REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8108250495 DOC.DATE: 81/08/13 NOTARIZED: NO DOCKET #
FACIL:50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397
AUTH.NAME AUTHOR AFFILIATION
BOUCHEY,G.D. Washington Public Power Supply System
RECIP.NAME RECIPIENT AFFILIATION
TEDESCO,R.L. Assistant Director for Licensing

SUBJECT: Forwards containment stress repts by Pittsburgh-Des Moines Steel Co,in response to Item 4 & Item 6 through 9 of NRC 810604 ltr. Ace Rpts

DISTRIBUTION CODE: B001S COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 1135
TITLE: PSAR/FSAR AMDTS and Related Correspondence

NOTES:PM: 2 copies of all material.1 cy:BWR-LRG PM(L.RIB) 05000397

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
ACTION:	A/D LICENSNG	1	0	LIC BR #2 BC	1	0
	LIC BR #2 LA	1	0	AULUCK,R. 04	1	1
INTERNAL:	ACCID EVAL BR26	1	1	AUX SYS BR 27	1	1
	CHEM ENG BR 11	1	1	CONT SYS BR 09	1	1
	CORE PERF BR 10	1	1	EFF TR SYS BR12	1	1
	EMRG PRP DEV 35	1	1	EMRG PRP LIC 36	3	3
	EQUIP QUAL BR13	3	3	FEMA-REP DIV 39	1	1
	GEOSCIENCES 28	2	2	HUM FACT ENG 40	1	1
	HYD/GEO BR 30	2	2	I&C SYS BR 16	1	1
	I&E 06	3	3	LIC GUID BR 33	1	1
	LIC QUAL BR 32	1	1	MATL ENG BR 17	1	1
	MECH ENG BR 18	1	1	MPA	1	0
	OELD	1	0	OP LIC BR 34	1	1
	POWER SYS BR 19	1	1	PROC/TST REV 20	1	1
	QA BR 21	1	1	RAD ASSESS BR22	1	1
	REAC SYS BR 23	1	1	REG FILE 01	1	1
	SIT ANAL BR 24	1	1	STRUCT ENG BR25	1	1
EXTERNAL:	ACRS 41	16	16	LPDR 03	1	1
	NRC PDR 02	1	1	NSIC 05	1	1
	NTIS	1	1			

LIMITED DISTRIBUTION

Encls TO: REG FILES

AUG 27 1981

TOTAL NUMBER OF COPIES REQUIRED: LTTR ~~62~~ 65 ENCL ~~51~~ 60

[illegible]

Washington Public Power Supply System
P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509) 372-5000

August 13, 1981
G02-81-238

Docket No. 50-397

RECEIVED
AUG 25 1981
U.S. NUCLEAR REGULATORY COMMISSION

Mr. R. L. Tedesco
Assistant Director for Licensing
Division of Licensing
U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D. C. 20555

Dear Mr. Tedesco:

Subject: SUPPLY SYSTEM NUCLEAR PROJECT NO. 2
CONTAINMENT BUCKLING INFORMATION

Reference: (1) Letter, R. L. Tedesco, NRC to R. L. Ferguson, Supply System, dated June 4, 1981

(2) Letter, G02-81-194, G. D. Bouchey, Supply System to R. L. Tedesco, NRC, dated July 22, 1981

Reference (1) requested information from the Supply System on the buckling properties on the WNP-2 steel containment. By reference (2), the Supply System answered items 1, 2, 3, and 5.

This letter transmits copies of the containment stress reports which contain the information requested in items 4, and 6 through 9 of Reference (1). Mr. David Looman of Pittsburgh-Des Moines Company (412-331-3000) may be contacted if you require clarification or have further questions regarding the contents of these stress reports.

Specific sections of these reports which relate to your request for information regarding containment buckling, are identified below. Based on our understanding of the scope of your research project, it was concluded that the most expeditious way to provide a complete information package, responsive to Reference (1), was to transmit the actual containment stress reports rather than excerpts or summaries.

B001
S 1/1

Limited Distribution
Each To: Reg Files

8108250495 810813
PDR ADOCK 05000397
A PDR

B&R File No.	Title	Pertinent Pages
213-00-0268	Design of Drywell Head, Flanges, Lifting Lugs and Support Feet	IV.9.2 Page 102 & 103
213-00-0455	Design of Lower Top Head Flange, Shell and Seal Support	IV.X.3 Pages 2 through 6
213-00-1545	Design and Analysis of Cone Shell Section El. 500'-8 1/4" to El. 573'-3 1/4"	IV.2.1 Pages 19 through 36.1
213-00-0303	Design of Transition Region, Seismic Lugs and Seal Ring	IV.1.1 Pages 7 through 14
213-00-0260	Design of Suppression Chamber Cylinder	II.8.1 Pages 135 through 142
213-00-0280	Design of Suppression Chamber Head and Inner Seismic Support Skirt	II.VI.2 Pages 179 through 183
213A-00-0058	Suppression Chamber Circumferential Ring Stiffener Design - External Pressure	Section B Pages 2 and 3

Very truly yours,

G. D. Bouchey
Nuclear Safety Director

LWV:kjf
Attachments: (7) To Addressee Only
cc: JA Forrest - B&R RO
HR Canter - B&R RO
J. Ellswanger - B&R NY
RE Snaith - B&R NY
JJ Verderber - B&R NY
AI Cygelman - B&R Site 979S
FA MacLean - General Electric
S. Smith - General Electric
ND Lewis - EFSEC, Olympia
WS Chin - Bonneville Power Admin.
NS Reynolds - Debevoise & Liberman
OK Earle - B&R RO
A. Schwencer - NRC
WNP-2 Files

PITTSBURGH-DES MOINES STEEL COMPANY

#8104250495

FINAL STRESS REPORT

SECTION II

SUBSECTION 8

REV A (8-8-73)

REV. B (11-21-73)

REV. C (7-1-74)

BR FILE NUMBER 213 00 0260

CONTRACT

WASHINGTON PUBLIC POWER SUPPLY SYS
Hanford No. 2
W. O. 2808

BURNS AND ROE, INC.
ORADELL, N.J.-HEMPSTEAD, N.Y.-LOS ANGELES, CAL.

REVIEWED AS CHECKED BELOW

- [x] APPROVED FOR FABRICATION .... A
- [ ] NOT APPROVED .... NA
- [ ] APPROVED AS NOTED FOR FABRICATION ..... AN
- [ ] RELEASED AS PRELIMINARY INFORMATION ..... P

SUBJECT TO ALL CONTRACTUAL PROVISIONS

THIS REVIEW DOES NOT IMPLY ACCEPTANCE OF ANY MATERIAL OR EQUIPMENT NOT FULFILLING ALL SPECIFICATION REQUIREMENTS.

Charles C. Simpson 10-31-74
PROCESSED BY DATE

DESIGN OF SUPPRESSION CHAMBER CYLINDER

THIS SUBSECTION REVIEWED BY: J. F. [signature]

TITLE: PROJECT ENGINEER

[illegible]

Introduction:

The following pages contain the design for the Suppression Chamber cylinder, including the applicable design drawings labeled Figures II.8.1, II.8.2, and II.8.3. The approach taken was to eliminate certain "non-critical" design conditions, using either abbreviated calculations or some logical rationale, and base the cylinder design on the three combinations presented on page II.8.1.1.

The three combinations examined were for shell tension, shell hoop compression, and shell longitudinal compression.

Conclusion:

The conclusion reached upon examining the design calculations is that the cylindrical shell presented in the enclosed figures is adequate for the design conditions specified in the Design Specification (Reference 1).

List of References:

1. Burns and Roe, Inc., Bidding Documents and Plans and Specifications, Specification 2808-213 Primary Containment Vessel Contract No. 213, for WPPSS, Hanford No. 2.

2. ASME, Boiler and Pressure Vessel Code, Section III, "Nuclear Power Plant Components", 1971, including 1972 Summer Addenda, New York

3. AISC, Specification For the Design, Fabrication and Erection of Structural Steel For Buildings, "Manual of Steel Construction", Seventh Edition, New York, 1970

4. ASME, Boiler and Pressure Vessel Code, Section VIII, "Pressure Vessels", Division 1, 1971, including 1972 Summer Addenda, New York.

5. Roark, Raymond J., "Formulas For Stress and Strain", Fourth Edition, McGraw-Hill Book Company, New York, 1965

6. ASCE, Transactions, "Paper No. 3269--Wind Forces on Structures", New York, Vol. 126, 1961.

7. Wichman, K. R., et al, Welding Research Council Bulletin No. 107, "Local Stresses in Spherical and Cylindrical Shells Due to External Loadings", August 1965.

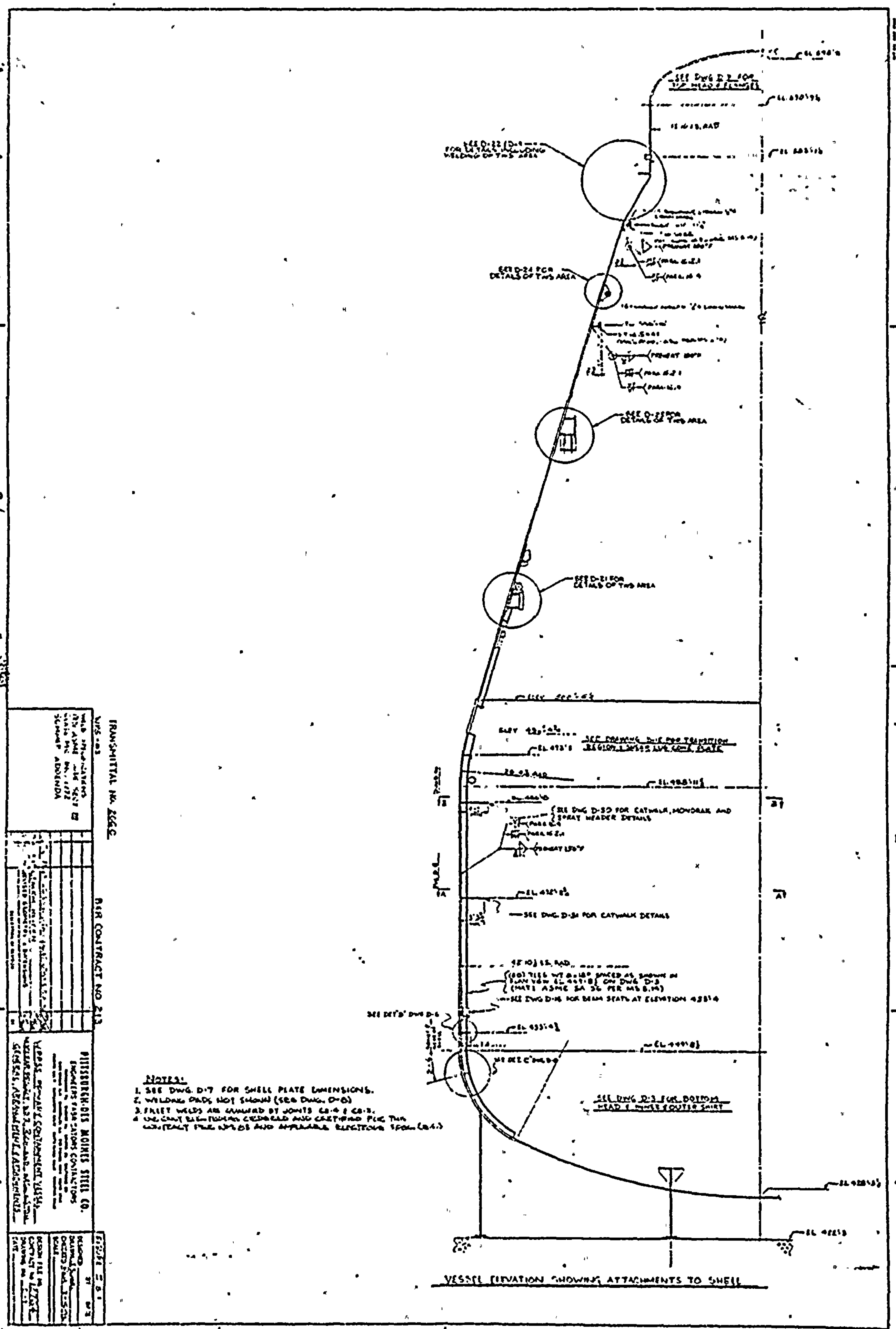
8. Bijlaard, P. P., Welding Research Council Bulletin No. 50, "Additional Data on Stresses in Cylindrical Shells Under Local Loading", May 1959.

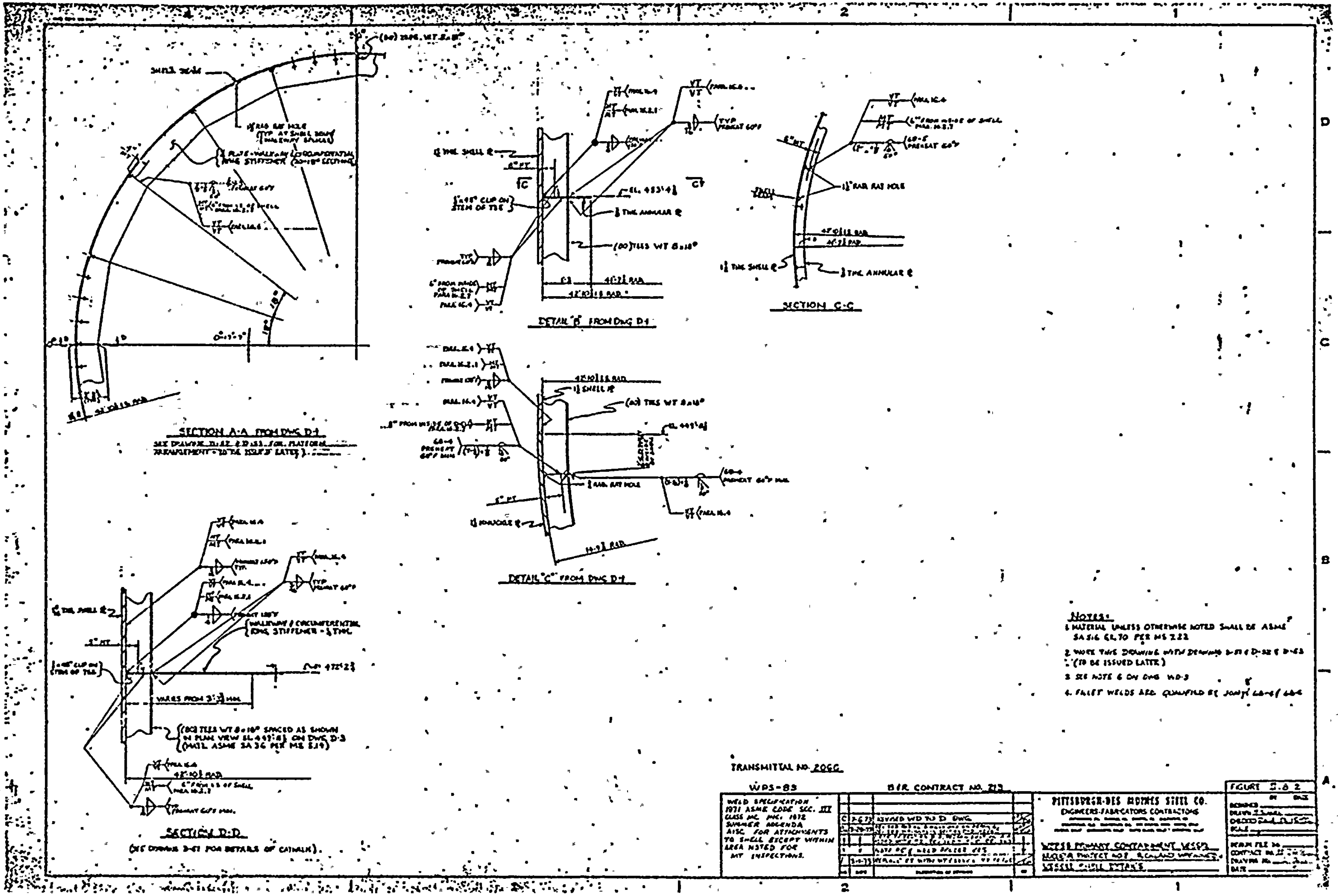
9. Blodgett, Omer W., "Design of Welded Structures", The James F. Lincoln Arc Welding Foundation, Cleveland, Ohio, 1966.

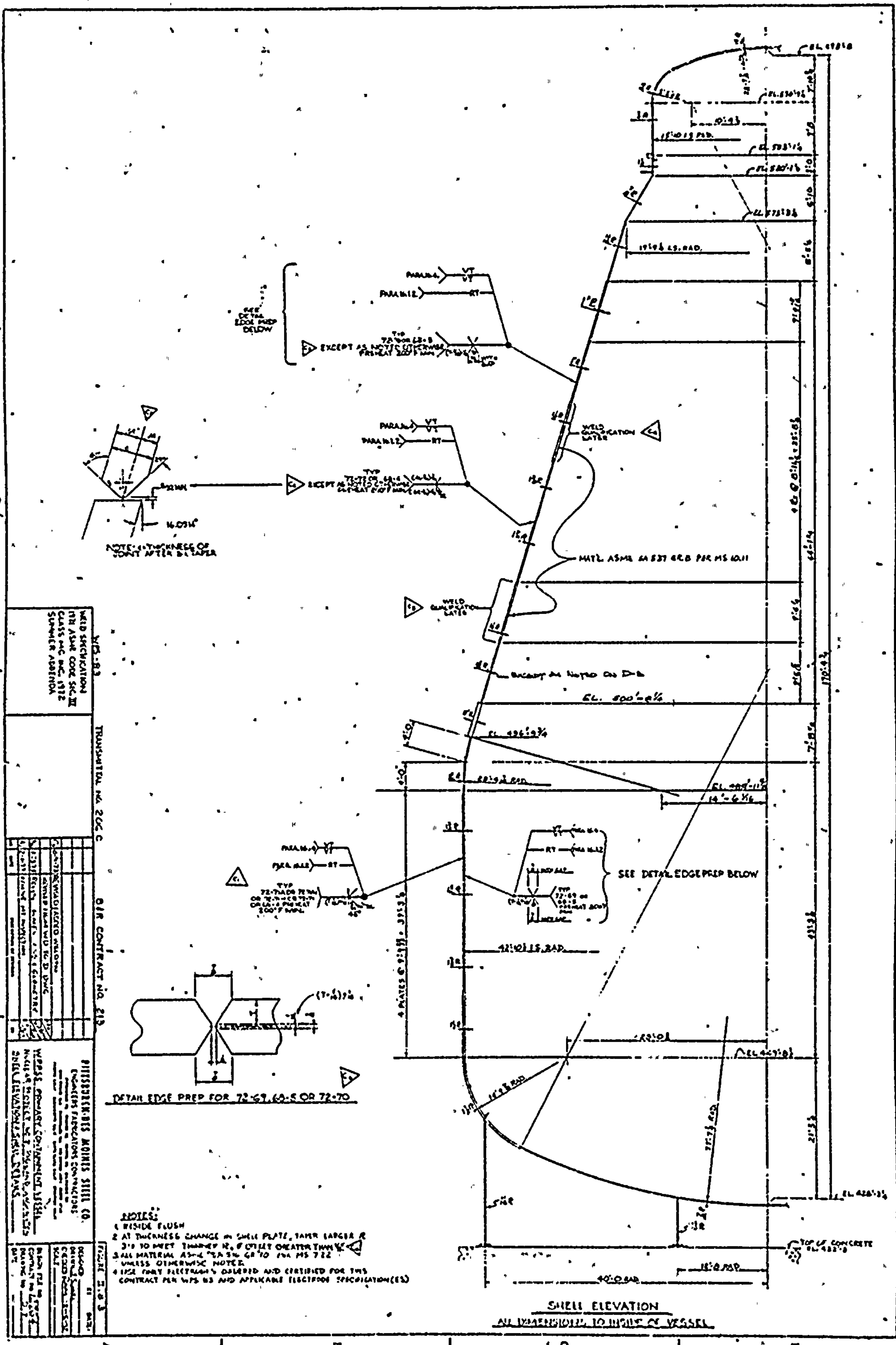
PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: II SUBSEC: 8 ARTICLE: PAGE: iii
PREPARED BY / DATE JFS/11-6-72					
CHECKED BY / DATE:					
REVISION NUMBER:					

REVISION PAGE

Rev.	Page Dwg.	Description	Page Dwg.	Description	Page Dwg.	Description
A	ALL	General Revision				
B	1-4	Revised	1-5	Revised	Cover	Revised
C	3-5 140	Revised Revised	136	Revised	139	Revised


SEE DWG D-2 FOR TOP HEAD & FLANGES
SEE D-22 FOR DETAILS OF THIS AREA
SEE D-24 FOR DETAILS OF THIS AREA
SEE D-21 FOR DETAILS OF THIS AREA
SEE DWG D-30 FOR CATWALK, MONORAIL AND SPRAY HEADER DETAILS
SEE DWG D-31 FOR CATWALK DETAILS
SEE DWG D-3 FOR BOTTOM HEAD & INNER & OUTER SKIRT
SEE DET 'B' DWG D-6
NOTES:
1. SEE DWG. D-7 FOR SHELL PLATE DIMENSIONS.
2. WELDING PADS NOT SHOWN (SEE DWG. D-6)
VESSEL ELEVATION SHOWING ATTACHMENTS TO SHELL
TRANSMITTAL NO. 266C
WPS-03
B&R CONTRACT NO 213
SUMMER ADDENDA
PITTSBURGH-DES MOINES STEEL CO.
ENGINEERS FABRICATORS CONTRACTORS
WPPSS PRIMARY CONTAINMENT VESSEL
GENERAL ARRANGEMENT & ATTACHMENTS
DESIGNED
DRAWN
CHECKED
SCALE
DESIGN FILE NO.
CONTRACT NO.
DRAWING NO.
DATE
A
B
C
D
1
2
3
4


SECTION A-A FROM DWG D-1
SEE DRAWING D-52 & D-53 FOR PLATFORM ARRANGEMENT - TO BE ISSUED LATER
DETAIL "B" FROM DWG D-1
SECTION C-C
DETAIL "C" FROM DWG D-1
SECTION D-D
(SEE DRAWING D-51 FOR DETAILS OF CATWALK).
NOTES:
1. MATERIAL UNLESS OTHERWISE NOTED SHALL BE ASME SA 516 GR.70 PER MS 222
2. WORK THIS DRAWING WITH DRAWING D-51 & D-52 & D-53 (TO BE ISSUED LATER)
3. SEE NOTE 6 ON DWG WD-3
4. FILLET WELDS ARE QUALIFIED BY JOINT 6A-4 / 6A-6
TRANSMITTAL NO. 2066
WPS-83
B&R CONTRACT NO. 213
WELD SPECIFICATION 1971 ASME CODE SEC. III CLASS MC INC. 1972 SUMMER ADDENDA AISC FOR ATTACHMENTS TO SHELL EXCEPT WITHIN AREA NOTED FOR MT INSPECTIONS.
REVISED WD TO D DWG
PITTSBURGH-DES MOINES STEEL CO.
ENGINEERS-FABRICATORS-CONTRACTORS
FIGURE 3.8 2


SEE DETAIL EDGE PREP BELOW
DETAIL EDGE PREP FOR 72-69, 60-5 OR 72-70
NOTES:
SHELL ELEVATION
ALL DIMENSIONS TO INSIDE OF VESSEL
TOP OF CONCRETE
40'-0 RAD.
PITTSBURGH-DES MOINES STEEL CO.

LOADING COMBINATIONS:

THE FOLLOWING LOADING COMBINATIONS WILL BE EXAMINED FOR THE DESIGN OF THE SUPPRESSION CHAMBER CYLINDER:

1. TENSION DESIGN = 45psi + S.C. WATER + 1/2 SSE E.Q. ACTING VERTICALLY ON WATER (g-FACTOR = 1.2 DOWN) + 1/2 SSE E.Q. SHEAR

2. HOOP COMPRESSION DESIGN = -4 psi

3. LONGITUDINAL COMPRESSION DESIGN = WELDING PAD L.L. + PLATFORM L.L. + VESSEL D.L. + FILLER MATERIAL D.L. + REFUELING BELLOWS LOCA LOAD + PIPE RUPTURE LOAD + FLOOR SEAL LOAD + SSE E.Q. ACTING VERTICALLY (g-FACTOR = 1.45) AND HORIZONTALLY + (-2) psi + FILLER MATERIAL - 2psi PRESSURE LOAD.

THESE COMBINATIONS CORRESPOND TO VARIATIONS OF THE INCIDENT CONDITION APPEARING ON (SPEC.) PAGE 3A-20 OF REFERENCE 1.

THE OTHER LOADING CONDITIONS WILL NOW BE DISCUSSED, AND DETERMINED AS INCONSEQUENTIAL WHEN COMPARED WITH THE ABOVE:

A. PROOF LOAD TEST CONDITION*: THE PROOF LOAD TEST IS A S.C. CYLINDER TENSILE CONDITION WITH A TEST PRESSURE OF 51.8 psi, DEAD LOADS, S.C. WATER, SMALL E.Q. LOADS, AND EMPTY HEADER LOAD. THE ALLOWABLE FOR THIS CONDITION, ACCORDING TO REFERENCE 2, PARAGRAPH NE-6322, IS 0.9 FY AT TEST TEMPERATURE, OR, 0.9 * 38. ksi = 34.2 ksi. IF THE SHELL IS ASSUMED TO BE STRESSED TO 1.1 SM, AND STRESS IS DIRECTLY PROPORTIONAL TO PRESSURE, THEN, THE STRESS IN THE CYLINDER IS 51.8 * 1.1 SM / 45.0 = 24.4 ksi < 34.2 ksi. THIS

* SPECIFICATION PARAGRAPH 3.4.1.1, OR 3.4.2.1

CONDITION SHOULD THEREFORE BE SATISFIED BY COMBINATION 1 ABOVE

B. FINAL PROOF LOAD TEST CONDITION:* THIS CONDITION SHOULD BE SATISFIED BY ONE AND/OR THREE OF THE COMBINATIONS PRESENTED ABOVE.

C. NORMAL OPERATING CONDITION:** SEE "B" ABOVE. (ALSO WITH PIPE WHIP SUPPORT LOADS)

D. REFUELING CONDITION:*** THE REFUELING CONDITION IS A S.C. CYLINDER COMPRESSIVE CONDITION, WHICH CONSISTS OF THE FOLLOWING:

1. D.L. OF VESSEL AND APPURTENANCES
2. S.C. WATER
3. PLATFORM LOADS
4. FILLER MAT'L D.L
5. 1/2 SSE E.Q. (VERTICALLY & HORIZONTALLY)
6. WELDING PAD L.L.
7. WATER LOAD OF 23'-6 ON WATER SEAL
8. REFUELING BELLOWS LOAD
9. EXTERNAL PRESSURE OF 2psi - FILLER MAT'L.
10. SEAL LOADS.

EXAMINING COMBINATIONS 1 AND 2 FROM THE PREVIOUS PAGE, IT IS SEEN THAT THEY CONTROL OVER THE ABOVE LOADS. FOR LONGITUDINAL COMPRESSION, CALCULATE THE LOADS SPECIFIED BY ITEMS 7 AND 8 ABOVE:

FOR ITEM 7, ASSUME WATER TO ELEVATION 606'-10 1/2"**** FOR INNER RING, WATER HEIGHT = 606'-10 1/2 - 582'-8 1/4 = 24'-2 1/4 FOR A LENGTH

* SPECIFICATION PARAGRAPH 3.4.1.2 OR 3.4.2.2
** SPECIFICATION PARAGRAPH 3.4.1.3, 3.4.1.7, OR 3.4.2.3
*** SPECIFICATION PARAGRAPH 3.4.1.4 OR 3.4.2.4
**** SEE DRAWING S-799 OF REFERENCE 1

FROM 31'-8½ TO 25'-6½. TOTAL LOAD IS THEREFORE

$$T.L. = \pi[(15'-10)^2 - (12'-9)^2](24'-2\tfrac{1}{4})(62.4)$$

$$T.L. = 417887.\#$$

THE OUTER BELLOWS LOAD IS -45#/IN, OR (45)(2π)(207.0) = 58,528.#

FOR THE OUTER RING, THE WATER LOAD IS:

$$T.L. = \pi[(17'-3)^2 - (15'-11\tfrac{1}{2})^2](26'-2\tfrac{1}{4})(62.4)$$

$$T.L. = 220,204.\#$$

THEREFORE, TOTAL LOAD FOR ITEMS 7 AND 8 IS 696.6 kips

THE SUM OF ITEMS 1, 3, 4, 6, 7, 8, & 9, CALCULATED ON PAGES II.8.1.139 & 140, IS 19,575.8K, WHEN MULTIPLIED BY A VERTICAL g-FACTOR OF 1.28. THE SEAL LOADS DURING REFUELING WILL BE ASSUMED THE SAME AS THE NORMAL OPERATING LOAD SPECIFIED ON DRAWING S799, OR THE TOTAL VERTICAL LOAD IS ABOUT EQUAL TO (2π)(505.5)(50) = 158.8 × 1.23

THEREFORE, TOTAL COMPRESSIVE REFUELING LOAD IS 19,771.1 kips, WHICH IS LESS THAN THAT USED IN THE DESIGN COMBINATION 3.

E. INCIDENT CONDITION*: VARIATIONS OF THIS CONDITION LEAD TO THE THREE COMBINATIONS USED FOR THE FINAL ANALYSIS (ALSO WITH PIPE WHIP SUPPORT LOADS.)

F. FLOODED CONDITION**: THE FLOODED CONDITION IS BOTH A LONGITUDINAL COMPRESSION AND HOOP TENSION PROBLEM. THE HOOP TENSION IS CAUSED BY FLOODING.

*SPECIFICATION PARAGRAPH 3.4.1.5, 3.4.1.6, OR 3.4.2.5

**SPECIFICATION PARAGRAPH 3.4.1.8 OR 3.4.2.6

TO ELEVATION 581'-10½", OR THE PRESSURE AND STRESSES AT THE BOTTOM OF EACH OF OF THE FOUR CYLINDRICAL SECTIONS, USING A 1.20 g-FACTOR, ARE CALCULATED AS FOLLOWS:

	***	
CYLINDER #1	53.41 psi	20,966 psi *
CYLINDER #2	58.53 psi	24,123 psi
CYLINDER #3	63.64 psi	24,982 psi
CYLINDER #4	68.73 psi	24,637 psi

THE LONGITUDINAL COMPRESSIVE STRESS WILL BE CAUSED BY:

1. D.L. = 4063.0 kips
2. PLATFORM L.L. = 8488.0 kips
3. FILLER MAT'L D.L. = 87.1 kips
4. WELDING PAD L.L. = 3000.0 kips
5. WATER LOAD ON SEAL = 220.2 + 529.5 kips ***
6. EXTERNAL PRESSURE OF FILLER = 1436.4 k.
7. BELLOWS LOADS = 97.5 kips **

MULTIPLYING 3 THRU 5, 1 AND 7 BY A 1.35 g-FACTOR, WILL GET TOTAL AXIAL COMPRESSIVE LOAD OF 20,720.8 kips. FROM REFERENCE 1, FIGURE 8, THE MAXIMUM OVERTURNING MOMENT AT THE BOTTOM OF THE FOUR CYLINDERS ARE 270, 340, 450, AND 560 $\times 10^3$ FT-KIPS RESPECTIVELY. THE COMPRESSIVE STRESS, WHICH EQUALS THE SUM OF THE AXIAL STRESS AND BENDING STRESS, FOR EACH CYLINDER IS AS FOLLOWS (SECT. PROP. ON p. 140):

CYLINDER #1	σ_B = 2701.	σ_A = 4434.
CYLINDER #2	σ_B = 3556.	σ_A = 4636.
CYLINDER #3	σ_B = 4502.	σ_A = 4434.
CYLINDER #4	σ_B = 5155.	σ_A = 4081.

****
*** SEE PAGE II.6.1.50 OF THIS FINAL STRESS REPORT
* BASED ON AX-2 MODEL ELEVATIONS
** R AND t BASED ON PAGE II.8.1.140
**** ASSUME PLANT SHUTDOWN LOAD OF -75#/IN. ON O.S.

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: II
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL						SUBSEC: 8
PREPARED BY / DATE: RAM/12-13-72	RAM/8-5-73	RAM/11-21-73	TAW 5-8-74			ARTICLE: 1
CHECKED BY / DATE: BJW / 1-9-73	BJW/8-5-73	DCL/11-21-73	ACL / 7-1-74			PAGE: 5
REVISION NUMBER:	A	B	C			

TOTALING THE LONGITUDINAL COMPRESSIVE STRESS, AND ADDING IT TO THE HOOP TENSILE STRESS WILL RESULT IN A STRESS INTENSITY, THE VALUE OF WHICH MUST BE LESS THAN F_y AT 212°F = 34.5 ksi

CYLINDER #1 S.I = 28.1 ksi
CYLINDER #2 S.I = 32.3 ksi
CYLINDER #3 S.I = 33.9 ksi
CYLINDER #4 S.I = 33.9 ksi

THEREFORE, THE DESIGN SATISFIES THE FLOODED CONDITION REQUIREMENTS.

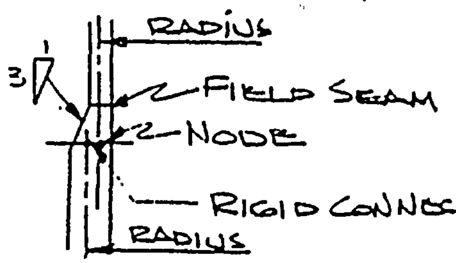
PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: II
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 8
PREPARED BY / DATE: RAM/12-8-72					ARTICLE: 1
CHECKED BY / DATE: BJW / 1-9-73					PAGE: 6
REVISION NUMBER:					

AXISYMMETRIC SHELL ANALYSIS

THE FOLLOWING PAGES CONTAIN THE AXISYMMETRIC SHELL ANALYSIS OF THE SUPPRESSION CHAMBER CYLINDER USING P.D.M.'S AXISYMMETRIC SHELL PROGRAM AX2 (SEE APPENDIX V, ARTICLE 1 OF THIS FINAL STRESS REPORT). THE CONE-CYLINDER TRANSITION, AND A PORTION OF THE BOTTOM HEAD KNUCKLE HAVE BEEN INCLUDED IN THE ANALYSIS TO GIVE DISCONTINUITY EFFECTS ON THE CYLINDER, BUT THEIR SPECIFIC DESIGN IS NOT INCLUDED HERE.

A FEW WORDS SHOULD BE SAID ABOUT THE AX2 MODEL ON THE FOLLOWING PAGE. THE BOTTOM KNUCKLE IS OF A TORUS GEOMETRY, BUT IS MODELED AS A SERIES OF SPHERICAL SEGMENTS. THE DIFFERENCE BETWEEN THE SEGMENT ANALYSIS AND THE TORUS SOLUTION IS NEGLIGIBLE. THE SAME HOLDS FOR THE MODELING OF THE CONE-CYLINDER TRANSITION REGION.

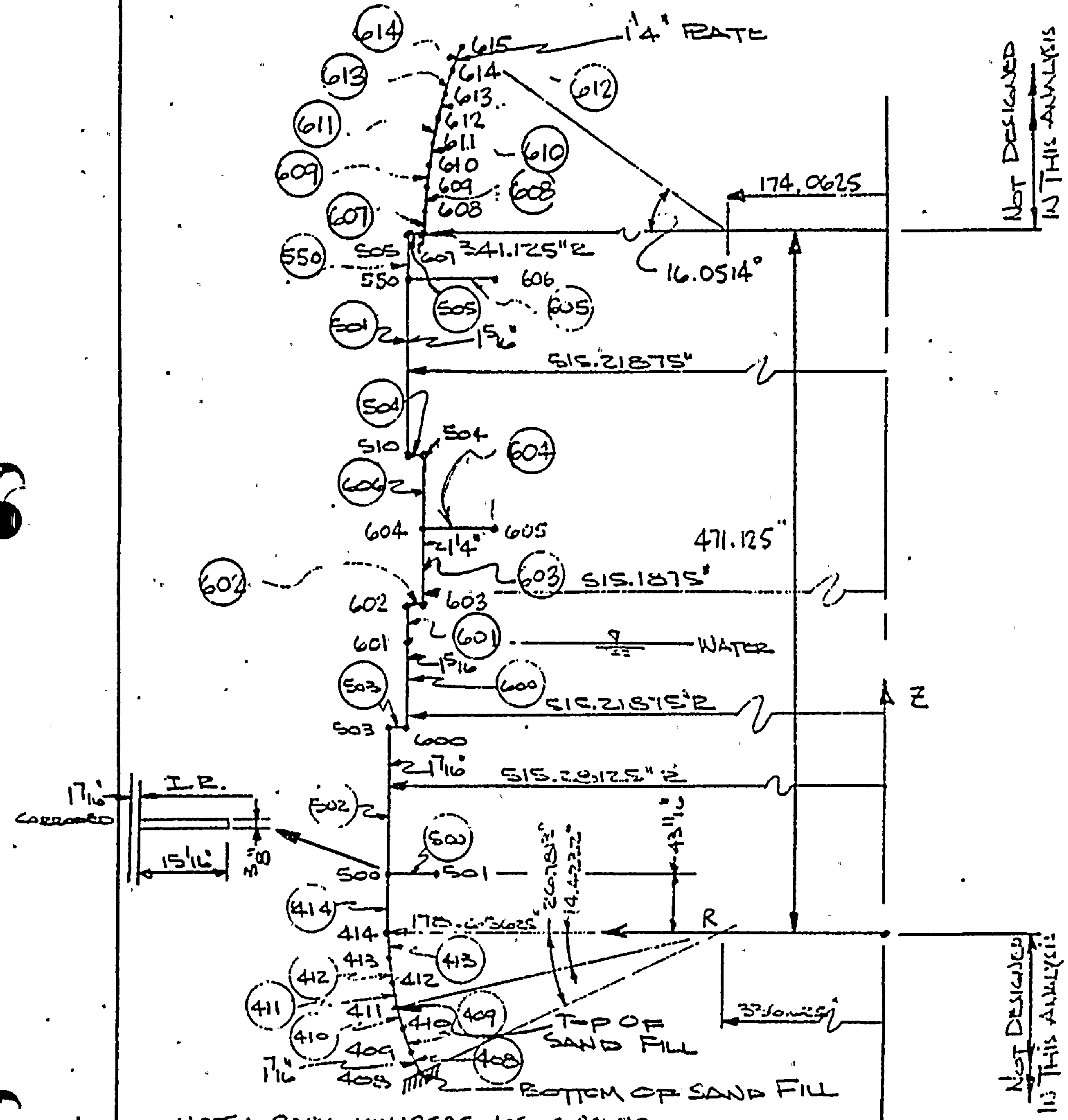
THE CONNECTION BETWEEN PLATES OF DIFFERENT THICKNESS IS ACCOMPLISHED BY USING AX2'S RIGID CONNECTOR ELEMENT IN THE FOLLOWING WAY:



THIS SHOULD CONSERVATIVELY GIVE DISCONTINUITY STRESSES, IF ANY, AT THE PLATE WELD SEAMS. THE WELD SEAM AT THE CYLINDER-CONE TRANSITION WAS NOT MODELED IN THAT IT YIELDS A BODY 3/16" LONG BY 1 1/4" THICK. THIS IS BY NO MEANS A THIN SHELL, AND RESULTS IN SINGULARITIES IN THE PROGRAM OUT PUT.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: I
WPPSS · HANFORD NO. 2 CONTAINMENT VESSEL				SUBSEC: 8
PREPARED BY / DATE: RAM/12-8-72	JXL 7-10-73			ARTICLE: 1
CHECKED BY / DATE: BJW/1-9-73	RAM/7-13-73			PAGE: 7
REVISION NUMBER:	A			

AX2 AXISYMMETRIC MODEL



NOTE: BODY NUMBERS ARE CIRCLED
THICKNESSES ARE IN THE CORRODED CONDITION

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF S.C. CYLINDER

NUMBER OF NODES = 30 NUMBER OF BODIES = 29

NODE NO.	COORDINATE R	COORDINATE Z	OBLIQUE AXIS ANGLE	FIXITY CODE
408	0.496117E 03	-0.804998E 02	0.0	111
409	0.501488E 03	-0.688346E 02	0.0	0
410	0.506007E 03	-0.568137E 02	0.0	0
411	0.509650E 03	-0.444997E 02	0.0	0
412	0.512771E 03	-0.298415E 02	0.0	0
413	0.514653E 03	-0.149732E 02	0.0	0
414	0.515281E 03	0.401448E-03	0.0	0
500	0.515281E 03	0.436875E 02	0.0	0
501	0.499500E 03	0.436875E 02	0.0	0
503	0.515281E 03	0.117406E 03	0.0	0
600	0.515219E 03	0.117406E 03	0.0	0
601	0.515219E 03	0.200250E 03	0.0	0
602	0.515219E 03	0.235375E 03	0.0	0
603	0.515188E 03	0.235375E 03	0.0	0
604	0.515188E 03	0.270125E 03	0.0	0
605	0.475125E 03	0.270125E 03	0.0	0
504	0.515188E 03	0.353531E 03	0.0	0
510	0.515219E 03	0.353531E 03	0.0	0
606	0.465500E 03	0.443375E 03	0.0	0
550	0.515219E 03	0.443375E 03	0.0	0
505	0.515219E 03	0.471125E 03	0.0	0
607	0.515188E 03	0.471125E 03	0.0	0
608	0.514978E 03	0.483069E 03	0.0	0
609	0.514351E 03	0.494998E 03	0.0	0
610	0.513307E 03	0.506897E 03	0.0	0
611	0.511846E 03	0.518752E 03	0.0	0
612	0.509971E 03	0.530550E 03	0.0	0
613	0.507685E 03	0.542274E 03	0.0	0
614	0.504990E 03	0.553911E 03	0.0	0
615	0.501888E 03	0.565447E 03	0.0	0

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF S.C. CYLINDER

NODE NO.	ELASTIC FOUNDATION CONSTANTS R-DIR.	Z-DIR.	ROTATION
408	0.0	0.0	0.0
409	0.0	0.0	0.0
410	0.0	0.0	0.0
411	0.0	0.0	0.0
412	0.0	0.0	0.0
413	0.0	0.0	0.0
414	0.0	0.0	0.0
500	0.0	0.0	0.0
501	0.0	0.0	0.0
503	0.0	0.0	0.0
600	0.0	0.0	0.0
601	0.0	0.0	0.0
602	0.0	0.0	0.0
603	0.0	0.0	0.0
604	0.0	0.0	0.0
605	0.0	0.0	0.0
504	0.0	0.0	0.0
510	0.0	0.0	0.0
606	0.0	0.0	0.0
550	0.0	0.0	0.0
505	0.0	0.0	0.0
607	0.0	0.0	0.0
608	0.0	0.0	0.0
609	0.0	0.0	0.0
610	0.0	0.0	0.0
611	0.0	0.0	0.0
612	0.0	0.0	0.0
613	0.0	0.0	0.0
614	0.0	0.0	0.0
615	0.0	0.0	0.0

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF S.C. CYLINDER

NODE NO.	PRESCRIBED DISPLACEMENTS R-DIR.	Z-DIR.	ROTATION
408	0.0	0.0	0.0
409	0.0	0.0	0.0
410	0.0	0.0	0.0
411	0.0	0.0	0.0
412	0.0	0.0	0.0
413	0.0	0.0	0.0
414	0.0	0.0	0.0
500	0.0	0.0	0.0
501	0.0	0.0	0.0
503	0.0	0.0	0.0
600	0.0	0.0	0.0
601	0.0	0.0	0.0
602	0.0	0.0	0.0
603	0.0	0.0	0.0
604	0.0	0.0	0.0
605	0.0	0.0	0.0
504	0.0	0.0	0.0
510	0.0	0.0	0.0
606	0.0	0.0	0.0
550	0.0	0.0	0.0
505	0.0	0.0	0.0
607	0.0	0.0	0.0
608	0.0	0.0	0.0
609	0.0	0.0	0.0
610	0.0	0.0	0.0
611	0.0	0.0	0.0
612	0.0	0.0	0.0
613	0.0	0.0	0.0
614	0.0	0.0	0.0
615	0.0	0.0	0.0

HANFORD NO. 2 CONTAINMENT VESSEL II 5.

ANALYSIS OF S.C. CYLINDER

BODY NO. 408 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 409 AND 408

THICKNESS = 0.143750E 01 RADIUS = 0.549166E 03

ANGLE PHI-A = 0.114051E 03 ANGLE PHI-B = 0.115391E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 409 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 410 AND 409

THICKNESS = 0.143750E 01 RADIUS = 0.538202E 03

ANGLE PHI-A = 0.109918E 03 ANGLE PHI-B = 0.111285E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 410 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 411 AND 410

THICKNESS = 0.143750E 01 RADIUS = 0.529631E 03

ANGLE PHI-A = 0.105788E 03 ANGLE PHI-B = 0.107178E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 411 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 412 AND 411

THICKNESS = 0.143750E 01 RADIUS = 0.522722E 03

ANGLE PHI-A = 0.101198E 03 ANGLE PHI-B = 0.102841E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL II.8..12

ANALYSIS OF S.C. CYLINDER

BODY NO. 412 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 413 AND 412

THICKNESS = 0.143750E 01 RADIUS = 0.517862E 03

ANGLE PHI-A = 0.963825E 02 ANGLE PHI-B = 0.980406E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 413 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 414 AND 413

THICKNESS = 0.143750E 01 RADIUS = 0.515475E 03

ANGLE PHI-A = 0.915713E 02 ANGLE PHI-B = 0.932372E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 414 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 500 AND 414 THICKNESS = 0.143750E 01

RADIUS = 0.515281E 03 LENGTH = 0.436871E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 500 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 501 AND 500 THICKNESS = 0.375000E 00

INSIDE RADIUS =0.499500E 03 OUTSIDE RADIUS = 0.515281E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL II.3.

ANALYSIS OF S.C. CYLINDER

BODY NO. 502 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 503 AND 500 THICKNESS = 0.143750E 01

RADIUS = 0.515281E 03 LENGTH = 0.737188E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 503 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 600 AND 503

BODY NO. 600 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 601 AND 600 THICKNESS = 0.131250E 01

RADIUS = 0.515219E 03 LENGTH = 0.828438E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 601 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 602 AND 601 THICKNESS = 0.131250E 01

RADIUS = 0.515219E 03 LENGTH = 0.351250E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF S.C. CYLINDER

BODY NO. 602 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 603 AND 602

BODY NO. 603 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 604 AND 603 THICKNESS = 0.125000E 01

RADIUS = 0.515188E 03 LENGTH = 0.347500E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 604 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 605 AND 604 THICKNESS = 0.250000E 00

INSIDE RADIUS =0.475125E 03 OUTSIDE RADIUS = 0.515188E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 606 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 504 AND 604 THICKNESS = 0.125000E 01

RADIUS = 0.515188E 03 LENGTH = 0.834063E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

II 3.1.15

ANALYSIS OF S.C. CYLINDER

BODY NO. 504 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 510 AND 504

BODY NO. 501 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 550 AND 510 THICKNESS = 0.131250E 01

RADIUS = 0.515219E 03 LENGTH = 0.898438E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 605 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 606 AND 550 THICKNESS = 0.250000E 00

INSIDE RADIUS =0.465500E 03 OUTSIDE RADIUS = 0.515219E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 550 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 505 AND 550 THICKNESS = 0.131250E 01

RADIUS = 0.515219E 03 LENGTH = 0.277500E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF S.C. CYLINDER

BODY NO. 505 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 607 AND 505

BODY NO. 607 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 608 AND 607

THICKNESS = 0.125000E 01 RADIUS = 0.515196E 03

ANGLE PHI-A = 0.883322E 02 ANGLE PHI-B = 0.896606E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 608 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 609 AND 608

THICKNESS = 0.125000E 01 RADIUS = 0.515410E 03

ANGLE PHI-A = 0.863265E 02 ANGLE PHI-B = 0.876544E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 609 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 610 AND 609

THICKNESS = 0.125000E 01 RADIUS = 0.515839E 03

ANGLE PHI-A = 0.843204E 02 ANGLE PHI-B = 0.856472E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF S.C. CYLINDER

BODY NO. 610 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 611 AND 610

THICKNESS = 0.125000E 01 RADIUS = 0.516485E 03

ANGLE PHI-A = 0.823147E 02 ANGLE PHI-B = 0.836398E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 611 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 612 AND 611

THICKNESS = 0.125000E 01 RADIUS = 0.517354E 03

ANGLE PHI-A = 0.803088E 02 ANGLE PHI-B = 0.816318E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 612 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 613 AND 612

THICKNESS = 0.125000E 01 RADIUS = 0.518447E 03

ANGLE PHI-A = 0.783051E 02 ANGLE PHI-B = 0.796253E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 613 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 614 AND 613

THICKNESS = 0.125000E 01 RADIUS = 0.519778E 03

ANGLE PHI-A = 0.762999E 02 ANGLE PHI-B = 0.776166E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF S.C. CYLINDER

BODY NO. 614 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 615 AND 614

THICKNESS = 0.125000E 01 RADIUS = 0.521352E 03

ANGLE PHI-A = 0.742945E 02 ANGLE PHI-B = 0.756073E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

F :.17

ANALYSIS OF S.C. CYLINDER

VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY LOADS

```
BODY NO. 408  BODY TYPE   4  X = MERIDIAN ANGLE
     PN = ( 0.571700E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 409  BODY TYPE   4  X = MERIDIAN ANGLE
     PN = ( 0.566600E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 410  BODY TYPE   4  X = MERIDIAN ANGLE
     PN = ( 0.561400E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( C.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF S.C. CYLINDER

VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY LOADS

```
BODY NO. 411  BODY TYPE   4  X = MERIDIAN ANGLE
     PN = ( 0.556100E 02) + ( 0.0          )*COS(X)
      + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 412  BODY TYPE   4  X = MERIDIAN ANGLE
     PN = ( 0.549700E 02) + ( 0.0          )*COS(X)
      + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 413  BODY TYPE   4  X = MERIDIAN ANGLE
     PN = ( 0.543300E 02) + ( 0.0          )*COS(X)
      + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

```
  HANFORD NO. 2 CONTAINMENT VESSEL

  ANALYSIS OF S.C. CYLINDER

  VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

  BODY LOADS

BODY NO. 414  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.517800E 02) +  ( 0.433000E-01)*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0           + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( 0.0          )*Z/H)*X*X
BODY NO. 500  BODY TYPE   3  X = RADIUS
     PN = ( 0.0          ) +  ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0           + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( 0.0          )*Z/H)*X*X
BODY NO. 502  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.485900E 02) +  ( 0.433000E-01)*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0           + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.C           + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF S.C. CYLINDER

VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY LOADS

```
BODY NO. 600   BODY TYPE    1   X = DISANCE ALONG MERICIAN FROM 'A' EDGE
     PN = ( 0.450000E 02) +  ( 0.433000E-01)*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 601   BODY TYPE    1   X = DISANCE ALONG MERICIAN FROM 'A' EDGE
     PN = ( 0.450000E 02) +  ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 603   BODY TYPE    1   X = DISANCE ALONG MERICIAN FROM 'A' EDGE
     PN = ( 0.450000E 02) +  ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF S.C. CYLINDER

VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY LOADS

```
BODY NO. 604  BODY TYPE   3  X = RADIUS
    PN = ( C.C          ) +  ( 0.0          )*X
    PPHI = ( 0.0          ) + ( 0.0          )*X
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( C.C          + ( 0.0          )*Z/H)*X
     + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 606  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
    PN = ( C.450CC0E 02) +  ( 0.0          )*X
    PPHI = ( C.C          ) + ( C.0          )*X
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( 0.0          + ( 0.0          )*Z/H)*X
     + ( 0.C          + ( 0.0          )*Z/H)*X*X
BODY NO. 501  BODY TYPE   1  X = DISANCE ALONG MERICIAN FROM 'A' ECGE
    PN = ( 0.450000E 02) +  ( 0.0          )*X
    PPHI = ( 0.0          ) + ( 0.0          )*X
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( 0.0          + ( 0.0          )*Z/H)*X
     + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF S.C. CYLINDER

VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY LOADS

```
BODY NO. 605  BODY TYPE   3  X = RADIUS
     PN = ( 0.0           ) +  ( 0.0          )*X
     PPHI = ( 0.0           ) + ( 0.0          )*X
     T = ( 0.0           + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( 0.0          )*Z/H)*X*X
BODY NO. 550  BODY TYPE   1  X = DISANCE ALONG MERICIAN FROM 'A' EDGE
     PN = ( 0.450000E 02) +  ( 0.0          )*X
     PPHI = ( 0.0           ) + ( 0.0          )*X
     T = ( 0.0           + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( C.0          )*Z/H)*X*X
BODY NO. 607  BODY TYPE   4  X = MERIDIAN ANGLE
     PN = ( -0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0           )*COS(X)*COS(X)
     PPHI = ( C.0           )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0           + ( 0.0          )*Z/H)
      + ( 0.C           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( C.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF S.C. CYLINDER

VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY LOADS

```
BODY NO. 608  BODY TYPE   4  X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 609  BODY TYPE   4  X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 610  BODY TYPE   4  X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

```
  HANFORD NO. 2 CONTAINMENT VESSEL

  ANALYSIS OF S.C. CYLINDER

  VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

  BODY LOADS

BODY NO. 611   BODY TYPE   4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 612   BODY TYPE   4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 613   BODY TYPE   4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*CCS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( C.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL   II.5.1.2.7

ANALYSIS OF S.C. CYLINDER

VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY LOADS

```
BODY NO. 614  BODY TYPE   4   X = MERIDIAN ANGLE

     PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.C           + ( C.0          )*Z/H)*X
      + ( 0.0           + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF S.C. CYLINDER

VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ
CIRCUMFERENTIAL LINE LOADS

NODE	R-DIR.	Z-DIR.	MOMENT
408	0.0	0.0	0.0
409	0.0	0.0	0.0
410	0.0	0.0	0.0
411	0.0	0.0	0.0
412	0.0	0.0	0.0
413	0.0	0.0	0.0
414	0.0	0.0	0.0
500	0.0	0.0	0.0
501	0.0	0.0	0.0
503	0.0	0.0	0.0
600	0.0	0.0	0.0
601	0.0	0.0	0.0
602	0.0	0.0	0.0
603	0.0	0.0	0.0
604	0.0	0.0	0.0
605	0.0	0.0	0.0
504	0.0	0.0	0.0
510	0.0	0.0	0.0
606	0.0	0.0	0.0
550	0.0	0.0	0.0
505	0.0	0.0	0.0
607	0.0	0.0	0.0
608	0.0	0.0	0.0
609	0.0	0.0	0.0
610	0.0	0.0	0.0
611	0.0	0.0	0.0
612	0.0	0.0	0.0
613	0.0	0.0	0.0
614	0.0	0.0	0.0
615	0.0	0.112925E 05	0.0

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EG

NODE NO.	NODE DISPLACEMENTS R OR R' DIR.	Z OR Z' DIR.	ROTATION	OBLIQUE AXIS ANGLE
408	0.0	0.0	0.0	0.0
409	-0.284804E-01	0.169364E-01	-0.406294E-02	0.0
410	-0.763438E-01	0.390765E-01	-0.365476E-02	0.0
411	-0.107158E 00	0.525849E-01	-0.133809E-02	0.0
412	-0.101009E 00	0.564375E-01	0.224312E-02	0.0
413	-0.338863E-01	0.527277E-01	0.674622E-02	0.0
414	0.920601E-01	0.512408E-01	0.914942E-02	0.0
500	0.281579E 00	0.569912E-01	0.301551E-03	0.0
501	0.284094E 00	0.617711E-01	0.304281E-03	0.0
503	0.290732E 00	0.641556E-01	0.867312E-03	0.0
600	0.290732E 00	0.642098E-01	0.867312E-03	0.0
601	0.279381E 00	0.740811E-01	-0.139154E-03	0.0
602	0.276603E 00	0.785158E-01	-0.164771E-03	0.0
603	0.276603E 00	0.785106E-01	-0.164771E-03	0.0
604	0.240506E 00	0.837688E-01	-0.155613E-04	0.0
605	0.245673E 00	0.831393E-01	-0.158851E-04	0.0
504	0.285715E 00	0.954567E-01	-0.692703E-03	0.0
510	0.285715E 00	0.954784E-01	-0.692703E-03	0.0
606	0.224371E 00	0.243635E-01	-0.169208E-02	0.0
550	0.218685E 00	0.107351E 00	-0.164979E-02	0.0
505	0.141783E 00	0.112281E 00	-0.505131E-02	0.0
607	0.141782E 00	0.112123E 00	-0.505131E-02	0.0
608	0.715005E-01	0.113726E 00	-0.635926E-02	0.0
609	-0.681832E-02	0.112992E 00	-0.668443E-02	0.0
610	-0.849193E-01	0.110108E 00	-0.603186E-02	0.0
611	-0.133877E 00	0.108657E 00	-0.910009E-03	0.0
612	-0.656556E-01	0.124383E 00	0.150242E-01	0.0
613	0.283493E 00	0.196421E 00	0.476807E-01	0.0
614	0.110039E 01	0.385778E 00	0.935766E-01	0.0
615	0.239434E 01	0.725374E 00	0.122836E 00	0.0

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

II.8.25

NODE NO.	REACTION LOADS R OR R' DIR.	Z OR Z' DIR.	MOMENT	OBLIQUE AXIS ANGLE
408	-0.507805E 04	-0.109404E 05	0.387895E 04	0.0

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 408

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11969.	1313.	118.	58.	488.
2	11974.	1508.	440.	155.	466.
3	11979.	1701.	749.	247.	445.
4	11984.	1890.	1042.	335.	423.
5	11989.	2075.	1322.	418.	402.
6	11994.	2254.	1587.	497.	381.
7	11999.	2427.	1838.	572.	360.
8	12004.	2591.	2076.	642.	340.
9	12009.	2747.	2299.	708.	319.
10	12014.	2892.	2509.	770.	299.
11	12019.	3026.	2705.	827.	279.
12	12023.	3149.	2889.	881.	259.
13	12028.	3259.	3058.	930.	239.
14	12033.	3356.	3215.	976.	220.
15	12038.	3438.	3358.	1017.	200.
16	12042.	3506.	3488.	1054.	181.
17	12047.	3558.	3605.	1088.	162.
18	12052.	3595.	3710.	1117.	142.
19	12056.	3615.	3801.	1142.	123.
20	12061.	3619.	3879.	1164.	104.

units?

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

II.5.1.32

BODY NO. 408

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.3290E-01	-0.3862E-02	-0.4063E-02
2	-0.3016E-01	-0.3629E-02	-0.4039E-02
3	-0.2745E-01	-0.3399E-02	-0.3986E-02
4	-0.2478E-01	-0.3174E-02	-0.3907E-02
5	-0.2217E-01	-0.2953E-02	-0.3802E-02
6	-0.1965E-01	-0.2737E-02	-0.3673E-02
7	-0.1721E-01	-0.2524E-02	-0.3521E-02
8	-0.1489E-01	-0.2314E-02	-0.3347E-02
9	-0.1269E-01	-0.2109E-02	-0.3153E-02
10	-0.1063E-01	-0.1906E-02	-0.2939E-02
11	-0.8718E-02	-0.1707E-02	-0.2708E-02
12	-0.6969E-02	-0.1510E-02	-0.2459E-02
13	-0.5396E-02	-0.1316E-02	-0.2194E-02
14	-0.4005E-02	-0.1124E-02	-0.1915E-02
15	-0.2807E-02	-0.9343E-03	-0.1623E-02
16	-0.1812E-02	-0.7461E-03	-0.1318E-02
17	-0.1026E-02	-0.5592E-03	-0.1002E-02
18	-0.4572E-03	-0.3735E-03	-0.6767E-03
19	-0.1112E-03	-0.1880E-03	-0.3421E-03
20	0.5722E-05	-0.3099E-05	0.2980E-07

HANFORD NO. 2 CONTAINMENT VESSEL II S.1.55
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 408

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8326.	914.	8668.	1082.	7985.	745.
2	8330.	1049.	9608.	1499.	7052.	599.
3	8333.	1183.	10507.	1900.	6160.	466.
4	8337.	1315.	11363.	2287.	5311.	343.
5	8340.	1443.	12178.	2658.	4503.	229.
6	8344.	1568.	12951.	3011.	3737.	125.
7	8347.	1688.	13685.	3348.	3010.	28.
8	8351.	1803.	14377.	3666.	2324.	-61.
9	8354.	1911.	15030.	3966.	1679.	-145.
10	8358.	2012.	15643.	4247.	1072.	-223.
11	8361.	2105.	16217.	4508.	505.	-297.
12	8364.	2191.	16751.	4748.	-23.	-367.
13	8367.	2267.	17247.	4968.	-512.	-434.
14	8371.	2334.	17705.	5167.	-964.	-499.
15	8374.	2392.	18125.	5345.	-1377.	-561.
16	8377.	2439.	18506.	5500.	-1751.	-622.
17	8381.	2475.	18849.	5633.	-2088.	-682.
18	8384.	2501.	19155.	5744.	-2387.	-742.
19	8387.	2515.	19423.	5832.	-2649.	-802.
20	8390.	2517.	19653.	5896.	-2872.	-861.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

II.8.1 54

BODY NO. 408 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	8388.		8668.		7985.	
2	8387.		9608.		7052.	
3	8385.		10507.		6160.	
4	8384.		11363.		5311.	
5	8383.		12178.		4503.	
6	8382.		12951.		3737.	
7	8381.		13685.		3010.	
8	8381.		14377.		2385.	
9	8381.		15030.		1823.	
10	8381.		15643.		1295.	
11	8381.		16217.		802.	
12	8382.		16751.		367.	
13	8382.		17247.		512.	
14	8383.		17705.		964.	
15	8384.		18125.		1377.	
16	8386.		18506.		1751.	
17	8387.		18849.		2088.	
18	8389.		19155.		2387.	
19	8391.		19423.	*	2649.	
20	8393.		19653.	*	2872.	

HANFORD NO. 2 CONTAINMENT VESSEL II 5 1 35
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EC

BODY NO. 409

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11869.	-2490.	-1563.	-452.	367.
2	11875.	-2309.	-1324.	-380.	341.
3	11881.	-2122.	-1103.	-313.	314.
4	11887.	-1930.	-900.	-251.	289.
5	11893.	-1733.	-713.	-195.	263.
6	11899.	-1534.	-544.	-144.	238.
7	11905.	-1332.	-392.	-98.	213.
8	11911.	-1128.	-257.	-57.	188.
9	11917.	-923.	-138.	-21.	163.
10	11923.	-717.	-36.	9.	139.
11	11929.	-511.	50.	35.	115.
12	11934.	-305.	120.	56.	91.
13	11940.	-99.	174.	72.	68.
14	11946.	106.	212.	84.	45.
15	11951.	310.	234.	91.	22.
16	11957.	513.	241.	93.	-1.
17	11962.	715.	233.	90.	-24.
18	11968.	916.	209.	83.	-46.
19	11973.	1117.	171.	72.	-68.
20	11978.	1316.	118.	56.	-90.

HANFORD NO. 2 CONTAINMENT VESSEL II.8.1.36
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 409

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	-0.8509E-01	-0.1073E-01	-0.3655E-02
2	-0.8258E-01	-0.1042E-01	-0.3784E-02
3	-0.7999E-01	-0.1010E-01	-0.3892E-02
4	-0.7734E-01	-0.9792E-02	-0.3982E-02
5	-0.7463E-01	-0.9487E-02	-0.4054E-02
6	-0.7188E-01	-0.9186E-02	-0.4110E-02
7	-0.6910E-01	-0.8890E-02	-0.4153E-02
8	-0.6629E-01	-0.8598E-02	-0.4182E-02
9	-0.6346E-01	-0.8311E-02	-0.4200E-02
10	-0.6063E-01	-0.8028E-02	-0.4208E-02
11	-0.5779E-01	-0.7749E-02	-0.4208E-02
12	-0.5496E-01	-0.7475E-02	-0.4201E-02
13	-0.5213E-01	-0.7206E-02	-0.4188E-02
14	-0.4931E-01	-0.6941E-02	-0.4172E-02
15	-0.4651E-01	-0.6680E-02	-0.4152E-02
16	-0.4372E-01	-0.6424E-02	-0.4132E-02
17	-0.4094E-01	-0.6173E-02	-0.4111E-02
18	-0.3818E-01	-0.5925E-02	-0.4092E-02
19	-0.3542E-01	-0.5683E-02	-0.4075E-02
20	-0.3268E-01	-0.5444E-02	-0.4063E-02

HANFORD NO. 2 CONTAINMENT VESSEL II 5.1 37
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 409

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8257.	-1732.	3720.	-3044.	12794.	-420.
2	8261.	-1606.	4416.	-2708.	12106.	-504.
3	8265.	-1476.	5062.	-2384.	11469.	-568.
4	8269.	-1342.	5657.	-2072.	10882.	-613.
5	8274.	-1206.	6202.	-1772.	10345.	-640.
6	8278.	-1067.	6697.	-1485.	9858.	-649.
7	8282.	-926.	7143.	-1211.	9421.	-642.
8	8286.	-785.	7540.	-950.	9032.	-619.
9	8290.	-642.	7889.	-704.	8691.	-580.
10	8294.	-499.	8190.	-471.	8398.	-526.
11	8298.	-355.	8443.	-253.	8153.	-458.
12	8302.	-212.	8650.	-48.	7954.	-376.
13	8306.	-69.	8810.	142.	7802.	-279.
14	8310.	74.	8925.	317.	7695.	-170.
15	8314.	216.	8994.	479.	7634.	-48.
16	8318.	357.	9018.	626.	7618.	88.
17	8321.	497.	8997.	759.	7646.	236.
18	8325.	637.	8933.	879.	7718.	396.
19	8329.	777.	8825.	984.	7833.	569.
20	8333.	916.	8674.	1077.	7992.	754.

HANFORD NO. 2 CONTAINMENT VESSEL II.8.1.38
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 409 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	10007.		6764.		13214.	
2	9883.		7125.		12610.	
3	9754.		7446.		12037.	
4	9623.		7729.		11495.	
5	9489.		7974.		10985.	
6	9352.		8182.		10508.	
7	9214.		8354.		10063.	
8	9075.		8490.		9651.	
9	8935.		8593.		9271.	
10	8795.		8661.		8924.	
11	8655.		8696.		8611.	
12	8515.		8698.		8330.	
13	8376.		8810.		8081.	
14	8310.		8925.		7865.	
15	8314.		8994.		7682.	
16	8318.		9018.		7618.	
17	8322.		8997.		7646.	
18	8326.		8933.		7718.	
19	8330.		8825.		7833.	
20	8335.		8674.		7992.	

HANFORD NO. 2 CONTAINMENT VESSEL III.8.1 23
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 410

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11763.	-4903.	-2300.	-685.	327.
2	11768.	-4835.	-2090.	-621.	298.
3	11774.	-4758.	-1899.	-563.	269.
4	11780.	-4672.	-1727.	-511.	240.
5	11785.	-4579.	-1575.	-465.	211.
6	11791.	-4478.	-1443.	-425.	183.
7	11797.	-4370.	-1329.	-390.	154.
8	11803.	-4256.	-1235.	-361.	126.
9	11809.	-4137.	-1160.	-338.	98.
10	11814.	-4013.	-1104.	-321.	70.
11	11820.	-3883.	-1066.	-310.	42.
12	11826.	-3748.	-1048.	-304.	14.
13	11832.	-3609.	-1048.	-303.	-14.
14	11838.	-3465.	-1067.	-308.	-41.
15	11844.	-3316.	-1104.	-319.	-68.
16	11850.	-3162.	-1160.	-335.	-95.
17	11856.	-3002.	-1233.	-357.	-122.
18	11862.	-2837.	-1325.	-384.	-149.
19	11868.	-2666.	-1435.	-416.	-175.
20	11874.	-2488.	-1562.	-454.	-201.

HANFORD NO. 2 CONTAINMENT VESSEL II.3 1.40
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EC

BODY NO. 410

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.1174E 00	-0.2145E-01	-0.1338E-02
2	-0.1165E 00	-0.2108E-01	-0.1533E-02
3	-0.1154E 00	-0.2071E-01	-0.1711E-02
4	-0.1142E 00	-0.2034E-01	-0.1873E-02
5	-0.1129E 00	-0.1997E-01	-0.2020E-02
6	-0.1115E 00	-0.1961E-01	-0.2154E-02
7	-0.1100E 00	-0.1924E-01	-0.2278E-02
8	-0.1085E 00	-0.1888E-01	-0.2392E-02
9	-0.1069E 00	-0.1852E-01	-0.2499E-02
10	-0.1052E 00	-0.1817E-01	-0.2600E-02
11	-0.1034E 00	-0.1782E-01	-0.2697E-02
12	-0.1016E 00	-0.1747E-01	-0.2791E-02
13	-0.9966E-01	-0.1712E-01	-0.2884E-02
14	-0.9770E-01	-0.1678E-01	-0.2979E-02
15	-0.9568E-01	-0.1644E-01	-0.3076E-02
16	-0.9359E-01	-0.1610E-01	-0.3177E-02
17	-0.9143E-01	-0.1577E-01	-0.3283E-02
18	-0.8919E-01	-0.1544E-01	-0.3398E-02
19	-0.8687E-01	-0.1511E-01	-0.3521E-02
20	-0.8447E-01	-0.1479E-01	-0.3655E-02

HANFORD NO. 2 CONTAINMENT VESSEL II.8.1.41
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 410

STATION.	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8183.	-3411.	1504.	-5400.	14861.	-1422.
2	8187.	-3364.	2119.	-5167.	14254.	-1560.
3	8191.	-3310.	2677.	-4945.	13704.	-1675.
4	8194.	-3250.	3179.	-4735.	13210.	-1766.
5	8198.	-3185.	3624.	-4535.	12773.	-1835.
6	8202.	-3115.	4014.	-4348.	12391.	-1882.
7	8207.	-3040.	4347.	-4173.	12066.	-1907.
8	8211.	-2961.	4625.	-4010.	11796.	-1912.
9	8215.	-2878.	4847.	-3861.	11582.	-1895.
10	8219.	-2791.	5014.	-3724.	11423.	-1859.
11	8223.	-2701.	5126.	-3600.	11319.	-1803.
12	8227.	-2608.	5184.	-3489.	11270.	-1726.
13	8231.	-2511.	5188.	-3391.	11274.	-1630.
14	8235.	-2410.	5137.	-3306.	11333.	-1515.
15	8239.	-2307.	5033.	-3233.	11445.	-1380.
16	8243.	-2200.	4876.	-3173.	11611.	-1226.
17	8248.	-2089.	4666.	-3125.	11829.	-1052.
18	8252.	-1974.	4404.	-3089.	12099.	-859.
19	8256.	-1855.	4090.	-3064.	12422.	-646.
20	8260.	-1731.	3723.	-3049.	12797.	-413.

HANFORD NO. 2 CONTAINMENT VESSEL II-1-42
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 410 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	11608.		6904.		16283.	
2	11562.		7287.		15814.	
3	11510.		7623.		15378.	
4	11452.		7914.		14976.	
5	11389.		8160.		14607.	
6	11322.		8362.		14273.	
7	11250.		8520.		13973.	
8	11174.		8635.		13708.	
9	11094.		8707.		13478.	
10	11011.		8738.		13282.	
11	10924.		8726.		13122.	
12	10835.		8673.		12996.	
13	10742.		8579.		12905.	
14	10646.		8443.		12848.	
15	10547.		8267.		12825.	
16	10444.		8049.		12836.	
17	10338.		7791.		12881.	
18	10228.		7493.		12958.	
19	10115.		7153.		13068.	
20	9996.		6772.		13209.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EG

BODY NO. 411

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11663.	-4401.	-2930.	-885.	361.
2	11668.	-4533.	-2659.	-803.	328.
3	11672.	-4647.	-2413.	-728.	295.
4	11677.	-4747.	-2194.	-662.	262.
5	11681.	-4833.	-2001.	-604.	229.
6	11686.	-4907.	-1834.	-553.	195.
7	11691.	-4969.	-1694.	-511.	161.
8	11696.	-5020.	-1580.	-476.	128.
9	11701.	-5062.	-1493.	-449.	94.
10	11707.	-5094.	-1433.	-431.	60.
11	11712.	-5117.	-1399.	-420.	26.
12	11717.	-5132.	-1392.	-418.	-8.
13	11723.	-5138.	-1412.	-423.	-42.
14	11728.	-5135.	-1458.	-437.	-76.
15	11734.	-5123.	-1532.	-458.	-110.
16	11740.	-5101.	-1632.	-488.	-143.
17	11746.	-5069.	-1759.	-526.	-177.
18	11752.	-5026.	-1912.	-571.	-211.
19	11758.	-4971.	-2093.	-624.	-245.
20	11764.	-4903.	-2300.	-686.	-279.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 411

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	-0.1100E 00	-0.3575E-01	0.2243E-02
2	-0.1117E 00	-0.3533E-01	0.1953E-02
3	-0.1132E 00	-0.3490E-01	0.1690E-02
4	-0.1145E 00	-0.3447E-01	0.1451E-02
5	-0.1156E 00	-0.3404E-01	0.1233E-02
6	-0.1166E 00	-0.3360E-01	0.1034E-02
7	-0.1174E 00	-0.3317E-01	0.8514E-03
8	-0.1180E 00	-0.3273E-01	0.6815E-03
9	-0.1185E 00	-0.3229E-01	0.5221E-03
10	-0.1189E 00	-0.3185E-01	0.3703E-03
11	-0.1192E 00	-0.3141E-01	0.2233E-03
12	-0.1194E 00	-0.3097E-01	0.7858E-04
13	-0.1194E 00	-0.3053E-01	-0.6687E-04
14	-0.1194E 00	-0.3009E-01	-0.2159E-03
15	-0.1192E 00	-0.2965E-01	-0.3710E-03
16	-0.1189E 00	-0.2921E-01	-0.5352E-03
17	-0.1184E 00	-0.2877E-01	-0.7113E-03
18	-0.1178E 00	-0.2833E-01	-0.9019E-03
19	-0.1171E 00	-0.2789E-01	-0.1110E-02
20	-0.1162E 00	-0.2746E-01	-0.1338E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

II 8.1 45

BODY NO. 411

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8114.	-3062.	-394.	-5631.	16621.	-492.
2	8117.	-3153.	397.	-5484.	15836.	-822.
3	8120.	-3233.	1113.	-5348.	15127.	-1118.
4	8123.	-3302.	1753.	-5225.	14493.	-1380.
5	8126.	-3362.	2317.	-5115.	13936.	-1610.
6	8130.	-3413.	2804.	-5019.	13455.	-1807.
7	8133.	-3456.	3214.	-4939.	13052.	-1974.
8	8136.	-3492.	3548.	-4874.	12725.	-2110.
9	8140.	-3521.	3804.	-4826.	12476.	-2216.
10	8144.	-3544.	3984.	-4795.	12304.	-2293.
11	8147.	-3560.	4085.	-4780.	12210.	-2339.
12	8151.	-3570.	4109.	-4783.	12193.	-2357.
13	8155.	-3574.	4056.	-4803.	12254.	-2345.
14	8159.	-3572.	3924.	-4841.	12394.	-2303.
15	8163.	-3564.	3715.	-4895.	12610.	-2233.
16	8167.	-3549.	3429.	-4966.	12905.	-2132.
17	8171.	-3526.	3064.	-5052.	13278.	-2000.
18	8175.	-3497.	2622.	-5155.	13728.	-1838.
19	8179.	-3458.	2103.	-5272.	14256.	-1645.
20	8184.	-3411.	1506.	-5403.	14861.	-1419.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 411 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	11193.		5631.		17113.	
2	11284.		5881.		16658.	
3	11364.		6461.		16245.	
4	11434.		6977.		15873.	
5	11495.		7431.		15545.	
6	11548.		7823.		15263.	
7	11593.		8153.		15026.	
8	11631.		8422.		14835.	
9	11662.		8631.		14692.	
10	11688.		8778.		14596.	
11	11707.		8866.		14549.	
12	11721.		8892.		14550.	
13	11729.		8859.		14599.	
14	11732.		8765.		14697.	
15	11728.		8610.		14843.	
16	11718.		8394.		15037.	
17	11702.		8116.		15278.	
18	11678.		7777.		15567.	
19	11646.		7375.		15901.	
20	11605.		6909.		16281.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

II 8 1.47

BODY NO. 412

STATION	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
		STRESS RESULTANTS			
1	11615.	844.	-3016.	-915.	269.
2	11616.	440.	-2814.	-854.	244.
3	11618.	53.	-2632.	-799.	219.
4	11620.	-317.	-2470.	-750.	193.
5	11622.	-672.	-2329.	-707.	166.
6	11624.	-1012.	-2208.	-671.	140.
7	11626.	-1338.	-2109.	-641.	112.
8	11628.	-1651.	-2032.	-618.	84.
9	11631.	-1951.	-1977.	-601.	56.
10	11633.	-2238.	-1944.	-591.	27.
11	11636.	-2513.	-1935.	-588.	-2.
12	11639.	-2776.	-1948.	-592.	-32.
13	11642.	-3027.	-1986.	-603.	-62.
14	11645.	-3266.	-2047.	-621.	-92.
15	11648.	-3491.	-2132.	-646.	-123.
16	11651.	-3703.	-2242.	-679.	-154.
17	11655.	-3901.	-2376.	-718.	-186.
18	11658.	-4084.	-2536.	-766.	-217.
19	11662.	-4251.	-2720.	-821.	-249.
20	11666.	-4401.	-2930.	-883.	-282.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

III 2.1 45

BODY NO. 412

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	-0.3954E-01	-0.4863E-01	0.6746E-02
2	-0.4481E-01	-0.4834E-01	0.6444E-02
3	-0.4985E-01	-0.4805E-01	0.6161E-02
4	-0.5467E-01	-0.4774E-01	0.5897E-02
5	-0.5929E-01	-0.4742E-01	0.5648E-02
6	-0.6372E-01	-0.4709E-01	0.5413E-02
7	-0.6797E-01	-0.4676E-01	0.5189E-02
8	-0.7205E-01	-0.4641E-01	0.4974E-02
9	-0.7596E-01	-0.4606E-01	0.4766E-02
10	-0.7971E-01	-0.4570E-01	0.4563E-02
11	-0.8330E-01	-0.4533E-01	0.4362E-02
12	-0.8673E-01	-0.4496E-01	0.4160E-02
13	-0.9000E-01	-0.4458E-01	0.3956E-02
14	-0.9311E-01	-0.4419E-01	0.3747E-02
15	-0.9604E-01	-0.4380E-01	0.3531E-02
16	-0.9881E-01	-0.4340E-01	0.3304E-02
17	-0.1014E 00	-0.4299E-01	0.3064E-02
18	-0.1038E 00	-0.4259E-01	0.2809E-02
19	-0.1060E 00	-0.4217E-01	0.2537E-02
20	-0.1079E 00	-0.4175E-01	0.2243E-02

HANFORD NO. 2 CONTAINMENT VESSEL II 8.1.49
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 412

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8080.	587.	-677.	-2069.	16837.	3243.
2	8081.	306.	-90.	-2174.	16252.	2785.
3	8082.	37.	440.	-2283.	15725.	2357.
4	8083.	-221.	911.	-2399.	15255.	1957.
5	8085.	-467.	1324.	-2522.	14846.	1587.
6	8086.	-704.	1675.	-2652.	14498.	1245.
7	8088.	-931.	1964.	-2792.	14212.	931.
8	8089.	-1148.	2190.	-2942.	13989.	645.
9	8091.	-1357.	2351.	-3102.	13831.	388.
10	8093.	-1557.	2447.	-3273.	13738.	159.
11	8095.	-1748.	2477.	-3455.	13712.	-42.
12	8096.	-1931.	2439.	-3649.	13754.	-213.
13	8099.	-2106.	2333.	-3856.	13864.	-356.
14	8101.	-2272.	2157.	-4074.	14044.	-470.
15	8103.	-2429.	1912.	-4304.	14294.	-553.
16	8105.	-2576.	1596.	-4546.	14615.	-606.
17	8108.	-2714.	1208.	-4800.	15007.	-628.
18	8110.	-2841.	748.	-5065.	15473.	-617.
19	8113.	-2957.	214.	-5340.	16011.	-574.
20	8115.	-3061.	-393.	-5626.	16623.	-497.

HANFORD NO. 2 CONTAINMENT VESSEL II.3.1.50
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 412 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	8099.		2069.		16837.	
2	8097.		2174.		16252.	
3	8095.		2723.		15725.	
4	8309.		3310.		15255.	
5	8556.		3845.		14846.	
6	8793.		4327.		14498.	
7	9020.		4756.		14212.	
8	9238.		5131.		13989.	
9	9448.		5453.		13831.	
10	9650.		5720.		13738.	
11	9843.		5932.		13754.	
12	10028.		6088.		13967.	
13	10205.		6188.		14220.	
14	10374.		6231.		14514.	
15	10533.		6216.		14847.	
16	10684.		6142.		15221.	
17	10826.		6008.		15635.	
18	10957.		5812.		16090.	
19	11078.		5555.		16585.	
20	11187.		5626.		17120.	

HANFORD NO. 2 CONTAINMENT VESSEL II 8.1 51
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 413

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11599.	10645.	-215.	-68.	-53.
2	11599.	10085.	-260.	-82.	-62.
3	11599.	9525.	-313.	-98.	-72.
4	11599.	8968.	-374.	-116.	-83.
5	11600.	8413.	-444.	-137.	-95.
6	11600.	7861.	-524.	-161.	-107.
7	11600.	7312.	-614.	-188.	-121.
8	11601.	6767.	-715.	-219.	-135.
9	11601.	6226.	-827.	-253.	-150.
10	11602.	5691.	-952.	-290.	-166.
11	11603.	5162.	-1090.	-332.	-183.
12	11603.	4639.	-1242.	-377.	-201.
13	11604.	4125.	-1407.	-427.	-219.
14	11605.	3619.	-1588.	-481.	-238.
15	11606.	3123.	-1784.	-540.	-258.
16	11607.	2639.	-1996.	-604.	-279.
17	11608.	2167.	-2224.	-673.	-301.
18	11610.	1710.	-2470.	-746.	-323.
19	11611.	1268.	-2734.	-825.	-346.
20	11612.	843.	-3016.	-910.	-369.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 413

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.9062E-01	-0.5375E-01	0.9150E-02
2	0.8333E-01	-0.5371E-01	0.9125E-02
3	0.7606E-01	-0.5366E-01	0.9095E-02
4	0.6882E-01	-0.5360E-01	0.9060E-02
5	0.6161E-01	-0.5352E-01	0.9018E-02
6	0.5443E-01	-0.5343E-01	0.8968E-02
7	0.4729E-01	-0.5333E-01	0.8909E-02
8	0.4021E-01	-0.5321E-01	0.8840E-02
9	0.3319E-01	-0.5307E-01	0.8760E-02
10	0.2623E-01	-0.5293E-01	0.8668E-02
11	0.1935E-01	-0.5276E-01	0.8562E-02
12	0.1255E-01	-0.5259E-01	0.8441E-02
13	0.5868E-02	-0.5240E-01	0.8304E-02
14	-0.7073E-03	-0.5220E-01	0.8149E-02
15	-0.7152E-02	-0.5199E-01	0.7974E-02
16	-0.1345E-01	-0.5176E-01	0.7778E-02
17	-0.1958E-01	-0.5152E-01	0.7559E-02
18	-0.2553E-01	-0.5127E-01	0.7315E-02
19	-0.3128E-01	-0.5100E-01	0.7045E-02
20	-0.3681E-01	-0.5073E-01	0.6746E-02

HANFORD NO. 2 CONTAINMENT VESSEL II 8.1 53.
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 413

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8069.	7405.	7444.	7208.	8693.	7603.
2	8069.	7015.	7313.	6778.	8824.	7252.
3	8069.	6626.	7160.	6343.	8978.	6910.
4	8069.	6239.	6983.	5902.	9155.	6576.
5	8069.	5852.	6780.	5454.	9358.	6251.
6	8070.	5468.	6549.	5000.	9590.	5937.
7	8070.	5086.	6288.	4539.	9852.	5634.
8	8070.	4707.	5995.	4072.	10145.	5343.
9	8071.	4331.	5669.	3597.	10473.	5065.
10	8071.	3959.	5306.	3115.	10836.	4802.
11	8071.	3591.	4906.	2627.	11236.	4554.
12	8072.	3227.	4467.	2131.	11677.	4323.
13	8073.	2869.	3987.	1629.	12158.	4110.
14	8073.	2517.	3463.	1119.	12683.	3915.
15	8074.	2173.	2894.	604.	13253.	3742.
16	8075.	1836.	2280.	82.	13869.	3589.
17	8075.	1508.	1616.	-445.	14534.	3461.
18	8076.	1189.	904.	-978.	15249.	3356.
19	8077.	882.	139.	-1515.	16016.	3279.
20	8078.	586.	-679.	-2056.	16835.	3229.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

II 8 1 54

BODY NO. 413 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	8070.		7444.		8693.	
2	8070.		7313.		8824.	
3	8070.		7160.		8978.	
4	8071.		6983.		9155.	
5	8072.		6780.		9358.	
6	8073.		6549.		9590.	
7	8074.		6288.		9852.	
8	8075.		5995.		10145.	
9	8077.		5669.		10473.	
10	8078.		5306.		10836.	
11	8080.		4906.		11236.	
12	8083.		4467.		11677.	
13	8085.		3987.		12158.	
14	8088.		3463.		12683.	
15	8092.		2894.		13253.	
16	8096.		2280.		13869.	
17	8100.		2062.		14534.	
18	8104.		1881.		15249.	
19	8109.		1654.		16016.	
20	8115.		2056.		16835.	

HANFORD NO. 2 CONTAINMENT VESSEL
II 8 1 55
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 414

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11593.	25394.	-88.	-27.	148.
2	11593.	25340.	246.	74.	142.
3	11593.	25272.	565.	170.	136.
4	11593.	25173.	870.	261.	129.
5	11593.	25028.	1157.	347.	121.
6	11593.	24820.	1425.	427.	112.
7	11593.	24534.	1671.	501.	102.
8	11593.	24159.	1892.	568.	90.
9	11593.	23680.	2083.	625.	76.
10	11593.	23089.	2239.	672.	59.
11	11593.	22377.	2354.	706.	40.
12	11593.	21537.	2419.	726.	16.
13	11593.	20567.	2425.	728.	-11.
14	11593.	19465.	2362.	709.	-44.
15	11593.	18236.	2218.	666.	-82.
16	11593.	16886.	1980.	594.	-126.
17	11593.	15430.	1634.	490.	-176.
18	11593.	13886.	1164.	349.	-234.
19	11593.	12279.	553.	166.	-299.
20	11593.	10643.	-215.	-65.	-371.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 414

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	RCTATION
1	0.2816E 00	-0.5699E-01	0.3015E-03
2	0.2809E 00	-0.5676E-01	0.3257E-03
3	0.2800E 00	-0.5653E-01	0.4489E-03
4	0.2787E 00	-0.5630E-01	0.6667E-03
5	0.2769E 00	-0.5607E-01	0.9741E-03
6	0.2742E 00	-0.5583E-01	0.1366E-02
7	0.2705E 00	-0.5559E-01	0.1835E-02
8	0.2657E 00	-0.5535E-01	0.2376E-02
9	0.2596E 00	-0.5509E-01	0.2979E-02
10	0.2520E 00	-0.5483E-01	0.3634E-02
11	0.2428E 00	-0.5456E-01	0.4331E-02
12	0.2320E 00	-0.5427E-01	0.5056E-02
13	0.2196E 00	-0.5397E-01	0.5791E-02
14	0.2054E 00	-0.5365E-01	0.6518E-02
15	0.1896E 00	-0.5331E-01	0.7214E-02
16	0.1723E 00	-0.5295E-01	0.7853E-02
17	0.1536E 00	-0.5256E-01	0.8403E-02
18	0.1337E 00	-0.5215E-01	0.8830E-02
19	0.1131E 00	-0.5171E-01	0.9094E-02
20	0.9206E-01	-0.5124E-01	0.9149E-02

HANFORD NO. 2 CONTAINMENT VESSEL II 8.157
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 414

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8065.	17666.	7808.	17589.	8322.	17743.
2	8065.	17628.	8778.	17842.	7352.	17414.
3	8065.	17580.	9707.	18073.	6423.	17088.
4	8065.	17512.	10590.	18269.	5540.	16754.
5	8065.	17411.	11424.	18418.	4706.	16403.
6	8065.	17266.	12202.	18507.	3928.	16025.
7	8065.	17067.	12917.	18523.	3213.	15612.
8	8065.	16806.	13558.	18454.	2572.	15158.
9	8065.	16473.	14114.	18288.	2016.	14659.
10	8065.	16062.	14567.	18013.	1563.	14112.
11	8065.	15567.	14900.	17617.	1230.	13516.
12	8065.	14983.	15088.	17090.	1042.	12876.
13	8065.	14307.	15107.	16420.	1023.	12195.
14	8065.	13541.	14924.	15599.	1206.	11483.
15	8065.	12686.	14506.	14618.	1624.	10753.
16	8065.	11747.	13815.	13472.	2315.	10022.
17	8065.	10734.	12809.	12157.	3321.	9311.
18	8065.	9660.	11443.	10673.	4687.	8646.
19	8065.	8542.	9670.	9024.	6460.	8061.
20	8065.	7404.	7440.	7217.	8690.	7592.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

II.81.58

BODY NO. 414   DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	17669.		17589.		17743.	
2	17630.		17842.		17414.	
3	17583.		18073.		17088.	
4	17514.		18269.		16754.	
5	17413.		18418.		16403.	
6	17268.		18507.		16025.	
7	17069.		18523.		15612.	
8	16807.		18454.		15158.	
9	16474.		18288.		14659.	
10	16063.		18013.		14112.	
11	15567.		17617.		13516.	
12	14983.		17090.		12876.	
13	14307.		16420.		12195.	
14	13541.		15599.		11483.	
15	12687.		14618.		10753.	
16	11749.		13815.		10022.	
17	10738.		12809.		9311.	
18	9667.		11443.		8646.	
19	8554.		9670.		8061.	
20	8102.		7440.		8690.	

HANFORD NO. 2 CONTAINMENT VESSEL II.8.1.59
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 500

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-0.	5951.	-0.	0.	-0.
2	10.	5941.	-0.	0.	-0.
3	19.	5931.	0.	0.	-0.
4	29.	5921.	0.	0.	-0.
5	39.	5911.	0.	0.	-0.
6	49.	5902.	0.	0.	-0.
7	58.	5892.	0.	0.	-0.
8	68.	5882.	0.	0.	-0.
9	77.	5873.	0.	0.	-0.
10	87.	5863.	0.	0.	-0.
11	96.	5854.	0.	0.	-0.
12	106.	5845.	0.	0.	-0.
13	115.	5835.	0.	0.	-0.
14	124.	5826.	0.	0.	-0.
15	134.	5817.	0.	0.	-0.
16	143.	5807.	0.	0.	-0.
17	152.	5798.	0.	0.	-0.
18	161.	5789.	0.	0.	-0.
19	170.	5780.	0.	0.	-0.
20	179.	5771.	0.	0.	-0.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

II 8.1.5

BODY NO. 500

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.6177E-01	0.2841E 00	0.3043E-03
2	0.6152E-01	0.2840E 00	0.3041E-03
3	0.6127E-01	0.2838E 00	0.3040E-03
4	0.6101E-01	0.2837E 00	0.3038E-03
5	0.6076E-01	0.2835E 00	0.3037E-03
6	0.6051E-01	0.2834E 00	0.3035E-03
7	0.6026E-01	0.2833E 00	0.3034E-03
8	0.6001E-01	0.2831E 00	0.3032E-03
9	0.5975E-01	0.2830E 00	0.3031E-03
10	0.5950E-01	0.2829E 00	0.3029E-03
11	0.5925E-01	0.2827E 00	0.3028E-03
12	0.5900E-01	0.2826E 00	0.3027E-03
13	0.5875E-01	0.2825E 00	0.3025E-03
14	0.5850E-01	0.2823E 00	0.3024E-03
15	0.5824E-01	0.2822E 00	0.3022E-03
16	0.5799E-01	0.2821E 00	0.3021E-03
17	0.5774E-01	0.2820E 00	0.3020E-03
18	0.5749E-01	0.2818E 00	0.3018E-03
19	0.5724E-01	0.2817E 00	0.3017E-03
20	0.5699E-01	0.2816E 00	0.3016E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 500

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-1.	15868.	-1.	15871.	-1.	15865.
2	26.	15842.	26.	15845.	26.	15839.
3	52.	15816.	52.	15819.	52.	15812.
4	78.	15790.	78.	15793.	78.	15786.
5	104.	15764.	104.	15767.	104.	15760.
6	130.	15738.	130.	15741.	130.	15735.
7	155.	15712.	155.	15715.	155.	15709.
8	181.	15687.	181.	15690.	181.	15683.
9	206.	15661.	206.	15664.	206.	15658.
10	232.	15636.	232.	15639.	232.	15633.
11	257.	15611.	257.	15614.	257.	15608.
12	282.	15586.	282.	15589.	282.	15582.
13	307.	15561.	307.	15564.	307.	15558.
14	332.	15536.	332.	15539.	332.	15533.
15	356.	15511.	356.	15514.	356.	15508.
16	381.	15487.	381.	15490.	381.	15484.
17	405.	15462.	405.	15465.	405.	15459.
18	430.	15438.	430.	15441.	430.	15435.
19	454.	15414.	454.	15417.	454.	15411.
20	478.	15390.	478.	15393.	478.	15386.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EC

BODY NO. 500 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	15869.		15872.		15866.	
2	15842.		15845.		15839.	
3	15816.		15819.		15812.	
4	15790.		15793.		15786.	
5	15764.		15767.		15760.	
6	15738.		15741.		15735.	
7	15712.		15715.		15709.	
8	15687.		15690.		15683.	
9	15661.		15664.		15658.	
10	15636.		15639.		15633.	
11	15611.		15614.		15608.	
12	15586.		15589.		15582.	
13	15561.		15564.		15558.	
14	15536.		15539.		15533.	
15	15511.		15514.		15508.	
16	15487.		15490.		15484.	
17	15462.		15465.		15459.	
18	15438.		15441.		15435.	
19	15414.		15417.		15411.	
20	15390.		15393.		15386.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL   II 8 1 63
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 502

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11594.	26107.	-401.	-120.	-2.
2	11594.	25876.	-394.	-118.	5.
3	11594.	25705.	-364.	-109.	10.
4	11594.	25591.	-320.	-96.	13.
5	11594.	25526.	-267.	-80.	14.
6	11594.	25502.	-209.	-63.	15.
7	11594.	25510.	-151.	-45.	15.
8	11594.	25542.	-94.	-28.	14.
9	11594.	25588.	-40.	-12.	13.
10	11594.	25641.	10.	3.	12.
11	11594.	25692.	54.	16.	11.
12	11594.	25735.	93.	28.	9.
13	11594.	25763.	124.	37.	7.
14	11594.	25773.	146.	44.	4.
15	11594.	25760.	156.	47.	1.
16	11594.	25723.	152.	46.	-3.
17	11594.	25663.	131.	39.	-8.
18	11594.	25583.	86.	26.	-15.
19	11594.	25489.	15.	5.	-22.
20	11594.	25394.	-88.	-27.	-31.

HANFORD NO. 2 CONTAINMENT VESSEL II 8.1 64
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 502

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.2907E 00	-0.6416E-01	0.8673E-03
2	0.2878E 00	-0.6379E-01	0.6629E-03
3	0.2856E 00	-0.6341E-01	0.4684E-03
4	0.2841E 00	-0.6304E-01	0.2931E-03
5	0.2833E 00	-0.6266E-01	0.1429E-03
6	0.2830E 00	-0.6228E-01	0.2101E-04
7	0.2831E 00	-0.6190E-01	-0.7118E-04
8	0.2835E 00	-0.6151E-01	-0.1338E-03
9	0.2841E 00	-0.6113E-01	-0.1681E-03
10	0.2847E 00	-0.6076E-01	-0.1757E-03
11	0.2854E 00	-0.6038E-01	-0.1590E-03
12	0.2860E 00	-0.6000E-01	-0.1210E-03
13	0.2863E 00	-0.5963E-01	-0.6516E-04
14	0.2864E 00	-0.5926E-01	0.4318E-05
15	0.2863E 00	-0.5888E-01	0.8218E-04
16	0.2858E 00	-0.5851E-01	0.1618E-03
17	0.2850E 00	-0.5813E-01	0.2350E-03
18	0.2840E 00	-0.5775E-01	0.2916E-03
19	0.2828E 00	-0.5737E-01	0.3188E-03
20	0.2816E 00	-0.5699E-01	0.3016E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 502

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8065.	18161.	6899.	17812.	9231.	18511.
2	8065.	18001.	6921.	17658.	9209.	18344.
3	8065.	17882.	7008.	17565.	9122.	18199.
4	8065.	17802.	7136.	17524.	8994.	18081.
5	8065.	17757.	7290.	17525.	8840.	17990.
6	8065.	17740.	7457.	17558.	8673.	17923.
7	8065.	17746.	7626.	17615.	8504.	17878.
8	8065.	17768.	7791.	17686.	8339.	17850.
9	8065.	17800.	7948.	17765.	8182.	17836.
10	8065.	17837.	8093.	17845.	8037.	17829.
11	8065.	17873.	8223.	17920.	7907.	17825.
12	8065.	17902.	8335.	17983.	7795.	17821.
13	8065.	17922.	8425.	18030.	7705.	17814.
14	8065.	17929.	8489.	18056.	7641.	17802.
15	8065.	17920.	8519.	18056.	7611.	17784.
16	8065.	17894.	8508.	18027.	7622.	17761.
17	8065.	17852.	8444.	17966.	7686.	17738.
18	8065.	17797.	8316.	17872.	7814.	17721.
19	8065.	17732.	8109.	17745.	8021.	17719.
20	8065.	17666.	7808.	17589.	8322.	17743.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 502 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	18161.		17812.		18511.	
2	18001.		17658.		18344.	
3	17882.		17565.		18199.	
4	17802.		17524.		18081.	
5	17757.		17525.		17990.	
6	17740.		17558.		17923.	
7	17746.		17615.		17878.	
8	17768.		17686.		17850.	
9	17800.		17765.		17836.	
10	17837.		17845.		17829.	
11	17873.		17920.		17825.	
12	17902.		17983.		17821.	
13	17922.		18030.		17814.	
14	17929.		18056.		17802.	
15	17920.		18056.		17784.	
16	17894.		18027.		17761.	
17	17852.		17966.		17738.	
18	17797.		17872.		17721.	
19	17732.		17745.		17719.	
20	17666.		17589.		17743.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 600

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11595.	23335.	-54.	-16.	-1.
2	11595.	23385.	-57.	-17.	-0.
3	11595.	23448.	-55.	-17.	1.
4	11595.	23523.	-52.	-15.	1.
5	11595.	23611.	-46.	-14.	1.
6	11595.	23709.	-39.	-12.	2.
7	11595.	23817.	-31.	-9.	2.
8	11595.	23931.	-21.	-6.	3.
9	11595.	24051.	-8.	-2.	3.
10	11595.	24172.	8.	2.	4.
11	11595.	24291.	28.	8.	5.
12	11595.	24404.	53.	16.	6.
13	11595.	24504.	83.	25.	8.
14	11595.	24585.	119.	36.	9.
15	11595.	24638.	160.	48.	10.
16	11595.	24653.	204.	61.	10.
17	11595.	24621.	248.	74.	10.
18	11595.	24531.	288.	86.	8.
19	11595.	24373.	316.	95.	4.
20	11595.	24142.	323.	97.	-2.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 600

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.2794E 00	-0.7408E-01	-0.1392E-03
2	0.2801E 00	-0.7353E-01	-0.1811E-03
3	0.2810E 00	-0.7299E-01	-0.2235E-03
4	0.2820E 00	-0.7245E-01	-0.2640E-03
5	0.2833E 00	-0.7191E-01	-0.3009E-03
6	0.2846E 00	-0.7137E-01	-0.3332E-03
7	0.2862E 00	-0.7084E-01	-0.3596E-03
8	0.2878E 00	-0.7031E-01	-0.3791E-03
9	0.2894E 00	-0.6979E-01	-0.3901E-03
10	0.2912E 00	-0.6927E-01	-0.3904E-03
11	0.2928E 00	-0.6876E-01	-0.3772E-03
12	0.2944E 00	-0.6825E-01	-0.3471E-03
13	0.2958E 00	-0.6774E-01	-0.2962E-03
14	0.2970E 00	-0.6724E-01	-0.2203E-03
15	0.2977E 00	-0.6673E-01	-0.1153E-03
16	0.2979E 00	-0.6623E-01	0.2186E-04
17	0.2975E 00	-0.6573E-01	0.1926E-03
18	0.2962E 00	-0.6523E-01	0.3955E-03
19	0.2940E 00	-0.6472E-01	0.6244E-03
20	0.2907E 00	-0.6421E-01	0.8673E-03

HANFORD NO. 2 CONTAINMENT VESSEL 11.8.1.64
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 600

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8834.	17779.	8647.	17723.	9022.	17836.
2	8834.	17817.	8637.	17758.	9031.	17876.
3	8834.	17865.	8642.	17807.	9027.	17923.
4	8834.	17922.	8655.	17869.	9014.	17976.
5	8834.	17989.	8674.	17941.	8995.	18037.
6	8834.	18064.	8698.	18023.	8971.	18105.
7	8834.	18146.	8727.	18114.	8941.	18178.
8	8834.	18233.	8763.	18212.	8906.	18255.
9	8834.	18324.	8807.	18316.	8862.	18333.
10	8834.	18417.	8862.	18425.	8807.	18409.
11	8834.	18508.	8931.	18537.	8737.	18479.
12	8834.	18594.	9018.	18649.	8651.	18539.
13	8834.	18670.	9124.	18757.	8545.	18583.
14	8834.	18732.	9249.	18856.	8420.	18607.
15	8834.	18772.	9391.	18939.	8278.	18605.
16	8834.	18783.	9545.	18997.	8124.	18570.
17	8834.	18759.	9699.	19018.	7970.	18499.
18	8834.	18690.	9837.	18991.	7831.	18389.
19	8834.	18570.	9935.	18900.	7734.	18240.
20	8834.	18394.	9960.	18732.	7709.	18056.

HANFORD NO. 2 CONTAINMENT VESSEL III 8.1.70
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ.

BODY NO. 600 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	17779.		17723.		17836.	
2	17817.		17758.		17876.	
3	17865.		17807.		17923.	
4	17922.		17869.		17976.	
5	17989.		17941.		18037.	
6	18064.		18023.		18105.	
7	18146.		18114.		18178.	
8	18233.		18212.		18255.	
9	18324.		18316.		18333.	
10	18417.		18425.		18409.	
11	18508.		18537.		18479.	
12	18594.		18649.		18539.	
13	18670.		18757.		18583.	
14	18732.		18856.		18607.	
15	18772.		18939.		18605.	
16	18783.		18997.		18570.	
17	18759.		19018.		18499.	
18	18690.		18991.		18389.	
19	18570.		18900.		18240.	
20	18394.		18732.		18056.	

HANFORD NO. 2 CONTAINMENT VESSEL I.3.7.
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 601

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11595.	23138.	84.	25.	-5.
2	11595.	23158.	75.	22.	-5.
3	11595.	23175.	66.	20.	-5.
4	11595.	23189.	56.	17.	-5.
5	11595.	23200.	47.	14.	-5.
6	11595.	23210.	38.	11.	-5.
7	11595.	23218.	29.	9.	-5.
8	11595.	23225.	20.	6.	-5.
9	11595.	23231.	11.	3.	-5.
10	11595.	23237.	3.	1.	-4.
11	11595.	23242.	-5.	-2.	-4.
12	11595.	23248.	-13.	-4.	-4.
13	11595.	23254.	-20.	-6.	-4.
14	11595.	23261.	-27.	-8.	-3.
15	11595.	23269.	-33.	-10.	-3.
16	11595.	23279.	-38.	-12.	-3.
17	11595.	23290.	-43.	-13.	-3.
18	11595.	23303.	-48.	-14.	-2.
19	11595.	23318.	-51.	-15.	-2.
20	11595.	23335.	-54.	-16.	-1.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 601

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	RCTATION
1	0.2766E 00	-0.7852E-01	-0.1648E-03
2	0.2769E 00	-0.7828E-01	-0.1393E-03
3	0.2771E 00	-0.7805E-01	-0.1168E-03
4	0.2773E 00	-0.7781E-01	-0.9728E-04
5	0.2775E 00	-0.7758E-01	-0.8076E-04
6	0.2776E 00	-0.7734E-01	-0.6723E-04
7	0.2777E 00	-0.7711E-01	-0.5664E-04
8	0.2778E 00	-0.7688E-01	-0.4892E-04
9	0.2779E 00	-0.7664E-01	-0.4400E-04
10	0.2780E 00	-0.7641E-01	-0.4179E-04
11	0.2781E 00	-0.7618E-01	-0.4218E-04
12	0.2782E 00	-0.7594E-01	-0.4506E-04
13	0.2782E 00	-0.7571E-01	-0.5030E-04
14	0.2783E 00	-0.7548E-01	-0.5775E-04
15	0.2785E 00	-0.7524E-01	-0.6728E-04
16	0.2786E 00	-0.7501E-01	-0.7869E-04
17	0.2787E 00	-0.7478E-01	-0.9182E-04
18	0.2789E 00	-0.7455E-01	-0.1064E-03
19	0.2791E 00	-0.7431E-01	-0.1223E-03
20	0.2794E 00	-0.7408E-01	-0.1392E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 601

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8834.	17629.	9127.	17717.	8541.	17541.
2	8834.	17644.	9095.	17722.	8573.	17566.
3	8834.	17657.	9063.	17725.	8605.	17588.
4	8834.	17668.	9030.	17726.	8638.	17609.
5	8834.	17676.	8998.	17725.	8671.	17627.
6	8834.	17684.	8965.	17723.	8703.	17644.
7	8834.	17690.	8934.	17720.	8735.	17660.
8	8834.	17695.	8903.	17716.	8766.	17675.
9	8834.	17700.	8873.	17711.	8796.	17688.
10	8834.	17704.	8844.	17707.	8825.	17701.
11	8834.	17708.	8816.	17703.	8852.	17714.
12	8834.	17713.	8790.	17699.	8879.	17726.
13	8834.	17717.	8765.	17697.	8904.	17738.
14	8834.	17723.	8742.	17695.	8927.	17751.
15	8834.	17729.	8720.	17695.	8949.	17763.
16	8834.	17736.	8700.	17696.	8968.	17776.
17	8834.	17745.	8683.	17699.	8986.	17790.
18	8834.	17755.	8668.	17705.	9001.	17805.
19	8834.	17766.	8656.	17713.	9013.	17820.
20	8834.	17779.	8646.	17723.	9022.	17836.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 601 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	17629.		17717.		17541.	
2	17644.		17722.		17566.	
3	17657.		17725.		17588.	
4	17668.		17726.		17609.	
5	17676.		17725.		17627.	
6	17684.		17723.		17644.	
7	17690.		17720.		17660.	
8	17695.		17716.		17675.	
9	17700.		17711.		17688.	
10	17704.		17707.		17701.	
11	17708.		17703.		17714.	
12	17713.		17699.		17726.	
13	17717.		17697.		17738.	
14	17723.		17695.		17751.	
15	17729.		17695.		17763.	
16	17736.		17696.		17776.	
17	17745.		17699.		17790.	
18	17755.		17705.		17805.	
19	17766.		17713.		17820.	
20	17779.		17723.		17836.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

31 8, 75

BODY NO. 603

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11596.	19760.	-1308.	-392.	138.
2	11596.	19789.	-1066.	-320.	126.
3	11596.	19867.	-846.	-254.	114.
4	11596.	19984.	-648.	-195.	103.
5	11596.	20130.	-471.	-141.	91.
6	11596.	20298.	-314.	-94.	81.
7	11596.	20480.	-175.	-52.	71.
8	11596.	20670.	-54.	-16.	62.
9	11596.	20862.	51.	15.	53.
10	11596.	21052.	141.	42.	45.
11	11596.	21236.	217.	65.	38.
12	11596.	21410.	280.	84.	31.
13	11596.	21572.	332.	100.	25.
14	11596.	21718.	373.	112.	20.
15	11596.	21847.	405.	122.	15.
16	11596.	21958.	428.	129.	10.
17	11596.	22050.	444.	133.	6.
18	11596.	22121.	451.	135.	2.
19	11596.	22173.	452.	136.	-1.
20	11596.	22203.	446.	134.	-5.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 603

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.2405E 00	-0.8377E-01	-0.1555E-04
2	0.2409E 00	-0.8347E-01	-0.4499E-03
3	0.2421E 00	-0.8318E-01	-0.7997E-03
4	0.2438E 00	-0.8288E-01	-0.1073E-02
5	0.2460E 00	-0.8259E-01	-0.1277E-02
6	0.2485E 00	-0.8230E-01	-0.1421E-02
7	0.2511E 00	-0.8201E-01	-0.1510E-02
8	0.2540E 00	-0.8173E-01	-0.1551E-02
9	0.2568E 00	-0.8144E-01	-0.1551E-02
10	0.2596E 00	-0.8117E-01	-0.1515E-02
11	0.2623E 00	-0.8089E-01	-0.1449E-02
12	0.2649E 00	-0.8062E-01	-0.1358E-02
13	0.2673E 00	-0.8035E-01	-0.1245E-02
14	0.2694E 00	-0.8008E-01	-0.1116E-02
15	0.2713E 00	-0.7982E-01	-0.9727E-03
16	0.2730E 00	-0.7955E-01	-0.8197E-03
17	0.2743E 00	-0.7929E-01	-0.6596E-03
18	0.2754E 00	-0.7903E-01	-0.4954E-03
19	0.2762E 00	-0.7877E-01	-0.3297E-03
20	0.2766E 00	-0.7851E-01	-0.1648E-03

HANFURD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 603

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	9277.	15808.	4256.	14301.	14298.	17314.
2	9277.	15831.	5183.	14603.	13370.	17059.
3	9277.	15894.	6026.	14919.	12527.	16869.
4	9277.	15987.	6787.	15240.	11767.	16734.
5	9277.	16104.	7468.	15562.	11086.	16647.
6	9277.	16238.	8072.	15877.	10481.	16600.
7	9277.	16384.	8605.	16182.	9948.	16585.
8	9277.	16536.	9071.	16474.	9483.	16598.
9	9277.	16690.	9473.	16749.	9080.	16631.
10	9277.	16842.	9818.	17004.	8735.	16679.
11	9277.	16989.	10110.	17239.	8443.	16739.
12	9277.	17128.	10353.	17451.	8200.	16805.
13	9277.	17257.	10552.	17640.	8001.	16875.
14	9277.	17374.	10711.	17804.	7843.	16944.
15	9277.	17478.	10833.	17945.	7721.	17011.
16	9277.	17567.	10922.	18060.	7632.	17073.
17	9277.	17640.	10980.	18151.	7574.	17129.
18	9277.	17697.	11010.	18217.	7544.	17177.
19	9277.	17738.	11013.	18259.	7540.	17217.
20	9277.	17762.	10991.	18277.	7562.	17248.

HANFORD NO. 2 CONTAINMENT VESSEL II 8 1.78
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 603 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	15811.		14301.		17314.	
2	15834.		14603.		17059.	
3	15896.		14919.		16869.	
4	15989.		15240.		16734.	
5	16106.		15562.		16647.	
6	16239.		15877.		16600.	
7	16385.		16182.		16585.	
8	16536.		16474.		16598.	
9	16690.		16749.		16631.	
10	16842.		17004.		16679.	
11	16989.		17239.		16739.	
12	17128.		17451.		16805.	
13	17257.		17640.		16875.	
14	17374.		17804.		16944.	
15	17478.		17945.		17011.	
16	17567.		18060.		17073.	
17	17640.		18151.		17129.	
18	17697.		18217.		17177.	
19	17738.		18259.		17217.	
20	17762.		18277.		17248.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 604

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	0.	3607.	-0.	-0.	0.
2	16.	3591.	-0.	-0.	0.
3	32.	3575.	-0.	-0.	0.
4	47.	3559.	-0.	-0.	0.
5	62.	3544.	-0.	-0.	0.
6	77.	3529.	-0.	-0.	0.
7	92.	3514.	-0.	-0.	0.
8	107.	3500.	-0.	-0.	0.
9	122.	3485.	-0.	-0.	0.
10	136.	3471.	-0.	-0.	0.
11	150.	3457.	-0.	-0.	0.
12	164.	3443.	-0.	-0.	0.
13	178.	3429.	-0.	-0.	0.
14	191.	3415.	-0.	-0.	0.
15	205.	3402.	-0.	-0.	0.
16	218.	3388.	-0.	-0.	0.
17	231.	3375.	-0.	-0.	0.
18	244.	3362.	-0.	-0.	0.
19	257.	3350.	-0.	-0.	0.
20	270.	3337.	-0.	-0.	0.

HANFORD NO. 2 CONTAINMENT VESSEL III 81 80
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ.

BODY NO. 604

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.8314E-01	0.2457E 00	-0.1589E-04
2	0.8317E-01	0.2453E 00	-0.1586E-04
3	0.8321E-01	0.2450E 00	-0.1584E-04
4.	0.8324E-01	0.2447E 00	-0.1583E-04
5	0.8327E-01	0.2444E 00	-0.1581E-04
6	0.8331E-01	0.2441E 00	-0.1579E-04
7	0.8334E-01	0.2438E 00	-0.1577E-04
8	0.8337E-01	0.2435E 00	-0.1575E-04
9	0.8341E-01	0.2433E 00	-0.1573E-04
10	0.8344E-01	0.2430E 00	-0.1572E-04
11	0.8347E-01	0.2427E 00	-0.1570E-04
12	0.8351E-01	0.2424E 00	-0.1568E-04
13	0.8354E-01	0.2422E 00	-0.1567E-04
14	0.8357E-01	0.2419E 00	-0.1565E-04
15	0.8360E-01	0.2417E 00	-0.1563E-04
16	0.8364E-01	0.2414E 00	-0.1562E-04
17	0.8367E-01	0.2412E 00	-0.1560E-04
18	0.8370E-01	0.2410E 00	-0.1559E-04
19	0.8374E-01	0.2407E 00	-0.1558E-04
20	0.8377E-01	0.2405E 00	-0.1556E-04

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 604

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	0.	14426.	0.	14426.	0.	14426.
2	64.	14363.	64.	14363.	64.	14363.
3	126.	14300.	126.	14300.	126.	14300.
4	188.	14238.	188.	14238.	188.	14238.
5	250.	14177.	250.	14177.	250.	14177.
6	310.	14117.	310.	14116.	310.	14117.
7	369.	14057.	369.	14057.	369.	14057.
8	428.	13998.	428.	13998.	428.	13998.
9	486.	13940.	486.	13940.	486.	13940.
10	544.	13883.	543.	13883.	544.	13883.
11	600.	13826.	600.	13826.	600.	13826.
12	656.	13770.	656.	13770.	656.	13771.
13	711.	13715.	711.	13715.	711.	13715.
14	766.	13661.	765.	13661.	766.	13661.
15	819.	13607.	819.	13607.	819.	13607.
16	872.	13554.	872.	13554.	872.	13554.
17	925.	13502.	925.	13501.	925.	13502.
18	977.	13450.	977.	13450.	977.	13450.
19	1028.	13399.	1028.	13398.	1028.	13399.
20	1078.	13348.	1078.	13348.	1078.	13348.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EL

BODY NO. 604 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	14426.		14426.		14426.	
2	14363.		14363.		14363.	
3	14300.		14300.		14300.	
4	14238.		14238.		14238.	
5	14177.		14177.		14177.	
6	14117.		14116.		14117.	
7	14057.		14057.		14057.	
8	13998.		13998.		13998.	
9	13940.		13940.		13940.	
10	13883.		13883.		13883.	
11	13826.		13826.		13826.	
12	13770.		13770.		13771.	
13	13715.		13715.		13715.	
14	13661.		13661.		13661.	
15	13607.		13607.		13607.	
16	13554.		13554.		13554.	
17	13502.		13501.		13502.	
18	13450.		13450.		13450.	
19	13399.		13398.		13399.	
20	13348.		13348.		13348.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 606

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11596.	22820.	146.	44.	1.
2	11596.	23007.	146.	44.	-1.
3	11596.	23155.	140.	42.	-2.
4	11596.	23267.	133.	40.	-1.
5	11596.	23344.	129.	39.	-0.
6	11596.	23388.	130.	39.	1.
7	11596.	23397.	139.	42.	3.
8	11596.	23370.	156.	47.	5.
9	11596.	23302.	180.	54.	6.
10	11596.	23186.	208.	63.	7.
11	11596.	23016.	237.	71.	6.
12	11596.	22784.	258.	77.	4.
13	11596.	22485.	265.	79.	-1.
14	11596.	22118.	245.	73.	-9.
15	11596.	21687.	185.	55.	-19.
16	11596.	21210.	69.	21.	-34.
17	11596.	20715.	-121.	-36.	-53.
18	11596.	20255.	-403.	-121.	-76.
19	11596.	19902.	-794.	-238.	-103.
20	11596.	19760.	-1308.	-392.	-131.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

II 8 1 37

BODY NO. 606

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.2857E 00	-0.9546E-01	-0.6927E-03
2	0.2885E 00	-0.9486E-01	-0.5636E-03
3	0.2907E 00	-0.9427E-01	-0.4374E-03
4	0.2923E 00	-0.9369E-01	-0.3174E-03
5	0.2935E 00	-0.9311E-01	-0.2028E-03
6	0.2941E 00	-0.9253E-01	-0.8957E-04
7	0.2942E 00	-0.9196E-01	0.2835E-04
8	0.2938E 00	-0.9138E-01	0.1578E-03
9	0.2928E 00	-0.9080E-01	0.3055E-03
10	0.2911E 00	-0.9022E-01	0.4762E-03
11	0.2886E 00	-0.8964E-01	0.6721E-03
12	0.2852E 00	-0.8904E-01	0.8905E-03
13	0.2808E 00	-0.8844E-01	0.1122E-02
14	0.2753E 00	-0.8782E-01	0.1348E-02
15	0.2690E 00	-0.8719E-01	0.1541E-02
16	0.2619E 00	-0.8654E-01	0.1657E-02
17	0.2546E 00	-0.8587E-01	0.1641E-02
18	0.2478E 00	-0.8518E-01	0.1418E-02
19	0.2426E 00	-0.8448E-01	0.8997E-03
20	0.2405E 00	-0.8377E-01	-0.1557E-04

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

II 3 1 85

BODY NO. 606

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	9277.	18256.	9836.	18424.	8717.	18088.
2	9277.	18405.	9838.	18574.	8715.	18237.
3	9277.	18524.	9815.	18686.	8739.	18363.
4	9277.	18614.	9787.	18767.	8767.	18461.
5	9277.	18676.	9770.	18824.	8783.	18527.
6	9277.	18710.	9777.	18860.	8777.	18560.
7	9277.	18718.	9812.	18878.	8742.	18557.
8	9277.	18696.	9877.	18876.	8676.	18516.
9	9277.	18641.	9969.	18849.	8585.	18434.
10	9277.	18549.	10077.	18789.	8476.	18309.
11	9277.	18413.	10185.	18685.	8369.	18140.
12	9277.	18227.	10268.	18525.	8286.	17930.
13	9277.	17988.	10293.	18293.	8261.	17683.
14	9277.	17694.	10217.	17976.	8337.	17412.
15	9277.	17350.	9987.	17563.	8567.	17137.
16	9277.	16968.	9542.	17047.	9012.	16888.
17	9277.	16572.	8813.	16433.	9741.	16712.
18	9277.	16204.	7729.	15740.	10824.	16668.
19	9277.	15922.	6227.	15007.	12327.	16837.
20	9277.	15808.	4256.	14301.	14298.	17314.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 606 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	18256.		18424.		18088.	
2	18405.		18574.		18237.	
3	18524.		18686.		18363.	
4	18614.		18767.		18461.	
5	18676.		18824.		18527.	
6	18710.		18860.		18560.	
7	18718.		18878.		18557.	
8	18696.		18876.		18516.	
9	18641.		18849.		18434.	
10	18549.		18789.		18309.	
11	18413.		18685.		18140.	
12	18227.		18525.		17930.	
13	17988.		18293.		17683.	
14	17694.		17976.		17412.	
15	17350.		17563.		17137.	
16	16968.		17047.		16888.	
17	16573.		16433.		16712.	
18	16205.		15740.		16668.	
19	15923.		15007.		16837.	
20	15810.		14301.		17314.	

HANFORD NO. 2 CONTAINMENT VESSEL II.8.1 37
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 501

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11595.	19021.	-708.	-212.	117.
2	11595.	19650.	-240.	-72.	82.
3	11595.	20348.	75.	23.	53.
4	11595.	21028.	267.	80.	30.
5	11595.	21637.	365.	110.	13.
6	11595.	22147.	395.	119.	1.
7	11595.	22549.	381.	114.	-7.
8	11595.	22847.	338.	101.	-11.
9	11595.	23053.	280.	84.	-13.
10	11595.	23182.	216.	65.	-14.
11	11595.	23251.	152.	45.	-13.
12	11595.	23279.	90.	27.	-13.
13	11595.	23282.	32.	10.	-12.
14	11595.	23276.	-21.	-6.	-11.
15	11595.	23275.	-70.	-21.	-10.
16	11595.	23294.	-116.	-35.	-9.
17	11595.	23344.	-156.	-47.	-8.
18	11595.	23438.	-190.	-57.	-6.
19	11595.	23583.	-212.	-64.	-3.
20	11595.	23786.	-217.	-65.	1.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 501

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.2187E 00	-0.1074E 00	-0.1650E-02
2	0.2275E 00	-0.1066E 00	-0.2026E-02
3	0.2373E 00	-0.1059E 00	-0.2084E-02
4	0.2469E 00	-0.1052E 00	-0.1937E-02
5	0.2555E 00	-0.1045E 00	-0.1673E-02
6	0.2627E 00	-0.1039E 00	-0.1358E-02
7	0.2683E 00	-0.1032E 00	-0.1038E-02
8	0.2725E 00	-0.1026E 00	-0.7425E-03
9	0.2754E 00	-0.1020E 00	-0.4892E-03
10	0.2772E 00	-0.1014E 00	-0.2862E-03
11	0.2782E 00	-0.1008E 00	-0.1360E-03
12	0.2786E 00	-0.1002E 00	-0.3740E-04
13	0.2786E 00	-0.9962E-01	0.1245E-04
14	0.2785E 00	-0.9902E-01	0.1695E-04
15	0.2785E 00	-0.9843E-01	-0.2058E-04
16	0.2788E 00	-0.9783E-01	-0.9692E-04
17	0.2795E 00	-0.9724E-01	-0.2085E-03
18	0.2808E 00	-0.9664E-01	-0.3506E-03
19	0.2829E 00	-0.9606E-01	-0.5158E-03
20	0.2857E 00	-0.9548E-01	-0.6927E-03

HANFORD NO. 2 CONTAINMENT VESSEL II 81 83
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 501

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8835.	14493.	6368.	13753.	11301.	15233.
2	8835.	14971.	7999.	14721.	9670.	15222.
3	8835.	15503.	9096.	15582.	8573.	15425.
4	8835.	16021.	9764.	16300.	7905.	15742.
5	8835.	16485.	10106.	16867.	7563.	16104.
6	8835.	16874.	10212.	17287.	7457.	16461.
7	8835.	17180.	10160.	17578.	7509.	16783.
8	8835.	17408.	10010.	17760.	7659.	17055.
9	8835.	17564.	9809.	17856.	7860.	17272.
10	8835.	17662.	9586.	17888.	8083.	17437.
11	8835.	17715.	9362.	17874.	8307.	17557.
12	8835.	17736.	9148.	17830.	8521.	17642.
13	8835.	17739.	8948.	17773.	8721.	17705.
14	8835.	17734.	8762.	17712.	8907.	17756.
15	8835.	17734.	8590.	17660.	9079.	17807.
16	8835.	17748.	8432.	17627.	9237.	17869.
17	8835.	17786.	8291.	17623.	9378.	17949.
18	8835.	17857.	8174.	17659.	9495.	18055.
19	8835.	17968.	8097.	17746.	9572.	18189.
20	8835.	18122.	8080.	17896.	9589.	18349.

HANFORD NO. 2 CONTAINMENT VESSEL II.8.1.90
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 501 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	14495.		13753.		15233.	
2	14972.		14721.		15222.	
3	15504.		15582.		15425.	
4	16022.		16300.		15742.	
5	16485.		16867.		16104.	
6	16874.		17287.		16461.	
7	17180.		17578.		16783.	
8	17408.		17760.		17055.	
9	17564.		17856.		17272.	
10	17662.		17888.		17437.	
11	17715.		17874.		17557.	
12	17736.		17830.		17642.	
13	17739.		17773.		17705.	
14	17734.		17712.		17756.	
15	17734.		17660.		17807.	
16	17748.		17627.		17869.	
17	17786.		17623.		17949.	
18	17857.		17659.		18055.	
19	17968.		17746.		18189.	
20	18122.		17896.		18349.	

HANFORD NO. 2 CONTAINMENT VESSEL II 8.1 '71
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 605

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	0.	3362.	-0.	-0.	-0.
2	19.	3343.	-0.	-0.	-0.
3	37.	3325.	-0.	-0.	-0.
4	55.	3307.	-0.	-0.	-0.
5	73.	3289.	-0.	-0.	-0.
6	91.	3271.	-0.	-0.	-0.
7	108.	3254.	-0.	-0.	-0.
8	125.	3237.	-0.	-0.	-0.
9	142.	3220.	-0.	-0.	-0.
10	158.	3204.	-0.	-0.	-0.
11	174.	3188.	-0.	-0.	-0.
12	190.	3172.	-0.	-0.	-0.
13	206.	3156.	-0.	-0.	-0.
14	221.	3141.	-0.	-0.	-0.
15	236.	3126.	-0.	-0.	-0.
16	251.	3111.	-0.	-0.	-0.
17	266.	3096.	-0.	-0.	-0.
18	280.	3081.	-0.	-0.	-0.
19	295.	3067.	-0.	-0.	-0.
20	309.	3053.	-0.	-0.	-0.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 605

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.2436E-01	0.2244E 00	-0.1692E-02
2	0.2879E-01	0.2240E 00	-0.1689E-02
3	0.3320E-01	0.2236E 00	-0.1687E-02
4	0.3761E-01	0.2233E 00	-0.1684E-02
5	0.4202E-01	0.2229E 00	-0.1681E-02
6	0.4641E-01	0.2226E 00	-0.1679E-02
7	0.5080E-01	0.2223E 00	-0.1676E-02
8	0.5519E-01	0.2219E 00	-0.1674E-02
9	0.5956E-01	0.2216E 00	-0.1672E-02
10	0.6394E-01	0.2213E 00	-0.1669E-02
11	0.6830E-01	0.2210E 00	-0.1667E-02
12	0.7266E-01	0.2207E 00	-0.1665E-02
13	0.7701E-01	0.2205E 00	-0.1663E-02
14	0.8136E-01	0.2202E 00	-0.1661E-02
15	0.8571E-01	0.2199E 00	-0.1659E-02
16	0.9005E-01	0.2197E 00	-0.1657E-02
17	0.9438E-01	0.2194E 00	-0.1655E-02
18	0.9871E-01	0.2192E 00	-0.1653E-02
19	0.1030E 00	0.2189E 00	-0.1652E-02
20	0.1074E 00	0.2187E 00	-0.1650E-02

HANFORD NO. 2 CONTAINMENT VESSEL II.8.1.93
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 605

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	0.	13448.	-0.	13435.	0.	13460.
2	75.	13373.	75.	13360.	75.	13385.
3	149.	13299.	149.	13287.	149.	13312.
4	221.	13227.	221.	13214.	221.	13239.
5	293.	13155.	292.	13143.	293.	13168.
6	363.	13085.	362.	13073.	363.	13098.
7	432.	13016.	431.	13004.	432.	13028.
8	500.	12948.	499.	12936.	500.	12961.
9	566.	12881.	566.	12869.	567.	12894.
10	632.	12816.	631.	12804.	633.	12828.
11	697.	12751.	696.	12739.	697.	12763.
12	760.	12687.	760.	12675.	761.	12699.
13	823.	12625.	822.	12613.	824.	12637.
14	885.	12563.	884.	12551.	886.	12575.
15	945.	12502.	944.	12491.	946.	12514.
16	1005.	12443.	1004.	12431.	1006.	12454.
17	1064.	12384.	1063.	12372.	1065.	12396.
18	1122.	12326.	1121.	12314.	1123.	12338.
19	1179.	12269.	1178.	12257.	1180.	12280.
20	1235.	12213.	1234.	12201.	1236.	12224.

HANFORD NO. 2 CONTAINMENT VESSEL II.3.1.94.
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 605 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	13448.		13435.		13460.	
2	13373.		13360.		13385.	
3	13299.		13287.		13312.	
4	13227.		13214.		13239.	
5	13155.		13143.		13168.	
6	13085.		13073.		13098.	
7	13016.		13004.		13028.	
8	12948.		12936.		12961.	
9	12881.		12869.		12894.	
10	12816.		12804.		12828.	
11	12751.		12739.		12763.	
12	12687.		12675.		12699.	
13	12625.		12613.		12637.	
14	12563.		12551.		12575.	
15	12502.		12491.		12514.	
16	12443.		12431.		12454.	
17	12384.		12372.		12396.	
18	12326.		12314.		12338.	
19	12269.		12257.		12280.	
20	12213.		12201.		12224.	

HANFORD NO. 2 CONTAINMENT VESSEL 8.1.95
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 550

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11595.	13556.	611.	183.	143.
2	11595.	14071.	801.	240.	117.
3	11595.	14566.	953.	286.	92.
4	11595.	15035.	1070.	321.	68.
5	11595.	15477.	1152.	346.	45.
6	11595.	15888.	1203.	361.	24.
7	11595.	16268.	1224.	367.	4.
8	11595.	16616.	1216.	365.	-15.
9	11595.	16932.	1180.	354.	-33.
10	11595.	17217.	1119.	336.	-51.
11	11595.	17473.	1033.	310.	-67.
12	11595.	17701.	924.	277.	-83.
13	11595.	17906.	791.	237.	-98.
14	11595.	18090.	637.	191.	-113.
15	11595.	18257.	462.	139.	-127.
16	11595.	18412.	266.	80.	-141.
17	11595.	18560.	51.	15.	-154.
18	11595.	18707.	-184.	-55.	-167.
19	11595.	18858.	-437.	-131.	-180.
20	11595.	19021.	-708.	-212.	-192.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 550

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.1418E 00	-0.1123E 00	-0.5051E-02
2	0.1490E 00	-0.1120E 00	-0.4872E-02
3	0.1560E 00	-0.1117E 00	-0.4649E-02
4	0.1626E 00	-0.1114E 00	-0.4393E-02
5	0.1688E 00	-0.1111E 00	-0.4111E-02
6	0.1746E 00	-0.1109E 00	-0.3813E-02
7	0.1799E 00	-0.1106E 00	-0.3505E-02
8	0.1848E 00	-0.1103E 00	-0.3196E-02
9	0.1893E 00	-0.1101E 00	-0.2893E-02
10	0.1933E 00	-0.1098E 00	-0.2602E-02
11	0.1969E 00	-0.1095E 00	-0.2329E-02
12	0.2001E 00	-0.1093E 00	-0.2081E-02
13	0.2030E 00	-0.1090E 00	-0.1864E-02
14	0.2056E 00	-0.1088E 00	-0.1683E-02
15	0.2079E 00	-0.1085E 00	-0.1544E-02
16	0.2101E 00	-0.1083E 00	-0.1451E-02
17	0.2122E 00	-0.1081E 00	-0.1411E-02
18	0.2143E 00	-0.1078E 00	-0.1427E-02
19	0.2164E 00	-0.1076E 00	-0.1505E-02
20	0.2187E 00	-0.1074E 00	-0.1650E-02

HANFORD NO. 2 CONTAINMENT VESSEL II 8.197
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 550

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8834.	10328.	10964.	10967.	6705.	9689.
2	8834.	10721.	11625.	11558.	6044.	9884.
3	8834.	11098.	12155.	12094.	5514.	10102.
4	8834.	11455.	12561.	12573.	5108.	10338.
5	8834.	11792.	12849.	12996.	4820.	10588.
6	8834.	12105.	13025.	13363.	4644.	10848.
7	8834.	12395.	13097.	13673.	4572.	11116.
8	8834.	12660.	13069.	13930.	4600.	11390.
9	8834.	12901.	12945.	14134.	4723.	11667.
10	8834.	13118.	12732.	14287.	4937.	11948.
11	8834.	13313.	12433.	14392.	5236.	12233.
12	8834.	13487.	12051.	14452.	5618.	12522.
13	8834.	13643.	11590.	14469.	6079.	12816.
14	8834.	13783.	11053.	14448.	6616.	13117.
15	8834.	13910.	10443.	14392.	7226.	13427.
16	8834.	14028.	9761.	14306.	7908.	13750.
17	8834.	14141.	9011.	14194.	8658.	14088.
18	8834.	14253.	8194.	14060.	9475.	14445.
19	8834.	14368.	7312.	13911.	10357.	14825.
20	8834.	14493.	6368.	13753.	11301.	15232.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 550 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	10331.		10967.		9689.	
2	10723.		11625.		9884.	
3	11099.		12155.		10102.	
4	11456.		12573.		10338.	
5	11792.		12996.		10588.	
6	12105.		13363.		10848.	
7	12395.		13673.		11116.	
8	12660.		13930.		11390.	
9	12901.		14134.		11667.	
10	13118.		14287.		11948.	
11	13313.		14392.		12233.	
12	13488.		14452.		12522.	
13	13644.		14469.		12816.	
14	13784.		14448.		13117.	
15	13912.		14392.		13427.	
16	14031.		14306.		13750.	
17	14144.		14194.		14088.	
18	14257.		14060.		14445.	
19	14373.		13911.		14825.	
20	14498.		13753.		15232.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 607

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11600.	8322.	82.	23.	93.
2	11599.	8592.	139.	40.	89.
3	11599.	8862.	194.	57.	86.
4	11599.	9131.	247.	73.	83.
5	11599.	9398.	298.	88.	80.
6	11599.	9664.	348.	103.	77.
7	11599.	9928.	396.	118.	75.
8	11598.	10190.	443.	132.	73.
9	11598.	10449.	488.	145.	72.
10	11598.	10706.	533.	159.	71.
11	11598.	10960.	577.	172.	70.
12	11598.	11210.	620.	185.	69.
13	11598.	11458.	664.	198.	69.
14	11598.	11702.	707.	211.	69.
15	11598.	11942.	750.	224.	69.
16	11598.	12178.	794.	238.	70.
17	11598.	12410.	838.	251.	70.
18	11597.	12637.	882.	264.	72.
19	11597.	12860.	928.	278.	73.
20	11597.	13077.	974.	292.	75.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 607

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.7478E-01	-0.1116E 00	-0.6360E-02
2	0.7864E-01	-0.1115E 00	-0.6345E-02
3	0.8249E-01	-0.1115E 00	-0.6324E-02
4	0.8632E-01	-0.1114E 00	-0.6296E-02
5	0.9013E-01	-0.1114E 00	-0.6262E-02
6	0.9392E-01	-0.1113E 00	-0.6221E-02
7	0.9768E-01	-0.1113E 00	-0.6174E-02
8	0.1014E 00	-0.1112E 00	-0.6121E-02
9	0.1051E 00	-0.1112E 00	-0.6063E-02
10	0.1088E 00	-0.1112E 00	-0.5998E-02
11	0.1124E 00	-0.1112E 00	-0.5928E-02
12	0.1160E 00	-0.1112E 00	-0.5853E-02
13	0.1195E 00	-0.1112E 00	-0.5772E-02
14	0.1229E 00	-0.1112E 00	-0.5686E-02
15	0.1264E 00	-0.1112E 00	-0.5594E-02
16	0.1297E 00	-0.1112E 00	-0.5497E-02
17	0.1330E 00	-0.1112E 00	-0.5394E-02
18	0.1362E 00	-0.1112E 00	-0.5286E-02
19	0.1394E 00	-0.1112E 00	-0.5171E-02
20	0.1424E 00	-0.1113E 00	-0.5052E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 607

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	9280.	6658.	9594.	6746.	8965.	6569.
2	9279.	6874.	9814.	7028.	8745.	6719.
3	9279.	7090.	10026.	7308.	8533.	6872.
4	9279.	7305.	10229.	7584.	8329.	7025.
5	9279.	7519.	10425.	7857.	8133.	7180.
6	9279.	7731.	10615.	8127.	7943.	7335.
7	9279.	7942.	10799.	8394.	7759.	7491.
8	9279.	8152.	10978.	8657.	7579.	7646.
9	9279.	8359.	11153.	8918.	7404.	7801.
10	9279.	8565.	11325.	9175.	7232.	7955.
11	9278.	8768.	11494.	9429.	7063.	8107.
12	9278.	8968.	11661.	9680.	6896.	8257.
13	9278.	9166.	11827.	9928.	6730.	8404.
14	9278.	9361.	11993.	10173.	6564.	8550.
15	9278.	9554.	12159.	10415.	6398.	8692.
16	9278.	9742.	12326.	10655.	6230.	8830.
17	9278.	9928.	12495.	10891.	6061.	8964.
18	9278.	10110.	12666.	11124.	5890.	9095.
19	9278.	10288.	12840.	11355.	5715.	9220.
20	9278.	10462.	13019.	11583.	5537.	9341.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EC

BODY NO. 607 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	9282.		9594.		8965.	
2	9282.		9814.		8745.	
3	9282.		10026.		8533.	
4	9281.		10229.		8329.	
5	9281.		10425.		8133.	
6	9281.		10615.		7943.	
7	9281.		10799.		7759.	
8	9280.		10978.		7646.	
9	9280.		11153.		7801.	
10	9280.		11325.		7955.	
11	9280.		11494.		8107.	
12	9280.		11661.		8257.	
13	9280.		11827.		8404.	
14	9362.		11993.		8550.	
15	9554.		12159.		8692.	
16	9743.		12326.		8830.	
17	9929.		12495.		8964.	
18	10110.		12666.		9095.	
19	10288.		12840.		9220.	
20	10463.		13019.		9341.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 608

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11607.	3020.	-84.	-29.	93.
2	11607.	3305.	-29.	-13.	82.
3	11606.	3591.	19.	2.	72.
4	11605.	3876.	62.	15.	63.
5	11605.	4161.	98.	26.	53.
6	11604.	4445.	129.	35.	45.
7	11603.	4729.	154.	43.	36.
8	11603.	5011.	174.	49.	28.
9	11602.	5293.	189.	54.	20.
10	11602.	5574.	199.	57.	12.
11	11602.	5853.	205.	58.	5.
12	11601.	6132.	206.	59.	-2.
13	11601.	6409.	203.	58.	-8.
14	11601.	6685.	196.	56.	-14.
15	11600.	6960.	185.	53.	-20.
16	11600.	7234.	171.	49.	-25.
17	11600.	7507.	153.	43.	-31.
18	11600.	7780.	133.	37.	-35.
19	11600.	8051.	109.	30.	-40.
20	11600.	8322.	82.	22.	-44.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

II 8.1 104

BODY NO. 608

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.4383E-03	-0.1132E 00	-0.6685E-02
2	0.4507E-02	-0.1130E 00	-0.6692E-02
3	0.8577E-02	-0.1128E 00	-0.6692E-02
4	0.1265E-01	-0.1126E 00	-0.6687E-02
5	0.1671E-01	-0.1125E 00	-0.6676E-02
6	0.2077E-01	-0.1123E 00	-0.6662E-02
7	0.2481E-01	-0.1122E 00	-0.6644E-02
8	0.2885E-01	-0.1120E 00	-0.6623E-02
9	0.3287E-01	-0.1119E 00	-0.6600E-02
10	0.3687E-01	-0.1117E 00	-0.6575E-02
11	0.4087E-01	-0.1116E 00	-0.6550E-02
12	0.4484E-01	-0.1115E 00	-0.6524E-02
13	0.4880E-01	-0.1114E 00	-0.6498E-02
14	0.5274E-01	-0.1112E 00	-0.6472E-02
15	0.5666E-01	-0.1111E 00	-0.6448E-02
16	0.6057E-01	-0.1110E 00	-0.6426E-02
17	0.6447E-01	-0.1109E 00	-0.6405E-02
18	0.6836E-01	-0.1109E 00	-0.6387E-02
19	0.7223E-01	-0.1108E 00	-0.6372E-02
20	0.7610E-01	-0.1107E 00	-0.6359E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 608

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	9286.	2416.	8962.	2304.	9610.	2528.
2	9285.	2644.	9172.	2596.	9398.	2692.
3	9285.	2873.	9358.	2881.	9211.	2864.
4	9284.	3101.	9521.	3158.	9048.	3043.
5	9284.	3329.	9660.	3428.	8907.	3229.
6	9283.	3556.	9778.	3691.	8788.	3421.
7	9283.	3783.	9875.	3948.	8691.	3618.
8	9282.	4009.	9951.	4197.	8613.	3821.
9	9282.	4234.	10009.	4440.	8555.	4028.
10	9282.	4459.	10047.	4677.	8516.	4241.
11	9281.	4683.	10068.	4907.	8494.	4458.
12	9281.	4905.	10073.	5132.	8489.	4679.
13	9281.	5127.	10061.	5350.	8501.	4904.
14	9281.	5348.	10034.	5563.	8528.	5133.
15	9280.	5568.	9992.	5771.	8569.	5365.
16	9280.	5787.	9937.	5974.	8623.	5600.
17	9280.	6006.	9869.	6173.	8691.	5839.
18	9280.	6224.	9789.	6367.	8771.	6080.
19	9280.	6441.	9698.	6557.	8862.	6325.
20	9280.	6658.	9596.	6744.	8963.	6572.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 608 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	9289.		8962.		9610.	
2	9287.		9172.		9398.	
3	9286.		9358.		9211.	
4	9285.		9521.		9048.	
5	9285.		9660.		8907.	
6	9284.		9778.		8788.	
7	9283.		9875.		8691.	
8	9283.		9951.		8613.	
9	9282.		10009.		8555.	
10	9282.		10047.		8516.	
11	9281.		10068.		8494.	
12	9281.		10073.		8489.	
13	9281.		10061.		8501.	
14	9281.		10034.		8528.	
15	9280.		9992.		8569.	
16	9280.		9937.		8623.	
17	9280.		9869.		8691.	
18	9280.		9789.		8771.	
19	9280.		9698.		8862.	
20	9280.		9596.		8963.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 609

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11631.	-2280.	-983.	-300.	216.
2	11629.	-2019.	-853.	-261.	199.
3	11627.	-1754.	-733.	-225.	183.
4	11625.	-1485.	-623.	-192.	167.
5	11624.	-1213.	-523.	-162.	151.
6	11622.	-938.	-433.	-135.	135.
7	11620.	-660.	-353.	-111.	120.
8	11619.	-381.	-282.	-90.	105.
9	11617.	-101.	-220.	-71.	91.
10	11616.	181.	-167.	-55.	77.
11	11615.	464.	-123.	-42.	63.
12	11614.	747.	-88.	-31.	50.
13	11612.	1030.	-61.	-23.	37.
14	11611.	1314.	-41.	-17.	24.
15	11610.	1598.	-30.	-14.	12.
16	11609.	1882.	-27.	-13.	-0.
17	11608.	2166.	-31.	-14.	-12.
18	11607.	2450.	-42.	-17.	-23.
19	11607.	2735.	-60.	-23.	-34.
20	11606.	3020.	-85.	-30.	-45.

HANFORC NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

II 8.1 10

BODY NO. 609

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.7360E-01	-0.1180E 00	-0.6032E-02
2	-0.6991E-01	-0.1177E 00	-0.6147E-02
3	-0.6616E-01	-0.1174E 00	-0.6247E-02
4	-0.6234E-01	-0.1171E 00	-0.6332E-02
5	-0.5848E-01	-0.1168E 00	-0.6404E-02
6	-0.5457E-01	-0.1165E 00	-0.6464E-02
7	-0.5063E-01	-0.1162E 00	-0.6513E-02
8	-0.4666E-01	-0.1159E 00	-0.6553E-02
9	-0.4267E-01	-0.1157E 00	-0.6584E-02
10	-0.3867E-01	-0.1154E 00	-0.6608E-02
11	-0.3465E-01	-0.1152E 00	-0.6626E-02
12	-0.3061E-01	-0.1149E 00	-0.6639E-02
13	-0.2658E-01	-0.1147E 00	-0.6648E-02
14	-0.2253E-01	-0.1144E 00	-0.6654E-02
15	-0.1849E-01	-0.1142E 00	-0.6658E-02
16	-0.1444E-01	-0.1140E 00	-0.6662E-02
17	-0.1039E-01	-0.1138E 00	-0.6665E-02
18	-0.6337E-02	-0.1136E 00	-0.6669E-02
19	-0.2281E-02	-0.1134E 00	-0.6676E-02
20	0.1783E-02	-0.1132E 00	-0.6684E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 609

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	9305.	-1824.	5529.	-2977.	13080.	-671.
2	9303.	-1615.	6029.	-2618.	12577.	-613.
3	9302.	-1403.	6488.	-2268.	12115.	-539.
4	9300.	-1188.	6909.	-1926.	11692.	-450.
5	9299.	-970.	7291.	-1593.	11307.	-347.
6	9298.	-750.	7635.	-1269.	10960.	-231.
7	9296.	-528.	7942.	-955.	10651.	-102.
8	9295.	-305.	8213.	-650.	10377.	40.
9	9294.	-81.	8449.	-354.	10139.	193.
10	9293.	145.	8651.	-68.	9935.	357.
11	9292.	371.	8819.	209.	9765.	532.
12	9291.	597.	8954.	477.	9628.	718.
13	9290.	824.	9057.	735.	9522.	913.
14	9289.	1051.	9130.	985.	9448.	1118.
15	9288.	1278.	9172.	1225.	9405.	1332.
16	9287.	1506.	9184.	1456.	9390.	1555.
17	9287.	1733.	9169.	1680.	9405.	1786.
18	9286.	1960.	9125.	1894.	9447.	2026.
19	9285.	2188.	9054.	2101.	9516.	2275.
20	9285.	2416.	8958.	2301.	9612.	2531.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EC

BODY NO. 609 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	11136.		8506.		13751.	
2	10925.		8647.		13190.	
3	10710.		8756.		12654.	
4	10493.		8835.		12142.	
5	10273.		8884.		11654.	
6	10051.		8904.		11191.	
7	9827.		8897.		10752.	
8	9602.		8863.		10377.	
9	9376.		8803.		10139.	
10	9295.		8718.		9935.	
11	9293.		8819.		9765.	
12	9292.		8954.		9628.	
13	9290.		9057.		9522.	
14	9289.		9130.		9448.	
15	9288.		9172.		9405.	
16	9287.		9184.		9390.	
17	9287.		9169.		9405.	
18	9286.		9125.		9447.	
19	9286.		9054.		9516.	
20	9285.		8958.		9612.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 610

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11683.	-5616.	-4035.	-1212.	446.
2	11680.	-5564.	-3761.	-1130.	425.
3	11677.	-5492.	-3500.	-1052.	404.
4	11674.	-5401.	-3252.	-978.	383.
5	11670.	-5292.	-3018.	-908.	362.
6	11667.	-5168.	-2796.	-842.	342.
7	11664.	-5029.	-2587.	-780.	321.
8	11661.	-4876.	-2391.	-722.	301.
9	11659.	-4710.	-2208.	-667.	281.
10	11656.	-4532.	-2037.	-616.	262.
11	11653.	-4344.	-1879.	-568.	242.
12	11650.	-4145.	-1732.	-525.	223.
13	11648.	-3938.	-1598.	-485.	204.
14	11645.	-3722.	-1476.	-448.	185.
15	11643.	-3498.	-1366.	-415.	166.
16	11641.	-3267.	-1267.	-386.	148.
17	11638.	-3029.	-1179.	-359.	130.
18	11636.	-2785.	-1103.	-337.	112.
19	11634.	-2535.	-1038.	-317.	95.
20	11632.	-2280.	-983.	-301.	78.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 610

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.1181E 00	-0.1256E 00	-0.9102E-03
2	-0.1176E 00	-0.1252E 00	-0.1401E-02
3	-0.1167E 00	-0.1248E 00	-0.1858E-02
4	-0.1155E 00	-0.1244E 00	-0.2283E-02
5	-0.1141E 00	-0.1241E 00	-0.2678E-02
6	-0.1124E 00	-0.1237E 00	-0.3044E-02
7	-0.1106E 00	-0.1233E 00	-0.3383E-02
8	-0.1085E 00	-0.1229E 00	-0.3696E-02
9	-0.1062E 00	-0.1226E 00	-0.3986E-02
10	-0.1038E 00	-0.1222E 00	-0.4253E-02
11	-0.1012E 00	-0.1218E 00	-0.4499E-02
12	-0.9841E-01	-0.1215E 00	-0.4726E-02
13	-0.9552E-01	-0.1211E 00	-0.4936E-02
14	-0.9250E-01	-0.1208E 00	-0.5129E-02
15	-0.8936E-01	-0.1205E 00	-0.5308E-02
16	-0.8611E-01	-0.1201E 00	-0.5473E-02
17	-0.8277E-01	-0.1198E 00	-0.5627E-02
18	-0.7933E-01	-0.1195E 00	-0.5770E-02
19	-0.7580E-01	-0.1192E 00	-0.5905E-02
20	-0.7219E-01	-0.1188E 00	-0.6032E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 610

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	9347.	-4493.	-6147.	-9145.	24840.	159.
2	9344.	-4451.	-5098.	-8790.	23786.	-112.
3	9341.	-4393.	-4099.	-8434.	22782.	-353.
4	9339.	-4321.	-3150.	-8077.	21828.	-564.
5	9336.	-4234.	-2252.	-7722.	20925.	-746.
6	9334.	-4134.	-1403.	-7369.	20071.	-900.
7	9331.	-4023.	-604.	-7018.	19267.	-1028.
8	9329.	-3901.	146.	-6671.	18512.	-1130.
9	9327.	-3768.	848.	-6328.	17805.	-1207.
10	9325.	-3626.	1502.	-5990.	17147.	-1261.
11	9322.	-3475.	2108.	-5658.	16536.	-1292.
12	9320.	-3316.	2668.	-5331.	15973.	-1301.
13	9318.	-3150.	3181.	-5011.	15455.	-1289.
14	9316.	-2977.	3648.	-4698.	14984.	-1256.
15	9314.	-2798.	4071.	-4393.	14558.	-1204.
16	9312.	-2613.	4449.	-4094.	14176.	-1133.
17	9311.	-2423.	4783.	-3803.	13839.	-1043.
18	9309.	-2228.	5074.	-3521.	13544.	-935.
19	9307.	-2028.	5323.	-3246.	13292.	-810.
20	9306.	-1824.	5530.	-2979.	13081.	-668.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 610 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	13870.		9145.		24840.	*
2	13823.		8790.		23898.	*
3	13760.		8434.		23135.	*
4	13682.		8077.		22392.	*
5	13591.		7722.		21671.	*
6	13486.		7369.		20971.	*
7	13370.		7018.		20295.	*
8	13244.		6817.		19642.	*
9	13107.		7176.		19013.	
10	12961.		7492.		18409.	
11	12806.		7766.		17829.	
12	12644.		7999.		17274.	
13	12475.		8192.		16744.	
14	12299.		8347.		16241.	
15	12117.		8463.		15762.	
16	11929.		8543.		15309.	
17	11736.		8586.		14882.	
18	11539.		8595.		14479.	
19	11337.		8569.		14102.	
20	11130.		8509.		13749.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 611

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11758.	-962.	-10019.	-2983.	675.
2	11754.	-1570.	-9598.	-2859.	660.
3	11751.	-2125.	-9187.	-2737.	643.
4	11747.	-2632.	-8786.	-2619.	626.
5	11743.	-3092.	-8397.	-2504.	609.
6	11740.	-3507.	-8019.	-2392.	590.
7	11736.	-3878.	-7652.	-2284.	572.
8	11732.	-4210.	-7297.	-2179.	553.
9	11728.	-4501.	-6955.	-2077.	533.
10	11724.	-4756.	-6625.	-1980.	514.
11	11720.	-4976.	-6307.	-1885.	493.
12	11717.	-5161.	-6003.	-1795.	473.
13	11713.	-5315.	-5711.	-1709.	453.
14	11709.	-5438.	-5432.	-1626.	432.
15	11705.	-5532.	-5166.	-1547.	411.
16	11702.	-5599.	-4914.	-1472.	390.
17	11698.	-5639.	-4674.	-1401.	369.
18	11694.	-5654.	-4448.	-1334.	348.
19	11691.	-5646.	-4235.	-1271.	327.
20	11687.	-5615.	-4035.	-1212.	306.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 611

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.4378E-01	-0.1337E 00	0.1502E-01
2	-0.5298E-01	-0.1334E 00	0.1379E-01
3	-0.6143E-01	-0.1331E 00	0.1260E-01
4	-0.6914E-01	-0.1328E 00	0.1147E-01
5	-0.7617E-01	-0.1325E 00	0.1039E-01
6	-0.8252E-01	-0.1321E 00	0.9353E-02
7	-0.8824E-01	-0.1318E 00	0.8366E-02
8	-0.9336E-01	-0.1315E 00	0.7423E-02
9	-0.9789E-01	-0.1311E 00	0.6525E-02
10	-0.1019E 00	-0.1308E 00	0.5670E-02
11	-0.1053E 00	-0.1304E 00	0.4854E-02
12	-0.1083E 00	-0.1300E 00	0.4079E-02
13	-0.1108E 00	-0.1296E 00	0.3341E-02
14	-0.1128E 00	-0.1293E 00	0.2639E-02
15	-0.1144E 00	-0.1289E 00	0.1971E-02
16	-0.1156E 00	-0.1285E 00	0.1336E-02
17	-0.1164E 00	-0.1281E 00	0.7322E-03
18	-0.1168E 00	-0.1277E 00	0.1578E-03
19	-0.1169E 00	-0.1274E 00	-0.3889E-03
20	-0.1166E 00	-0.1270E 00	-0.9101E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 611

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	9406.	-770.	-29066.	-12225.	47878.	10685.
2	9403.	-1256.	-27452.	-12233.	46258.	9722.
3	9400.	-1700.	-25877.	-12212.	44678.	8811.
4	9398.	-2106.	-24342.	-12163.	43137.	7952.
5	9395.	-2474.	-22849.	-12088.	41638.	7141.
6	9392.	-2805.	-21400.	-11991.	40183.	6380.
7	9389.	-3103.	-19996.	-11872.	38773.	5667.
8	9386.	-3368.	-18636.	-11734.	37408.	4998.
9	9382.	-3601.	-17325.	-11578.	36090.	4376.
10	9379.	-3805.	-16061.	-11407.	34820.	3797.
11	9376.	-3981.	-14844.	-11221.	33597.	3260.
12	9373.	-4129.	-13677.	-11023.	32424.	2764.
13	9370.	-4252.	-12560.	-10813.	31300.	2310.
14	9367.	-4350.	-11491.	-10594.	30226.	1893.
15	9364.	-4426.	-10474.	-10367.	29203.	1516.
16	9361.	-4479.	-9507.	-10133.	28230.	1175.
17	9358.	-4511.	-8590.	-9892.	27307.	870.
18	9356.	-4524.	-7725.	-9647.	26436.	600.
19	9353.	-4517.	-6910.	-9398.	25616.	364.
20	9350.	-4492.	-6146.	-9145.	24846.	161.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 611 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	10245.		29066.	* *	47878.	* *
2	10725.		27452.	*	46258.	* *
3	11164.		25877.	*	44678.	* *
4	11563.		24342.	*	43137.	* *
5	11925.		22849.	*	41638.	* *
6	12250.		21400.	*	40183.	* *
7	12541.		19996.	*	38773.	* *
8	12800.		18636.		37408.	* *
9	13027.		17325.		36090.	* *
10	13225.		16061.		34820.	* *
11	13394.		14844.		33597.	* *
12	13537.		13677.		32424.	* *
13	13654.		12560.		31300.	* *
14	13746.		11491.		30226.	* *
15	13816.		10474.		29203.	* *
16	13864.		10133.		28230.	*
17	13891.		9892.		27307.	*
18	13898.		9647.		26436.	*
19	13886.		9398.		25616.	*
20	13857.		9145.		24846.	*

HANFORD NO. 2 CONTAINMENT VESSEL II.8.1.119
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 612

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11791.	23012.	-17388.	-5130.	600.
2	11792.	21040.	-17003.	-5019.	613.
3	11794.	19158.	-16611.	-4906.	623.
4	11794.	17366.	-16214.	-4791.	631.
5	11795.	15660.	-15812.	-4674.	637.
6	11795.	14040.	-15408.	-4557.	641.
7	11794.	12502.	-15002.	-4439.	643.
8	11794.	11044.	-14595.	-4320.	643.
9	11793.	9665.	-14189.	-4202.	641.
10	11791.	8361.	-13784.	-4084.	638.
11	11789.	7132.	-13382.	-3967.	633.
12	11787.	5974.	-12983.	-3850.	627.
13	11785.	4886.	-12589.	-3735.	620.
14	11783.	3865.	-12200.	-3621.	611.
15	11780.	2909.	-11817.	-3509.	601.
16	11777.	2017.	-11442.	-3399.	589.
17	11774.	1186.	-11073.	-3291.	577.
18	11771.	414.	-10712.	-3185.	564.
19	11768.	-301.	-10360.	-3082.	550.
20	11764.	-961.	-10017.	-2981.	535.

HANFORD NO. 2 CONTAINMENT VESSEL II 3.1.120
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 612

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.3174E 00	-0.1349E 00	0.4768E-01
2	0.2880E 00	-0.1351E 00	0.4551E-01
3	0.2599E 00	-0.1354E 00	0.4339E-01
4	0.2331E 00	-0.1356E 00	0.4132E-01
5	0.2076E 00	-0.1357E 00	0.3930E-01
6	0.1834E 00	-0.1358E 00	0.3733E-01
7	0.1603E 00	-0.1359E 00	0.3541E-01
8	0.1385E 00	-0.1359E 00	0.3354E-01
9	0.1178E 00	-0.1359E 00	0.3173E-01
10	0.9830E-01	-0.1359E 00	0.2996E-01
11	0.7985E-01	-0.1358E 00	0.2825E-01
12	0.6245E-01	-0.1357E 00	0.2659E-01
13	0.4610E-01	-0.1356E 00	0.2498E-01
14	0.3073E-01	-0.1355E 00	0.2341E-01
15	0.1633E-01	-0.1353E 00	0.2190E-01
16	0.2876E-02	-0.1351E 00	0.2043E-01
17	-0.9680E-02	-0.1349E 00	0.1901E-01
18	-0.2135E-01	-0.1347E 00	0.1764E-01
19	-0.3218E-01	-0.1344E 00	0.1631E-01
20	-0.4218E-01	-0.1342E 00	0.1502E-01

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 612

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	9432.	18409.	-57336.	-1289.	76201.	38108.
2	9434.	16832.	-55858.	-2441.	74726.	36104.
3	9435.	15326.	-54353.	-3512.	73222.	34164.
4	9436.	13893.	-52827.	-4503.	71698.	32289.
5	9436.	12528.	-51284.	-5421.	70156.	30477.
6	9436.	11232.	-49731.	-6266.	68603.	28730.
7	9436.	10002.	-48171.	-7043.	67042.	27046.
8	9435.	8835.	-46609.	-7754.	65479.	25425.
9	9434.	7732.	-45051.	-8403.	63919.	23867.
10	9433.	6689.	-43497.	-8993.	62363.	22371.
11	9431.	5706.	-41955.	-9525.	60818.	20937.
12	9430.	4779.	-40426.	-10005.	59286.	19564.
13	9428.	3909.	-38915.	-10433.	57772.	18251.
14	9426.	3092.	-37424.	-10813.	56276.	16997.
15	9424.	2327.	-35955.	-11147.	54803.	15802.
16	9422.	1614.	-34514.	-11438.	53357.	14665.
17	9419.	948.	-33100.	-11688.	51939.	13585.
18	9417.	331.	-31719.	-11899.	50552.	12562.
19	9414.	-241.	-30369.	-12075.	49197.	11593.
20	9411.	-769.	-29055.	-12216.	47878.	10679.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 612 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	18464.		57336.	* *	76201.	* * *
2	16889.		55858.	* *	74726.	* * *
3	15385.		54353.	* *	73222.	* * *
4	13953.		52827.	* *	71698.	* * *
5	12590.		51284.	* *	70156.	* * *
6	11295.		49731.	* *	68603.	* * *
7	10064.		48171.	* *	67042.	* * *
8	9560.		46609.	* *	65479.	* * *
9	9559.		45051.	* *	63919.	* * *
10	9556.		43497.	* *	62363.	* * *
11	9553.		41955.	* *	60818.	* * *
12	9549.		40426.	* *	59286.	* * *
13	9545.		38915.	* *	57772.	* *
14	9539.		37424.	* *	56276.	* *
15	9534.		35955.	* *	54803.	* *
16	9527.		34514.	* *	53357.	* *
17	9521.		33100.	* *	51939.	* *
18	9514.		31719.	* *	50552.	* *
19	9701.		30369.	* *	49197.	* *
20	10223.		29055.	* *	47878.	* *

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

II. 3.1.22

BODY NO. 613

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11604.	79475.	-19227.	-5569.	-379.
2	11624.	75560.	-19436.	-5638.	-299.
3	11642.	71751.	-19596.	-5692.	-224.
4	11659.	68047.	-19711.	-5733.	-154.
5	11675.	64446.	-19782.	-5760.	-88.
6	11690.	60955.	-19814.	-5776.	-26.
7	11704.	57570.	-19808.	-5780.	31.
8	11716.	54290.	-19767.	-5774.	85.
9	11728.	51118.	-19694.	-5758.	134.
10	11738.	48052.	-19591.	-5733.	180.
11	11748.	45089.	-19460.	-5699.	222.
12	11756.	42233.	-19304.	-5658.	261.
13	11764.	39480.	-19125.	-5610.	296.
14	11771.	36829.	-18925.	-5555.	328.
15	11777.	34280.	-18706.	-5495.	357.
16	11782.	31832.	-18469.	-5429.	383.
17	11787.	29482.	-18218.	-5359.	406.
18	11791.	27230.	-17952.	-5285.	426.
19	11794.	25075.	-17676.	-5206.	443.
20	11797.	23013.	-17389.	-5125.	458.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EC

BODY NO. 613

STATION	NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.1160E 01	-0.1142E 00	0.9358E-01
2	0.1102E 01	-0.1158E 00	0.9113E-01
3	0.1046E 01	-0.1172E 00	0.8867E-01
4	0.9905E 00	-0.1186E 00	0.8618E-01
5	0.9369E 00	-0.1200E 00	0.8369E-01
6	0.8850E 00	-0.1212E 00	0.8118E-01
7	0.8346E 00	-0.1223E 00	0.7868E-01
8	0.7857E 00	-0.1234E 00	0.7618E-01
9	0.7385E 00	-0.1244E 00	0.7369E-01
10	0.6928E 00	-0.1253E 00	0.7121E-01
11	0.6486E 00	-0.1262E 00	0.6874E-01
12	0.6060E 00	-0.1270E 00	0.6629E-01
13	0.5650E 00	-0.1277E 00	0.6387E-01
14	0.5254E 00	-0.1283E 00	0.6146E-01
15	0.4874E 00	-0.1289E 00	0.5909E-01
16	0.4508E 00	-0.1295E 00	0.5674E-01
17	0.4157E 00	-0.1299E 00	0.5443E-01
18	0.3821E 00	-0.1304E 00	0.5214E-01
19	0.3499E 00	-0.1307E 00	0.4990E-01
20	0.3190E 00	-0.1311E 00	0.4768E-01

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 613

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	9283.	63580.	-64549.	42195.	83116.	84964.
2	9299.	60448.	-65335.	38800.	83933.	82097.
3	9314.	57400.	-65935.	35543.	84563.	79258.
4	9328.	54437.	-66361.	32424.	85016.	76450.
5	9340.	51557.	-66624.	29438.	85304.	73676.
6	9352.	48764.	-66733.	26585.	85437.	70943.
7	9363.	46056.	-66699.	23861.	85426.	68252.
8	9373.	43432.	-66533.	21260.	85279.	65603.
9	9382.	40894.	-66243.	18784.	85008.	63004.
10	9391.	38442.	-65839.	16428.	84620.	60456.
11	9398.	36071.	-65330.	14186.	84126.	57957.
12	9405.	33786.	-64724.	12059.	83534.	55514.
13	9411.	31584.	-64030.	10042.	82852.	53127.
14	9417.	29463.	-63255.	8130.	82088.	50796.
15	9422.	27424.	-62408.	6323.	81251.	48525.
16	9426.	25466.	-61496.	4617.	80348.	46315.
17	9430.	23585.	-60526.	3007.	79385.	44164.
18	9433.	21784.	-59505.	1492.	78370.	42077.
19	9435.	20060.	-58439.	67.	77310.	40053.
20	9438.	18411.	-57334.	-1270.	76210.	38091.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EC

BODY NO. 613   DESIGN STRESS INTENSITY =   19300.

STATION	MID-SURFACE SI	T1T2T3	OUTSIDE SURFACE SI	T1T2T3	INSIDE SURFACE SI	T1T2T3
1	63602.	* * *	106745.	* * *	84964.	* * *
2	60462.	* * *	104134.	* * *	83933.	* * *
3	57408.	* *	101478.	* * *	84563.	* * *
4	54441.	* *	98785.	* * *	85016.	* * *
5	51558.	* *	96061.	* * *	85304.	* * *
6	48764.	* *	93318.	* * *	85437.	* * *
7	46056.	* *	90560.	* * *	85426.	* * *
8	43433.	* *	87793.	* * *	85279.	* * *
9	40897.	* *	85027.	* * *	85008.	* * *
10	38447.	* *	82267.	* * *	84620.	* * *
11	36079.	* *	79515.	* * *	84126.	* * *
12	33797.	* *	76782.	* * *	83534.	* * *
13	31598.	* *	74071.	* * *	82852.	* * *
14	29479.	* *	71385.	* * *	82088.	* * *
15	27444.	*	68731.	* * *	81251.	* * *
16	25488.	*	66113.	* * *	80348.	* * *
17	23610.	*	63532.	* * *	79385.	* * *
18	21812.	*	60996.	* * *	78370.	* * *
19	20090.	*	58507.	* * *	77310.	* * *
20	18442.		57334.	* *	76210.	* * *

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EG

BODY NO. 614

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	10870.	169638.	0.	301.	-3056.
2	10927.	164422.	-1861.	-259.	-2869.
3	10981.	159213.	-3607.	-785.	-2688.
4	11033.	154031.	-5240.	-1278.	-2513.
5	11083.	148875.	-6766.	-1739.	-2345.
6	11130.	143761.	-8186.	-2169.	-2183.
7	11176.	138689.	-9507.	-2569.	-2026.
8	11219.	133674.	-10730.	-2940.	-1876.
9	11261.	128714.	-11862.	-3284.	-1732.
10	11300.	123823.	-12904.	-3602.	-1594.
11	11338.	118999.	-13861.	-3895.	-1462.
12	11373.	114255.	-14736.	-4163.	-1335.
13	11407.	109587.	-15534.	-4408.	-1215.
14	11439.	105007.	-16257.	-4630.	-1099.
15	11469.	100511.	-16910.	-4832.	-990.
16	11498.	96111.	-17495.	-5014.	-885.
17	11525.	91802.	-18016.	-5176.	-786.
18	11550.	87594.	-18476.	-5321.	-692.
19	11574.	83482.	-18878.	-5448.	-603.
20	11597.	79472.	-19227.	-5559.	-519.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 614

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.2501E 01	-0.5016E-01	0.1228E 00
2	0.2424E 01	-0.5383E-01	0.1227E 00
3	0.2347E 01	-0.5739E-01	0.1223E 00
4	0.2270E 01	-0.6082E-01	0.1218E 00
5	0.2194E 01	-0.6413E-01	0.1210E 00
6	0.2118E 01	-0.6732E-01	0.1201E 00
7	0.2042E 01	-0.7039E-01	0.1189E 00
8	0.1968E 01	-0.7335E-01	0.1176E 00
9	0.1894E 01	-0.7618E-01	0.1162E 00
10	0.1822E 01	-0.7890E-01	0.1146E 00
11	0.1750E 01	-0.8151E-01	0.1129E 00
12	0.1679E 01	-0.8400E-01	0.1111E 00
13	0.1610E 01	-0.8638E-01	0.1092E 00
14	0.1542E 01	-0.8866E-01	0.1072E 00
15	0.1475E 01	-0.9083E-01	0.1051E 00
16	0.1410E 01	-0.9289E-01	0.1029E 00
17	0.1345E 01	-0.9485E-01	0.1007E 00
18	0.1283E 01	-0.9671E-01	0.9835E-01
19	0.1221E 01	-0.9848E-01	0.9599E-01
20	0.1162E 01	-0.1001E 00	0.9358E-01

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 614

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8696.	135711.	8697.	136866.	8695.	134555.
2	8741.	131537.	1596.	130542.	15887.	132532.
3	8785.	127371.	-5066.	124355.	22636.	130386.
4	8826.	123225.	-11295.	118318.	28947.	128132.
5	8866.	119100.	-17114.	112423.	34846.	125777.
6	8904.	115009.	-22530.	106682.	40338.	123336.
7	8941.	110951.	-27566.	101087.	45447.	120816.
8	8975.	106939.	-32229.	95648.	50179.	118230.
9	9009.	102971.	-36541.	90359.	54558.	115584.
10	9040.	99059.	-40510.	85227.	58590.	112890.
11	9070.	95199.	-44157.	80244.	62297.	110154.
12	9099.	91404.	-47489.	75419.	65686.	107388.
13	9126.	87669.	-50526.	70744.	68777.	104595.
14	9151.	84005.	-53277.	66225.	71579.	101786.
15	9176.	80409.	-55759.	61853.	74110.	98965.
16	9198.	76889.	-57981.	57636.	76378.	96142.
17	9220.	73442.	-59961.	53564.	78401.	93319.
18	9240.	70075.	-61707.	49644.	80187.	90506.
19	9259.	66785.	-63234.	45866.	81753.	87705.
20	9277.	63578.	-64553.	42232.	83108.	84923.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF S.C. CYLINDER
VESSEL SUBJECTED TO INTERNAL PRESSURE + S.C. WATER + 1/2 SSE EQ

BODY NO. 614   DESIGN STRESS INTENSITY =   19300.

STATION	MID-SURFACE SI	T1T2T3	OUTSIDE SURFACE SI	T1T2T3	INSIDE SURFACE SI	T1T2T3
1	137051.	* * *	136866.	* * *	134555.	* * *
2	132730.	* * *	130542.	* * *	132532.	* * *
3	128428.	* * *	129422.	* * *	130386.	* * *
4	124157.	* * *	129613.	* * *	128132.	* * *
5	119918.	* * *	129537.	* * *	125777.	* * *
6	115722.	* * *	129211.	* * *	123336.	* * *
7	111570.	* * *	128653.	* * *	120816.	* * *
8	107472.	* * *	127877.	* * *	118230.	* * *
9	103428.	* * *	126900.	* * *	115584.	* * *
10	99447.	* * *	125737.	* * *	112890.	* * *
11	95527.	* * *	124401.	* * *	110154.	* * *
12	91678.	* * *	122908.	* * *	107388.	* * *
13	87896.	* * *	121270.	* * *	104595.	* * *
14	84192.	* * *	119501.	* * *	101786.	* * *
15	80560.	* * *	117612.	* * *	98965.	* * *
16	77010.	* * *	115617.	* * *	96142.	* * *
17	73537.	* * *	113525.	* * *	93319.	* * *
18	70149.	* * *	111350.	* * *	90506.	* * *
19	66842.	* * *	109100.	* * *	87705.	* * *
20	63619.	* * *	106785.	* * *	84923.	* * *

SHELL TENSION DESIGN

THE PRECEDING COMPUTER ANALYSIS GIVES TENSILE STRESSES IN THE SHELL DUE TO INTERNAL PRESSURE, SUPPRESSION CHAMBER WATER, AND VERTICAL EARTHQUAKE DOWN. FROM THE SPECIFICATION (REFERENCE 1) THE FOLLOWING SHEARS EXIST AT THE BOTTOM OF EACH CYLINDRICAL COURSE:

CYLINDER #1	SHEAR = 7.15×10^3 kips
CYLINDER #2	SHEAR = 7.15×10^3 kips
CYLINDER #3	SHEAR = 7.25×10^3 kips
CYLINDER #4	SHEAR = 8.20×10^3 kips

OR, THE SHEAR STRESSES ARE:

CYLINDER #1	$\tau_V = 3366.$ psi*
CYLINDER #2	$\tau_V = 3534.$ psi
CYLINDER #3	$\tau_V = 3413.$ psi
CYLINDER #4	$\tau_V = 3524.$ psi

BY DEFINITION, PRINCIPAL STRESSES ARE

$$\sigma = \frac{S_X + S_Y}{2} \pm \sqrt{\left(\frac{S_X - S_Y}{2}\right)^2 + (S_{XY})^2}$$

IF THE Q-PHI STRESSES ARE IGNORED IN THE AX-2 PRINTOUT (THIS IS JUSTIFIABLE IN THAT THEY ARE SMALL), THEN THE STRESS INTENSITIES FOR EACH COURSE ARE CALCULATED AS FOLLOWS:

CYLINDER #1	$S_X = 18122.$	$S_Y = 8835.$	S.I. = 19414.
CYLINDER #2	$S_X = 18718.$	$S_Y = 9277.$	S.I. = 19894.
CYLINDER #3	$S_X = 18783.$	$S_Y = 8834.$	S.I. = 19841.
CYLINDER #4	$S_X = 18161.$	$S_Y = 8065.$	S.I. = 19269.

*$\tau_T = V/\pi R t$ W/ R & t FROM PAGE II.8.1.140

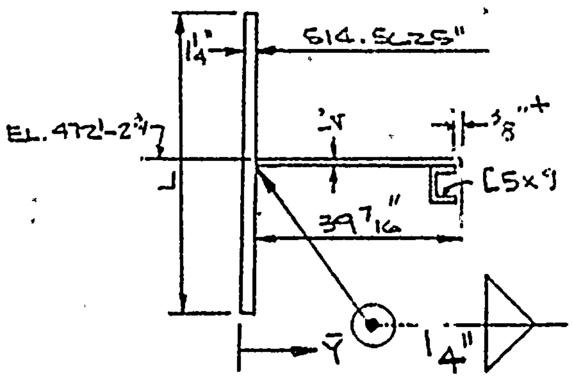
CYLINDERS 1 AND 4 ARE STRESSED UNDER THE ALLOWABLE OF 19300. psi. CYLINDERS 2 AND 3 APPEAR TO BE OVERSTRESSED. HOWEVER, FROM REFERENCE 2 (THE ASME CODE) THE STRESS LEVEL CAN BE ALLOWED UP TO $1.1 S_M$ FOR A DISTANCE OF $2.5\sqrt{Rt}$, IF ANOTHER "OVERSTRESSED" AREA IS NOT ENCOUNTERED WITHIN $2.5\sqrt{Rt}$ ALONG THE MERIDIONAL DIRECTION. FOR CYLINDER #2, FROM THE BODY STRESS OUTPUT OF THE AXZ PROGRAM, THE OVERSTRESSED AREA IS FROM STATION 1 TO STATION 13*, OR A LENGTH OF 12/19 * 83.40625 = 52.7 IN. THE VALUE OF $2.5\sqrt{Rt}$ W/ R = 515.1875 AND t = 1.25 IS 63.4 IN. THE NEXT "OVERSTRESSED" REGION IS ALSO GREATER THAN $2.5\sqrt{Rt}$ AWAY. FOR CYLINDER #3, THE "OVERSTRESSED" AREA IS FROM STATION 7 TO STATION 20**, OR A LENGTH OF 13/19 * 82.84375 = 56.7 IN. THE CYLINDER THEREFORE APPEARS ADEQUATE.

*BODY 606
**BODY 600

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: II
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 8
PREPARED BY / DATE: RAM/11-21-72	DCL/7-1-73				ARTICLE: 1
CHECKED BY / DATE: BJW / 1-9-73	RAM/8-5-73				PAGE: 133
REVISION NUMBER:	A				

WALKWAY - CIRCUMFERENTIAL RING STIFFENER (EL. 472'-2 3/4")

ACCORDING TO REFERENCE 1, DRAWING 5794, THE ELEVATION TO THE PLATFORM T.O.S. IS 472'-2 3/4".* USING THE RING STIFFENER AS THE FLOOR PLATE, THE STIFFENER WILL BE DESIGNED IN ACCORDANCE WITH REFERENCE 2, ASSUMING ADDITIONAL CIRCUMFERENTIAL STIFFENING AT EL. 486'-7 7/8" AND A SUPPORT AT EL. 443'-0"



$D_o = 2 * 515.8125 = 1031.625$

$L_s = \frac{1}{2}[(486'-7\frac{7}{8} - 472'-2\frac{3}{4}) + (472'-2\frac{5}{8} - 443'-0")]$

$L_s = 261.9375$

$T = 1.25"$

$L = 1.10\sqrt{D_o T} = 39.50"$

$A_s = (39.50)(1.25) + (39\frac{7}{16})(\frac{1}{4}) + 2.64 =$ [illegible] in^2

$$\bar{Y} = \frac{(39.50)(1.25)(1.25/2) + (39\frac{7}{16})(\frac{1}{4})(20.96) + (2.64)(33.31)}{A_s}$$

$\bar{Y} = 5.50"$

$$I = (39.50)(1\tfrac{1}{4})(4.875)^2 + \frac{(\frac{1}{4})(39\frac{7}{16})^3}{12} + (\tfrac{1}{4})(39\tfrac{7}{16})(15.47)^2$$

$+ 0.632 + 2.64(33.41)^2 = 7758.\ IN^4$

$$B = \frac{3}{4}\left[\frac{P D_o}{T + A_s/L_s}\right] = 2082.\ \text{FOR } 4\ psi$$

FROM FIG. VII-1100-2 OF REF. 2, A = 0.00014

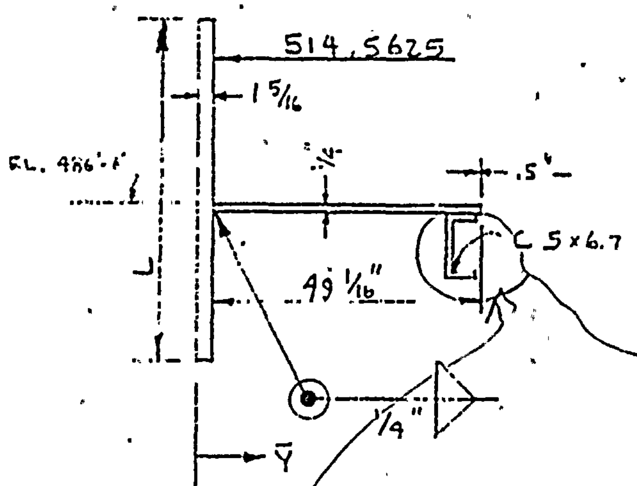
$$I_s = \frac{D_o^2 L_s (T + A_s/L_s) A}{10.9} = 5321.\ in^4 < I_{SUPPLIED}$$

∴ USE ABOVE STIFFENER

* + 1 1/4" FOR GRATING

WALKWAY - CIRCUMFERENTIAL RING STIFFENER AT ELEVATION 486'-8"

ACCORDING TO REFERENCE 1, DRAWING [illegible], THE ELEVATION TO THE PLATFORM T.O.S. IS 486'-8". USING THE RING STIFFENER AS THE FLOOR PLATE, THE STIFFENER WILL BE DESIGNED IN ACCORDANCE WITH REFERENCE 2, ASSUMING ADDITIONAL CIRCUMFERENTIAL STIFFENERS AT EL. 516'-6" AND AT EL. 472'-2 5/8"



$D_o = 2 \times 515.875 = 1031.75$

$L_s = \frac{1}{2}\left[(516'-6" - 486'-7\frac{7}{8}") + (486'-7\frac{7}{8}" - 472'-2\frac{5}{8}")\right]$

$L_s = 265.6875$

$T = 1.3125$

$L = 1.10\sqrt{D_o T} = 40.48"$

$A_s = 40.48(1.3125) + 49\frac{1}{16}(.25) + 1.97 = 67.366$

$$\bar{Y} = \frac{(40.48)(1.3125)(1.3125/2) + (49\frac{1}{16})(.25)(25.84375) + (1.97)(42.009)}{A_s}$$

$\bar{Y} = 6.645"$

$I = (40.48)(1.3125)(5.99)^2 + \frac{(.25)(49\frac{1}{16})^3}{12} + .25(49\frac{1}{16})(19.19)^2 + 9.478 + 1.97(41.964)^2 = 12,357.\ in^4$

BY INSPECTION THE VALUE OF I FOR THE STIFFENER AT EL. 486'-8" WILL SATISFY THE REQUIREMENTS OF PARAGRAPH NE 3133.5 [illegible] I VALUE OF 12,357 IN.⁴ FOR THE STIFFENER AT EL. 486'-8" IS CONSIDERABLY GREATER THAN THE I VALUE OF 7758 IN⁴ AT EL. 472'-2 5/8 WHICH WAS ADEQUATE. ∴ USE ABOVE STIFFENER

EXTERNAL PRESSURE

ACCORDING TO PARAGRAPH 3.4.1.5 OF REFERENCE 1, THE VESSEL IS SUBJECTED TO 4 psi EXTERNAL PRESSURE. THE FOLLOWING DESIGN IS BASED ON PARAGRAPH NE-3133.3 OF REFERENCE 2:

FOR THE 1 5/16" CYLINDER, THE LENGTH BETWEEN STIFFENERS OR POINTS OF SUPPORT IS FROM EL. 472'-2 5/8 TO EL 443'-0 (BOTTOM OF SAND FILL)

$L = 350.625$
$D_o = 2(514.5 + 1\frac{5}{16}) = 1031.625$
$T = 1.25$
$L/D_o = 0.340$
$D_o/T = 825.3$

FROM FIGURE VII-1100-2 OF REF. 2, B = 2550, AND,

$$P_A = \frac{4B}{3D_o/T} = 4.12 > 4 \text{ psi} \therefore OK$$

FOR THE 1 3/8" CYLINDER ABOVE ELEV 486'-7 7/8", THE LENGTH BETWEEN STIFFENERS OR POINTS OF SUPPORT IS FROM EL. 486'-7 7/8" TO EL. 516'-6" (PIPE WHIP RING ℄).

$L = 358.125$
$D_o = 2(514.5 + 1\frac{3}{8}) = 1031.75$
$T = 1.3125$
$L/D_o = 0.347$
$D_o/T = 786.1$

FROM FIGURE VII-1100-2 OF REF 2, B = 2750 . AND

EQN $$P_A = \frac{4B}{3D_o/T} = 4.66 > 4 \text{ PSI} \therefore OK$$

GRAVITY LOADS:

A. WELDING PAD LIVE LOADS — PARAGRAPH 3.1.8 OF THE SPECIFICATION (REFERENCE 1) STATES THAT ALL PADS ARE LOADED WITH 1500 #/FT. FROM FIGURE I.3.2 OF SECTION I, SUBSECTION 3 OF THIS FINAL STRESS REPORT, THE WELDING PAD RADII CAN BE OBTAINED. THEREFORE, THE WELDING PAD GRAVITY LOAD EFFECT ON THE CYLINDER IS CALCULATED AS FOLLOWS:

$$G.L._A = (1500)(2\pi)/_{12} * [213.7 + 240.7 + 257.3 + 279.3 + 290.5 + 307.0 + 323.6 + 334.5 + 362.7 + 373.4 + 388.3 + 406.6 + 419.1 + 442.4 + 456.4 + 472.9 + 189.75]$$

$G.L._A = 4522.4$ kips — USE 3000 kips* ←

B. PLATFORM LIVE LOADS — DRAWING S800 OF REFERENCE 1 GIVES THE PLATFORM LIVE LOADS TRANSMITTED TO THE SHELL. THEY ARE TABULATED BELOW FOR DEAD, LIVE, AND SSE VERTICAL LOADS:

1. ELEV. 548'-6¼ — T.L. = 150 kips (IGNORING VERTICAL LOADS UP.)
2. ELEV. 541'-3¾ — T.L. = 3463 kips
3. ELEV. 524'-3⅞ — T.L. = 1290 kips
4. ELEV. 512'-9½ — T.L. = 2817 kips
5. ELEV. 486'-8" — T.L. = 360 kips (IGNORING VERTICAL LOADS UP.)
6. ELEV. 455'-4 — T.L. = 408 kips

$G.L._B = 8488.0$ kips ←

*PDM TELECON W/ BURNS & ROE DATED 11-15-72

C. VESSEL DEAD LOAD — FROM FIGURE I.3.1 OF SECTION I, SUBSECTION 3 OF THIS FINAL STRESS REPORT, THE DEAD LOAD FOR THE FOUR SUPPRESSION CHAMBER CYLINDERS IS AS FOLLOWS:

1. #1 CYLINDER — T.L. = 3434.6 Kips
2. #2 CYLINDER — T.L. = 3643.3 Kips
3. #3 CYLINDER — T.L. = 3835.9 Kips
4. #4 CYLINDER — T.L. = 4063.0 Kips

D. FILLER MATERIAL DEAD LOAD — THE FILLER MATERIAL AROUND THE CONE WILL CAUSE COMPRESSIVE STRESSES IN THE CYLINDER BELOW. THE TOTAL WEIGHT OF FILLER MATERIAL, ASSUMING A SPECIFIC WEIGHT OF 5 pcf, IS CALCULATED AS FOLLOWS:

$$W_T = 2\pi \gamma * [R_1 l_1 + R_2 l_2]$$

$$W_T = (2\pi)(5)[(239.1360 + 516.8125)/2 * 962.625 / \cos 16.0514° + (192.1640 + 239.4140)/2 * 84/\cos 29.9514°]/144$$

$$G.L._D = 87.1 \text{ kips} \leftarrow$$

E. REFUELING BELLOWS LOADS — FROM REFERENCE 1, DRAWING S799, THE LOCA REFUELING BELLOWS LOADS ARE $P_A = -30\#/in$ AND $P_B = -170\#/in$, OR TOTAL LOADS ARE:

$$G.L._{E1} = (30)(2\pi)(153)/1000 = 28.8 \text{ kips}$$

$$G.L._{E2} = (170)(2\pi)(207)/1000 = 221.1 \text{ kips}$$

OR

$$G.L._E = 249.9 \text{ kips} \leftarrow$$

F. FROM REFERENCE 1, DRAWING S800, THE MAX. PIPE RUPTURE LOAD OCCURING AT THE

PIPE WHIP SUPPORT RINGS IS

$G.L._F = 561.$ kips ←

G. JET LOAD — FROM REFERENCE 1, PARAGRAPH 3.4.3, MAXIMUM JET LOAD IS

$G.L._G = 534.0$ kips ←

H. SEAL FLANGE LOAD — FROM REFERENCE 1, DRAWING 5799, THE VERTICAL SEAL LOAD IS 350#/IN, OR, WITH $\bar{R} \doteq 514.5 - 9 = 505.5$ IN,

$G.L._H = (350)(2\pi)(505.5)/1000 = 1111.7$ kips ←

hand calc. $\frac{P}{A} + \frac{MC}{I}$

LONGITUDINAL COMPRESSION:

THE SUPPRESSION CHAMBER CYLINDER LONGITUDINAL COMPRESSION ANALYSIS WILL BE BASED ON THE LOAD COMBINATION SPECIFIED AS ACCIDENT CONDITION APPEARING IN PARAGRAPH 3.4.1.6 OF REFERENCE 1. THE TWO CONDITIONS WHICH WILL BE USED FOR THIS ANALYSIS ARE SSE EARTHQUAKE AND THE NEGATIVE 2 psig INTERNAL PRESSURE AT 135°F. THE ENCLOSED "GRAVITY LOAD" PAGES CALCULATE THE GRAVITY LOADS TO BE USED:

1. WELDING PAD L.L. = 3000.0 kips
2. PLATFORM L.L. = 8488.0 kips
3. VESSEL D.L. = 3434.6 kips @ #1
   3643.3 kips @ #2
   3835.9 kips @ #3
   4063.0 kips @ #4
4. FILLER MAT'L D.L. = 87.1 kips
5. REFUELING BELLOWS = 249.9 kips
6. PIPE RUPTURE = 561.0 kips } USE LARGER OF
7. JET LOAD = 534.0 kips }
8. SEAL LOAD = 1111.7 kips

FROM REFERENCE 1, FIGURE 5, THE MAXIMUM VERTICAL "G" LOAD IS 0.45. OR INCREASING THE GRAVITY LOADS FOR ITEMS 3 THRU 5, 1 AND 8 BY THIS FACTOR, THE RESULTING GRAVITY LOADS ARE AS FOLLOWS:

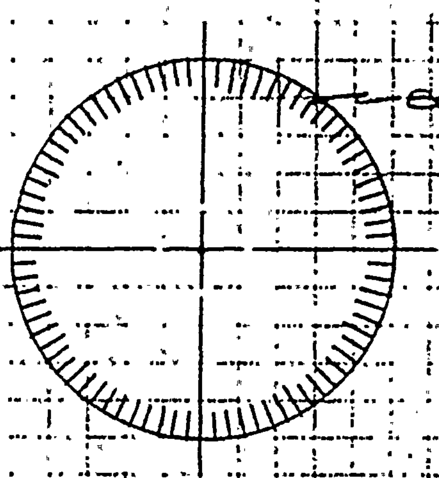
#1 CYLINDER — 20,479.8 kips
#2 CYLINDER — 20,782.4 kips
#3 CYLINDER — 21,069.7 kips
#4 CYLINDER — 21,394.0 kips

THE NEGATIVE 2 psig INTERNAL PRESSURE ADDS A LONGITUDINAL COMPRESSIVE LOAD OF $P\pi R^2$ = $(2)(\pi)(514.5)^2/1000$ = 1663.2 kips. FROM FIGURE 9 OF REFERENCE 1, THE MAXIMUM BENDING MOMENTS FOR THE FOUR CYLINDER COURSES ARE:

#1 CYLINDER — $310 * 10^3 * 12 * 10^3 = 3.72 * 10^9$ IN#
#2 CYLINDER — $410 * 12 * 10^6 = 4.92 * 10^9$ IN#
#3 CYLINDER — $530 * 12 * 10^6 = 6.36 * 10^9$ IN#
#4 CYLINDER — $620 * 12 * 10^6 = 7.44 * 10^9$ IN#

THE FILLER MATERIAL ALSO ADDS A 2 psig EXTERNAL PRESSURE LOAD OVER AN AREA OF $\pi(514.5^2 - 190^2)$, OR, THE EFFECTIVE LOAD IS 1436.4 kips

USING THE THICKNESSES REQUIRED FOR INTERNAL PRESSURE, AND 80 STRUCTURAL T's FOR ADDITIONAL SUPPORT, THE VESSEL GEOMETRY WILL BE AS FOLLOWS:



60-WT8x18 — $A = 5.3 IN^2$, $I = 30.8 IN^4$

$A_s = 2\pi R_M t + \Sigma A$

$I_s = \pi R_M^3 t + \Sigma A d^2$

FOR I_s, $d^2 = 2((r)(\cos 0°))^2 + 4 * [(r * \cos 4\frac{1}{2}°)^2 + (r * \cos 9°)^2 + (r * \cos 13\frac{1}{2}°)^2 + \ldots + (r * \cos 81°)^2 + (r * \cos 85\frac{1}{2}°)^2] + (r * \cos 90°)^2 * 2$

FOR ABOVE T's, $r = 514.5 - 7.93 + 1.89$
$r = 508.46$ IN

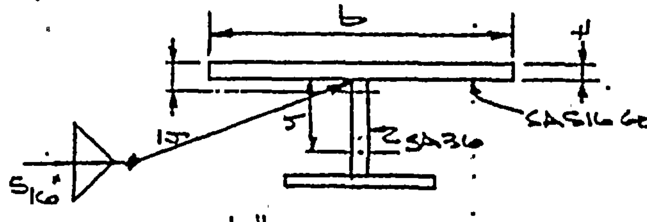
$\therefore d^2 = 10,341,263 IN^2$

COURSE	Ad^2	R_M	t	I_s	A_s
#1	54,808,694	515.21875	1.3125	$618.74 * 10^6$	4673.
#2	"	515.1875	1.25	$591.79 * 10^6$	4470.
#3	"	515.21875	1.3125	$618.74 * 10^6$	4673.
#4	"	515.28125	1.4375	$672.67 * 10^6$	5078.

OR, STRESSES ARE CALCULATED AS $\sigma = \frac{My}{I_s} + \frac{P}{A_s}$

$\sigma_1 = 3102. + 5046. = 8148.$ psi
$\sigma_2 = 4288. + 5343. = 9631.$ psi
$\sigma_3 = 5303. + 5170. = 10,473.$ psi
$\sigma_4 = 5707. + 4823. = 10,530.$ psi

THE SHELL-"T" COMBINED VERTICAL STIFFENER WILL BE ANALYZED USING THE AISC MANUAL (REFERENCE 3) AS A FORMAT.



W/ b EQUAL TO THE SMALLER OF $2t \times 95/\sqrt{F_Y}$ OR $2\pi R_M/80$; WHERE THE FIRST FORMULA IS FROM REFERENCE 3. USE F_Y FROM REFERENCE 2 AT 135°F, OR $F_Y = 36.81$ ksi

$y = 1/16'' + 7.93 - 1.89 = 6.10''$

$C_c = \sqrt{\frac{2\pi^2 E}{F_Y}} = 128.68$ W/ $E = 27.9 \times 10^6$ psi & $F_Y = 33,260$ psi @340°F, BOTH FROM REFERENCE 2

ASSUME COLUMN LENGTH FROM EL. 472'-2 1/2 TO EL. 453'-4 3/8, OR 226 1/8 IN. FOR THE LOWER COURSES, AND FROM EL. 486'-7 3/4" TO EL. 472'-2 3/4", OR, 173" IN. FOR THE UPPER. ALSO, ASSUME K=1.0; I.E. A PINNED-PINNED COLUMN.

CYLINDER	t	b	A	$\bar{y}$	I
#1	1 5/16	40.465*	58.410	1.269	258.40
#2	1 1/4	39.145	54.231	1.282	253.44
#3	1 5/16	40.465*	58.410	1.269	258.40
#4	1 7/16	40.470**	63.476	1.288	266.67

*STIFFENED SHELL LEN. = 41.103" **STIFFENED SHELL LEN. = 45.67"

CYLINDER	r	KL/r	σ_{ALL}
#1	2.10	82.38	14,102.
#2	2.16	104.61	11,651.
#3	2.10	107.68	11,328.
#4	2.05	110.30	11,023.

} BASED ON TABLE 1-A OF REFERENCE 3 W/ LINEAR INTERPOLATION

COMPARING THE ABOVE ALLOWABLES WITH THE STRESSES PRESENTED ON THE PREVIOUS PAGE SHOWS THAT THE STIFFENED SHELL IS ADEQUATE. IT SHOULD BE NOTED THAT THE SSE EARTHQUAKE WAS USED, BUT A 1/3 INCREASE WAS NOT INCLUDED IN THE

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764	FINAL STRESS REPORT	SECTION: II
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL			SUBSEC: 8
PREPARED BY / DATE: RAM/11-21-72			ARTICLE: L
CHECKED BY / DATE: BJW/1-9-73			PAGE: 142
REVISION NUMBER:			

ALLOWABLES. THIS FURTHER SUBSTANTIATES THE DESIGN.

ANOTHER PROCEDURE TO GRASP THE STRESS PICTURE IN THE STIFFENED SHELL IS TO SOLVE FOR AN "EFFECTIVE THICKNESS", ASSUMING THAT THE MOMENT OF INERTIA OF THE EFFECTIVE SECTION EQUALS THE MOMENT OF INERTIA OF THE STIFFENED SHELL. THIS EFFECTIVE THICKNESS WILL THEN BE USED TO OBTAIN AN ALLOWABLE LONGITUDINAL COMPRESSIVE STRESS FROM REFERENCE 2.

$$\therefore \; b t_e^3/12 = I_s \quad \text{OR} \quad t_e = (12 I_s / b)^{1/3}$$

CYLINDER	I_s	b	t_e	$R_m/100t_e$	B
#1	258.40	40.465	4.25	1.21	12,000.
#2	253.44	39.145	4.27	1.21	12,000.
#3	258.40	40.465	4.25	1.21	13,000.
#4	266.07	40.470	4.29	1.20	12,000.

AS SEEN, EVEN WITHOUT THE ALLOWED 20% INCREASE IN THE ALLOWABLE, THE SHELL-T SECTION IS OVER-DESIGNED.

PITTSBURGH-DES MOINES STEEL COMPANY

ENG. COPY

8108250495

FOR STAMP.
SEE REVERSE
OF REVISED PAGE

FINAL STRESS REPORT

B & R
FILE NUMBER
213-00-0455

SECTION IV

SUBSECTION 10
REV. A (10-18-73)
REV. B (11-21-73)
REV. C (1-9-74)

DESIGN OF
LOWER TOP HEAD FLANGE,
SHELL, AND SEAL SUPPORT

THIS SUBSECTION REVIEWED BY: J. F. Strunk

TITLE: PROJECT ENGINEER

Introduction:

This part of the Final Stress Report contains the analysis of the Lower Top Head Flange, Seal Support Plates, Cylindrical Shell and Upper Cone, and associated weld pads.

The report is broken down into 4 articles. Article 1 contains the design combinations which are to be examined for the above areas. Also appearing are rationale for the deletion of extensive design for the other loading combinations presented in the Design Specification.

Article 2 contains the analysis for the weld pads located on the 1 1/2" cylinder and 7/8" upper cone. Also appearing here is the analysis for the lower mating flange of the drywell head.

Article 3 contains the shell analysis for the cylinder, upper cone, and bellows support plates for the non-yield design condition, while Article 4 contains the yield design criteria jet load condition.

Conclusion:

Examining the following report, it is seen that all components are within their allowable stress values. The structure shown in Figure IV.10.1 therefore satisfies the requirement of the Design Specification (Reference 1).

PITTSBURGH - DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
					SUBSEC: 10
PREPARED BY / DATE JFS/11-6-72					ARTICLE:
CHECKED BY / DATE					PAGE: 22
REVISION NUMBER:					

List of References:

1. Burns and Roe, Inc., Bidding Documents and Plans and Specifications, Specification 2808-213 Primary Containment Vessel Contract No. 213, for WPPSS, Hanford No. 2.

2. ASME, Boiler and Pressure Vessel Code, Section III, "Nuclear Power Plant Components", 1971, including 1972 Summer Addenda, New York

3. AISC, Specification For the Design, Fabrication and Erection of Structural Steel For Buildings, "Manual of Steel Construction", Seventh Edition, New York, 1970

4. ASME, Boiler and Pressure Vessel Code, Section VIII, "Pressure Vessels", Division 1, 1971, including 1972 Summer Addenda, New York.

5. Roark, Raymond J., "Formulas For Stress and Strain", Fourth Edition, McGraw-Hill Book Company, New York, 1965

6. ASCE, Transactions, "Paper No. 3269--Wind Forces on Structures", New York, Vol. 126, 1961.

7. Wichman, K. R., et. al., Welding Research Council Bulletin No. 107, "Local Stresses in Spherical and Cylindrical Shells Due to External Loadings", Third Printing, April 1972.

8. Bijlaard, P. P., Welding Research Council Bulletin No. 50, "Additional Data on Stresses in Cylindrical Shells Under Local Loading", May 1959.

9. Blodgett, Omer W., "Design of Welded Structures", The James F. Lincoln Arc Welding Foundation, Cleveland, Ohio, 1966.

10. Logcher, R. D. et. al., ICES STRUDL - II Engineering User's Manual, Volume 1, Frame Analysis, Department of Civil Engineering, M. I. T., Cambridge, Mass. R68-91, Novmeber 1968.

11. Logcher, R. D., et. al., ICES STRUDL - II Engineering User's Manual Volume 2, Second Edition, Additional Design and Analysis Facilities, Department of Civil Engineering Research Report R70-77, Massachusetts Institute of Technology, Cambridge, Massachusetts, June 1971.

List of References: (Cont'd)

12. McDonnell-ECI STRUDL Improvements User's Manual, McDonnell Douglas Automation Company, St. Louis, Missouri, 1972.

13. Winter, George, et. al., "Design of Concrete Structures". Seventh Edition, McGraw-Hill Book Company, New York, 1964.

14. Bijlaard, P. P., "Stresses From Radial Loads and External Moments in Cylindrical Pressure Vessels", supplement to The Welding Journal, December 1955, p. 608-S to 617-S, 1955.

15. Gaylord, G. H. Jr., and Gaylord, G. N., "Design of Steel Structures", McGraw-Hill Book Company, New York, 1957.

16. The NASTRAN User's Manual, Caleb W. McCormick, Editor NASA SP-222(01), Washington, D.C., June 1972.

17. Timoshenko, S., "Strength of Materials", Part I, Third Edition, D. Van Nostran Co., Inc. Princeton, New Jersey, 1955

18. Timoshenko, S., "Strength of Materials", Part II, Third Edition, D. Van Nostran Co., Inc. Princeton, New Jersey, 1956

19. Bruhn, E. F., "Analysis and Design of Flight Vehicle Structures", Tri-State Offset Co., Cincinnati, Ohio, 1965.

LOADING COMBINATIONS

THE FOLLOWING LOADING COMBINATIONS WILL BE EXAMINED FOR THE DESIGN OF THE LOWER DRYWELL HEAD. (1½" CYLINDER, ⅞" CONE)

1. TENSION DESIGN = 45 PSI + E.Q. + LOCA SEAL LOADS + JET LOAD
2. HOOP COMPRESSION DESIGN
3. LONGITUDINAL COMPRESSION DESIGN = VESSEL D.L. + REFUELING BELLOWS LOCA LOAD + JET LOAD + SSE EARTHQUAKE ACTING VERTICALLY (g-FACTOR = 1.45) AND HORIZONTALLY + (-2) PSI + WELDING PAD L.L. (RING #1 + 2 ONLY) + FILLER MATERIAL.

COMBINATIONS 1, 2 & 3 CORRESPOND TO VARIATIONS OF THE INCIDENT CONDITION APPEARING (SPEC) ON PAGE 5A-20 OF REFERENCE 1.

THE OTHER LOADING CONDITIONS WILL NOW BE DISCUSSED AND DETERMINED AS INCONSEQUENTIAL WHEN COMPARED WITH THE ABOVE.

A. PROOF LOAD TEST CONDITION
B. FINAL PROOF LOAD TEST CONDITION
C. NORMAL OPERATING CONDITION.

LOADINGS A, B & C ARE DISCUSSED ON PAGE II.8.1.1

FOR THE 1½" CYLINDER, THE FOLLOWING LOADINGS EXIST:

PITTSBURGH - DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
PREPARED BY / DATE: JKS/1-29-73					SUBSEC: 10
CHECKED BY / DATE: BJW/8-2-73					ARTICLE: 1
REVISION NUMBER:					PAGE: 2

D. REFUELING CONDITION

1. D.L. OF VESSEL AND APPURTENANCES
2. 1/2 SSE E.Q. (VERTICALLY & HORIZONTALLY)
3. WATER LOAD OF 23'-6 ON WATER SEAL
4. REFUELING BELLOWS LOAD
5. WELDING PAD L.L. (1500 (2π/12)(189.75) = 149.03 K)

EXAMINING COMBINATIONS 1 AND 2 FROM THE PREVIOUS PAGE, IT IS SEEN THAT THEY CONTROL OVER THE ABOVE LOADS. FOR LONGITUDINAL COMPRESSION CALCULATE THE LOADS SPECIFIED BY ITEMS 3 AND 4 ABOVE:

FROM PAGE II. 8.1.3, INNER RING WATER LOAD = 417887 LBS

THE OUTER BELLOWS LOAD IS -45 #/IN OR 45(2π)(207)
= 58528 LBS

OUTER RING WATER LOAD = π[(17'-3)² - (15'-11½)²] (26'-2¼)(62.4)
= 220204 LBS

THEREFORE, THE TOTAL LOAD FOR ITEMS 3 + 4 IS 697 K.

THE DEAD LOAD AT THE BOTTOM OF THE 1½" CYLINDER (FROM FIGURE I.3.1) IS 133.8 K.

APPLYING A VERT. E.Q. FACTOR OF 1.23 TO ITEMS 1, 3, 4 + 5 THE TOTAL COMPRESSIVE REFUELING LOAD

(Jan 2001 Section / Subsection)

IS 1205.2 K, WHICH IS LESS THAN THAT USED IN DESIGN COMBINATION 3 (SEE PAGE IV.10.3.5) = 1506.6 K.

E. INCIDENT CONDITION: COMBINATIONS 1-3 SATISFY THIS

F. FLOODED CONDITION: THE FLOODED CONDITION IS BOTH A LONGITUDINAL COMPRESSION AND HOOP ~~DESIGN~~ TENSION PROBLEM. THE HOOP TENSION IS CAUSED BY FLOODING ELEV 581-10½. THE PRESSURE AND STRESSES AT THE BOTTOM OF THE 1½" CYLINDER ARE:

$$(581'-10\tfrac{1}{2} - 580'-1\tfrac{1}{4}) \times 12 \times \frac{62.4}{1728} + 1.20 = .921 \text{ PSI}$$

$$\sigma_A = \frac{qr}{t} = \frac{.921 \times 190.78125}{1.4375} = 122.2 \text{ psi}$$

THE LONGITUDINAL COMPRESSIVE STRESS WILL BE CAUSED BY:

1. D.L. = 133.8K
2. WATER LOAD ON SEAL = 220.2K + 529.5K**
3. BELLOWS LOADS = 77.5K*
4. WELDING PAD L.L. = 149.63K

MULTIPLYING 1,2,3+4 BY A 1.35 FACTOR, THE TOTAL AXIAL LOAD IS 1525.5K. FROM REF. 1, FIGURE 8, THE MAXIMUM OVERTURNING MOMENT AT THE BOTTOM OF THE DRYWELL HEAD IS 5×10^3 FT K.

SUPERSET

* ASSUME PLANT SHUTDOWN LOAD OF -75 #/IN ON O.S.

** SEE PAGE II.C.1.5 OF THIS FINAL STRESS REPORT

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: III SUBSEC: 10 ARTICLE: 1 PAGE: 4
PREPARED BY / DATE: JKS / 1-30-73	RAM/11-20-73				
CHECKED BY / DATE: BSW / 8-2-73	DCL/11-20-73				
REVISION NUMBER:	B				

σ_B = 5000 * 2/π (190.18125)² * 1.4375 = .365 KSI

σ_A = 1525.5/π * 2 * 190.78125 * 1.4375 = .885 KSI

$\sigma_T = \sigma_A + \sigma_B$ = 1250 PSI

S.I. = $\sigma_T + \sigma_A$ = 1.250 + .122 = 1.372 KSI

THIS MUST BE LESS THAN F_y AT 212°F = 34.5 KSI

34.5 KSI > 1.372 KSI ✓

FOR 7/8" CONE (APEX ANGLE = 29.9514°, SEE FIGURE I.3.1)

CONDITIONS A, B, C : SEE P. 1 OF THIS ARTICLE

D. REFUELING CONDITON

FROM P. 4 OF THIS ARTICLE THE TOTAL LOAD FOR ITEMS 3 & 4 IS 697 K. THE DEAD LOAD AT THE BOTTOM OF THE CONICAL HEAD IS 171.0 K (SEE FIGURE I.3.1). APPLYING A VERT. EQ FACTOR OF 1.23 (SEE REF. 1 PAGE 3A-54) TO ITEMS 1, 3, 4 + 5* + FILLER MAT'L D.L. (4.45 K)** + FILLER MAT'L END LOADS (π (237.25² - 190²) 2 = 126.84K) THE TOTAL COMPRESSIVE REFUELING LOAD IS 1589.7 K WHICH IS LESS THAN THAT USED IN DESIGN COMBINATION 3 (2090.73 K)

* WELDING PAD L.L. = 1500 * 2π (184.75 + 213.7) / 12 = 316.87 K

** [(191.875 + 239.0625)/2 × 82/cos 29.9514/144] (2π5) = 4.45 K

E. INCIDENT CONDITION: COMBINATIONS 1-3 SATISFY THIS

F. FLOODED CONDITION:

THE PRESSURE AND STRESSES AT THE BOTTOM OF THE CONICAL HEAD ARE

$(581'-10\frac{1}{2}'' - 573'-3\frac{1}{4}'')(62.4/144) * 1.2 = 4.47$ PSI

$\sigma_\theta = 4.47 * (237.25/.3664 + (.0625 + .8125/2))/.8125 = 1509.09$ PSI

WHERE .8125 IS THE CORRODED THICKNESS AND 237.25 IS FROM FIGURE I.3.1.

THE LONGITUDINAL COMPRESSIVE STRESS WILL BE CAUSED BY:

1. D.L. = 171.0 K
2. WATER LOAD ON SEAL = 220.2 K + 529.5 K ✓
3. BELLOWS LOADS = 97.5 K *
4. WELDING PAD L.L. = 316.37 K
5. FILLER MAT'L D.L. = 4.45 K
6. FILLER MAT'L END LOADS = 126.84 K

MULTIPLYING 1 THRU 5 BY A 1.35 FACTOR, THE TOTAL AXIAL LOAD IS 1135.19 K. FROM REF. 1, FIGURE 8, THE MAXIMUM OVERTURNING MOMENT AT THE BOTTOM OF THE CONICAL HEAD (EL. 573-3¼) IS 10×10^3 FT-K.

* ASSUME PLANT SHUTDOWN LOAD OF 75 #/IN ON O.S.

$\sigma_B = 10000 * 12/\pi(237.791)^2 * .8125 * .8664 = .960$ KSI

$\sigma_A = 1935.19/2\pi(237.791)\ .8125 * .8664 = 1.84$ KSI

$\sigma_T = \sigma_A + \sigma_B = 2800$ PSI

$SI = \sigma_T + \sigma_\theta = 2800 + 1509 = 4309$ PSI

THIS MUST BE LESS THAN F_y AT 212°F = 34.5 KSI

34.5 KSI > 4.31 KSI ✓

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV SUBSEC: 10 ARTICLE: 1 PAGE: 6
PREPARED BY/ DATE: JKS/2-12-73					
CHECKED BY/ DATE: BJW/8-2-73					
REVISION NUMBER:					

$\sigma_B = 10000 * 12/\pi(237.791)^2 * .8125 * .8664 = .960$ KSI

$\sigma_A - 1220.37/2\pi(237.791)\ .8125 * .8664 = 1.160$ KSI

$\sigma_T = \sigma_A + \sigma_B = 2120$ PSI

$SI = \sigma_T + \sigma_\theta = 2120 + 1509 = 3629$ PSI

THIS MUST BE LESS THAN F_y AT 212°F = 34.5 KSI

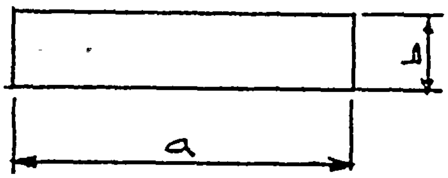
34.5 KSI > 3.63 KSI

THE FOLLOWING PAGES WILL EXAMINE TWO "ACCESSORY" ITEMS TO THE DRY WELL SEAL AREA DESIGN. THESE ARE WELD PADS, AND THE TOP HEAD FLANGE WELDED TO THE 1½" CYLINDER PLATE.

WELD PADS

REFERENCE 1 STATES THAT WELD PADS OF SA516 GR 70 MATERIAL WILL BE SUBJECTED TO 1500 #/FT ACTING IN ANY DIRECTION. RINGS ARE 12" WIDE AND ½" THICK.

FOR THE DESIGN OF THE PLATE, ASSUME ROARK CASE 36 ON PAGE 225 OF REFERENCE 5



$a = \infty \quad b = 12$ INCHES

$a/b = \infty \quad \therefore \beta = 0.75$

$$MAX\ \sigma = \beta \frac{wb^2}{t^2} \quad w/\ w = \frac{(1500)}{(12)(12)}$$

$$\sigma_{MAX} = \frac{(0.75)(1500)(12)^2}{(12)(12)(0.50)^2} = 4500\ psi$$

∴ PLATE IS OK

USE A 5/16" FILLET WELD ALL AROUND TO CONNECT TO THE SHELL.

TO ANALYZE THE EFFECTS ON THE 7/8" SHELL PLATE, PERFORM AN ANALYSIS IN ACCORDANCE WITH REFERENCE 7, ASSUMING A CYLINDRICAL SHELL WITH APPROPRIATE RADIUS. ALSO ASSUME THAT THE "a" DIMENSION OF THE PLATE IS 24".

$$\therefore \beta_1 = \frac{c_1}{R_M} = \frac{12}{214.5/\cos\theta}^{*} = 0.048$$

$$\beta_2 = \frac{c_2}{R_M} = \frac{6}{R_M} = 0.024$$

*APPROXIMATE RADIUS FOR PAD @ ELEV 571'-0 7/8"

$$\beta = \left[1 - \frac{1}{3}\left(\frac{\beta_1}{\beta_2} - 1\right)(1 - K_1)\right]\sqrt{\beta_1\beta_2} = \left[1 - \frac{1}{3}(1 - K_1)\right]\sqrt{\beta_1\beta_2}$$

$$\rho = \frac{R_M}{T} = \frac{214.5/\cos\theta}{0.8125} = 304.7$$

W/ $K_1 = 0.91$, $\beta = 0.03$ – $N\phi$
1.68 $= 0.04$ – Nx
1.76 $= 0.04$ – $M\phi$
1.20 $= 0.04$ – Mx

$\therefore N\phi / P/R_M = 50$ $\quad \sigma_\phi^M = 0.75$ ksi
$M\phi / P = 0.13$ $\quad \sigma_\phi^B = 3.54$ ksi
$Nx / P/R_M = 50$ $\quad \sigma_x^M = 0.75$ ksi
$Mx / P = 0.08$ $\quad \sigma_x^B = 2.18$ ksi

} W/ P = 3000#

OR $\sigma_\phi^{TOT} = 4.29$ ksi, $\sigma_x^{TOT} = 2.93$ ksi } IF THE SHELL IS ASSUMED TO BE AT S_M, THEN THE DISCONTINUITY BENDING STRESSES ARE:

$\sigma_\phi^{BEND} = 23.6 \leq 3S_M$
$\sigma_x^{BEND} = 22.2 \leq 3S_M$

AND THE DISCONTINUITY MEMBRANE STRESSES ARE:

$\sigma_\phi^{MEM} = 0.75 + 19.3 = 20.1$ ksi $\leq 1\tfrac{1}{2}S_M$
$\sigma_x^{MEM} = 0.75 + 19.3 = 20.1$ ksi $\leq 1\tfrac{1}{2}S_M$

$\therefore$ SHELL IS O.K.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV SUBSEC: 10 ARTICLE: 2 PAGE: 3
PREPARED BY / DATE: JKS/2-7-73					
CHECKED BY / DATE: BJW/8-3-73					
REVISION NUMBER:					

FLANGE DESIGN

THE FLANGES CONNECTING THE TOP HEAD TO THE DRYWELL OF THE CONTAINMENT VESSEL WILL BE DESIGNED USING PDM'S FLAT-FACE FLANGE PROGRAM FLA2 (SEE APPENDIX V, ARTICLE 2 OF THIS FINAL STRESS REPORT.)

THE FOLLOWING PAGE CONTAINS THE FLANGE DESIGN FOR THE DRYWELL, INCLUDING SPECIFIED INPUT AND DESIRED OUTPUT. AS SHOWN, ALL COMPUTED STRESSES ARE WITHIN THEIR ALLOWABLE LIMITS AND THE FLANGE SPECIFIED IS ADEQUATE.

```
=================================================================================
=          1972 ASME SECTION III, APPENDIX XI, BOLTED FLANGE DESIGN
= XI-3300--CLASS FF FLANGES WITH METAL-TO-METAL CONTACT OUTSIDE BOLT CIRCLE
=                 SELF-ENERGIZING TYPF GASKETS WILL BE ASSUMED
=         FOLLOWING FLANGE WILL BE VALID FOR INTERNAL PRESSURE ONLY
=================================================================================
```

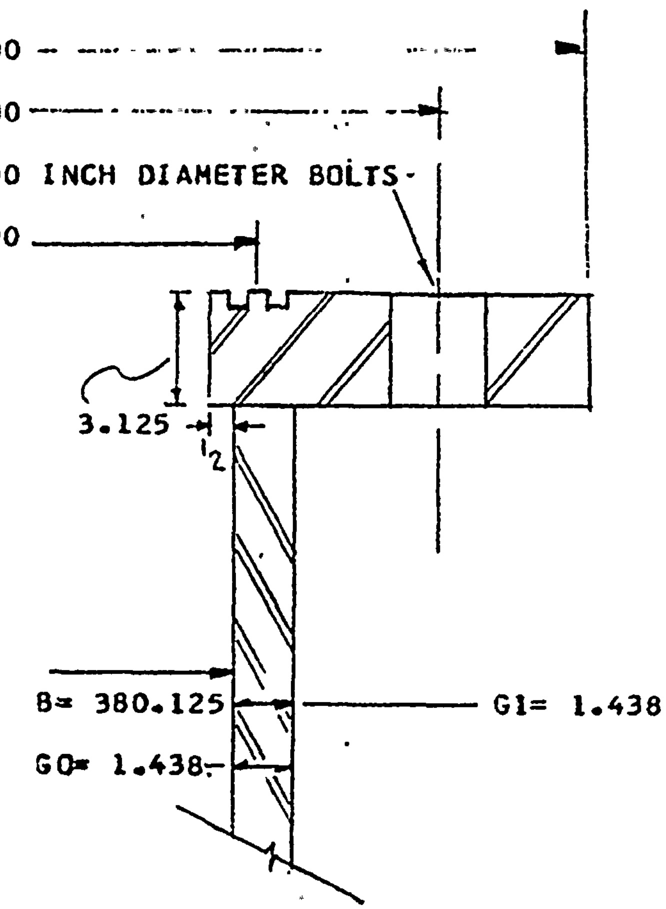
FLAT FACE FLANGE--INTEGRAL TYPE
HANFORD NO. 2 CONTAINMENT VESSEL
PDM CONTRACT NO. 12764

LISTING OF INPUT

DESIGN PRESSURE	45.00	SPACER THICKNESS	0.0
DESIGN TEMPERATURE	340.	NO. OF THREADED ENDS/BOLT	
BOLT PRESTRESS	21573.	BOLT HOLE DIAMETER	2.687
BOLT ALLOWABLE STRESS	27500.	FLANGE FACTOR C1	1.000
BOLT ROOT AREA	3.720	FLANGE FACTOR C2	1.000
FLANGE ALLOWABLE STRESS	19300.	FLANGE FACTOR C3	1.000
FLANGE MODULUS OF ELASTICITY	27900000.	FLANGE FACTOR C4	0.850
BOLT MODULUS OF ELASTICITY	29900000.	FLANGE FACTOR C5	0.0
NOZZLE ALLOWABLE STRESS	19300.		

AXIAL SEPERATION= .01228

ACTUAL BOLT PRESTRESS= 18822.



STRESS COMPUTATIONS

STRESS TYPE	STRESS1	STRESS2	ALLOWABLE
SH	3460.	2512.	28950.
SHS	3293.	3009.	28950.
SR	17110.	-17110.	19300.
SRS	151.	-337.	19300.
ST	2301.	1534.	19300.
SH+SR/2 OR SH+ST/2		10285.	19300.

PREPARED BY / DATE: RAM/7-28-73				
CHECKED BY / DATE: BJW / 8-3-73				
REVISION NUMBER:				

DRYWELL SEAL AREA

THE FOLLOWING ARTICLE CONTAINS THE DESIGN OF THE DRYWELL SEAL AREA LOCATED BELOW THE TOP-HEAD-MATING-FLANGES PARTING LINE, AND THE LARGE ANGLE CONE LOCATED BELOW THIS AREA. THE LOADING CONDITIONS EXAMINED CAN BE CLASSIFIED INTO THREE SEPERATE CATAGORIES, THOSE CAUSING:

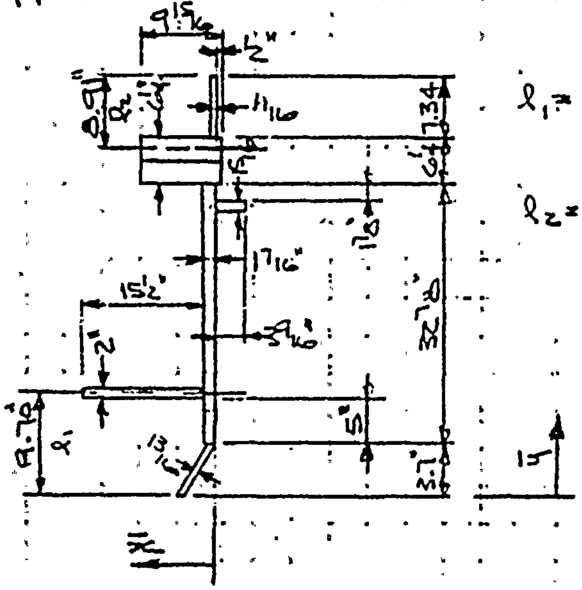
1. COMPRESSIVE STRESSES IN THE HOOP DIRECTION
2. COMPRESSIVE STRESSES IN THE LONGITUDINAL DIRECTION
3. TENSILE SHELL STRESSES, AND SEAL SUPPORT STRESSES.

IN ADDITION TO THESE, JET. LOADING EFFECTS ARE EXAMINED IN ARTICLE 4 OF THIS REPORT.

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764	FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL			SUBSEC: 10
PREPARED BY / DATE: RAM/7-28-73			ARTICLE: 3
CHECKED BY / DATE: BIW/8-3-73			PAGE: 2
REVISION NUMBER:			

EXTERNAL PRESSURE

IN ORDER TO DETERMINE WHETHER THE $1\frac{1}{2}$" CYLINDER AND $\frac{7}{8}$" TOP CONE ARE ADEQUATE UNDER EXTERNAL PRESSURE, IT WILL FIRST BE NECESSARY TO DETERMINE IF THE SEAL AREA OF THE SHELL ACTS AS AN ASME CIRCUMFERENTIAL RING STIFFENER.



$$\ell_1 = \frac{1.1}{2}\sqrt{D_o T} = \left(\frac{1.1}{2}\right)\sqrt{(191.5)(2)(\tfrac{13}{16})}$$

$$\ell_2 = \left(\frac{1.1}{2}\right)\sqrt{(190.75)(2)(\tfrac{11}{16})}$$

$$\bar{y} = \frac{(4.27)(\frac{13}{16})(3.7/2) + (32\frac{7}{8})(1\frac{7}{16})(20.14) + (15\frac{1}{2})(2)(9.7) + (3\frac{9}{16})(1\frac{5}{16})(34.04) + (6\frac{1}{4})(9\frac{15}{16})(39.7) + (\frac{11}{16})(7.34)(46.495)}{(4.27)(\frac{13}{16}) + (32\frac{7}{8})(1\frac{7}{16}) + (15\frac{1}{2})(2) + (3\frac{9}{16})(1\frac{5}{16}) + (6\frac{1}{4})(9\frac{15}{16}) + (\frac{11}{16})(7.34)}$$

$\bar{y} = 26.820$ IN. w/ $A_s = 153.559$ IN^2

$$\bar{x} = \frac{(-3\frac{9}{16})(1\frac{5}{16})(3\frac{9}{16}/2) + (1\frac{7}{16})(32\frac{7}{8})(1\frac{7}{16})/2 + (\frac{13}{16})(4.27)(1.53) + (15\frac{1}{2})(2)(9.19) + (6\frac{1}{4})(9\frac{15}{16})(4.47) + (7.34)(\frac{11}{16})(\frac{11}{16})/2}{153.559}$$

$\bar{x} = 3.876$ IN.

$$I_{xx} = \frac{(1\frac{5}{16})(3\frac{9}{16})^3}{12} + \frac{(6\frac{1}{4})(9\frac{15}{16})^3}{12} + \frac{(2)(15\frac{1}{2})^3}{12} + \frac{(4.27)(\frac{13}{16})\left[(4.27)^2\sin^2\alpha + (\frac{13}{16})^2\cos^2\alpha\right]}{12}$$

$+ (13/16)(4.27)(2.35)^2 + (15 1/2)(2)(5.31)^2 + (3 9/16)(1 5/16)(5.66)^2$

$+ (32 7/8)(1 7/16)(3.16)^2 + (6 1/4)(9 15/16)(0.59)^2 + (7.34)(11/16)(3.53)^2$

$I_{YY} = 2738 \text{ in}^4$

ASSUME AN ADDITIONAL ASME RING STIFFENER AT ELEV. 572'-9.076; ALSO, ADDITIONAL SUPPORT IS ASSUMED AT THE THE TOP HEAD, OR AT ELEV. 590'-9 1/4 + (7'-10 3/4)/3

$\therefore L_s = 123.88 \text{ in}$ $T = 0.6875 \text{ in}$

$D_o = 190.75 * 2 = 381.5 \text{ in.}$

$$B = \frac{3}{4}\left[\frac{PD_o}{T + A_s/L_s}\right] = 593.9 \quad W/\ P = 4 \text{ psi}$$

FROM FIGURE VII-1100-2 OF REF. 2,

$A \doteq 0.000042$

FROM ¶ NE-3133.5 OF REF. 2,

$$I_s = \frac{D_o^2 L_s (T + A_s/L_s) A}{10.9} = 133.9 \text{ in}^4 < I_{SUPPLIED}$$

$\therefore$ AREA ACTS LIKE AN ASME RING STIFFENER

FOR THE 7/8" TOP CONE*, AN EXTERNAL PRESSURE ANALYSIS WILL BE PERFORMED IN ACCORDANCE WITH ¶ NE-3133.7 OF REF. 2

$D_o = 2 * 237.25/\cos 29.9514° = 547.64 \text{ in}$

$L = (580'-1 1/4 + 26.820 - 3.7) - 572'-9.076 = 111.29 \text{ in}$

$\left.\begin{array}{l} L/D_o = 0.2033 \\ D_o/T = 674.0 \end{array}\right\} B \doteq 6000$

$$P_A = \frac{4B}{3D_o/T} = 11.87 \text{ psi} > 4 \text{ psi} \quad \therefore \underline{OK}$$

*BUCKLING IS NOT A PROBLEM IN THE CYLINDER - ASME STIFFENER

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV SUBSEC: 10
PREPARED BY / DATE: JKS / 1-29-73					ARTICLE: 3
CHECKED BY / DATE: BJW / 8-1-73					PAGE: 4
REVISION NUMBER:					

LONGITUDINAL COMPRESSION

THE DRYWELL HEAD CYLINDER LONGITUDINAL COMPRESSION ANALYSIS WILL BE BASED ON THE LOAD COMBINATION SPECIFIED AS INCIDENT CONDITION APPEARING IN PARAGRAPH 3.4.1.5 OF REFERENCE 1. THE TWO CONDITIONS WHICH WILL BE USED FOR THIS ANALYSIS ARE SSE EARTHQUAKE AND THE NEGATIVE 2 PSIG INTERNAL PRESSURE AT 135°F. THE FOLLOWING LOADS WILL BE USED:

1. VESSEL D.L. = 133.8 K
2. REFUELING BELLOWS = 249.9* K
3. JET LOAD = 534 K
4. 149.03 K = WELDING PAD L.L.

FROM REF. 1, FIGURE 5, THE MAXIMUM VERTICAL "G" LOAD IS .40 AT THE BOTTOM OF THE DRYWELL HEAD. MULTIPLY ITEMS 1+2+4 BY THIS FACTOR.

$1.4\,(133.8 + 249.9 + 149.03) + 534 = 1279.82\ K$

THE NEGATIVE 2PSIG INTERNAL PRESSURE ADDS A LONGITUDINAL COMPRESSIVE LOAD OF $P * \pi R^2 = 2(\pi)(190)^2/1000$

$= 226.823\ K$

FROM FIGURE 9 OF REFERENCE 1, THE MAXIMUM BENDING MOMENT AT THE BOTTOM OF THE DRYWELL HEAD IS 5×10^3 FT-K

* $[(30 * 153) + (170 * 207)]\, 2\pi = 249.9\ K$

$P_{TOTAL} = 1279.82 + 226.82 = 1506.6$ K

$\sigma_A = 1506.6 / \pi * 2 * 190.78125 * 1.4375 = .874$ KSI

$\sigma_B = 5000 * 12 / \pi (190.78125)^2 * 1.4375 = .3650$ KSI

$\sigma_T = \sigma_A + \sigma_B = 1.24$ KSI (COMPRESSION)

FIND $\sigma_{ALLOWABLE}$: $R/100T = 190/143.75 = 1.32$

FROM FIGURE VIII-1100-2 OF REF. 1 B = 12000

$\sigma_{ALL} = 1.2 * 12000 = 14400$ PSI > 1240 PSI

1.4375* PL IS ADEQUATE FOR COMPRESSION

ANALYZE 7/8 CONICAL HEAD FOR LONGITUDINAL COMPRESSION

1. VESSEL DEAD LOAD = 171.0 K
2. REFUELING BELLOWS = 249.9 K
3. JET LOAD = 534 K
4. FILLER MAT'L D.L = 4.45 K
5. WELDING PAD L.L. = 316.87 K.

MULTIPLYING ITEMS 1, 2, 4 & 5 BY 1.45, A TOTAL GRAVITY LOAD OF 1076.22 K IS OBTAINED.

ADDED TO THIS ARE THE JET LOAD OF 534 K AND THE

* 1.5 - .0625 (CORR.) = 1.4375

PRESSURE END LOADS ARE 126.84 (FILLER MATERIAL)* AND

$2 \times \pi (237.25)^2 = 353.67$ K

TOTAL COMPRESSIVE LOAD = 2090.73 K

$\sigma_A = 2090.73 / 2 \times 237.7910 \times .8125 \times .8664 \times \pi$

$\sigma_A = 1.988$ KSI

FULL SEISMIC MOMENT AT EL. 573-3¼ (FROM REF. 1 PAGE 13A-59) = 10×10^3 FT-K

$\sigma_B = 10000 \times 12 / \pi \times 237.7910^2 \times .8125 \times .8664$

$\sigma_B = .960$ KSI

$\sigma_T = 2.948$ KSI

FROM FIGURE VIII-1100-2

$R/100T = 237.25/81.25 (.8664) = 3.370$

$B = 5400$

$\sigma_{ALL} = 1.2 \times 5400 = 6480 > 294.8$

7/8" CONE IS ADEQUATE FOR LONGITUDINAL COMPRESSION

* $(\pi (237.25^2 - 190^2) 2 = 126.84$ K

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV SUBSEC: 10
PREPARED BY / DATE: RAM/7-29-73					ARTICLE: 2
CHECKED BY / DATE: BJW/8-3-73					PAGE: 7
REVISION NUMBER:					

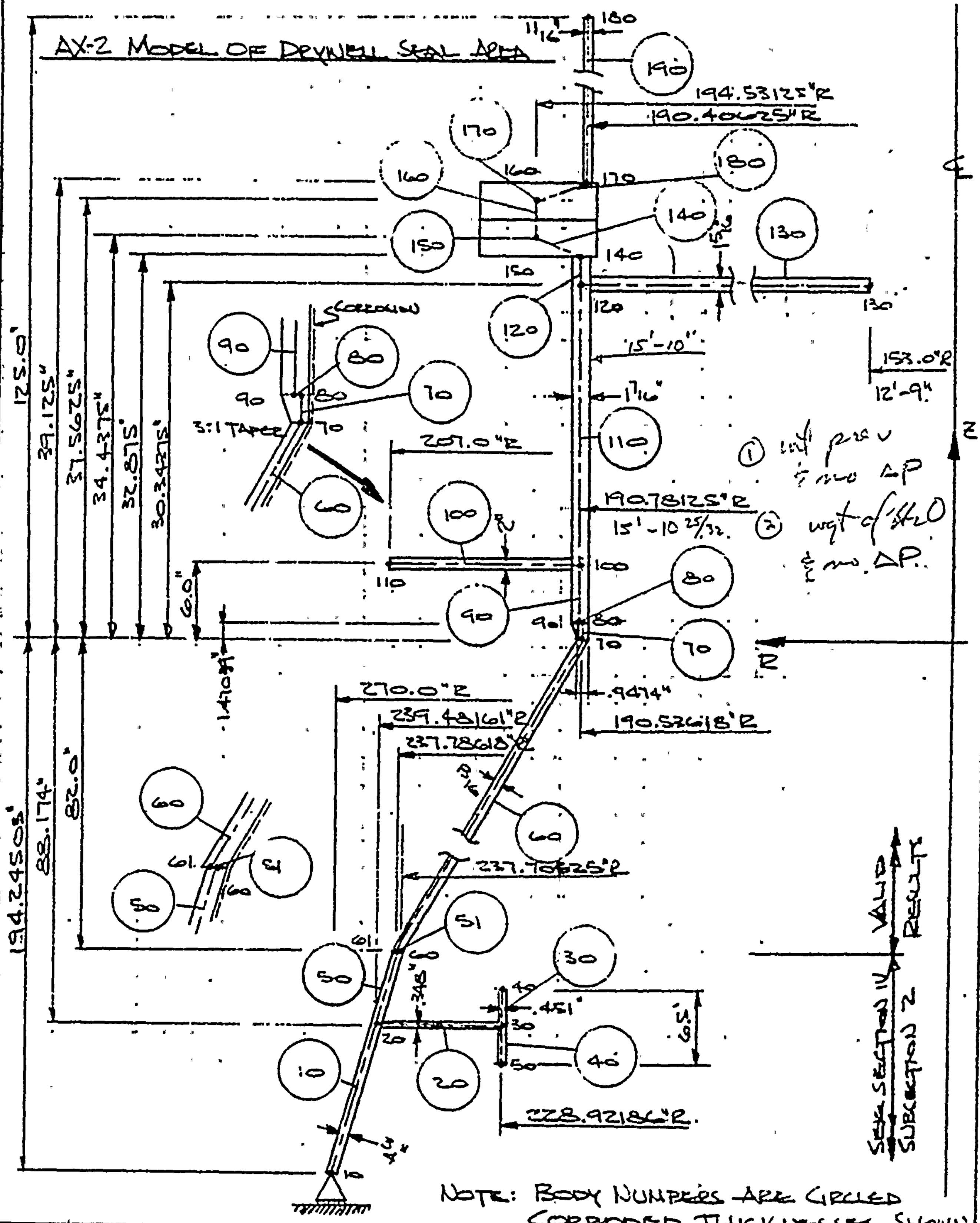
INTERNAL PRESSURE + SEAL LOADS

THE FOLLOWING PAGES CONTAIN THE AX-2 ANALYSIS (SEE APPENDIX V, ARTICLE 1) OF THE DRYWELL SEAL AREA. TWO LOADING CONDITIONS WERE EXAMINED AND PRESENTED HEREIN:

1. 45psi INT. PRES. + LOCA SEAL LOADS + ½SSE (0.20 "G" FACTOR)
2. FILLER MAT'L. EXT. PRESS. + REFUELING LOADS + ½SSE (0.20 "G" FACTOR)

PAGE 8 CONTAINS THE MODEL TO BE ANALYZED, WITH THE COMPUTER OUTPUT FOLLOWING. IT SHOULD BE NOTED THAT SHELL CONNECTIONS OF PLATES OF DIFFERENT THICKNESSES OR GEOMETRY HAVE BEEN MODELED USING AX-2's RIGID CONNECTOR ELEMENT. IN THIS WAY, DISCONTINUITY STRESSES, IF ANY, AT THE PLATE WELD SEAMS WILL CONSERVATIVELY BE GIVEN.

PITTSBURGH-DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV SUBSEC: 10
PREPARED BY/ DATE: RAM/6-11/73					ARTICLE: 3
CHECKED BY/ DATE: BJW/7-11-73					PAGE: 8
REVISION NUMBER:					



HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

NUMBER OF NODES = 19   NUMBER OF BODIES = 20

NODE NO.	COORDINATE R	COORDINATE Z	OBLIQUE AXIS ANGLE	FIXITY CODE
10	0.270000E 03	-0.194245E 03	0.0	10
20	0.239482E 03	-0.881740E 02	0.0	0
30	0.228922E 03	-0.881740E 02	0.0	0
40	0.228922E 03	-0.849240E 02	0.0	0
50	0.228922E 03	-0.914240E 02	0.0	0
60	0.237705E 03	-0.820000E 02	0.0	0
61	0.237786E 03	-0.820000E 02	0.0	0
70	0.190536E 03	0.0	0.0	0
80	0.190536E 03	0.147039E 01	0.0	0
90	0.190781E 03	0.147039E 01	0.0	0
100	0.190781E 03	0.600000E 01	0.0	0
110	0.207000E 03	0.600000E 01	0.0	0
120 inner	0.190781E 03	0.303437E 02	0.0	0
130 outer	0.153000E 03	0.303437E 02	0.0	0
140	0.190781E 03	0.328750E 02	0.0	0
150	0.194531E 03	0.344375E 02	0.0	0
160	0.194531E 03	0.375625E 02	0.0	0
170	0.190406E 03	0.391250E 02	0.0	0
180	0.190406E 03	0.125000E 03	0.0	0

IV.10.3.10

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

NODE NO.	ELASTIC FOUNDATION CONSTANTS R-DIR.	Z-DIR.	ROTATION
10	0.0	0.0	0.0
20	0.0	0.0	0.0
30	0.0	0.0	0.0
40	0.0	0.0	0.0
50	0.0	0.0	0.0
60	0.0	0.0	0.0
61	0.0	0.0	0.0
70	0.0	0.0	0.0
80	0.0	0.0	0.0
90	0.0	0.0	0.0
100	0.0	0.0	0.0
110	0.0	0.0	0.0
120	0.0	0.0	0.0
130	0.0	0.0	0.0
140	0.0	0.0	0.0
150	0.0	0.0	0.0
160	0.0	0.0	0.0
170	0.0	0.0	0.0
180	0.0	0.0	0.0

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

NODE NO.	PRESCRIBED DISPLACEMENTS R-DIR.	Z-DIR.	ROTATION
10	0.0	0.0	0.0
20	0.0	0.0	0.0
30	0.0	0.0	0.0
40	0.0	0.0	0.0
50	0.0	0.0	0.0
60	0.0	0.0	0.0
61	0.0	0.0	0.0
70	0.0	0.0	0.0
80	0.0	0.0	0.0
90	0.0	0.0	0.0
100	0.0	0.0	0.0
110	0.0	0.0	0.0
120	0.0	0.0	0.0
130	0.0	0.0	0.0
140	0.0	0.0	0.0
150	0.0	0.0	0.0
160	0.0	0.0	0.0
170	0.0	0.0	0.0
180	0.0	0.0	0.0

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

BODY NO. 10 -- BODY TYPE 6, SEGMENT OF A CONE

EDGE NODES ARE 20 AND 10 THICKNESS = 0.750000E 00

APEX ANGLE = 0.160514E 02 MERIDIAN LENGTH = 0.110374E 03

DIMENSION XA = 0.866119E 03 DIMENSION XB = 0.976493E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 20 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 30 AND 20 THICKNESS = 0.348000E 00

INSIDE RADIUS =0.228922E 03 OUTSIDE RADIUS = 0.239482E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 30 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 40 AND 30 THICKNESS = 0.451000E 00

RADIUS = 0.228922E 03 LENGTH = 0.325000E 01

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 40 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 30 AND 50 THICKNESS = 0.451000E 00

RADIUS = 0.228922E 03 LENGTH = 0.325000E 01

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

BODY NO. 50 -- BODY TYPE 6, SEGMENT OF A CONE

EDGE NODES ARE 60 AND 20 THICKNESS = 0.750000E 00

APEX ANGLE = 0.160513E 02 MERIDIAN LENGTH = 0.642446E 01

DIMENSION XA = 0.859698E 03 DIMENSION XB = 0.866123E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 51 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 61 AND 60

BODY NO. 60 -- BODY TYPE 6, SEGMENT OF A CONE

EDGE NODES ARE 70 AND 61 THICKNESS = 0.812500E 00

APEX ANGLE = 0.299514E 02 MERIDIAN LENGTH = 0.946391E 02

DIMENSION XA = 0.381633E 03 DIMENSION XB = 0.476272E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 70 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 80 AND 70 THICKNESS = 0.947400E 00

RADIUS = 0.190536E 03 LENGTH = 0.147039E 01

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

BODY NO. 80 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 90 AND 80

BODY NO. 90 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 100 AND 90 THICKNESS = 0.143750E 01

RADIUS = 0.190781E 03 LENGTH = 0.452961E 01

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 100 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 100 AND 110 THICKNESS = 0.200000E 01

INSIDE RADIUS =0.190781E 03 OUTSIDE RADIUS = 0.207000E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 110 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 120 AND 100 THICKNESS = 0.143750E 01

RADIUS = 0.190781E 03 LENGTH = 0.243438E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

BODY NO. 120 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 140 AND 120 THICKNESS = 0.143750E 01

RADIUS = 0.190781E 03 LENGTH = 0.253125E 01

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 130 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 130 AND 120 THICKNESS = 0.131250E 01

INSIDE RADIUS =0.153000E 03 OUTSIDE RADIUS = 0.190781E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 140 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 150 AND 140

BODY NO. 150 -- BODY TYPE 8, CIRCUMFERENTIAL RING

REFERENCE NODE IS 150 RADIUS = 0.194531E 03

CROSS SECTION AREA = 0.310547E 02 MOMENT OF INERTIA = 0.252724E 02

E = 0.279000E 08

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

BODY NO. 160 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 160 AND 150

BODY NO. 170 -- BODY TYPE 8, CIRCUMFERENTIAL RING

REFERENCE NODE IS 160 RADIUS = 0.194531E 03

CROSS SECTION AREA = 0.310547E 02 MOMENT OF INERTIA = 0.252724E 02

E = 0.279000E 08

BODY NO. 180 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 170 AND 160

BODY NO. 190 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 180 AND 170 THICKNESS = 0.687500E 00

RADIUS = 0.190406E 03 LENGTH = 0.858750E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY LOADS

```
BODY NO.  10  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
      PN = ( 0.450000E 02) + ( 0.0            )*X
      PPHI = ( 0.0          ) + ( 0.0          )*X
      T = ( 0.0          + ( 0.0          )*Z/H)
       + ( 0.0          + ( 0.0          )*Z/H)*X
       + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  20  BODY TYPE   3  X = RADIUS
      PN = ( 0.0          ) + ( 0.0          )*X
      PPHI = ( 0.0          ) + ( 0.0          )*X
      T = ( 0.0          + ( 0.0          )*Z/H)
       + ( 0.0          + ( 0.0          )*Z/H)*X
       + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  30  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
      PN = ( 0.0          ) + ( 0.0          )*X
      PPHI = ( 0.0          ) + ( 0.0          )*X
      T = ( 0.0          + ( 0.0          )*Z/H)
       + ( 0.0          + ( 0.0          )*Z/H)*X
       + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY LOADS

```
BODY NO.  40  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.0           ) + ( 0.0           )*X
     PPHI = ( 0.0           ) + ( 0.0           )*X
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0            + ( 0.0           )*Z/H)*X
      + ( 0.0            + ( 0.0           )*Z/H)*X*X
BODY NO.  50  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0           )*X
     PPHI = ( 0.0           ) + ( 0.0           )*X
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0            + ( 0.0           )*Z/H)*X
      + ( 0.0            + ( 0.0           )*Z/H)*X*X
BODY NO.  60  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0           )*X
     PPHI = ( 0.0           ) + ( 0.0           )*X
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0            + ( 0.0           )*Z/H)*X
      + ( 0.0            + ( 0.0           )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY LOADS

```
BODY NO.  70  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.450000E 02) + ( 0.0            )*X
     PPHI = ( 0.0            ) + ( 0.0            )*X
     T = ( 0.0            + ( 0.0            )*Z/H)
      + ( 0.0            + ( 0.0            )*Z/H)*X
      + ( 0.0            + ( 0.0            )*Z/H)*X*X
BODY NO.  90  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.450000E 02) + ( 0.0            )*X
     PPHI = ( 0.0            ) + ( 0.0            )*X
     T = ( 0.0            + ( 0.0            )*Z/H)
      + ( 0.0            + ( 0.0            )*Z/H)*X
      + ( 0.0            + ( 0.0            )*Z/H)*X*X
BODY NO. 100  BODY TYPE   3  X = RADIUS
     PN = ( 0.0            ) + ( 0.0            )*X
     PPHI = ( 0.0            ) + ( 0.0            )*X
     T = ( 0.0            + ( 0.0            )*Z/H)
      + ( 0.0            + ( 0.0            )*Z/H)*X
      + ( 0.0            + ( 0.0            )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY LOADS

```
BODY NO. 110  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.450000E 02) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 120  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.450000E 02) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 130  BODY TYPE   3  X = RADIUS
     PN = ( 0.0          ) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY LOADS

```
BODY NO. 150   BODY TYPE    8
     FREE THERMAL RADIAL DEFLECTION = 0.0
     FREE THERMAL TWIST = 0.0


BODY NO. 170   BODY TYPE    8
     FREE THERMAL RADIAL DEFLECTION = 0.0
     FREE THERMAL TWIST = 0.0


BODY NO. 190   BODY TYPE    1   X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.450000E 02) + ( 0.0           )*X
     PPHI = ( 0.0          ) + ( 0.0           )*X
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0           + ( 0.0           )*Z/H)*X
      + ( 0.0           + ( 0.0           )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE
CIRCUMFERENTIAL LINE LOADS

NODE	R-DIR.	Z-DIR.	MOMENT
10	0.0	0.0	0.0
20	0.0	0.0	0.0
30	0.0	0.0	0.0
40	0.0	0.0	0.0
50	0.0	0.0	0.0
60	0.0	0.0	0.0
61	0.0	0.0	0.0
70	0.0	0.0	0.0
80	0.0	0.0	0.0
90	0.0	0.0	0.0
100	0.0	0.0	0.0
110	0.0	-0.204000E 03 } INCLUDE	0.0
120	0.0	0.0 } 0.2 VERT.	0.0
130	0.0	-0.360000E 02 } E.Q. PIPE	0.0
140	0.0	0.0	0.0
150	0.140625E 03 } DUE TO	0.0	0.0
160	0.140625E 03 } 45 psi	0.0	0.0
170	0.0	0.0	0.0
180	0.0	0.428414E 04 = PR/2	0.0

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

NODE NO.	NODE DISPLACEMENTS R OR R' DIR.	Z OR Z' DIR.	ROTATION	OBLIQUE AXIS ANGLE
10	-0.903743E 00	0.0	0.961329E-01	0.0
20	-0.161150E-01	0.275248E 00	-0.105312E-01	0.0
30	-0.162945E-01	0.175847E 00	-0.783787E-02	0.0
40	-0.412736E-01	0.175969E 00	-0.763286E-02	0.0
50	0.914324E-02	0.175831E 00	-0.782077E-02	0.0
60	-0.589376E-01	0.264892E 00	-0.559278E-04	0.0
61	-0.589376E-01	0.264896E 00	-0.559278E-04	0.0
70	0.119047E 00	0.378060E 00	-0.784439E-02	0.0
80	0.106298E 00	0.378003E 00	-0.920312E-02	0.0
90	0.106298E 00	0.380259E 00	-0.920312E-02	0.0
100	0.683875E-01	0.380057E 00	-0.681422E-02	0.0
110	0.665355E-01	0.474226E 00	-0.528092E-02	0.0
120	0.580537E-02	0.381493E 00	0.271704E-03	0.0
130	0.606176E-02	0.294307E 00	-0.373042E-02	0.0
140	0.777372E-02	0.381712E 00	0.128047E-02	0.0
150	0.977446E-02	0.376911E 00	0.128047E-02	0.0
160	0.137759E-01	0.376911E 00	0.128047E-02	0.0
170	0.157767E-01	0.382193E 00	0.128047E-02	0.0
180	0.723098E-01	0.390577E 00	0.102055E-05	0.0

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

NODE NO.	REACTION LOADS R OR R' DIR.	Z OR Z' DIR.	MOMENT	OBLIQUE AXIS ANGLE
10	0.0	-0.589659E 04	0.0	0.0

IV.10.3.--

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 10

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	5476.	235.	-404.	-133.	272.
2	5458.	5354.	545.	153.	75.
3	5471.	9158.	673.	195.	-15.
4	5503.	11237.	487.	143.	-40.
5	5544.	12047.	262.	78.	-34.
6	5586.	12164.	102.	31.	-21.
7	5628.	12005.	16.	5.	-10.
8	5669.	11799.	-26.	-7.	-6.
9	5707.	11659.	-59.	-18.	-7.
10	5745.	11670.	-110.	-33.	-11.
11	5783.	11959.	-186.	-57.	-14.
12	5823.	12697.	-257.	-80.	-8.
13	5870.	14031.	-239.	-76.	19.
14	5926.	15876.	24.	2.	78.
15	5992.	17547.	738.	219.	174.
16	6063.	17306.	2077.	628.	287.
17	6119.	12028.	3959.	1209.	346.
18	6117.	-2491.	5681.	1752.	203.
19	5990.	-29759.	5443.	1712.	-371.
20	5667.	-68340.	0.	97.	-1630.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 10

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.6063E-01	-0.2690E 00	-0.1053E-01
2	0.1216E 00	-0.2677E 00	-0.9616E-02
3	0.1675E 00	-0.2668E 00	-0.6083E-02
4	0.1930E 00	-0.2662E 00	-0.2887E-02
5	0.2034E 00	-0.2656E 00	-0.8817E-03
6	0.2054E 00	-0.2651E 00	0.6490E-04
7	0.2039E 00	-0.2645E 00	0.3553E-03
8	0.2018E 00	-0.2639E 00	0.3167E-03
9	0.2006E 00	-0.2633E 00	0.9153E-04
10	0.2012E 00	-0.2627E 00	-0.3516E-03
11	0.2053E 00	-0.2621E 00	-0.1139E-02
12	0.2153E 00	-0.2615E 00	-0.2344E-02
13	0.2330E 00	-0.2610E 00	-0.3743E-02
14	0.2575E 00	-0.2606E 00	-0.4470E-02
15	0.2801E 00	-0.2603E 00	-0.2660E-02
16	0.2778E 00	-0.2601E 00	0.4631E-02
17	0.2091E 00	-0.2597E 00	0.2072E-01
18	0.1698E-01	-0.2585E 00	0.4700E-01
19	-0.3476E 00	-0.2556E 00	0.7835E-01
20	-0.8685E 00	-0.2499E 00	0.9613E-01

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 10

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	7301.	313.	2994.	-1106.	11608.	1732.
2	7277.	7138.	13089.	8766.	1466.	5510.
3	7295.	12210.	14473.	14291.	117.	10129.
4	7337.	14983.	12531.	16507.	2144.	13459.
5	7391.	16062.	10188.	16891.	4595.	15234.
6	7449.	16218.	8540.	16546.	6357.	15890.
7	7504.	16006.	7675.	16062.	7333.	15951.
8	7558.	15732.	7283.	15653.	7833.	15811.
9	7609.	15545.	6982.	15358.	8237.	15732.
10	7659.	15561.	6486.	15205.	8833.	15917.
11	7710.	15945.	5729.	15337.	9692.	16552.
12	7764.	16929.	5024.	16080.	10505.	17777.
13	7826.	18709.	5279.	17903.	10373.	19514.
14	7901.	21168.	8152.	21193.	7650.	21142.
15	7989.	23396.	15865.	25730.	114.	21063.
16	8085.	23075.	30242.	29773.	-14073.	16377.
17	8159.	16037.	50392.	28933.	-34075.	3141.
18	8156.	-3321.	68755.	15368.	-52444.	-22011.
19	7987.	-39678.	66049.	-21415.	-50075.	-57941.
20	7555.	-91120.	7556.	-90090.	7555.	-92150.

IV.10.3.23

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 10 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	7381.		4100.		11608.	
2	7284.		13089.		5510.	
3	12210.		14473.		10129.	
4	14984.		16507.		13459.	
5	16063.		16891.		15234.	
6	16218.		16546.		15890.	
7	16006.		16062.		15951.	
8	15732.		15653.		15811.	
9	15545.		15358.		15732.	
10	15561.		15205.		15917.	
11	15945.		15337.		16552.	
12	16929.		16080.		17777.	
13	18709.		17903.		19514.	*
14	21171.	*	21193.	*	21142.	*
15	23411.	*	25730.	*	21063.	*
16	23116.	*	30242.	* *	30450.	* *
17	16096.		50392.	* *	37216.	* *
18	11497.		68755.	* * *	52444.	* *
19	47733.	* *	87464.	* * *	57941.	* * *
20	99888.	* * *	97645.	* * *	99705.	* * *

DUE TO B.C. WHICH ARE NOT THE TRUE CASE.

IV-10.3.29

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 20

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-25.	-699.	-43.	-16.	3.
2	-27.	-697.	-41.	-16.	3.
3	-29.	-695.	-40.	-15.	3.
4	-30.	-694.	-38.	-15.	3.
5	-32.	-692.	-37.	-15.	3.
6	-33.	-691.	-35.	-14.	3.
7	-35.	-689.	-34.	-14.	3.
8	-36.	-688.	-32.	-14.	3.
9	-38.	-686.	-31.	-13.	3.
10	-40.	-684.	-29.	-13.	3.
11	-41.	-683.	-28.	-12.	3.
12	-43.	-681.	-26.	-12.	3.
13	-44.	-680.	-25.	-12.	3.
14	-46.	-678.	-24.	-11.	3.
15	-47.	-677.	-22.	-11.	3.
16	-49.	-675.	-21.	-10.	3.
17	-50.	-674.	-19.	-10.	3.
18	-51.	-673.	-18.	-10.	3.
19	-53.	-671.	-17.	-9.	3.
20	-54.	-670.	-15.	-9.	2.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 20

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.1758E 00	-0.1629E-01	-0.7838E-02
2	0.1803E 00	-0.1628E-01	-0.8049E-02
3	0.1848E 00	-0.1627E-01	-0.8252E-02
4	0.1894E 00	-0.1626E-01	-0.8448E-02
5	0.1942E 00	-0.1625E-01	-0.8635E-02
6	0.1990E 00	-0.1624E-01	-0.8815E-02
7	0.2040E 00	-0.1623E-01	-0.8987E-02
8	0.2090E 00	-0.1622E-01	-0.9151E-02
9	0.2141E 00	-0.1621E-01	-0.9307E-02
10	0.2194E 00	-0.1620E-01	-0.9456E-02
11	0.2247E 00	-0.1619E-01	-0.9597E-02
12	0.2300E 00	-0.1619E-01	-0.9731E-02
13	0.2355E 00	-0.1618E-01	-0.9857E-02
14	0.2410E 00	-0.1617E-01	-0.9976E-02
15	0.2466E 00	-0.1616E-01	-0.1009E-01
16	0.2522E 00	-0.1615E-01	-0.1019E-01
17	0.2579E 00	-0.1614E-01	-0.1029E-01
18	0.2636E 00	-0.1613E-01	-0.1038E-01
19	0.2694E 00	-0.1612E-01	-0.1046E-01
20	0.2752E 00	-0.1612E-01	-0.1053E-01

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 20

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-73.	-2008.	-2192.	-2810.	2047.	-1206.
2	-77.	-2003.	-2122.	-2787.	1967.	-1219.
3	-82.	-1998.	-2052.	-2764.	1888.	-1233.
4	-87.	-1994.	-1983.	-2740.	1809.	-1247.
5	-91.	-1989.	-1913.	-2717.	1731.	-1261.
6	-96.	-1985.	-1844.	-2694.	1652.	-1276.
7	-100.	-1980.	-1775.	-2670.	1574.	-1290.
8	-105.	-1976.	-1707.	-2647.	1497.	-1304.
9	-109.	-1971.	-1638.	-2623.	1420.	-1319.
10	-114.	-1967.	-1570.	-2600.	1343.	-1334.
11	-118.	-1962.	-1502.	-2576.	1266.	-1348.
12	-122.	-1958.	-1435.	-2553.	1190.	-1363.
13	-127.	-1954.	-1368.	-2529.	1114.	-1378.
14	-131.	-1949.	-1301.	-2505.	1039.	-1393.
15	-135.	-1945.	-1234.	-2482.	963.	-1409.
16	-140.	-1941.	-1168.	-2458.	888.	-1424.
17	-144.	-1937.	-1101.	-2434.	814.	-1440.
18	-148.	-1933.	-1035.	-2410.	740.	-1455.
19	-152.	-1928.	-970.	-2386.	666.	-1471.
20	-156.	-1924.	-904.	-2362.	592.	-1486.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 20 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	2009.		2810.		3253.	
2	2005.		2787.		3187.	
3	2000.		2764.		3121.	
4	1995.		2740.		3056.	
5	1991.		2717.		2992.	
6	1986.		2694.		2928.	
7	1981.		2670.		2864.	
8	1977.		2647.		2801.	
9	1972.		2623.		2739.	
10	1968.		2600.		2676.	
11	1963.		2576.		2615.	
12	1959.		2553.		2553.	
13	1955.		2529.		2493.	
14	1950.		2505.		2432.	
15	1946.		2482.		2372.	
16	1942.		2458.		2313.	
17	1938.		2434.		2253.	
18	1933.		2410.		2195.	
19	1929.		2386.		2136.	
20	1925.		2362.		2078.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 30

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-0.	-2269.	0.	0.	0.
2	-0.	-2197.	-0.	-0.	-2.
3	-0.	-2125.	-1.	-0.	-3.
4	-0.	-2054.	-1.	-0.	-5.
5	-0.	-1982.	-2.	-1.	-6.
6	-0.	-1910.	-3.	-1.	-8.
7	-0.	-1838.	-5.	-1.	-9.
8	-0.	-1766.	-7.	-2.	-11.
9	-0.	-1694.	-8.	-3.	-12.
10	-0.	-1622.	-11.	-3.	-13.
11	-0.	-1550.	-13.	-4.	-14.
12	-0.	-1478.	-15.	-5.	-15.
13	-0.	-1406.	-18.	-5.	-16.
14	-0.	-1334.	-21.	-6.	-17.
15	-0.	-1261.	-24.	-7.	-18.
16	-0.	-1189.	-27.	-8.	-19.
17	-0.	-1116.	-31.	-9.	-20.
18	-0.	-1043.	-34.	-10.	-21.
19	-0.	-969.	-38.	-11.	-22.
20	-0.	-896.	-42.	-13.	-22.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 30

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	-0.4127E-01	-0.1760E 00	-0.7633E-02
2	-0.3997E-01	-0.1760E 00	-0.7633E-02
3	-0.3866E-01	-0.1760E 00	-0.7633E-02
4	-0.3736E-01	-0.1759E 00	-0.7634E-02
5	-0.3605E-01	-0.1759E 00	-0.7635E-02
6	-0.3475E-01	-0.1759E 00	-0.7637E-02
7	-0.3344E-01	-0.1759E 00	-0.7640E-02
8	-0.3213E-01	-0.1759E 00	-0.7644E-02
9	-0.3082E-01	-0.1759E 00	-0.7650E-02
10	-0.2951E-01	-0.1759E 00	-0.7657E-02
11	-0.2820E-01	-0.1759E 00	-0.7665E-02
12	-0.2689E-01	-0.1759E 00	-0.7676E-02
13	-0.2558E-01	-0.1759E 00	-0.7688E-02
14	-0.2426E-01	-0.1759E 00	-0.7702E-02
15	-0.2294E-01	-0.1759E 00	-0.7719E-02
16	-0.2162E-01	-0.1759E 00	-0.7737E-02
17	-0.2030E-01	-0.1759E 00	-0.7759E-02
18	-0.1897E-01	-0.1759E 00	-0.7782E-02
19	-0.1763E-01	-0.1759E 00	-0.7809E-02
20	-0.1630E-01	-0.1758E 00	-0.7838E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 30

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-1.	-5031.	-1.	-5031.	-1.	-5031.
2	-1.	-4871.	-5.	-4873.	3.	-4870.
3	-1.	-4713.	-17.	-4717.	15.	-4708.
4	-1.	-4553.	-38.	-4564.	36.	-4542.
5	-1.	-4394.	-66.	-4414.	64.	-4375.
6	-1.	-4235.	-102.	-4265.	100.	-4205.
7	-1.	-4076.	-144.	-4119.	142.	-4033.
8	-1.	-3916.	-194.	-3974.	192.	-3858.
9	-1.	-3757.	-251.	-3832.	249.	-3682.
10	-1.	-3597.	-313.	-3691.	311.	-3504.
11	-1.	-3438.	-382.	-3552.	380.	-3323.
12	-1.	-3278.	-457.	-3415.	455.	-3141.
13	-1.	-3118.	-537.	-3279.	535.	-2957.
14	-1.	-2957.	-623.	-3144.	621.	-2771.
15	-1.	-2797.	-714.	-3011.	712.	-2583.
16	-1.	-2635.	-809.	-2878.	807.	-2393.
17	-1.	-2474.	-909.	-2747.	907.	-2202.
18	-1.	-2312.	-1013.	-2616.	1011.	-2009.
19	-1.	-2149.	-1121.	-2486.	1119.	-1813.
20	-1.	-1987.	-1233.	-2356.	1231.	-1617.

IV.10.2.36

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 30 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	5031.		5031.		5031.	
2	4876.		4873.		4873.	
3	4723.		4717.		4723.	
4	4569.		4564.		4578.	
5	4415.		4414.		4439.	
6	4260.		4265.		4304.	
7	4106.		4119.		4175.	
8	3951.		3974.		4050.	
9	3796.		3832.		3931.	
10	3640.		3691.		3815.	
11	3485.		3552.		3704.	
12	3328.		3415.		3596.	
13	3172.		3279.		3492.	
14	3015.		3144.		3392.	
15	2858.		3011.		3295.	
16	2699.		2878.		3200.	
17	2541.		2747.		3109.	
18	2382.		2616.		3020.	
19	2221.		2486.		2933.	
20	2061.		2356.		2848.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 40

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	0.	-896.	1.	0.	3.
2	0.	-822.	1.	0.	2.
3	0.	-748.	2.	1.	2.
4	0.	-675.	2.	1.	1.
5	0.	-601.	2.	1.	1.
6	0.	-527.	2.	1.	0.
7	0.	-454.	2.	1.	-0.
8	0.	-380.	2.	1.	-1.
9	0.	-306.	2.	1.	-1.
10	0.	-233.	2.	1.	-1.
11	0.	-159.	2.	0.	-1.
12	0.	-86.	1.	0.	-1.
13	0.	-12.	1.	0.	-1.
14	0.	61.	1.	0.	-1.
15	0.	135.	1.	0.	-1.
16	0.	208.	0.	0.	-1.
17	0.	282.	0.	0.	-1.
18	0.	356.	0.	0.	-1.
19	0.	429.	0.	0.	-0.
20	0.	503.	0.	0.	-0.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 40

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.1629E-01	-0.1758E 00	-0.7838E-02
2	-0.1495E-01	-0.1758E 00	-0.7837E-02
3	-0.1361E-01	-0.1758E 00	-0.7836E-02
4	-0.1227E-01	-0.1758E 00	-0.7835E-02
5	-0.1093E-01	-0.1758E 00	-0.7833E-02
6	-0.9593E-02	-0.1758E 00	-0.7832E-02
7	-0.8254E-02	-0.1758E 00	-0.7830E-02
8	-0.6915E-02	-0.1758E 00	-0.7829E-02
9	-0.5576E-02	-0.1758E 00	-0.7827E-02
10	-0.4237E-02	-0.1758E 00	-0.7826E-02
11	-0.2898E-02	-0.1758E 00	-0.7825E-02
12	-0.1560E-02	-0.1758E 00	-0.7824E-02
13	-0.2217E-03	-0.1758E 00	-0.7823E-02
14	0.1116E-02	-0.1758E 00	-0.7822E-02
15	0.2454E-02	-0.1758E 00	-0.7822E-02
16	0.3792E-02	-0.1758E 00	-0.7821E-02
17	0.5130E-02	-0.1758E 00	-0.7821E-02
18	0.6468E-02	-0.1758E 00	-0.7821E-02
19	0.7805E-02	-0.1758E 00	-0.7821E-02
20	0.9143E-02	-0.1758E 00	-0.7821E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 40

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	1.	-1986.	29.	-1977.	-27.	-1994.
2	1.	-1822.	41.	-1810.	-40.	-1835.
3	1.	-1659.	51.	-1644.	-49.	-1674.
4	1.	-1496.	57.	-1479.	-55.	-1512.
5	1.	-1332.	61.	-1315.	-59.	-1350.
6	1.	-1169.	62.	-1151.	-60.	-1187.
7	1.	-1006.	62.	-988.	-60.	-1024.
8	1.	-843.	60.	-825.	-58.	-860.
9	1.	-680.	56.	-663.	-54.	-696.
10	1.	-516.	51.	-501.	-49.	-531.
11	1.	-353.	46.	-340.	-44.	-367.
12	1.	-190.	39.	-179.	-37.	-202.
13	1.	-27.	33.	-17.	-31.	-36.
14	1.	136.	26.	144.	-24.	129.
15	1.	299.	20.	305.	-18.	294.
16	1.	462.	14.	466.	-12.	458.
17	1.	625.	9.	628.	-7.	623.
18	1.	788.	5.	789.	-3.	787.
19	1.	952.	2.	952.	-0.	951.
20	1.	1114.	1.	1114.	1.	1114.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 40 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	1995.		2006.		1994.	
2	1830.		1852.		1835.	
3	1664.		1695.		1674.	
4	1499.		1536.		1512.	
5	1335.		1375.		1350.	
6	1170.		1213.		1187.	
7	1007.		1049.		1024.	
8	845.		885.		860.	
9	683.		719.		696.	
10	520.		553.		531.	
11	358.		385.		367.	
12	195.		218.		202.	
13	32.		50.		36.	
14	140.		144.		153.	
15	303.		305.		312.	
16	465.		466.		470.	
17	628.		628.		630.	
18	790.		789.		790.	
19	952.		952.		951.	
20	1114.		1114.		1114.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 50

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	5553.	-3521.	-3521.	-1056.	670.
2	5549.	-3500.	-3297.	-990.	650.
3	5546.	-3450.	-3079.	-926.	630.
4	5542.	-3372.	-2869.	-864.	610.
5	5539.	-3269.	-2665.	-804.	590.
6	5535.	-3141.	-2469.	-746.	570.
7	5532.	-2993.	-2279.	-690.	550.
8	5528.	-2823.	-2095.	-636.	531.
9	5525.	-2635.	-1918.	-583.	512.
10	5522.	-2430.	-1748.	-533.	493.
11	5519.	-2209.	-1584.	-484.	474.
12	5516.	-1975.	-1426.	-437.	456.
13	5513.	-1728.	-1275.	-392.	438.
14	5510.	-1470.	-1129.	-349.	421.
15	5508.	-1202.	-990.	-308.	403.
16	5505.	-926.	-856.	-268.	387.
17	5503.	-642.	-728.	-230.	370.
18	5500.	-351.	-605.	-193.	354.
19	5498.	-57.	-488.	-158.	338.
20	5496.	243.	-376.	-125.	323.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 50

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.1677E-01	-0.2714E 00	-0.5712E-04
2	0.1697E-01	-0.2713E 00	-0.1127E-02
3	0.1752E-01	-0.2712E 00	-0.2127E-02
4	0.1840E-01	-0.2710E 00	-0.3060E-02
5	0.1958E-01	-0.2709E 00	-0.3926E-02
6	0.2105E-01	-0.2708E 00	-0.4731E-02
7	0.2277E-01	-0.2707E 00	-0.5475E-02
8	0.2474E-01	-0.2706E 00	-0.6160E-02
9	0.2693E-01	-0.2705E 00	-0.6789E-02
10	0.2933E-01	-0.2704E 00	-0.7363E-02
11	0.3191E-01	-0.2703E 00	-0.7885E-02
12	0.3466E-01	-0.2702E 00	-0.8356E-02
13	0.3755E-01	-0.2701E 00	-0.8778E-02
14	0.4059E-01	-0.2700E 00	-0.9154E-02
15	0.4374E-01	-0.2699E 00	-0.9486E-02
16	0.4699E-01	-0.2698E 00	-0.9773E-02
17	0.5034E-01	-0.2698E 00	-0.1002E-01
18	0.5377E-01	-0.2697E 00	-0.1023E-01
19	0.5725E-01	-0.2696E 00	-0.1040E-01
20	0.6079E-01	-0.2695E 00	-0.1053E-01

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 50

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	7404.	-4694.	-30151.	-15962.	44959.	6573.
2	7399.	-4667.	-27765.	-15229.	42563.	5896.
3	7394.	-4600.	-25450.	-14479.	40238.	5279.
4	7389.	-4496.	-23210.	-13713.	37989.	4721.
5	7385.	-4358.	-21047.	-12936.	35817.	4219.
6	7380.	-4189.	-18951.	-12145.	33712.	3768.
7	7376.	-3990.	-16931.	-11348.	31682.	3368.
8	7371.	-3764.	-14977.	-10543.	29719.	3015.
9	7367.	-3513.	-13097.	-9735.	27831.	2708.
10	7363.	-3240.	-11285.	-8924.	26011.	2443.
11	7359.	-2946.	-9537.	-8110.	24254.	2218.
12	7355.	-2633.	-7860.	-7299.	22569.	2032.
13	7351.	-2304.	-6248.	-6490.	20949.	1882.
14	7347.	-1960.	-4699.	-5685.	19393.	1765.
15	7344.	-1603.	-3213.	-4884.	17900.	1679.
16	7340.	-1235.	-1793.	-4093.	16474.	1624.
17	7337.	-856.	-429.	-3307.	15103.	1595.
18	7334.	-469.	877.	-2529.	13791.	1592.
19	7331.	-75.	2122.	-1764.	12539.	1613.
20	7328.	324.	3315.	-1007.	11341.	1655.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 50 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	12333.		30151.	* *	44959.	* *
2	12287.		27765.	*	42563.	* *
3	12203.		25450.	*	40238.	* *
4	12081.		23210.	*	37989.	* *
5	11927.		21047.	*	35817.	* *
6	11741.		18951.		33712.	* *
7	11526.		16931.		31682.	* *
8	11285.		14977.		29719.	* *
9	11020.		13097.		27831.	*
10	10733.		11285.		26011.	*
11	10425.		9537.		24254.	*
12	10099.		7860.		22569.	*
13	9758.		6490.		20949.	*
14	9402.		5685.		19393.	*
15	9034.		4884.		17900.	
16	8655.		4093.		16474.	
17	8267.		3307.		15103.	
18	7870.		3406.		13791.	
19	7468.		3886.		12539.	
20	7441.		4322.		11341.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 60

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4395.	15482.	3322.	971.	-450.
2	4470.	16708.	2302.	681.	-378.
3	4547.	16903.	1469.	442.	-301.
4	4623.	16451.	825.	255.	-227.
5	4694.	15644.	353.	117.	-162.
6	4759.	14692.	29.	21.	-107.
7	4817.	13737.	-177.	-42.	-64.
8	4868.	12867.	-291.	-77.	-32.
9	4915.	12129.	-339.	-94.	-10.
10	4956.	11543.	-343.	-97.	5.
11	4994.	11106.	-319.	-91.	13.
12	5029.	10807.	-280.	-81.	17.
13	5063.	10627.	-236.	-70.	18.
14	5095.	10546.	-193.	-58.	17.
15	5127.	10545.	-154.	-47.	15.
16	5159.	10606.	-121.	-38.	12.
17	5190.	10715.	-94.	-30.	10.
18	5223.	10861.	-72.	-24.	8.
19	5255.	11034.	-53.	-19.	8.
20	5289.	11226.	-33.	-13.	8.
21	5323.	11429.	-11.	-6.	10.
22	5357.	11632.	18.	2.	14.
23	5393.	11826.	56.	14.	18.
24	5429.	11996.	107.	30.	24.
25	5466.	12122.	172.	50.	30.
26	5503.	12180.	253.	75.	37.
27	5539.	12141.	350.	106.	43.
28	5574.	11970.	459.	141.	48.
29	5608.	11629.	576.	178.	49.
30	5639.	11076.	690.	216.	46.
31	5666.	10275.	789.	249.	36.
32	5688.	9192.	852.	272.	17.
33	5703.	7811.	855.	276.	-14.
34	5710.	6137.	767.	254.	-59.
35	5707.	4208.	551.	192.	-120.
36	5694.	2107.	164.	78.	-200.
37	5670.	-21.	-436.	-103.	-299.
38	5635.	-1960.	-1296.	-365.	-415.
39	5592.	-3406.	-2453.	-721.	-546.
40	5544.	-3955.	-3936.	-1181.	-686.

WL-105.046

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 60

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.2919E 00	-0.2681E 00	-0.7844E-02
2	0.3045E 00	-0.2682E 00	-0.2881E-02
3	0.3072E 00	-0.2682E 00	0.4318E-03
4	0.3035E 00	-0.2683E 00	0.2433E-02
5	0.2962E 00	-0.2683E 00	0.3447E-02
6	0.2874E 00	-0.2683E 00	0.3758E-02
7	0.2783E 00	-0.2682E 00	0.3605E-02
8	0.2701E 00	-0.2681E 00	0.3173E-02
9	0.2631E 00	-0.2680E 00	0.2602E-02
10	0.2575E 00	-0.2679E 00	0.1989E-02
11	0.2534E 00	-0.2677E 00	0.1398E-02
12	0.2507E 00	-0.2675E 00	0.8642E-03
13	0.2491E 00	-0.2673E 00	0.4061E-03
14	0.2486E 00	-0.2671E 00	0.2651E-04
15	0.2489E 00	-0.2669E 00	-0.2796E-03
16	0.2499E 00	-0.2667E 00	-0.5218E-03
17	0.2514E 00	-0.2665E 00	-0.7109E-03
18	0.2533E 00	-0.2663E 00	-0.8566E-03
19	0.2556E 00	-0.2661E 00	-0.9655E-03
20	0.2580E 00	-0.2659E 00	-0.1040E-02
21	0.2606E 00	-0.2657E 00	-0.1078E-02
22	0.2632E 00	-0.2654E 00	-0.1071E-02
23	0.2657E 00	-0.2653E 00	-0.1005E-02
24	0.2680E 00	-0.2651E 00	-0.8606E-03
25	0.2698E 00	-0.2649E 00	-0.6144E-03
26	0.2709E 00	-0.2647E 00	-0.2392E-03
27	0.2709E 00	-0.2645E 00	0.2928E-03
28	0.2693E 00	-0.2643E 00	0.1007E-02
29	0.2658E 00	-0.2640E 00	0.1920E-02
30	0.2598E 00	-0.2638E 00	0.3039E-02
31	0.2509E 00	-0.2635E 00	0.4346E-02
32	0.2386E 00	-0.2632E 00	0.5798E-02
33	0.2227E 00	-0.2629E 00	0.7311E-02
34	0.2032E 00	-0.2625E 00	0.8751E-02
35	0.1805E 00	-0.2621E 00	0.9925E-02
36	0.1555E 00	-0.2616E 00	0.1057E-01
37	0.1299E 00	-0.2610E 00	0.1035E-01
38	0.1063E 00	-0.2604E 00	0.8841E-02
39	0.8839E-01	-0.2597E 00	0.5556E-02
40	0.8119E-01	-0.2589E 00	-0.5593E-04

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 60

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	5409.	19055.	35605.	27881.	-24787.	10229.
2	5501.	20563.	26425.	26755.	-15423.	14371.
3	5597.	20804.	18951.	24823.	-7757.	16785.
4	5690.	20248.	13189.	22568.	-1808.	17927.
5	5778.	19254.	8987.	20316.	2569.	18191.
6	5857.	18082.	6118.	18268.	5597.	17896.
7	5928.	16907.	4322.	16528.	7535.	17285.
8	5992.	15836.	3348.	15133.	8636.	16539.
9	6049.	14928.	2966.	14077.	9131.	15780.
10	6100.	14207.	2986.	13328.	9214.	15085.
11	6147.	13669.	3251.	12840.	9042.	14499.
12	6190.	13301.	3646.	12562.	8734.	14040.
13	6231.	13079.	4087.	12447.	8376.	13712.
14	6271.	12980.	4519.	12454.	8024.	13505.
15	6310.	12978.	4910.	12550.	7711.	13406.
16	6349.	13053.	5247.	12708.	7452.	13398.
17	6388.	13188.	5530.	12911.	7246.	13465.
18	6428.	13368.	5771.	13148.	7085.	13588.
19	6468.	13581.	5988.	13411.	6948.	13750.
20	6509.	13817.	6207.	13699.	6811.	13935.
21	6551.	14066.	6453.	14008.	6649.	14124.
22	6594.	14317.	6758.	14338.	6430.	14296.
23	6638.	14556.	7150.	14683.	6125.	14428.
24	6682.	14764.	7655.	15034.	5710.	14495.
25	6727.	14920.	8293.	15373.	5161.	14466.
26	6772.	14991.	9075.	15676.	4469.	14307.
27	6817.	14943.	9998.	15905.	3637.	13982.
28	6861.	14733.	11035.	16011.	2686.	13455.
29	6902.	14312.	12136.	15931.	1668.	12694.
30	6940.	13632.	13215.	15591.	665.	11674.
31	6974.	12646.	14144.	14905.	-197.	10386.
32	7000.	11314.	14746.	13781.	-746.	8846.
33	7019.	9614.	14793.	12127.	-756.	7101.
34	7027.	7554.	14000.	9860.	54.	5247.
35	7024.	5179.	12030.	6923.	2018.	3435.
36	7008.	2594.	8502.	3299.	5513.	1888.
37	6978.	-26.	3012.	-965.	10943.	914.
38	6936.	-2413.	-4842.	-5733.	18713.	908.
39	6883.	-4192.	-15416.	-10749.	29181.	2364.
40	6824.	-4868.	-28950.	-15601.	42598.	5865.

III.10.3.48

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 60 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	19179.		35605.	* *	35016.	* * } ≤ 3S_M ∴ ok (Q)
2	20651.	* } ≤ 1½ S_M ∴ ok (PL)	26755.	*	29794.	* *
3	20858.	*	24823.	*	24542.	*
4	20278.	*	22568.	*	19735.	*
5	19269.		20316.	*	18191.	
6	18089.		18268.		17896.	
7	16909.		16528.		17285.	
8	15837.		15133.		16539.	
9	14929.		14077.		15780.	
10	14207.		13328.		15085.	
11	13669.		12840.		14499.	
12	13301.		12562.		14040.	
13	13079.		12447.		13712.	
14	12980.		12454.		13505.	
15	12978.		12550.		13406.	
16	13053.		12708.		13398.	
17	13188.		12911.		13465.	
18	13368.		13148.		13588.	
19	13581.		13411.		13750.	
20	13817.		13699.		13935.	
21	14066.		14008.		14124.	
22	14317.		14338.		14296.	
23	14556.		14683.		14428.	
24	14765.		15034.		14495.	
25	14920.		15373.		14466.	
26	14992.		15676.		14307.	
27	14944.		15905.		13982.	
28	14734.		16011.		13455.	
29	14313.		15931.		12694.	
30	13633.		15591.		11674.	
31	12646.		14905.		10583.	
32	11314.		14746.		9592.	
33	9614.		14793.		7857.	
34	7555.		14000.		5247.	
35	7038.		12030.		3435.	
36	7046.		8502.		5513.	
37	7064.		3978.		10943.	
38	9432.		5733.		18713.	
39	11220.		15416.		29181.	* * } ≤ 3S_M ∴ ok (Q)
40	11919.		28950.	*	42598.	* *

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 70

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4029.	15954.	714.	214.	1739.
2	4029.	16053.	849.	255.	1742.
3	4029.	16152.	986.	295.	1745.
4	4029.	16249.	1118.	336.	1748.
5	4029.	16348.	1255.	376.	1751.
6	4029.	16444.	1390.	417.	1754.
7	4029.	16541.	1527.	458.	1758.
8	4029.	16638.	1662.	499.	1761.
9	4029.	16733.	1799.	540.	1764.
10	4029.	16827.	1936.	581.	1768.
11	4029.	16922.	2073.	622.	1771.
12	4029.	17014.	2210.	663.	1774.
13	4029.	17106.	2346.	704.	1778.
14	4029.	17197.	2485.	745.	1781.
15	4029.	17288.	2623.	787.	1785.
16	4029.	17377.	2762.	828.	1788.
17	4029.	17466.	2899.	870.	1792.
18	4029.	17551.	3039.	911.	1796.
19	4029.	17638.	3177.	953.	1799.
20	4029.	17722.	3317.	995.	1803.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 70

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.1063E 00	-0.3780E 00	-0.9205E-02
2	0.1070E 00	-0.3780E 00	-0.9174E-02
3	0.1077E 00	-0.3780E 00	-0.9142E-02
4	0.1084E 00	-0.3780E 00	-0.9105E-02
5	0.1091E 00	-0.3780E 00	-0.9063E-02
6	0.1098E 00	-0.3780E 00	-0.9016E-02
7	0.1105E 00	-0.3780E 00	-0.8963E-02
8	0.1112E 00	-0.3780E 00	-0.8907E-02
9	0.1119E 00	-0.3780E 00	-0.8846E-02
10	0.1126E 00	-0.3780E 00	-0.8780E-02
11	0.1133E 00	-0.3780E 00	-0.8707E-02
12	0.1139E 00	-0.3780E 00	-0.8631E-02
13	0.1146E 00	-0.3780E 00	-0.8551E-02
14	0.1153E 00	-0.3780E 00	-0.8463E-02
15	0.1159E 00	-0.3780E 00	-0.8373E-02
16	0.1166E 00	-0.3780E 00	-0.8278E-02
17	0.1172E 00	-0.3780E 00	-0.8176E-02
18	0.1178E 00	-0.3781E 00	-0.8070E-02
19	0.1184E 00	-0.3781E 00	-0.7960E-02
20	0.1190E 00	-0.3781E 00	-0.7844E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 70

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	4253.	16840.	9024.	18272.	-519.	15408.
2	4253.	16944.	9925.	18646.	-1419.	15242.
3	4253.	17048.	10841.	19022.	-2335.	15075.
4	4253.	17152.	11726.	19396.	-3221.	14907.
5	4253.	17256.	12642.	19772.	-4137.	14740.
6	4253.	17357.	13548.	20144.	-5042.	14569.
7	4253.	17459.	14457.	20520.	-5951.	14398.
8	4253.	17562.	15361.	20896.	-6855.	14228.
9	4253.	17662.	16276.	21269.	-7771.	14055.
10	4253.	17762.	17192.	21643.	-8687.	13880.
11	4253.	17861.	18109.	22017.	-9603.	13705.
12	4253.	17959.	19028.	22390.	-10522.	13528.
13	4253.	18056.	19934.	22763.	-11428.	13349.
14	4253.	18152.	20865.	23134.	-12359.	13169.
15	4253.	18247.	21787.	23507.	-13282.	12988.
16	4253.	18342.	22715.	23879.	-14209.	12805.
17	4253.	18436.	23632.	24251.	-15127.	12620.
18	4253.	18525.	24570.	24618.	-16065.	12433.
19	4253.	18618.	25492.	24990.	-16986.	12245.
20	4253.	18706.	26427.	25358.	-17921.	12054.

IV.10.3.52

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 70 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	18193.		18272.		15927.	
2	18301.		18646.		16661.	
3	18408.		19022.		17410.	
4	18516.		19396.	*	18128.	
5	18624.		19772.	*	18876.	
6	18728.		20144.	*	19611.	*
7	18835.		20520.	*	20350.	*
8	18942.		20896.	*	21083.	*
9	19046.		21269.	*	21826.	*
10	19150.		21643.	*	22567.	*
11	19254.		22017.	*	23309.	*
12	19356.	*	22390.	*	24050.	*
13	19457.	*	22763.	*	24777.	*
14	19557.	*	23134.	*	25528.	*
15	19658.	*	23507.	*	26269.	*
16	19757.	* ≤ 1½SM	23879.	*	27014.	*
17	19855.	* ∴ OK(PL)	24251.	*	27747.	*
18	19949.	*	24618.	*	28497.	*
19	20046.	*	25492.	*	29231.	* * ≤ 3SM
20	20139.	*	26427.	*	29975.	* * ∴ OK (Q)

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 90

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4025.	15582.	-7540.	-2262.	1492.
2	4025.	15931.	-7183.	-2155.	1501.
3	4025.	16289.	-6824.	-2047.	1511.
4	4025.	16658.	-6463.	-1939.	1521.
5	4025.	17038.	-6099.	-1830.	1531.
6	4025.	17427.	-5733.	-1720.	1542.
7	4025.	17825.	-5364.	-1609.	1553.
8	4025.	18232.	-4992.	-1498.	1565.
9	4025.	18647.	-4618.	-1385.	1577.
10	4025.	19068.	-4240.	-1272.	1590.
11	4025.	19496.	-3860.	-1158.	1603.
12	4025.	19931.	-3476.	-1043.	1617.
13	4025.	20372.	-3089.	-927.	1632.
14	4025.	20816.	-2698.	-809.	1647.
15	4025.	21266.	-2304.	-691.	1662.
16	4025.	21718.	-1905.	-572.	1678.
17	4025.	22173.	-1503.	-451.	1695.
18	4025.	22632.	-1097.	-329.	1712.
19	4025.	23090.	-687.	-206.	1730.
20	4025.	23552.	-272.	-82.	1749.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 90

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.6839E-01	-0.3801E 00	-0.6814E-02
2	0.7004E-01	-0.3801E 00	-0.7045E-02
3	0.7175E-01	-0.3801E 00	-0.7265E-02
4	0.7350E-01	-0.3801E 00	-0.7474E-02
5	0.7531E-01	-0.3801E 00	-0.7671E-02
6	0.7716E-01	-0.3801E 00	-0.7857E-02
7	0.7906E-01	-0.3801E 00	-0.8031E-02
8	0.8099E-01	-0.3801E 00	-0.8194E-02
9	0.8296E-01	-0.3801E 00	-0.8345E-02
10	0.8497E-01	-0.3801E 00	-0.8484E-02
11	0.8701E-01	-0.3801E 00	-0.8611E-02
12	0.8907E-01	-0.3801E 00	-0.8727E-02
13	0.9117E-01	-0.3802E 00	-0.8830E-02
14	0.9328E-01	-0.3802E 00	-0.8921E-02
15	0.9542E-01	-0.3802E 00	-0.8999E-02
16	0.9757E-01	-0.3802E 00	-0.9065E-02
17	0.9974E-01	-0.3802E 00	-0.9119E-02
18	0.1019E 00	-0.3802E 00	-0.9160E-02
19	0.1041E 00	-0.3802E 00	-0.9188E-02
20	0.1063E 00	-0.3803E 00	-0.9203E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 90

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	2800.	10840.	-19093.	4272.	24693.	17408.
2	2800.	11082.	-18057.	4825.	23657.	17339.
3	2800.	11331.	-17014.	5387.	22615.	17276.
4	2800.	11588.	-15965.	5959.	21566.	17218.
5	2800.	11853.	-14909.	6540.	20510.	17166.
6	2800.	12123.	-13846.	7129.	19446.	17117.
7	2800.	12400.	-12775.	7728.	18375.	17072.
8	2800.	12683.	-11696.	8334.	17296.	17032.
9	2800.	12972.	-10608.	8949.	16209.	16994.
10	2800.	13265.	-9512.	9571.	15113.	16958.
11	2800.	13563.	-8407.	10200.	14008.	16925.
12	2800.	13865.	-7292.	10837.	12893.	16893.
13	2800.	14172.	-6168.	11481.	11769.	16863.
14	2800.	14480.	-5034.	12130.	10634.	16831.
15	2800.	14794.	-3889.	12787.	9489.	16800.
16	2800.	15108.	-2732.	13448.	8333.	16768.
17	2800.	15425.	-1565.	14115.	7165.	16734.
18	2800.	15744.	-386.	14788.	5986.	16700.
19	2800.	16063.	806.	15464.	4795.	16661.
20	2800.	16384.	2010.	16147.	3591.	16621.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 90 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	11534.		23364.	*	24693.	*
2	11783.		22882.	*	23657.	*
3	12040.		22402.	*	22615.	*
4	12304.		21924.	*	21566.	*
5	12577.		21449.	*	20510.	*
6	12856.		20975.	*	19446.	*
7	13141.		20502.	*	18375.	
8	13434.		20030.	*	17296.	
9	13732.		19557.	*	16994.	
10	14036.		19084.		16958.	
11	14344.		18607.		16925.	
12	14658.		18130.		16893.	
13	14976.		17650.		16863.	
14	15297.		17164.		16831.	
15	15623.		16676.		16800.	
16	15950.		16181.		16768.	
17	16280.		15680.		16734.	
18	16614.		15174.		16700.	
19	16947.		15464.		16661.	
20	17284.		16147.		16621.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 100

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-1590.	19525.	3591.	413.	-221.
2	-1544.	19479.	3492.	392.	-221.
3	-1498.	19434.	3394.	371.	-220.
4	-1453.	19388.	3296.	350.	-220.
5	-1408.	19343.	3198.	329.	-219.
6	-1363.	19299.	3101.	308.	-219.
7	-1319.	19254.	3004.	287.	-218.
8	-1275.	19210.	2908.	265.	-218.
9	-1231.	19166.	2812.	244.	-218.
10	-1187.	19123.	2716.	222.	-217.
11	-1144.	19080.	2620.	200.	-217.
12	-1101.	19037.	2525.	178.	-216.
13	-1058.	18994.	2431.	156.	-216.
14	-1016.	18951.	2336.	134.	-215.
15	-974.	18909.	2242.	112.	-215.
16	-932.	18867.	2149.	89.	-214.
17	-890.	18826.	2055.	67.	-214.
18	-849.	18784.	1962.	45.	-213.
19	-808.	18743.	1870.	22.	-213.
20	-767.	18702.	1778.	-1.	-212.
21	-726.	18662.	1686.	-24.	-212.
22	-686.	18621.	1594.	-47.	-212.
23	-646.	18581.	1503.	-70.	-211.
24	-606.	18541.	1412.	-93.	-211.
25	-566.	18502.	1321.	-116.	-210.
26	-527.	18462.	1231.	-139.	-210.
27	-488.	18423.	1141.	-163.	-209.
28	-449.	18384.	1051.	-186.	-209.
29	-410.	18346.	962.	-210.	-209.
30	-372.	18307.	873.	-233.	-208.
31	-333.	18269.	784.	-257.	-208.
32	-295.	18231.	696.	-281.	-207.
33	-258.	18193.	608.	-305.	-207.
34	-220.	18156.	520.	-329.	-206.
35	-183.	18119.	433.	-353.	-206.
36	-146.	18082.	346.	-377.	-206.
37	-109.	18045.	259.	-401.	-205.
38	-73.	18008.	172.	-426.	-205.
39	-36.	17972.	86.	-450.	-204.
40	-0.	17936.	0.	-474.	-204.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 100

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.3801E 00	0.6839E-01	-0.6814E-02
2	0.3829E 00	0.6833E-01	-0.6738E-02
3	0.3857E 00	0.6828E-01	-0.6663E-02
4	0.3884E 00	0.6822E-01	-0.6591E-02
5	0.3911E 00	0.6817E-01	-0.6521E-02
6	0.3938E 00	0.6812E-01	-0.6452E-02
7	0.3965E 00	0.6806E-01	-0.6386E-02
8	0.3992E 00	0.6801E-01	-0.6322E-02
9	0.4018E 00	0.6796E-01	-0.6260E-02
10	0.4044E 00	0.6791E-01	-0.6199E-02
11	0.4069E 00	0.6785E-01	-0.6141E-02
12	0.4095E 00	0.6780E-01	-0.6085E-02
13	0.4120E 00	0.6775E-01	-0.6031E-02
14	0.4145E 00	0.6770E-01	-0.5978E-02
15	0.4170E 00	0.6765E-01	-0.5928E-02
16	0.4194E 00	0.6760E-01	-0.5880E-02
17	0.4218E 00	0.6755E-01	-0.5833E-02
18	0.4243E 00	0.6751E-01	-0.5789E-02
19	0.4267E 00	0.6746E-01	-0.5746E-02
20	0.4290E 00	0.6741E-01	-0.5705E-02
21	0.4314E 00	0.6736E-01	-0.5666E-02
22	0.4338E 00	0.6732E-01	-0.5630E-02
23	0.4361E 00	0.6727E-01	-0.5594E-02
24	0.4384E 00	0.6722E-01	-0.5561E-02
25	0.4407E 00	0.6718E-01	-0.5530E-02
26	0.4430E 00	0.6713E-01	-0.5501E-02
27	0.4453E 00	0.6709E-01	-0.5473E-02
28	0.4476E 00	0.6704E-01	-0.5448E-02
29	0.4498E 00	0.6700E-01	-0.5424E-02
30	0.4521E 00	0.6695E-01	-0.5402E-02
31	0.4543E 00	0.6691E-01	-0.5382E-02
32	0.4566E 00	0.6687E-01	-0.5363E-02
33	0.4588E 00	0.6682E-01	-0.5347E-02
34	0.4610E 00	0.6678E-01	-0.5332E-02
35	0.4632E 00	0.6674E-01	-0.5319E-02
36	0.4654E 00	0.6670E-01	-0.5308E-02
37	0.4676E 00	0.6666E-01	-0.5298E-02
38	0.4698E 00	0.6662E-01	-0.5291E-02
39	0.4720E 00	0.6658E-01	-0.5285E-02
40	0.4742E 00	0.6654E-01	-0.5281E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 100

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-795.	9763.	4592.	10382.	-6181.	9143.
2	-772.	9740.	4467.	10328.	-6010.	9151.
3	-749.	9717.	4342.	10274.	-5840.	9160.
4	-726.	9694.	4217.	10220.	-5670.	9169.
5	-704.	9672.	4093.	10166.	-5501.	9178.
6	-682.	9649.	3970.	10111.	-5333.	9187.
7	-659.	9627.	3847.	10057.	-5166.	9197.
8	-637.	9605.	3724.	10003.	-4999.	9207.
9	-615.	9583.	3602.	9949.	-4833.	9218.
10	-594.	9561.	3480.	9894.	-4667.	9229.
11	-572.	9540.	3358.	9840.	-4503.	9240.
12	-551.	9518.	3237.	9786.	-4338.	9251.
13	-529.	9497.	3117.	9731.	-4175.	9263.
14	-508.	9476.	2996.	9677.	-4012.	9275.
15	-487.	9455.	2877.	9622.	-3850.	9287.
16	-466.	9434.	2757.	9568.	-3689.	9299.
17	-445.	9413.	2638.	9513.	-3528.	9312.
18	-424.	9392.	2519.	9459.	-3368.	9325.
19	-404.	9372.	2401.	9404.	-3208.	9339.
20	-383.	9351.	2283.	9350.	-3050.	9352.
21	-363.	9331.	2165.	9295.	-2891.	9366.
22	-343.	9311.	2048.	9241.	-2734.	9381.
23	-323.	9291.	1931.	9186.	-2577.	9395.
24	-303.	9271.	1815.	9131.	-2421.	9410.
25	-283.	9251.	1699.	9077.	-2265.	9425.
26	-263.	9231.	1583.	9022.	-2110.	9440.
27	-244.	9212.	1468.	8967.	-1955.	9456.
28	-224.	9192.	1353.	8913.	-1801.	9471.
29	-205.	9173.	1238.	8858.	-1648.	9487.
30	-186.	9154.	1124.	8803.	-1495.	9504.
31	-167.	9134.	1010.	8749.	-1343.	9520.
32	-148.	9115.	896.	8694.	-1192.	9537.
33	-129.	9097.	783.	8639.	-1041.	9554.
34	-110.	9078.	670.	8585.	-891.	9571.
35	-92.	9059.	558.	8530.	-741.	9589.
36	-73.	9041.	446.	8475.	-592.	9606.
37	-55.	9022.	334.	8420.	-443.	9624.
38	-36.	9004.	222.	8366.	-295.	9642.
39	-18.	8985.	111.	8311.	-147.	9661.
40	-0.	8968.	0.	8256.	-0.	9679.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 100   DESIGN STRESS INTENSITY =   19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	10591.		10382.		15325.	
2	10546.		10328.		15162.	
3	10501.		10274.		15000.	
4	10456.		10220.		14839.	
5	10412.		10166.		14679.	
6	10368.		10111.		14521.	
7	10325.		10057.		14363.	
8	10282.		10003.		14206.	
9	10239.		9949.		14050.	
10	10197.		9894.		13896.	
11	10155.		9840.		13742.	
12	10113.		9786.		13589.	
13	10072.		9731.		13438.	
14	10031.		9677.		13287.	
15	9990.		9622.		13137.	
16	9950.		9568.		12988.	
17	9910.		9513.		12840.	
18	9870.		9459.		12693.	
19	9831.		9404.		12547.	
20	9792.		9350.		12402.	
21	9754.		9295.		12258.	
22	9716.		9241.		12114.	
23	9678.		9186.		11972.	
24	9641.		9131.		11830.	
25	9604.		9077.		11690.	
26	9568.		9022.		11550.	
27	9532.		8967.		11411.	
28	9497.		8913.		11273.	
29	9462.		8858.		11136.	
30	9428.		8803.		10999.	
31	9394.		8749.		10864.	
32	9361.		8694.		10729.	
33	9329.		8639.		10595.	
34	9297.		8585.		10462.	
35	9266.		8530.		10330.	
36	9236.		8475.		10198.	
37	9206.		8420.		10067.	
38	9177.		8366.		9937.	
39	9148.		8311.		9808.	
40	9121.		8256.		9680.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 110

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4247.	2494.	-1949.	-585.	197.
2	4247.	2469.	-1833.	-550.	177.
3	4247.	2464.	-1728.	-518.	157.
4	4247.	2477.	-1636.	-491.	137.
5	4247.	2507.	-1557.	-467.	117.
6	4247.	2555.	-1490.	-447.	97.
7	4247.	2619.	-1435.	-431.	78.
8	4247.	2698.	-1393.	-418.	58.
9	4247.	2792.	-1362.	-409.	39.
10	4247.	2901.	-1344.	-403.	20.
11	4247.	3025.	-1337.	-401.	2.
12	4247.	3162.	-1341.	-402.	-16.
13	4247.	3315.	-1356.	-407.	-33.
14	4247.	3482.	-1383.	-415.	-50.
15	4247.	3664.	-1419.	-426.	-67.
16	4247.	3861.	-1466.	-440.	-83.
17	4247.	4074.	-1522.	-457.	-98.
18	4247.	4304.	-1588.	-476.	-112.
19	4247.	4550.	-1662.	-499.	-126.
20	4247.	4815.	-1744.	-523.	-138.
21	4247.	5098.	-1834.	-550.	-150.
22	4247.	5402.	-1932.	-579.	-161.
23	4247.	5726.	-2035.	-611.	-171.
24	4247.	6072.	-2145.	-644.	-180.
25	4247.	6441.	-2260.	-678.	-188.
26	4247.	6835.	-2379.	-714.	-194.
27	4247.	7254.	-2502.	-750.	-199.
28	4247.	7700.	-2627.	-788.	-203.
29	4247.	8175.	-2754.	-826.	-205.
30	4247.	8679.	-2882.	-865.	-205.
31	4247.	9215.	-3010.	-903.	-204.
32	4247.	9783.	-3137.	-941.	-201.
33	4247.	10385.	-3261.	-978.	-196.
34	4247.	11022.	-3381.	-1014.	-189.
35	4247.	11695.	-3497.	-1049.	-180.
36	4247.	12406.	-3606.	-1082.	-169.
37	4247.	13156.	-3707.	-1112.	-155.
38	4247.	13947.	-3799.	-1140.	-139.
39	4247.	14778.	-3880.	-1164.	-120.
40	4247.	15651.	-3948.	-1184.	-98.

IV.10.3.62

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 110

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.5805E-02	-0.3815E 00	0.2717E-03
2	0.5685E-02	-0.3814E 00	0.1163E-03
3	0.5658E-02	-0.3814E 00	-0.3007E-04
4	0.5721E-02	-0.3813E 00	-0.1683E-03
5	0.5867E-02	-0.3813E 00	-0.2996E-03
6	0.6093E-02	-0.3812E 00	-0.4248E-03
7	0.6396E-02	-0.3812E 00	-0.5450E-03
8	0.6773E-02	-0.3811E 00	-0.6612E-03
9	0.7221E-02	-0.3811E 00	-0.7744E-03
10	0.7739E-02	-0.3810E 00	-0.8856E-03
11	0.8327E-02	-0.3810E 00	-0.9958E-03
12	0.8982E-02	-0.3809E 00	-0.1106E-02
13	0.9707E-02	-0.3809E 00	-0.1217E-02
14	0.1050E-01	-0.3808E 00	-0.1329E-02
15	0.1137E-01	-0.3808E 00	-0.1444E-02
16	0.1231E-01	-0.3807E 00	-0.1563E-02
17	0.1332E-01	-0.3807E 00	-0.1686E-02
18	0.1441E-01	-0.3806E 00	-0.1814E-02
19	0.1558E-01	-0.3806E 00	-0.1947E-02
20	0.1684E-01	-0.3805E 00	-0.2087E-02
21	0.1819E-01	-0.3805E 00	-0.2234E-02
22	0.1963E-01	-0.3804E 00	-0.2389E-02
23	0.2118E-01	-0.3804E 00	-0.2552E-02
24	0.2282E-01	-0.3804E 00	-0.2724E-02
25	0.2458E-01	-0.3803E 00	-0.2905E-02
26	0.2645E-01	-0.3803E 00	-0.3096E-02
27	0.2845E-01	-0.3803E 00	-0.3297E-02
28	0.3057E-01	-0.3802E 00	-0.3507E-02
29	0.3283E-01	-0.3802E 00	-0.3729E-02
30	0.3523E-01	-0.3802E 00	-0.3961E-02
31	0.3777E-01	-0.3801E 00	-0.4203E-02
32	0.4047E-01	-0.3801E 00	-0.4456E-02
33	0.4334E-01	-0.3801E 00	-0.4719E-02
34	0.4637E-01	-0.3801E 00	-0.4992E-02
35	0.4957E-01	-0.3801E 00	-0.5275E-02
36	0.5295E-01	-0.3801E 00	-0.5567E-02
37	0.5652E-01	-0.3801E 00	-0.5868E-02
38	0.6028E-01	-0.3801E 00	-0.6176E-02
39	0.6423E-01	-0.3801E 00	-0.6492E-02
40	0.6839E-01	-0.3801E 00	-0.6814E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 110

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	2954.	1735.	-2706.	37.	8615.	3433.
2	2954.	1718.	-2366.	121.	8275.	3314.
3	2954.	1714.	-2063.	208.	7972.	3219.
4	2954.	1723.	-1797.	298.	7706.	3148.
5	2954.	1744.	-1566.	388.	7475.	3101.
6	2954.	1777.	-1372.	480.	7281.	3075.
7	2954.	1822.	-1213.	571.	7122.	3072.
8	2954.	1877.	-1090.	664.	6999.	3090.
9	2954.	1942.	-1001.	756.	6910.	3129.
10	2954.	2018.	-947.	848.	6856.	3189.
11	2954.	2104.	-927.	940.	6836.	3268.
12	2954.	2200.	-939.	1032.	6848.	3368.
13	2954.	2306.	-984.	1124.	6893.	3487.
14	2954.	2422.	-1060.	1218.	6969.	3626.
15	2954.	2549.	-1166.	1312.	7075.	3785.
16	2954.	2686.	-1302.	1409.	7210.	3963.
17	2954.	2834.	-1465.	1508.	7374.	4160.
18	2954.	2994.	-1655.	1611.	7564.	4377.
19	2954.	3165.	-1871.	1718.	7780.	4613.
20	2954.	3349.	-2110.	1830.	8019.	4869.
21	2954.	3547.	-2372.	1949.	8281.	5145.
22	2954.	3758.	-2654.	2075.	8563.	5440.
23	2954.	3983.	-2956.	2210.	8865.	5756.
24	2954.	4224.	-3274.	2355.	9183.	6092.
25	2954.	4481.	-3607.	2512.	9516.	6449.
26	2954.	4754.	-3953.	2682.	9862.	6827.
27	2954.	5046.	-4309.	2867.	10218.	7225.
28	2954.	5357.	-4673.	3068.	10582.	7645.
29	2954.	5687.	-5043.	3288.	10951.	8086.
30	2954.	6038.	-5414.	3527.	11323.	8548.
31	2954.	6410.	-5785.	3788.	11694.	9032.
32	2954.	6805.	-6153.	4073.	12062.	9538.
33	2954.	7224.	-6513.	4384.	12422.	10064.
34	2954.	7667.	-6863.	4722.	12772.	10612.
35	2954.	8136.	-7198.	5090.	13107.	11181.
36	2954.	8630.	-7515.	5490.	13424.	11771.
37	2954.	9152.	-7809.	5923.	13718.	12381.
38	2954.	9702.	-8076.	6393.	13985.	13011.
39	2954.	10280.	-8311.	6900.	14220.	13660.
40	2954.	10887.	-8509.	7448.	14418.	14326.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 110 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	2983.		2743.		8615.	
2	2978.		2488.		8275.	
3	2973.		2272.		7972.	
4	2968.		2094.		7706.	
5	2965.		1954.		7475.	
6	2961.		1851.		7281.	
7	2959.		1785.		7122.	
8	2957.		1753.		6999.	
9	2956.		1757.		6910.	
10	2955.		1795.		6856.	
11	2954.		1866.		6836.	
12	2955.		1971.		6848.	
13	2955.		2108.		6893.	
14	2956.		2278.		6969.	
15	2958.		2479.		7075.	
16	2959.		2711.		7210.	
17	2961.		2973.		7374.	
18	2998.		3266.		7564.	
19	3171.		3588.		7780.	
20	3356.		3940.		8019.	
21	3555.		4321.		8281.	
22	3767.		4729.		8563.	
23	3994.		5166.		8865.	
24	4236.		5629.		9183.	
25	4494.		6119.		9516.	
26	4768.		6635.		9862.	
27	5061.		7176.		10218.	
28	5372.		7742.		10582.	
29	5702.		8330.		10951.	
30	6053.		8941.		11323.	
31	6425.		9574.		11694.	
32	6820.		10226.		12062.	
33	7238.		10897.		12422.	
34	7680.		11585.		12772.	
35	8148.		12288.		13107.	
36	8641.		13004.		13424.	
37	9161.		13732.		13718.	
38	9709.		14469.		13985.	
39	10285.		15211.		14220.	
40	10891.		15957.		14418.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 120

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4275.	2916.	-3013.	-904.	17.
2	4275.	2881.	-3012.	-903.	13.
3	4275.	2847.	-3010.	-903.	9.
4	4275.	2815.	-3009.	-903.	5.
5	4275.	2783.	-3008.	-903.	1.
6	4275.	2756.	-3009.	-903.	-3.
7	4275.	2727.	-3009.	-903.	-7.
8	4275.	2702.	-3011.	-903.	-11.
9	4275.	2677.	-3012.	-904.	-16.
10	4275.	2653.	-3015.	-904.	-20.
11	4275.	2630.	-3018.	-905.	-24.
12	4275.	2611.	-3021.	-906.	-28.
13	4275.	2592.	-3025.	-908.	-32.
14	4275.	2574.	-3030.	-909.	-36.
15	4275.	2558.	-3035.	-911.	-41.
16	4275.	2545.	-3040.	-912.	-45.
17	4275.	2531.	-3047.	-914.	-49.
18	4275.	2521.	-3054.	-916.	-53.
19	4275.	2509.	-3061.	-918.	-57.
20	4275.	2502.	-3069.	-921.	-62.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 120

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.7774E-02	-0.3817E 00	0.1281E-02
2	0.7607E-02	-0.3817E 00	0.1228E-02
3	0.7447E-02	-0.3817E 00	0.1175E-02
4	0.7294E-02	-0.3817E 00	0.1122E-02
5	0.7147E-02	-0.3817E 00	0.1069E-02
6	0.7009E-02	-0.3817E 00	0.1016E-02
7	0.6877E-02	-0.3816E 00	0.9633E-03
8	0.6752E-02	-0.3816E 00	0.9105E-03
9	0.6634E-02	-0.3816E 00	0.8576E-03
10	0.6524E-02	-0.3816E 00	0.8047E-03
11	0.6420E-02	-0.3816E 00	0.7518E-03
12	0.6323E-02	-0.3816E 00	0.6985E-03
13	0.6234E-02	-0.3816E 00	0.6459E-03
14	0.6151E-02	-0.3816E 00	0.5931E-03
15	0.6076E-02	-0.3816E 00	0.5393E-03
16	0.6007E-02	-0.3815E 00	0.4864E-03
17	0.5946E-02	-0.3815E 00	0.4325E-03
18	0.5892E-02	-0.3815E 00	0.3786E-03
19	0.5845E-02	-0.3815E 00	0.3251E-03
20	0.5805E-02	-0.3815E 00	0.2717E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 120

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	2974.	2029.	-5775.	-596.	11723.	4654.
2	2974.	2004.	-5771.	-619.	11719.	4627.
3	2974.	1980.	-5766.	-641.	11714.	4602.
4	2974.	1959.	-5763.	-663.	11710.	4580.
5	2974.	1936.	-5762.	-684.	11709.	4557.
6	2974.	1917.	-5762.	-704.	11709.	4538.
7	2974.	1897.	-5764.	-724.	11712.	4519.
8	2974.	1879.	-5768.	-743.	11716.	4502.
9	2974.	1862.	-5771.	-762.	11719.	4486.
10	2974.	1846.	-5780.	-780.	11728.	4472.
11	2974.	1830.	-5788.	-799.	11736.	4458.
12	2974.	1816.	-5798.	-816.	11746.	4448.
13	2974.	1803.	-5810.	-832.	11758.	4438.
14	2974.	1790.	-5823.	-849.	11771.	4429.
15	2974.	1779.	-5838.	-864.	11785.	4423.
16	2974.	1771.	-5854.	-878.	11802.	4419.
17	2974.	1760.	-5874.	-893.	11822.	4414.
18	2974.	1753.	-5894.	-907.	11841.	4413.
19	2974.	1746.	-5913.	-921.	11861.	4412.
20	2974.	1741.	-5938.	-933.	11886.	4414.

IV-10.3.68

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 120 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	2974.		5775.		11723.	
2	2974.		5771.		11719.	
3	2974.		5766.		11714.	
4	2974.		5763.		11710.	
5	2974.		5762.		11709.	
6	2974.		5762.		11709.	
7	2974.		5764.		11712.	
8	2974.		5768.		11716.	
9	2974.		5771.		11719.	
10	2974.		5780.		11728.	
11	2974.		5788.		11736.	
12	2974.		5798.		11746.	
13	2975.		5810.		11758.	
14	2975.		5823.		11771.	
15	2975.		5838.		11785.	
16	2975.		5854.		11802.	
17	2976.		5874.		11822.	
18	2976.		5894.		11841.	
19	2976.		5913.		11861.	
20	2977.		5938.		11886.	

IV.10.3.69

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 130

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-0.	1451.	0.	-128.	36.
2	9.	1442.	34.	-117.	36.
3	18.	1433.	67.	-105.	36.
4	27.	1424.	101.	-94.	35.
5	35.	1415.	133.	-83.	35.
6	44.	1407.	166.	-71.	35.
7	52.	1399.	198.	-59.	35.
8	60.	1391.	230.	-48.	34.
9	68.	1383.	262.	-36.	34.
10	76.	1375.	293.	-24.	34.
11	84.	1367.	324.	-12.	34.
12	91.	1359.	354.	-0.	34.
13	99.	1352.	385.	11.	33.
14	106.	1345.	415.	23.	33.
15	113.	1337.	445.	35.	33.
16	120.	1330.	474.	47.	33.
17	127.	1323.	503.	59.	33.
18	134.	1317.	532.	71.	33.
19	141.	1310.	561.	84.	32.
20	147.	1303.	590.	96.	32.
21	154.	1297.	618.	108.	32.
22	160.	1291.	646.	120.	32.
23	167.	1284.	674.	132.	32.
24	173.	1278.	701.	144.	31.
25	179.	1272.	728.	157.	31.
26	185.	1266.	755.	169.	31.
27	191.	1260.	782.	181.	31.
28	196.	1254.	809.	193.	31.
29	202.	1249.	835.	206.	31.
30	208.	1243.	861.	218.	30.
31	213.	1238.	887.	230.	30.
32	219.	1232.	913.	242.	30.
33	224.	1227.	938.	255.	30.
34	229.	1222.	964.	267.	30.
35	234.	1217.	989.	279.	30.
36	239.	1211.	1014.	292.	29.
37	244.	1206.	1038.	304.	29.
38	249.	1202.	1063.	316.	29.
39	254.	1197.	1087.	329.	29.
40	259.	1192.	1111.	341.	29.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 130

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.2943E 00	0.6062E-02	-0.3730E-02
2	0.2979E 00	0.6050E-02	-0.3721E-02
3	0.3015E 00	0.6039E-02	-0.3705E-02
4	0.3051E 00	0.6029E-02	-0.3684E-02
5	0.3086E 00	0.6018E-02	-0.3658E-02
6	0.3122E 00	0.6008E-02	-0.3626E-02
7	0.3157E 00	0.5998E-02	-0.3589E-02
8	0.3191E 00	0.5989E-02	-0.3546E-02
9	0.3225E 00	0.5979E-02	-0.3498E-02
10	0.3259E 00	0.5970E-02	-0.3446E-02
11	0.3292E 00	0.5961E-02	-0.3388E-02
12	0.3325E 00	0.5953E-02	-0.3325E-02
13	0.3357E 00	0.5945E-02	-0.3257E-02
14	0.3388E 00	0.5937E-02	-0.3184E-02
15	0.3418E 00	0.5929E-02	-0.3107E-02
16	0.3448E 00	0.5921E-02	-0.3025E-02
17	0.3477E 00	0.5914E-02	-0.2937E-02
18	0.3505E 00	0.5907E-02	-0.2846E-02
19	0.3532E 00	0.5900E-02	-0.2749E-02
20	0.3558E 00	0.5894E-02	-0.2648E-02
21	0.3583E 00	0.5888E-02	-0.2542E-02
22	0.3607E 00	0.5881E-02	-0.2432E-02
23	0.3630E 00	0.5876E-02	-0.2318E-02
24	0.3652E 00	0.5870E-02	-0.2199E-02
25	0.3673E 00	0.5864E-02	-0.2075E-02
26	0.3692E 00	0.5859E-02	-0.1947E-02
27	0.3711E 00	0.5854E-02	-0.1816E-02
28	0.3728E 00	0.5849E-02	-0.1679E-02
29	0.3743E 00	0.5845E-02	-0.1539E-02
30	0.3757E 00	0.5840E-02	-0.1394E-02
31	0.3770E 00	0.5836E-02	-0.1246E-02
32	0.3782E 00	0.5832E-02	-0.1093E-02
33	0.3791E 00	0.5828E-02	-0.9360E-03
34	0.3800E 00	0.5824E-02	-0.7752E-03
35	0.3806E 00	0.5821E-02	-0.6104E-03
36	0.3811E 00	0.5817E-02	-0.4417E-03
37	0.3815E 00	0.5814E-02	-0.2691E-03
38	0.3817E 00	0.5811E-02	-0.9263E-04
39	0.3817E 00	0.5808E-02	0.8764E-04
40	0.3815E 00	0.5805E-02	0.2717E-03

IV.10.3.71

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 130

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-0.	1105.	0.	659.	-0.	1552.
2	7.	1098.	125.	691.	-111.	1505.
3	14.	1092.	249.	724.	-221.	1459.
4	20.	1085.	371.	757.	-330.	1412.
5	27.	1078.	492.	791.	-438.	1366.
6	33.	1072.	612.	825.	-545.	1319.
7	40.	1066.	730.	859.	-651.	1272.
8	46.	1059.	847.	894.	-755.	1225.
9	52.	1053.	963.	928.	-859.	1178.
10	58.	1047.	1078.	963.	-962.	1131.
11	64.	1042.	1192.	999.	-1064.	1084.
12	70.	1036.	1304.	1034.	-1165.	1037.
13	75.	1030.	1416.	1070.	-1265.	990.
14	81.	1025.	1526.	1106.	-1364.	943.
15	86.	1019.	1635.	1142.	-1463.	896.
16	92.	1014.	1743.	1179.	-1560.	849.
17	97.	1008.	1851.	1215.	-1657.	801.
18	102.	1003.	1957.	1252.	-1752.	754.
19	107.	998.	2062.	1289.	-1847.	707.
20	112.	993.	2166.	1326.	-1941.	660.
21	117.	988.	2269.	1364.	-2035.	613.
22	122.	983.	2371.	1401.	-2127.	565.
23	127.	978.	2473.	1439.	-2219.	518.
24	132.	974.	2573.	1477.	-2310.	471.
25	136.	969.	2673.	1515.	-2400.	424.
26	141.	965.	2771.	1553.	-2490.	377.
27	145.	960.	2869.	1591.	-2579.	330.
28	150.	956.	2966.	1629.	-2667.	282.
29	154.	951.	3062.	1668.	-2754.	235.
30	158.	947.	3157.	1706.	-2841.	188.
31	162.	943.	3252.	1745.	-2927.	141.
32	166.	939.	3346.	1783.	-3013.	94.
33	171.	935.	3438.	1822.	-3097.	48.
34	175.	931.	3531.	1861.	-3181.	1.
35	178.	927.	3622.	1900.	-3265.	-46.
36	182.	923.	3712.	1939.	-3348.	-93.
37	186.	919.	3802.	1978.	-3430.	-139.
38	190.	915.	3892.	2017.	-3512.	-186.
39	194.	912.	3980.	2056.	-3593.	-233.
40	197.	908.	4068.	2095.	-3673.	-279.

III.10.3.12

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 130 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1 outer	1147.	485	659.	405	1552.	
2	1136.		691.		1617.	
3	1126.		724.		1680.	
4	1116.		757.		1743.	
5	1107.		791.		1804.	
6	1099.		825.		1864.	
7	1090.		859.		1923.	
8	1082.		894.		1981.	
9	1074.		963.		2038.	
10	1067.		1078.		2094.	
11	1060.		1192.		2148.	
12	1053.		1304.		2202.	
13	1046.		1416.		2255.	
14	1040.		1526.		2307.	
15	1033.		1635.		2358.	
16	1027.		1743.		2409.	
17	1021.		1851.		2458.	
18	1015.		1957.		2507.	
19	1010.		2062.		2554.	
20	1004.		2166.		2601.	
21	999.		2269.		2647.	
22	993.		2371.		2693.	
23	988.		2473.		2737.	
24	983.		2573.		2781.	
25	978.		2673.		2824.	
26	973.		2771.		2867.	
27	968.		2869.		2908.	
28	964.		2966.		2949.	
29	959.		3062.		2990.	
30	954.		3157.		3029.	
31	950.		3252.		3069.	
32	946.		3346.		3107.	
33	941.		3438.		3145.	
34	937.		3531.		3182.	
35	933.		3622.		3265.	
36	929.		3712.		3348.	
37	925.		3802.		3430.	
38	921.		3892.		3512.	
39	917.		3980.		3593.	
40 inner	914.		4068.		3673.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 190

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4284.	8570.	-0.	-0.	-0.
2	4284.	8569.	0.	0.	0.
3	4284.	8569.	0.	0.	0.
4	4284.	8567.	0.	0.	0.
5	4284.	8565.	0.	0.	-0.
6	4284.	8562.	0.	0.	-0.
7	4284.	8559.	-1.	-0.	-0.
8	4284.	8558.	-3.	-1.	-1.
9	4284.	8563.	-6.	-2.	-1.
10	4284.	8582.	-9.	-3.	-1.
11	4284.	8623.	-11.	-3.	0.
12	4284.	8690.	-6.	-2.	2.
13	4284.	8770.	11.	3.	6.
14	4284.	8817.	50.	15.	11.
15	4284.	8735.	115.	34.	17.
16	4284.	8366.	194.	58.	17.
17	4284.	7520.	248.	74.	3.
18	4284.	6082.	184.	55.	-37.
19	4284.	4244.	-151.	-45.	-118.
20	4284.	2875.	-946.	-284.	-239.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 190

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.7231E-01	-0.3906E 00	0.1022E-05
2	0.7231E-01	-0.3902E 00	0.1100E-05
3	0.7230E-01	-0.3898E 00	0.1765E-05
4	0.7229E-01	-0.3894E 00	0.3334E-05
5	0.7227E-01	-0.3890E 00	0.5618E-05
6	0.7224E-01	-0.3886E 00	0.7526E-05
7	0.7220E-01	-0.3882E 00	0.6447E-05
8	0.7219E-01	-0.3877E 00	-0.2067E-05
9	0.7224E-01	-0.3873E 00	-0.2386E-04
10	0.7243E-01	-0.3869E 00	-0.6364E-04
11	0.7284E-01	-0.3865E 00	-0.1190E-03
12	0.7350E-01	-0.3861E 00	-0.1698E-03
13	0.7429E-01	-0.3857E 00	-0.1646E-03
14	0.7477E-01	-0.3854E 00	-0.9149E-05
15	0.7395E-01	-0.3850E 00	0.4278E-03
16	0.7029E-01	-0.3846E 00	0.1268E-02
17	0.6189E-01	-0.3841E 00	0.2500E-02
18	0.4762E-01	-0.3836E 00	0.3759E-02
19	0.2937E-01	-0.3830E 00	0.4015E-02
20	0.1578E-01	-0.3822E 00	0.1280E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 190

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	6231.	12465.	6231.	12465.	6231.	12465.
2	6231.	12464.	6232.	12464.	6231.	12464.
3	6231.	12463.	6234.	12464.	6229.	12463.
4	6231.	12462.	6236.	12463.	6227.	12460.
5	6231.	12459.	6237.	12460.	6226.	12457.
6	6231.	12454.	6234.	12455.	6229.	12454.
7	6231.	12449.	6222.	12447.	6240.	12452.
8	6231.	12447.	6198.	12437.	6264.	12457.
9	6231.	12455.	6161.	12434.	6302.	12476.
10	6231.	12483.	6117.	12449.	6346.	12517.
11	6231.	12543.	6095.	12502.	6368.	12584.
12	6231.	12640.	6150.	12616.	6312.	12664.
13	6231.	12756.	6373.	12798.	6089.	12713.
14	6231.	12825.	6867.	13016.	5596.	12634.
15	6231.	12706.	7685.	13142.	4778.	12270.
16	6231.	12169.	8698.	12909.	3764.	11428.
17	6231.	10938.	9381.	11883.	3081.	9993.
18	6231.	8847.	8568.	9548.	3895.	8146.
19	6231.	6173.	4318.	5599.	8144.	6747.
20	6231.	4181.	-5773.	580.	18236.	7783.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO 45 PSI I.P. + LOCA LOADS + 1/2 SSE

BODY NO. 190   DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	12465.		12465.		12465.	
2	12464.		12464.		12464.	
3	12463.		12464.		12463.	
4	12462.		12463.		12460.	
5	12459.		12460.		12457.	
6	12454.		12455.		12454.	
7	12449.		12447.		12452.	
8	12447.		12437.		12457.	
9	12455.		12434.		12476.	
10	12483.		12449.		12517.	
11	12543.		12502.		12584.	
12	12640.		12616.		12664.	
13	12756.		12798.		12713.	
14	12825.		13016.		12634.	
15	12706.		13142.		12270.	
16	12169.		12909.		11428.	
17	10938.		11883.		9993.	
18	8848.		9548.		8146.	
19	6253.		5599.		8144.	
20	6318.		6353.		18236.	

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY LOADS

```
BODY NO.  10  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
    PN = (-0.200000E 01) + ( 0.0          )*X
    PPHI = ( 0.0         ) + ( 0.0          )*X
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( 0.0          + ( 0.0          )*Z/H)*X
     + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  20  BODY TYPE   3  X = RADIUS
    PN = ( 0.0         ) + ( 0.0          )*X
    PPHI = ( 0.0         ) + ( 0.0          )*X
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( 0.0          + ( 0.0          )*Z/H)*X
     + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  30  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
    PN = ( 0.0         ) + ( 0.0          )*X
    PPHI = ( 0.0         ) + ( 0.0          )*X
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( 0.0          + ( 0.0          )*Z/H)*X
     + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY LOADS

```
BODY NO.  40  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
    PN = ( 0.0          ) + ( 0.0          )*X
    PPHI = ( 0.0          ) + ( 0.0          )*X
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( 0.0          + ( 0.0          )*Z/H)*X
     + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  50  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
    PN = (-0.200000E 01) + ( 0.0          )*X
    PPHI = ( 0.0          ) + ( 0.0          )*X
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( 0.0          + ( 0.0          )*Z/H)*X
     + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  60  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
    PN = (-0.200000E 01) + ( 0.0          )*X
    PPHI = ( 0.0          ) + ( 0.0          )*X
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( 0.0          + ( 0.0          )*Z/H)*X
     + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

IV.10.3.79

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY LOADS

```
BODY NO.  70  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.0            ) + ( 0.0            )*X
     PPHI = ( 0.0          ) + ( 0.0            )*X
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0            + ( 0.0           )*Z/H)*X
      + ( 0.0            + ( 0.0           )*Z/H)*X*X
BODY NO.  90  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.0            ) + ( 0.0            )*X
     PPHI = ( 0.0          ) + ( 0.0            )*X
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0            + ( 0.0           )*Z/H)*X
      + ( 0.0            + ( 0.0           )*Z/H)*X*X
BODY NO. 100  BODY TYPE   3  X = RADIUS
     PN = (-0.136600E 02) + ( 0.0            )*X
     PPHI = ( 0.0          ) + ( 0.0            )*X
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0            + ( 0.0           )*Z/H)*X
      + ( 0.0            + ( 0.0           )*Z/H)*X*X
```

HYDROSTATIC HEAD TO ELEV. 606'-10½" + ½ SSE (g'-FACTOR = 0.20)

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY LOADS

```
BODY NO. 110   BODY TYPE   1   X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = (-0.126100E 02) + (-0.433333E-01)*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( 0.0          )*Z/H)*X*X
BODY NO. 120   BODY TYPE   1   X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.0          ) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( 0.0          )*Z/H)*X*X
BODY NO. 130   BODY TYPE   3   X = RADIUS
     PN = (-0.126100E 02) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( 0.0          )*Z/H)*X*X
```

HYDROSTATIC HEAD TO ELEV 666'-10"± + 1/2 SSE

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY LOADS

BODY NO. 150 BODY TYPE 8

FREE THERMAL RADIAL DEFLECTION = 0.0

FREE THERMAL TWIST = 0.0

BODY NO. 170 BODY TYPE 8

FREE THERMAL RADIAL DEFLECTION = 0.0

FREE THERMAL TWIST = 0.0

BODY NO. 190 BODY TYPE 1 X = DISANCE ALONG MERIDIAN FROM 'A' EDGE

```
PN = ( 0.0          ) +  ( 0.0          )*X
PPHI = ( 0.0          ) + ( 0.0          )*X
T = ( 0.0          + ( 0.0          )*Z/H)
 + ( 0.0          + ( 0.0          )*Z/H)*X
 + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL SEAL AREA

VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS
CIRCUMFERENTIAL LINE LOADS

NODE	R-DIR.	Z-DIR.	MOMENT
10	0.0	0.0	0.0
20	0.0	0.0	0.0
30	0.0	0.0	0.0
40	0.0	0.0	0.0
50	0.0	0.0	0.0
60	0.0	0.0	0.0
61	0.0	0.0	0.0
70	0.0	0.0	0.0
80	0.0	0.0	0.0
90	0.0	0.0	0.0
100	0.0	0.0	0.0
110	0.0	-0.540000E 02	0.0
120	0.0	0.0	0.0
130	0.0	0.0	0.0
140	0.0	0.0	0.0
150	0.0	0.0	0.0
160	0.0	0.0	0.0
170	0.0	0.0	0.0
180	0.0	0.0	0.0

INCLUDES ½SSE (0.20)

IV.10.3.82

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

NODE NO.	NODE DISPLACEMENTS R OR R' DIR.	Z OR Z' DIR.	ROTATION	OBLIQUE AXIS ANGLE
10	0.109214E 00	0.0	-0.105166E-01	0.0
20	0.969203E-02	-0.323121E-01	0.134290E-02	0.0
30	0.979998E-02	-0.197475E-01	0.985489E-03	0.0
40	0.128310E-01	-0.197957E-01	0.914712E-03	0.0
50	0.649187E-02	-0.197127E-01	0.102834E-02	0.0
60	0.159197E-01	-0.308392E-01	0.186880E-03	0.0
61	0.159197E-01	-0.308543E-01	0.186880E-03	0.0
70	-0.279784E-01	-0.588789E-01	0.214357E-02	0.0
80	-0.242131E-01	-0.588546E-01	0.294991E-02	0.0
90	-0.242131E-01	-0.595776E-01	0.294991E-02	0.0
100	-0.990523E-02	-0.595289E-01	0.332088E-02	0.0
110	-0.963701E-02	-0.122459E 00	0.407009E-02	0.0
120	0.323773E-02	-0.600650E-01	-0.294400E-02	0.0
130	0.338072E-02	-0.681053E 00	-0.214884E-01	0.0
140	-0.269198E-02	-0.600651E-01	-0.181070E-02	0.0
150	-0.552120E-02	-0.532750E-01	-0.181070E-02	0.0
160	-0.111796E-01	-0.532750E-01	-0.181070E-02	0.0
170	-0.140089E-01	-0.607441E-01	-0.181070E-02	0.0
180	0.584167E-05	-0.604346E-01	0.741817E-06	0.0

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

NODE NO.	REACTION LOADS R OR R' DIR.	Z OR Z' DIR.	MOMENT	OBLIQUE AXIS ANGLE
10	0.0	0.643701E 03	0.0	0.0

IV.10.3.85

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 10

STATION			STRESS RESULTANTS		
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-694.	639.	-13.	-2.	-23.
2	-687.	40.	-84.	-24.	-4.
3	-684.	-348.	-78.	-23.	4.
4	-683.	-534.	-50.	-15.	5.
5	-682.	-589.	-24.	-7.	4.
6	-681.	-581.	-7.	-2.	2.
7	-680.	-552.	0.	0.	1.
8	-680.	-524.	4.	1.	0.
9	-678.	-505.	7.	2.	1.
10	-677.	-503.	12.	4.	1.
11	-676.	-530.	20.	6.	2.
12	-676.	-607.	28.	9.	1.
13	-676.	-748.	26.	8.	-2.
14	-677.	-944.	-3.	-0.	-8.
15	-679.	-1122.	-81.	-24.	-19.
16	-682.	-1091.	-227.	-69.	-31.
17	-683.	-509.	-432.	-132.	-38.
18	-678.	1080.	-620.	-191.	-22.
19	-659.	4062.	-594.	-187.	40.
20	-619.	8278.	-0.	-11.	178.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 10

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.3794E-03	0.3373E-01	0.1343E-02
2	-0.6689E-02	0.3351E-01	0.1029E-02
3	-0.1132E-01	0.3334E-01	0.5716E-03
4	-0.1355E-01	0.3319E-01	0.2229E-03
5	-0.1421E-01	0.3305E-01	0.2809E-04
6	-0.1410E-01	0.3291E-01	-0.5131E-04
7	-0.1374E-01	0.3276E-01	-0.6729E-04
8	-0.1337E-01	0.3262E-01	-0.5547E-04
9	-0.1312E-01	0.3247E-01	-0.2861E-04
10	-0.1308E-01	0.3233E-01	0.1945E-04
11	-0.1342E-01	0.3218E-01	0.1043E-03
12	-0.1438E-01	0.3204E-01	0.2348E-03
13	-0.1619E-01	0.3191E-01	0.3868E-03
14	-0.1874E-01	0.3179E-01	0.4657E-03
15	-0.2108E-01	0.3169E-01	0.2681E-03
16	-0.2070E-01	0.3160E-01	-0.5279E-03
17	-0.1307E-01	0.3148E-01	-0.2284E-02
18	0.8033E-02	0.3127E-01	-0.5153E-02
19	0.4797E-01	0.3088E-01	-0.8576E-02
20	0.1050E 00	0.3020E-01	-0.1052E-01

IV.10.3.87

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 10

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-926.	851.	-1067.	825.	-784.	878.
2	-917.	54.	-1809.	-202.	-24.	309.
3	-912.	-465.	-1747.	-708.	-77.	-221.
4	-910.	-712.	-1442.	-869.	-378.	-556.
5	-909.	-786.	-1162.	-861.	-656.	-710.
6	-908.	-775.	-987.	-799.	-829.	-750.
7	-907.	-736.	-904.	-736.	-911.	-737.
8	-906.	-698.	-867.	-687.	-945.	-709.
9	-905.	-673.	-835.	-652.	-974.	-694.
10	-903.	-670.	-777.	-632.	-1029.	-708.
11	-902.	-707.	-688.	-642.	-1116.	-772.
12	-901.	-809.	-603.	-717.	-1198.	-901.
13	-901.	-997.	-624.	-910.	-1178.	-1084.
14	-902.	-1259.	-930.	-1262.	-874.	-1256.
15	-905.	-1496.	-1765.	-1751.	-45.	-1241.
16	-909.	-1454.	-3328.	-2186.	1510.	-723.
17	-910.	-679.	-5521.	-2087.	3700.	729.
18	-903.	1441.	-7519.	-600.	5712.	3481.
19	-878.	5416.	-7217.	3422.	5460.	7410.
20	-825.	11038.	-825.	10925.	-825.	11151.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 10 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	1779.		1893.		1662.	
2	970.		1809.		333.	
3	912.		1747.		221.	
4	910.		1442.		556.	
5	909.		1162.		710.	
6	908.		987.		829.	
7	907.		904.		911.	
8	906.		867.		945.	
9	905.		835.		974.	
10	903.		777.		1029.	
11	902.		688.		1116.	
12	901.		717.		1198.	
13	997.		910.		1178.	
14	1259.		1262.		1256.	
15	1497.		1765.		1241.	
16	1458.		3328.		2233.	
17	923.		5521.		3700.	
18	2346.		7519.		5712.	
19	6302.		10639.		7410.	
20	11995.		11750.		11975.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 20

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	15.	420.	5.	2.	-0.
2	16.	419.	5.	2.	-0.
3	17.	418.	5.	2.	-0.
4	18.	417.	5.	2.	-0.
5	19.	416.	5.	2.	-0.
6	20.	415.	5.	2.	-0.
7	21.	414.	4.	2.	-0.
8	22.	413.	4.	2.	-0.
9	23.	413.	4.	2.	-0.
10	24.	412.	4.	2.	-0.
11	25.	411.	4.	2.	-0.
12	26.	410.	4.	2.	-0.
13	26.	409.	3.	2.	-0.
14	27.	408.	3.	1.	-0.
15	28.	407.	3.	1.	-0.
16	29.	406.	3.	1.	-0.
17	30.	405.	3.	1.	-0.
18	31.	404.	3.	1.	-0.
19	32.	404.	2.	1.	-0.
20	33.	403.	2.	1.	-0.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 20

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.1975E-01	0.9800E-02	0.9855E-03
2	-0.2030E-01	0.9794E-02	0.1012E-02
3	-0.2087E-01	0.9787E-02	0.1038E-02
4	-0.2146E-01	0.9781E-02	0.1063E-02
5	-0.2205E-01	0.9775E-02	0.1087E-02
6	-0.2266E-01	0.9769E-02	0.1110E-02
7	-0.2329E-01	0.9763E-02	0.1132E-02
8	-0.2392E-01	0.9757E-02	0.1153E-02
9	-0.2457E-01	0.9752E-02	0.1174E-02
10	-0.2523E-01	0.9746E-02	0.1193E-02
11	-0.2589E-01	0.9740E-02	0.1212E-02
12	-0.2657E-01	0.9734E-02	0.1230E-02
13	-0.2726E-01	0.9729E-02	0.1247E-02
14	-0.2796E-01	0.9723E-02	0.1263E-02
15	-0.2867E-01	0.9718E-02	0.1278E-02
16	-0.2938E-01	0.9713E-02	0.1293E-02
17	-0.3010E-01	0.9707E-02	0.1307E-02
18	-0.3083E-01	0.9702E-02	0.1320E-02
19	-0.3157E-01	0.9697E-02	0.1332E-02
20	-0.3231E-01	0.9692E-02	0.1343E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 20

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	44.	1207.	310.	1308.	-223.	1107.
2	46.	1205.	305.	1303.	-212.	1106.
3	49.	1202.	299.	1299.	-200.	1105.
4	52.	1199.	293.	1294.	-189.	1104.
5	55.	1196.	288.	1289.	-178.	1104.
6	58.	1194.	282.	1284.	-167.	1103.
7	60.	1191.	277.	1280.	-156.	1102.
8	63.	1188.	271.	1275.	-146.	1102.
9	66.	1186.	266.	1270.	-135.	1101.
10	68.	1183.	261.	1265.	-124.	1100.
11	71.	1180.	255.	1261.	-113.	1100.
12	74.	1178.	250.	1256.	-103.	1099.
13	76.	1175.	244.	1251.	-92.	1099.
14	79.	1172.	239.	1246.	-81.	1098.
15	81.	1170.	233.	1242.	-71.	1098.
16	84.	1167.	228.	1237.	-60.	1098.
17	86.	1165.	223.	1232.	-50.	1097.
18	89.	1162.	217.	1228.	-40.	1097.
19	91.	1160.	212.	1223.	-29.	1097.
20	94.	1157.	207.	1218.	-19.	1096.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 20 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	1208.		1308.		1329.	
2	1205.		1303.		1317.	
3	1202.		1299.		1306.	
4	1199.		1294.		1294.	
5	1196.		1289.		1282.	
6	1194.		1284.		1270.	
7	1191.		1280.		1259.	
8	1188.		1275.		1247.	
9	1186.		1270.		1236.	
10	1183.		1265.		1224.	
11	1180.		1261.		1213.	
12	1178.		1256.		1202.	
13	1175.		1251.		1191.	
14	1172.		1246.		1180.	
15	1170.		1242.		1169.	
16	1167.		1237.		1158.	
17	1165.		1232.		1147.	
18	1162.		1228.		1136.	
19	1160.		1223.		1126.	
20	1157.		1218.		1115.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 30

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	0.	705.	-0.	-0.	-0.
2	0.	697.	0.	0.	1.
3	0.	688.	0.	0.	1.
4	0.	679.	0.	0.	2.
5	0.	671.	1.	0.	2.
6	0.	662.	1.	0.	3.
7	0.	654.	2.	0.	3.
8	0.	645.	2.	1.	4.
9	0.	636.	3.	1.	4.
10	0.	628.	4.	1.	4.
11	0.	619.	4.	1.	5.
12	0.	610.	5.	2.	5.
13	0.	602.	6.	2.	6.
14	0.	593.	7.	2.	6.
15	0.	584.	8.	2.	7.
16	0.	575.	10.	3.	7.
17	0.	566.	11.	3.	8.
18	0.	557.	12.	4.	8.
19	0.	548.	14.	4.	8.
20	0.	539.	15.	5.	9.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 30

STATION		DISPLACEMENTS	
	NORMAL	TANGENTIAL	ROTATION
1	0.1283E-01	0.1980E-01	0.9147E-03
2	0.1267E-01	0.1979E-01	0.9148E-03
3	0.1252E-01	0.1979E-01	0.9148E-03
4	0.1236E-01	0.1979E-01	0.9150E-03
5	0.1221E-01	0.1978E-01	0.9154E-03
6	0.1205E-01	0.1978E-01	0.9161E-03
7	0.1189E-01	0.1978E-01	0.9170E-03
8	0.1173E-01	0.1978E-01	0.9184E-03
9	0.1158E-01	0.1977E-01	0.9202E-03
10	0.1142E-01	0.1977E-01	0.9225E-03
11	0.1126E-01	0.1977E-01	0.9253E-03
12	0.1110E-01	0.1977E-01	0.9288E-03
13	0.1094E-01	0.1976E-01	0.9330E-03
14	0.1078E-01	0.1976E-01	0.9378E-03
15	0.1062E-01	0.1976E-01	0.9435E-03
16	0.1046E-01	0.1976E-01	0.9500E-03
17	0.1030E-01	0.1975E-01	0.9574E-03
18	0.1013E-01	0.1975E-01	0.9657E-03
19	0.9968E-02	0.1975E-01	0.9751E-03
20	0.9800E-02	0.1975E-01	0.9855E-03

IV.10.3.95

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 30

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	0.	1564.	0.	1564.	0.	1564.
2	0.	1545.	1.	1545.	-1.	1544.
3	0.	1526.	5.	1527.	-5.	1524.
4	0.	1507.	12.	1510.	-12.	1503.
5	0.	1488.	21.	1494.	-21.	1481.
6	0.	1468.	33.	1478.	-32.	1459.
7	0.	1449.	47.	1463.	-46.	1435.
8	0.	1430.	63.	1449.	-63.	1411.
9	0.	1411.	82.	1436.	-82.	1386.
10	0.	1392.	104.	1423.	-103.	1361.
11	0.	1373.	128.	1411.	-127.	1334.
12	0.	1353.	154.	1399.	-153.	1307.
13	0.	1334.	182.	1388.	-182.	1279.
14	0.	1314.	213.	1378.	-212.	1251.
15	0.	1295.	246.	1368.	-245.	1221.
16	0.	1275.	281.	1359.	-280.	1191.
17	0.	1255.	318.	1351.	-318.	1160.
18	0.	1235.	358.	1342.	-357.	1128.
19	0.	1215.	399.	1335.	-399.	1095.
20	0.	1194.	443.	1327.	-442.	1062.

IV-10.3-96

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 30 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	1564.		1564.		1564.	
2	1546.		1545.		1545.	
3	1529.		1527.		1529.	
4	1512.		1510.		1515.	
5	1494.		1494.		1502.	
6	1477.		1478.		1491.	
7	1459.		1463.		1482.	
8	1442.		1449.		1474.	
9	1424.		1436.		1468.	
10	1407.		1423.		1464.	
11	1389.		1411.		1462.	
12	1371.		1399.		1461.	
13	1353.		1388.		1461.	
14	1335.		1378.		1463.	
15	1317.		1368.		1466.	
16	1299.		1359.		1471.	
17	1280.		1351.		1478.	
18	1262.		1342.		1485.	
19	1243.		1335.		1494.	
20	1224.		1327.		1504.	

III.10.2.47

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 40

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	0.	539.	10.	3.	-6.
2	0.	529.	9.	3.	-6.
3	0.	520.	8.	2.	-6.
4	0.	511.	7.	2.	-5.
5	0.	501.	6.	2.	-5.
6	0.	492.	5.	2.	-4.
7	0.	482.	4.	1.	-4.
8	0.	473.	4.	1.	-4.
9	0.	463.	3.	1.	-3.
10	0.	453.	2.	1.	-3.
11	0.	444.	2.	1.	-3.
12	0.	434.	2.	0.	-2.
13	0.	425.	1.	0.	-2.
14	0.	415.	1.	0.	-2.
15	0.	405.	1.	0.	-1.
16	0.	396.	0.	0.	-1.
17	0.	386.	0.	0.	-1.
18	0.	376.	0.	0.	-1.
19	0.	367.	0.	0.	-0.
20	0.	357.	-0.	0.	0.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 40

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.9800E-02	0.1975E-01	0.9855E-03
2	0.9631E-02	0.1975E-01	0.9922E-03
3	0.9461E-02	0.1974E-01	0.9980E-03
4	0.9290E-02	0.1974E-01	0.1003E-02
5	0.9118E-02	0.1974E-01	0.1008E-02
6	0.8945E-02	0.1974E-01	0.1012E-02
7	0.8772E-02	0.1973E-01	0.1015E-02
8	0.8598E-02	0.1973E-01	0.1018E-02
9	0.8423E-02	0.1973E-01	0.1020E-02
10	0.8249E-02	0.1973E-01	0.1022E-02
11	0.8073E-02	0.1973E-01	0.1024E-02
12	0.7898E-02	0.1973E-01	0.1025E-02
13	0.7723E-02	0.1972E-01	0.1026E-02
14	0.7547E-02	0.1972E-01	0.1027E-02
15	0.7371E-02	0.1972E-01	0.1028E-02
16	0.7196E-02	0.1972E-01	0.1028E-02
17	0.7020E-02	0.1972E-01	0.1028E-02
18	0.6844E-02	0.1972E-01	0.1028E-02
19	0.6668E-02	0.1971E-01	0.1028E-02
20	0.6492E-02	0.1971E-01	0.1028E-02

IV-10.2.99

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 40

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	0.	1194.	284.	1280.	-284.	1109.
2	0.	1174.	253.	1250.	-253.	1098.
3	0.	1153.	224.	1220.	-224.	1086.
4	0.	1132.	197.	1191.	-196.	1073.
5	0.	1111.	172.	1163.	-171.	1060.
6	0.	1090.	148.	1135.	-148.	1046.
7	0.	1069.	127.	1107.	-126.	1031.
8	0.	1048.	107.	1080.	-107.	1016.
9	0.	1027.	89.	1053.	-89.	1000.
10	0.	1005.	73.	1027.	-73.	983.
11	0.	984.	59.	1002.	-58.	966.
12	0.	963.	46.	976.	-46.	949.
13	0.	941.	35.	952.	-35.	931.
14	0.	920.	26.	927.	-25.	912.
15	0.	898.	18.	904.	-17.	893.
16	0.	877.	11.	880.	-11.	874.
17	0.	856.	6.	857.	-6.	854.
18	0.	834.	3.	835.	-2.	833.
19	0.	813.	1.	813.	-0.	813.
20	0.	791.	0.	791.	0.	791.

IV.10.3.100

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 40 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	1215.		1280.		1393.	
2	1194.		1250.		1351.	
3	1171.		1220.		1310.	
4	1149.		1191.		1270.	
5	1127.		1163.		1231.	
6	1105.		1135.		1194.	
7	1082.		1107.		1158.	
8	1060.		1080.		1123.	
9	1038.		1053.		1089.	
10	1015.		1027.		1056.	
11	993.		1002.		1025.	
12	970.		976.		995.	
13	948.		952.		965.	
14	925.		927.		937.	
15	903.		904.		910.	
16	881.		880.		884.	
17	858.		857.		860.	
18	836.		835.		836.	
19	813.		813.		813.	
20	791.		791.		791.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 50

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-716.	1187.	447.	134.	-93.
2	-715.	1179.	416.	125.	-90.
3	-714.	1167.	386.	116.	-88.
4	-714.	1152.	357.	108.	-86.
5	-713.	1133.	328.	99.	-83.
6	-712.	1112.	300.	91.	-81.
7	-711.	1088.	273.	83.	-79.
8	-711.	1061.	247.	75.	-77.
9	-710.	1033.	221.	67.	-75.
10	-709.	1002.	196.	60.	-73.
11	-709.	970.	172.	53.	-70.
12	-708.	936.	148.	46.	-68.
13	-707.	901.	125.	39.	-67.
14	-707.	865.	103.	32.	-65.
15	-706.	828.	82.	26.	-63.
16	-706.	790.	61.	20.	-61.
17	-705.	752.	40.	14.	-59.
18	-704.	713.	21.	8.	-58.
19	-704.	675.	2.	2.	-56.
20	-703.	636.	-17.	-4.	-54.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 50

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.6768E-02	0.3405E-01	0.1869E-03
2	0.6682E-02	0.3403E-01	0.3224E-03
3	0.6551E-02	0.3402E-01	0.4483E-03
4	0.6379E-02	0.3400E-01	0.5648E-03
5	0.6170E-02	0.3398E-01	0.6719E-03
6	0.5926E-02	0.3397E-01	0.7705E-03
7	0.5650E-02	0.3395E-01	0.8602E-03
8	0.5345E-02	0.3393E-01	0.9417E-03
9	0.5015E-02	0.3392E-01	0.1015E-02
10	0.4660E-02	0.3390E-01	0.1080E-02
11	0.4285E-02	0.3388E-01	0.1138E-02
12	0.3891E-02	0.3387E-01	0.1188E-02
13	0.3482E-02	0.3385E-01	0.1231E-02
14	0.3060E-02	0.3384E-01	0.1266E-02
15	0.2627E-02	0.3382E-01	0.1295E-02
16	0.2186E-02	0.3381E-01	0.1317E-02
17	0.1737E-02	0.3379E-01	0.1333E-02
18	0.1285E-02	0.3377E-01	0.1342E-02
19	0.8308E-03	0.3376E-01	0.1346E-02
20	0.3757E-03	0.3375E-01	0.1343E-02

IV.10.3.103

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 50

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-954.	1582.	3818.	3016.	-5727.	148.
2	-953.	1571.	3488.	2908.	-5395.	235.
3	-952.	1556.	3166.	2797.	-5071.	315.
4	-951.	1535.	2853.	2684.	-4756.	387.
5	-950.	1511.	2549.	2569.	-4450.	453.
6	-949.	1482.	2252.	2452.	-4151.	513.
7	-948.	1450.	1964.	2335.	-3861.	566.
8	-948.	1415.	1683.	2216.	-3578.	615.
9	-947.	1377.	1410.	2097.	-3304.	658.
10	-946.	1336.	1146.	1977.	-3037.	696.
11	-945.	1293.	888.	1857.	-2777.	730.
12	-944.	1248.	638.	1737.	-2525.	759.
13	-943.	1201.	395.	1618.	-2281.	785.
14	-942.	1153.	159.	1499.	-2043.	808.
15	-941.	1104.	-71.	1381.	-1812.	827.
16	-941.	1054.	-293.	1264.	-1589.	843.
17	-940.	1003.	-509.	1148.	-1371.	857.
18	-939.	951.	-719.	1033.	-1160.	869.
19	-938.	899.	-922.	921.	-955.	878.
20	-938.	848.	-1120.	809.	-755.	886.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 50 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	2571.		3818.		5875.	
2	2558.		3488.		5630.	
3	2540.		3166.		5386.	
4	2517.		2853.		5143.	
5	2490.		2569.		4903.	
6	2459.		2452.		4664.	
7	2425.		2335.		4427.	
8	2387.		2216.		4193.	
9	2347.		2097.		3961.	
10	2304.		1977.		3733.	
11	2259.		1857.		3507.	
12	2212.		1737.		3285.	
13	2163.		1618.		3066.	
14	2113.		1499.		2851.	
15	2062.		1451.		2639.	
16	2010.		1556.		2432.	
17	1957.		1657.		2228.	
18	1904.		1752.		2028.	
19	1851.		1843.		1833.	
20	1798.		1930.		1641.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 60

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-716.	-3544.	-1320.	-389.	200.
2	-735.	-3802.	-875.	-262.	163.
3	-754.	-3671.	-523.	-160.	125.
4	-771.	-3311.	-260.	-83.	91.
5	-786.	-2842.	-73.	-28.	63.
6	-797.	-2346.	49.	9.	39.
7	-805.	-1876.	122.	31.	21.
8	-810.	-1463.	157.	42.	9.
9	-813.	-1121.	165.	46.	-0.
10	-814.	-852.	157.	44.	-6.
11	-813.	-652.	139.	40.	-8.
12	-812.	-512.	117.	34.	-9.
13	-810.	-422.	94.	27.	-9.
14	-808.	-372.	72.	21.	-8.
15	-805.	-351.	52.	16.	-7.
16	-802.	-352.	36.	11.	-6.
17	-800.	-367.	24.	7.	-5.
18	-797.	-392.	14.	5.	-3.
19	-795.	-423.	7.	2.	-3.
20	-793.	-456.	1.	1.	-2.
21	-791.	-488.	-4.	-1.	-2.
22	-790.	-519.	-8.	-2.	-2.
23	-788.	-547.	-13.	-4.	-2.
24	-787.	-569.	-19.	-5.	-3.
25	-786.	-583.	-26.	-8.	-3.
26	-785.	-587.	-35.	-11.	-4.
27	-784.	-578.	-46.	-14.	-5.
28	-782.	-551.	-58.	-18.	-5.
29	-781.	-503.	-71.	-22.	-5.
30	-779.	-429.	-83.	-26.	-5.
31	-777.	-325.	-93.	-30.	-3.
32	-774.	-188.	-98.	-32.	-1.
33	-771.	-16.	-96.	-31.	3.
34	-766.	188.	-83.	-28.	8.
35	-761.	419.	-53.	-19.	16.
36	-754.	667.	-3.	-4.	26.
37	-746.	911.	73.	19.	37.
38	-737.	1126.	180.	51.	51.
39	-727.	1273.	322.	95.	67.
40	-717.	1303.	501.	151.	83.

HANFORD NO. 2. CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 60

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.5364E-01	0.3705E-01	0.2144E-02
2	-0.5634E-01	0.3709E-01	0.2111E-03
3	-0.5524E-01	0.3713E-01	-0.1013E-02
4	-0.5186E-01	0.3716E-01	-0.1691E-02
5	-0.4735E-01	0.3718E-01	-0.1972E-02
6	-0.4251E-01	0.3717E-01	-0.1981E-02
7	-0.3787E-01	0.3716E-01	-0.1819E-02
8	-0.3376E-01	0.3712E-01	-0.1566E-02
9	-0.3031E-01	0.3708E-01	-0.1275E-02
10	-0.2757E-01	0.3702E-01	-0.9852E-03
11	-0.2550E-01	0.3696E-01	-0.7200E-03
12	-0.2404E-01	0.3689E-01	-0.4917E-03
13	-0.2308E-01	0.3682E-01	-0.3047E-03
14	-0.2253E-01	0.3675E-01	-0.1585E-03
15	-0.2229E-01	0.3667E-01	-0.4898E-04
16	-0.2227E-01	0.3660E-01	0.2920E-04
17	-0.2241E-01	0.3652E-01	0.8200E-04
18	-0.2265E-01	0.3645E-01	0.1150E-03
19	-0.2295E-01	0.3638E-01	0.1331E-03
20	-0.2329E-01	0.3630E-01	0.1397E-03
21	-0.2362E-01	0.3624E-01	0.1372E-03
22	-0.2395E-01	0.3617E-01	0.1267E-03
23	-0.2423E-01	0.3610E-01	0.1079E-03
24	-0.2446E-01	0.3603E-01	0.7970E-04
25	-0.2461E-01	0.3597E-01	0.3980E-04
26	-0.2464E-01	0.3590E-01	-0.1453E-04
27	-0.2452E-01	0.3584E-01	-0.8627E-04
28	-0.2421E-01	0.3577E-01	-0.1781E-03
29	-0.2364E-01	0.3570E-01	-0.2919E-03
30	-0.2277E-01	0.3564E-01	-0.4279E-03
31	-0.2155E-01	0.3556E-01	-0.5835E-03
32	-0.1993E-01	0.3549E-01	-0.7529E-03
33	-0.1789E-01	0.3541E-01	-0.9254E-03
34	-0.1545E-01	0.3533E-01	-0.1084E-02
35	-0.1266E-01	0.3523E-01	-0.1205E-02
36	-0.9658E-02	0.3514E-01	-0.1256E-02
37	-0.6656E-02	0.3503E-01	-0.1196E-02
38	-0.3983E-02	0.3492E-01	-0.9755E-03
39	-0.2098E-02	0.3480E-01	-0.5358E-03
40	-0.1611E-02	0.3468E-01	0.1869E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 60

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-881.	-4361.	-12880.	-7897.	11117.	-825.
2	-905.	-4679.	-8861.	-7060.	7051.	-2299.
3	-928.	-4518.	-5685.	-5975.	3829.	-3061.
4	-949.	-4076.	-3309.	-4833.	1410.	-3318.
5	-967.	-3498.	-1631.	-3755.	-302.	-3242.
6	-981.	-2888.	-532.	-2810.	-1429.	-2965.
7	-990.	-2309.	114.	-2030.	-2095.	-2589.
8	-997.	-1801.	426.	-1419.	-2420.	-2183.
9	-1000.	-1380.	503.	-965.	-2503.	-1794.
10	-1002.	-1049.	428.	-647.	-2431.	-1450.
11	-1001.	-802.	265.	-442.	-2268.	-1162.
12	-999.	-630.	63.	-325.	-2062.	-935.
13	-997.	-519.	-147.	-273.	-1847.	-766.
14	-994.	-457.	-343.	-266.	-1645.	-648.
15	-991.	-432.	-515.	-290.	-1467.	-573.
16	-987.	-433.	-656.	-333.	-1319.	-533.
17	-984.	-452.	-768.	-385.	-1201.	-519.
18	-981.	-483.	-853.	-441.	-1110.	-525.
19	-979.	-520.	-917.	-498.	-1040.	-543.
20	-976.	-561.	-966.	-554.	-986.	-568.
21	-974.	-601.	-1006.	-607.	-941.	-595.
22	-972.	-639.	-1045.	-658.	-899.	-620.
23	-970.	-673.	-1088.	-705.	-852.	-640.
24	-969.	-700.	-1141.	-750.	-797.	-650.
25	-967.	-718.	-1206.	-788.	-728.	-647.
26	-966.	-723.	-1287.	-819.	-645.	-626.
27	-964.	-711.	-1383.	-839.	-546.	-583.
28	-963.	-678.	-1491.	-841.	-435.	-515.
29	-961.	-619.	-1605.	-819.	-317.	-418.
30	-959.	-528.	-1715.	-765.	-204.	-290.
31	-957.	-400.	-1803.	-668.	-111.	-131.
32	-953.	-231.	-1848.	-518.	-58.	56.
33	-949.	-20.	-1823.	-305.	-74.	265.
34	-943.	231.	-1693.	-20.	-193.	483.
35	-936.	516.	-1419.	342.	-454.	690.
36	-928.	820.	-955.	782.	-902.	859.
37	-918.	1121.	-254.	1292.	-1582.	951.
38	-907.	1385.	727.	1852.	-2541.	919.
39	-895.	156[illegible].	2027.	2430.	-3817.	702.
40	-882.	1603.	3670.	2973.	-5434.	233.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 60 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	4495.		12880.		11943.	
2	4770.		8861.		9350.	
3	4573.		5975.		6890.	
4	4105.		4833.		4729.	
5	3512.		3755.		3242.	
6	2893.		2810.		2965.	
7	2311.		2144.		2589.	
8	1801.		1844.		2420.	
9	1380.		1467.		2503.	
10	1049.		1075.		2431.	
11	1002.		708.		2268.	
12	1000.		388.		2062.	
13	998.		273.		1847.	
14	994.		343.		1645.	
15	991.		515.		1467.	
16	988.		656.		1319.	
17	984.		768.		1201.	
18	981.		853.		1110.	
19	979.		917.		1040.	
20	976.		966.		986.	
21	974.		1006.		941.	
22	972.		1045.		899.	
23	970.		1088.		852.	
24	969.		1141.		797.	
25	967.		1206.		728.	
26	966.		1287.		645.	
27	965.		1383.		583.	
28	963.		1491.		515.	
29	962.		1605.		418.	
30	959.		1715.		290.	
31	957.		1803.		131.	
32	953.		1848.		115.	
33	949.		1823.		340.	
34	1175.		1693.		676.	
35	1454.		1761.		1144.	
36	1751.		1736.		1761.	
37	2045.		1546.		2533.	
38	2302.		1852.		3460.	
39	2478.		2430.		4519.	
40	2511.		3670.		5667.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 70

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-718.	-3575.	-1070.	-321.	-155.
2	-718.	-3606.	-1082.	-325.	-156.
3	-718.	-3637.	-1096.	-328.	-158.
4	-718.	-3668.	-1107.	-332.	-159.
5	-718.	-3699.	-1120.	-336.	-161.
6	-718.	-3728.	-1132.	-340.	-162.
7	-718.	-3757.	-1145.	-343.	-164.
8	-718.	-3787.	-1157.	-347.	-165.
9	-718.	-3815.	-1170.	-351.	-167.
10	-718.	-3843.	-1183.	-355.	-168.
11	-718.	-3870.	-1196.	-359.	-170.
12	-718.	-3898.	-1210.	-363.	-172.
13	-718.	-3924.	-1222.	-367.	-173.
14	-718.	-3950.	-1236.	-371.	-175.
15	-718.	-3976.	-1250.	-375.	-176.
16	-718.	-4002.	-1264.	-379.	-178.
17	-718.	-4026.	-1277.	-383.	-180.
18	-718.	-4050.	-1292.	-387.	-181.
19	-718.	-4074.	-1305.	-392.	-183.
20	-718.	-4097.	-1320.	-396.	-184.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 70

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.2421E-01	0.5885E-01	0.2951E-02
2	-0.2444E-01	0.5886E-01	0.2911E-02
3	-0.2467E-01	0.5886E-01	0.2873E-02
4	-0.2489E-01	0.5886E-01	0.2833E-02
5	-0.2511E-01	0.5886E-01	0.2794E-02
6	-0.2532E-01	0.5886E-01	0.2754E-02
7	-0.2553E-01	0.5886E-01	0.2713E-02
8	-0.2574E-01	0.5886E-01	0.2672E-02
9	-0.2594E-01	0.5886E-01	0.2631E-02
10	-0.2615E-01	0.5886E-01	0.2589E-02
11	-0.2634E-01	0.5887E-01	0.2546E-02
12	-0.2654E-01	0.5887E-01	0.2504E-02
13	-0.2673E-01	0.5887E-01	0.2461E-02
14	-0.2693E-01	0.5887E-01	0.2416E-02
15	-0.2711E-01	0.5887E-01	0.2372E-02
16	-0.2730E-01	0.5887E-01	0.2328E-02
17	-0.2747E-01	0.5887E-01	0.2282E-02
18	-0.2764E-01	0.5888E-01	0.2236E-02
19	-0.2781E-01	0.5888E-01	0.2190E-02
20	-0.2798E-01	0.5888E-01	0.2144E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 70

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-758.	-3774.	-7914.	-5921.	6398.	-1626.
2	-758.	-3806.	-7993.	-5978.	6477.	-1635.
3	-758.	-3839.	-8082.	-6035.	6566.	-1643.
4	-758.	-3872.	-8155.	-6092.	6639.	-1651.
5	-758.	-3904.	-8242.	-6149.	6727.	-1659.
6	-758.	-3935.	-8325.	-6205.	6809.	-1665.
7	-758.	-3966.	-8411.	-6262.	6895.	-1671.
8	-758.	-3997.	-8492.	-6318.	6977.	-1676.
9	-758.	-4027.	-8580.	-6373.	7064.	-1680.
10	-758.	-4056.	-8668.	-6429.	7152.	-1684.
11	-758.	-4085.	-8756.	-6484.	7240.	-1687.
12	-758.	-4114.	-8845.	-6539.	7330.	-1689.
13	-758.	-4142.	-8927.	-6595.	7412.	-1690.
14	-758.	-4169.	-9023.	-6648.	7507.	-1690.
15	-758.	-4197.	-9114.	-6703.	7598.	-1690.
16	-758.	-4224.	-9207.	-6758.	7691.	-1690.
17	-758.	-4250.	-9295.	-6812.	7779.	-1688.
18	-758.	-4275.	-9393.	-6864.	7877.	-1685.
19	-758.	-4300.	-9483.	-6918.	7967.	-1682.
20	-758.	-4324.	-9579.	-6971.	8063.	-1678.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 70 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	3846.		7914.		8024.	
2	3880.		7993.		8112.	
3	3914.		8082.		8210.	
4	3948.		8155.		8290.	
5	3981.		8242.		8385.	
6	4013.		8325.		8474.	
7	4046.		8411.		8565.	
8	4079.		8492.		8653.	
9	4110.		8580.		8745.	
10	4141.		8668.		8836.	
11	4171.		8756.		8926.	
12	4201.		8845.		9018.	
13	4231.		8927.		9102.	
14	4259.		9023.		9197.	
15	4289.		9114.		9288.	
16	4317.		9207.		9381.	
17	4344.		9295.		9467.	
18	4371.		9393.		9563.	
19	4398.		9483.		9649.	
20	4424.		9579.		9741.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 90

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-718.	-2298.	-419.	-126.	-65.
2	-718.	-2464.	-435.	-130.	-68.
3	-718.	-2629.	-451.	-135.	-71.
4	-718.	-2794.	-469.	-141.	-75.
5	-718.	-2958.	-487.	-146.	-78.
6	-718.	-3121.	-506.	-152.	-82.
7	-718.	-3284.	-526.	-158.	-86.
8	-718.	-3445.	-547.	-164.	-90.
9	-718.	-3606.	-569.	-171.	-95.
10	-718.	-3766.	-592.	-178.	-99.
11	-718.	-3925.	-617.	-185.	-104.
12	-718.	-4082.	-642.	-193.	-109.
13	-718.	-4239.	-669.	-201.	-114.
14	-718.	-4395.	-697.	-209.	-120.
15	-718.	-4550.	-726.	-218.	-125.
16	-718.	-4704.	-757.	-227.	-131.
17	-718.	-4856.	-789.	-237.	-137.
18	-718.	-5007.	-822.	-247.	-143.
19	-718.	-5157.	-857.	-257.	-150.
20	-718.	-5306.	-893.	-268.	-156.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 90

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.9906E-02	0.5953E-01	0.3321E-02
2	-0.1070E-01	0.5953E-01	0.3307E-02
3	-0.1148E-01	0.5953E-01	0.3294E-02
4	-0.1227E-01	0.5953E-01	0.3279E-02
5	-0.1305E-01	0.5953E-01	0.3264E-02
6	-0.1382E-01	0.5953E-01	0.3248E-02
7	-0.1459E-01	0.5953E-01	0.3232E-02
8	-0.1536E-01	0.5953E-01	0.3215E-02
9	-0.1613E-01	0.5954E-01	0.3198E-02
10	-0.1689E-01	0.5954E-01	0.3180E-02
11	-0.1764E-01	0.5954E-01	0.3161E-02
12	-0.1840E-01	0.5954E-01	0.3141E-02
13	-0.1914E-01	0.5955E-01	0.3120E-02
14	-0.1988E-01	0.5955E-01	0.3099E-02
15	-0.2062E-01	0.5955E-01	0.3076E-02
16	-0.2135E-01	0.5956E-01	0.3053E-02
17	-0.2207E-01	0.5956E-01	0.3029E-02
18	-0.2279E-01	0.5957E-01	0.3004E-02
19	-0.2351E-01	0.5957E-01	0.2977E-02
20	-0.2421E-01	0.5958E-01	0.2950E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 90

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-500.	-1598.	-1715.	-1963.	716.	-1234.
2	-500.	-1714.	-1762.	-2093.	762.	-1335.
3	-500.	-1829.	-1810.	-2222.	810.	-1436.
4	-500.	-1944.	-1860.	-2352.	861.	-1535.
5	-500.	-2058.	-1914.	-2482.	914.	-1634.
6	-500.	-2171.	-1969.	-2612.	970.	-1730.
7	-500.	-2284.	-2027.	-2743.	1028.	-1826.
8	-500.	-2397.	-2088.	-2873.	1089.	-1920.
9	-500.	-2508.	-2153.	-3004.	1153.	-2013.
10	-500.	-2620.	-2220.	-3136.	1220.	-2103.
11	-500.	-2730.	-2290.	-3267.	1291.	-2193.
12	-500.	-2840.	-2364.	-3399.	1365.	-2281.
13	-500.	-2949.	-2442.	-3532.	1442.	-2367.
14	-500.	-3058.	-2523.	-3664.	1523.	-2451.
15	-500.	-3165.	-2607.	-3797.	1608.	-2533.
16	-500.	-3272.	-2696.	-3931.	1697.	-2613.
17	-500.	-3378.	-2789.	-4065.	1790.	-2691.
18	-500.	-3483.	-2886.	-4199.	1887.	-2767.
19	-500.	-3588.	-2988.	-4334.	1988.	-2841.
20	-500.	-3691.	-3094.	-4469.	2094.	-2913.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 90 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	1608.		1963.		1950.	
2	1724.		2093.		2098.	
3	1840.		2222.		2246.	
4	1956.		2352.		2396.	
5	2071.		2482.		2548.	
6	2186.		2612.		2700.	
7	2300.		2743.		2854.	
8	2414.		2873.		3009.	
9	2527.		3004.		3166.	
10	2640.		3136.		3324.	
11	2753.		3267.		3484.	
12	2865.		3399.		3646.	
13	2976.		3532.		3809.	
14	3087.		3664.		3974.	
15	3197.		3797.		4141.	
16	3307.		3931.		4310.	
17	3416.		4065.		4481.	
18	3525.		4199.		4654.	
19	3632.		4334.		4829.	
20	3739.		4469.		5007.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 100

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	230.	-2828.	2791.	1161.	-290.
2	223.	-2821.	2669.	1129.	-283.
3	217.	-2815.	2549.	1097.	-277.
4	210.	-2808.	2432.	1066.	-271.
5	204.	-2802.	2318.	1035.	-264.
6	197.	-2795.	2206.	1005.	-258.
7	191.	-2789.	2098.	976.	-252.
8	185.	-2782.	1992.	947.	-246.
9	178.	-2776.	1889.	919.	-240.
10	172.	-2770.	1789.	892.	-233.
11	166.	-2764.	1691.	865.	-227.
12	159.	-2757.	1596.	839.	-221.
13	153.	-2751.	1504.	813.	-215.
14	147.	-2745.	1415.	788.	-209.
15	141.	-2739.	1328.	764.	-203.
16	135.	-2733.	1244.	740.	-197.
17	129.	-2727.	1162.	717.	-190.
18	123.	-2721.	1083.	694.	-184.
19	117.	-2715.	1007.	672.	-178.
20	111.	-2709.	934.	651.	-172.
21	105.	-2703.	863.	630.	-166.
22	99.	-2697.	794.	610.	-160.
23	93.	-2691.	729.	591.	-154.
24	88.	-2686.	666.	573.	-148.
25	82.	-2680.	605.	555.	-142.
26	76.	-2674.	547.	537.	-136.
27	71.	-2668.	492.	521.	-130.
28	65.	-2663.	439.	505.	-124.
29	59.	-2657.	389.	489.	-118.
30	54.	-2652.	341.	475.	-113.
31	48.	-2646.	295.	461.	-107.
32	43.	-2641.	253.	447.	-101.
33	37.	-2635.	213.	435.	-95.
34	32.	-2630.	175.	423.	-89.
35	26.	-2624.	140.	412.	-83.
36	21.	-2619.	107.	401.	-77.
37	16.	-2614.	76.	391.	-71.
38	10.	-2608.	49.	382.	-66.
39	5.	-2603.	23.	373.	-60.
40	-0.	-2598.	0.	366.	-54.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 100

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	-0.5953E-01	-0.9905E-02	0.3321E-02
2	-0.6092E-01	-0.9897E-02	0.3374E-02
3	-0.6233E-01	-0.9889E-02	0.3425E-02
4	-0.6377E-01	-0.9881E-02	0.3474E-02
5	-0.6522E-01	-0.9874E-02	0.3520E-02
6	-0.6670E-01	-0.9866E-02	0.3563E-02
7	-0.6819E-01	-0.9858E-02	0.3605E-02
8	-0.6969E-01	-0.9851E-02	0.3644E-02
9	-0.7122E-01	-0.9843E-02	0.3681E-02
10	-0.7276E-01	-0.9835E-02	0.3716E-02
11	-0.7431E-01	-0.9828E-02	0.3749E-02
12	-0.7587E-01	-0.9821E-02	0.3780E-02
13	-0.7745E-01	-0.9813E-02	0.3809E-02
14	-0.7904E-01	-0.9806E-02	0.3837E-02
15	-0.8064E-01	-0.9799E-02	0.3862E-02
16	-0.8225E-01	-0.9792E-02	0.3886E-02
17	-0.8387E-01	-0.9785E-02	0.3908E-02
18	-0.8550E-01	-0.9778E-02	0.3928E-02
19	-0.8714E-01	-0.9771E-02	0.3947E-02
20	-0.8879E-01	-0.9764E-02	0.3964E-02
21	-0.9044E-01	-0.9757E-02	0.3980E-02
22	-0.9210E-01	-0.9750E-02	0.3994E-02
23	-0.9376E-01	-0.9743E-02	0.4007E-02
24	-0.9543E-01	-0.9737E-02	0.4019E-02
25	-0.9710E-01	-0.9730E-02	0.4029E-02
26	-0.9878E-01	-0.9723E-02	0.4039E-02
27	-0.1005E 00	-0.9717E-02	0.4047E-02
28	-0.1021E 00	-0.9710E-02	0.4054E-02
29	-0.1038E 00	-0.9704E-02	0.4059E-02
30	-0.1055E 00	-0.9698E-02	0.4064E-02
31	-0.1072E 00	-0.9691E-02	0.4068E-02
32	-0.1089E 00	-0.9685E-02	0.4071E-02
33	-0.1106E 00	-0.9679E-02	0.4074E-02
34	-0.1123E 00	-0.9673E-02	0.4075E-02
35	-0.1140E 00	-0.9667E-02	0.4076E-02
36	-0.1157E 00	-0.9661E-02	0.4076E-02
37	-0.1174E 00	-0.9655E-02	0.4075E-02
38	-0.1191E 00	-0.9649E-02	0.4074E-02
39	-0.1208E 00	-0.9643E-02	0.4072E-02
40	-0.1225E 00	-0.9637E-02	0.4070E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 100

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	115.	-1414.	4302.	327.	-4072.	-3155.
2	112.	-1411.	4115.	282.	-3891.	-3104.
3	108.	-1407.	3932.	238.	-3715.	-3053.
4	105.	-1404.	3753.	195.	-3543.	-3003.
5	102.	-1401.	3579.	152.	-3375.	-2954.
6	99.	-1398.	3408.	110.	-3211.	-2906.
7	95.	-1394.	3242.	70.	-3051.	-2859.
8	92.	-1391.	3080.	30.	-2896.	-2812.
9	89.	-1388.	2923.	-9.	-2744.	-2767.
10	86.	-1385.	2769.	-47.	-2597.	-2723.
11	83.	-1382.	2619.	-84.	-2454.	-2679.
12	80.	-1379.	2474.	-121.	-2315.	-2637.
13	77.	-1376.	2333.	-156.	-2179.	-2595.
14	74.	-1372.	2195.	-191.	-2048.	-2554.
15	70.	-1369.	2062.	-224.	-1921.	-2515.
16	67.	-1366.	1933.	-257.	-1798.	-2476.
17	64.	-1363.	1808.	-288.	-1679.	-2438.
18	61.	-1360.	1686.	-319.	-1564.	-2402.
19	58.	-1357.	1569.	-349.	-1452.	-2366.
20	55.	-1354.	1456.	-378.	-1345.	-2331.
21	53.	-1351.	1347.	-406.	-1242.	-2297.
22	50.	-1349.	1241.	-433.	-1142.	-2264.
23	47.	-1346.	1140.	-459.	-1046.	-2232.
24	44.	-1343.	1042.	-484.	-955.	-2202.
25	41.	-1340.	948.	-508.	-867.	-2172.
26	38.	-1337.	859.	-531.	-783.	-2143.
27	35.	-1334.	773.	-553.	-702.	-2115.
28	32.	-1331.	691.	-574.	-626.	-2088.
29	30.	-1329.	612.	-595.	-553.	-2063.
30	27.	-1326.	538.	-614.	-484.	-2038.
31	24.	-1323.	467.	-632.	-419.	-2014.
32	21.	-1320.	400.	-649.	-358.	-1991.
33	19.	-1318.	337.	-665.	-300.	-1970.
34	16.	-1315.	278.	-681.	-246.	-1949.
35	13.	-1312.	222.	-695.	-196.	-1930.
36	11.	-1309.	171.	-708.	-150.	-1911.
37	8.	-1307.	123.	-720.	-107.	-1894.
38	5.	-1304.	78.	-731.	-68.	-1877.
39	3.	-1302.	37.	-741.	-32.	-1862.
40	-0.	-1299.	0.	-750.	-0.	-1847.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 100   DESIGN STRESS INTENSITY =   19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	1696.		4302.		4072.	
2	1686.		4115.		3891.	
3	1676.		3932.		3715.	
4	1666.		3753.		3543.	
5	1657.		3579.		3375.	
6	1647.		3408.		3211.	
7	1637.		3242.		3051.	
8	1627.		3080.		2896.	
9	1618.		2932.		2767.	
10	1608.		2816.		2723.	
11	1598.		2704.		2679.	
12	1589.		2595.		2637.	
13	1579.		2489.		2595.	
14	1570.		2386.		2554.	
15	1561.		2286.		2515.	
16	1551.		2190.		2476.	
17	1542.		2096.		2438.	
18	1533.		2006.		2402.	
19	1523.		1918.		2366.	
20	1514.		1834.		2331.	
21	1505.		1752.		2297.	
22	1496.		1674.		2264.	
23	1487.		1599.		2232.	
24	1478.		1526.		2202.	
25	1469.		1456.		2172.	
26	1460.		1390.		2143.	
27	1451.		1326.		2115.	
28	1442.		1265.		2088.	
29	1433.		1207.		2063.	
30	1425.		1152.		2038.	
31	1416.		1099.		2014.	
32	1407.		1050.		1991.	
33	1399.		1003.		1970.	
34	1390.		959.		1949.	
35	1381.		917.		1930.	
36	1373.		879.		1911.	
37	1364.		843.		1894.	
38	1356.		809.		1877.	
39	1348.		779.		1862.	
40	1339.		751.		1847.	

IV-10.3.121

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 110

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-429.	552.	3844.	1153.	-348.
2	-429.	918.	3630.	1089.	-338.
3	-429.	1245.	3423.	1027.	-326.
4	-429.	1534.	3223.	967.	-314.
5	-429.	1790.	3031.	909.	-300.
6	-429.	2012.	2848.	854.	-286.
7	-429.	2203.	2674.	802.	-271.
8	-429.	2366.	2510.	753.	-256.
9	-429.	2502.	2355.	707.	-240.
10	-429.	2612.	2211.	663.	-223.
11	-429.	2698.	2076.	623.	-207.
12	-429.	2762.	1953.	586.	-190.
13	-429.	2805.	1840.	552.	-172.
14	-429.	2828.	1737.	521.	-155.
15	-429.	2832.	1646.	494.	-138.
16	-429.	2818.	1565.	470.	-120.
17	-429.	2788.	1496.	449.	-103.
18	-429.	2741.	1437.	431.	-86.
19	-429.	2679.	1388.	416.	-69.
20	-429.	2602.	1351.	405.	-52.
21	-429.	2510.	1323.	397.	-36.
22	-429.	2404.	1306.	392.	-19.
23	-429.	2284.	1299.	390.	-3.
24	-429.	2150.	1302.	391.	12.
25	-429.	2002.	1314.	394.	27.
26	-429.	1839.	1336.	401.	42.
27	-429.	1662.	1366.	410.	56.
28	-429.	1471.	1405.	422.	69.
29	-429.	1264.	1453.	436.	82.
30	-429.	1042.	1508.	452.	94.
31	-429.	803.	1570.	471.	106.
32	-429.	547.	1639.	492.	116.
33	-429.	274.	1715.	515.	126.
34	-429.	-18.	1796.	539.	135.
35	-429.	-329.	1883.	565.	143.
36	-429.	-661.	1974.	592.	150.
37	-429.	-1014.	2070.	621.	155.
38	-429.	-1389.	2168.	650.	160.
39	-429.	-1788.	2269.	681.	163.
40	-429.	-2211.	2371.	711.	165.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 110

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.3238E-02	0.6006E-01	-0.2944E-02
2	0.4978E-02	0.6005E-01	-0.2637E-02
3	0.6533E-02	0.6004E-01	-0.2347E-02
4	0.7912E-02	0.6003E-01	-0.2074E-02
5	0.9125E-02	0.6002E-01	-0.1816E-02
6	0.1018E-01	0.6000E-01	-0.1575E-02
7	0.1109E-01	0.5998E-01	-0.1348E-02
8	0.1187E-01	0.5997E-01	-0.1134E-02
9	0.1251E-01	0.5995E-01	-0.9345E-03
10	0.1304E-01	0.5993E-01	-0.7468E-03
11	0.1345E-01	0.5991E-01	-0.5705E-03
12	0.1375E-01	0.5989E-01	-0.4049E-03
13	0.1395E-01	0.5987E-01	-0.2490E-03
14	0.1406E-01	0.5985E-01	-0.1020E-03
15	0.1408E-01	0.5983E-01	0.3705E-04
16	0.1402E-01	0.5981E-01	0.1690E-03
17	0.1387E-01	0.5979E-01	0.2948E-03
18	0.1365E-01	0.5977E-01	0.4153E-03
19	0.1336E-01	0.5975E-01	0.5314E-03
20	0.1299E-01	0.5973E-01	0.6440E-03
21	0.1255E-01	0.5972E-01	0.7539E-03
22	0.1205E-01	0.5970E-01	0.8619E-03
23	0.1148E-01	0.5968E-01	0.9690E-03
24	0.1084E-01	0.5966E-01	0.1076E-02
25	0.1013E-01	0.5965E-01	0.1183E-02
26	0.9361E-02	0.5963E-01	0.1292E-02
27	0.8520E-02	0.5962E-01	0.1403E-02
28	0.7609E-02	0.5960E-01	0.1517E-02
29	0.6625E-02	0.5959E-01	0.1635E-02
30	0.5567E-02	0.5958E-01	0.1756E-02
31	0.4431E-02	0.5957E-01	0.1883E-02
32	0.3215E-02	0.5956E-01	0.2015E-02
33	0.1915E-02	0.5955E-01	0.2153E-02
34	0.5263E-03	0.5954E-01	0.2297E-02
35	-0.9545E-03	0.5953E-01	0.2449E-02
36	-0.2532E-02	0.5953E-01	0.2607E-02
37	-0.4211E-02	0.5953E-01	0.2773E-02
38	-0.5996E-02	0.5953E-01	0.2948E-02
39	-0.7892E-02	0.5953E-01	0.3130E-02
40	-0.9905E-02	0.5953E-01	0.3321E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 110

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-298.	384.	10862.	3732.	-11459.	-2964.
2	-298.	639.	10241.	3800.	-10838.	-2523.
3	-298.	866.	9639.	3847.	-10236.	-2116.
4	-298.	1067.	9060.	3875.	-9656.	-1740.
5	-298.	1245.	8503.	3885.	-9100.	-1396.
6	-298.	1400.	7972.	3881.	-8569.	-1082.
7	-298.	1533.	7467.	3862.	-8064.	-797.
8	-298.	1646.	6989.	3832.	-7586.	-540.
9	-298.	1740.	6540.	3792.	-7137.	-311.
10	-298.	1817.	6120.	3743.	-6717.	-109.
11	-298.	1877.	5731.	3686.	-6328.	68.
12	-298.	1921.	5371.	3622.	-5968.	220.
13	-298.	1951.	5043.	3554.	-5640.	349.
14	-298.	1967.	4746.	3481.	-5343.	454.
15	-298.	1970.	4481.	3404.	-5078.	536.
16	-298.	1961.	4247.	3324.	-4844.	597.
17	-298.	1939.	4044.	3242.	-4641.	637.
18	-298.	1907.	3873.	3158.	-4470.	656.
19	-298.	1864.	3733.	3073.	-4329.	654.
20	-298.	1810.	3623.	2986.	-4220.	634.
21	-298.	1746.	3544.	2899.	-4141.	594.
22	-298.	1672.	3494.	2810.	-4091.	535.
23	-298.	1589.	3474.	2721.	-4071.	457.
24	-298.	1496.	3482.	2630.	-4079.	362.
25	-298.	1392.	3517.	2537.	-4114.	248.
26	-298.	1279.	3580.	2443.	-4177.	116.
27	-298.	1156.	3669.	2347.	-4266.	-34.
28	-298.	1023.	3782.	2247.	-4379.	-201.
29	-298.	879.	3919.	2145.	-4516.	-386.
30	-298.	725.	4079.	2038.	-4676.	-589.
31	-298.	559.	4261.	1926.	-4857.	-809.
32	-298.	381.	4462.	1809.	-5059.	-1047.
33	-298.	190.	4681.	1684.	-5278.	-1303.
34	-298.	-13.	4918.	1552.	-5515.	-1577.
35	-298.	-229.	5169.	1411.	-5766.	-1869.
36	-298.	-460.	5434.	1260.	-6031.	-2180.
37	-298.	-705.	5711.	1097.	-6308.	-2508.
38	-298.	-966.	5996.	922.	-6593.	-2855.
39	-298.	-1244.	6289.	733.	-6886.	-3220.
40	-298.	-1538.	6587.	528.	-7184.	-3604.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 110 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	926.		10862.		11459.	
2	1170.		10241.		10838.	
3	1387.		9639.		10236.	
4	1576.		9060.		9656.	
5	1741.		8503.		9100.	
6	1882.		7972.		8569.	
7	2002.		7467.		8064.	
8	2101.		6989.		7586.	
9	2181.		6540.		7137.	
10	2243.		6120.		6717.	
11	2288.		5731.		6396.	
12	2319.		5371.		6189.	
13	2334.		5043.		5989.	
14	2337.		4746.		5797.	
15	2327.		4481.		5614.	
16	2305.		4247.		5441.	
17	2273.		4044.		5278.	
18	2230.		3873.		5125.	
19	2179.		3733.		4984.	
20	2118.		3623.		4853.	
21	2049.		3544.		4734.	
22	1972.		3494.		4626.	
23	1887.		3474.		4528.	
24	1795.		3482.		4440.	
25	1694.		3517.		4362.	
26	1584.		3580.		4293.	
27	1466.		3669.		4266.	
28	1338.		3782.		4379.	
29	1201.		3919.		4516.	
30	1053.		4079.		4676.	
31	893.		4261.		4857.	
32	722.		4462.		5059.	
33	539.		4681.		5278.	
34	410.		4918.		5515.	
35	422.		5169.		5766.	
36	527.		5434.		6031.	
37	776.		5711.		6308.	
38	1041.		5996.		6593.	
39	1321.		6289.		6886.	
40	1617.		6587.		7184.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 120

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	0.	-566.	-2773.	-832.	-492.
2	0.	-514.	-2839.	-852.	-493.
3	0.	-461.	-2904.	-871.	-493.
4	0.	-407.	-2970.	-891.	-493.
5	0.	-352.	-3036.	-911.	-494.
6	0.	-295.	-3102.	-930.	-494.
7	0.	-236.	-3167.	-950.	-494.
8	0.	-176.	-3233.	-970.	-494.
9	0.	-114.	-3299.	-990.	-494.
10	0.	-50.	-3365.	-1009.	-494.
11	0.	15.	-3431.	-1029.	-494.
12	0.	82.	-3497.	-1049.	-494.
13	0.	150.	-3563.	-1069.	-494.
14	0.	221.	-3628.	-1089.	-494.
15	0.	293.	-3694.	-1108.	-494.
16	0.	367.	-3760.	-1128.	-494.
17	0.	442.	-3826.	-1148.	-493.
18	0.	520.	-3891.	-1167.	-493.
19	0.	599.	-3957.	-1187.	-493.
20	0.	681.	-4023.	-1207.	-492.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 120

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.2692E-02	0.6007E-01	-0.1811E-02
2	-0.2447E-02	0.6007E-01	-0.1860E-02
3	-0.2196E-02	0.6007E-01	-0.1910E-02
4	-0.1938E-02	0.6007E-01	-0.1962E-02
5	-0.1673E-02	0.6007E-01	-0.2015E-02
6	-0.1401E-02	0.6007E-01	-0.2068E-02
7	-0.1122E-02	0.6007E-01	-0.2123E-02
8	-0.8355E-03	0.6007E-01	-0.2180E-02
9	-0.5414E-03	0.6007E-01	-0.2237E-02
10	-0.2395E-03	0.6007E-01	-0.2295E-02
11	0.7031E-04	0.6007E-01	-0.2355E-02
12	0.3880E-03	0.6007E-01	-0.2416E-02
13	0.7141E-03	0.6007E-01	-0.2478E-02
14	0.1048E-02	0.6007E-01	-0.2541E-02
15	0.1391E-02	0.6007E-01	-0.2605E-02
16	0.1743E-02	0.6007E-01	-0.2671E-02
17	0.2103E-02	0.6007E-01	-0.2737E-02
18	0.2472E-02	0.6007E-01	-0.2805E-02
19	0.2850E-02	0.6007E-01	-0.2874E-02
20	0.3238E-02	0.6006E-01	-0.2944E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 120

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	0.	-394.	-8052.	-2809.	8052.	2022.
2	0.	-358.	-8242.	-2831.	8242.	2115.
3	0.	-321.	-8433.	-2851.	8433.	2209.
4	0.	-283.	-8624.	-2871.	8624.	2304.
5	0.	-245.	-8815.	-2889.	8815.	2400.
6	0.	-205.	-9006.	-2907.	9006.	2497.
7	0.	-164.	-9197.	-2923.	9197.	2595.
8	0.	-122.	-9388.	-2939.	9388.	2694.
9	0.	-79.	-9579.	-2953.	9579.	2795.
10	0.	-35.	-9770.	-2966.	9771.	2896.
11	0.	10.	-9962.	-2978.	9962.	2999.
12	0.	57.	-10153.	-2989.	10153.	3103.
13	0.	105.	-10344.	-2999.	10345.	3208.
14	0.	153.	-10535.	-3007.	10535.	3314.
15	0.	204.	-10726.	-3014.	10727.	3421.
16	0.	255.	-10918.	-3020.	10918.	3530.
17	0.	308.	-11108.	-3025.	11109.	3640.
18	0.	362.	-11299.	-3028.	11299.	3751.
19	0.	417.	-11490.	-3030.	11490.	3864.
20	0.	474.	-11680.	-3031.	11680.	3978.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 120 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	1027.		8052.		8052.	
2	1028.		8242.		8242.	
3	1029.		8433.		8433.	
4	1030.		8624.		8624.	
5	1030.		8815.		8815.	
6	1031.		9006.		9006.	
7	1031.		9197.		9197.	
8	1031.		9388.		9388.	
9	1032.		9579.		9579.	
10	1032.		9770.		9771.	
11	1032.		9962.		9962.	
12	1032.		10153.		10153.	
13	1031.		10344.		10345.	
14	1031.		10535.		10535.	
15	1031.		10726.		10727.	
16	1030.		10918.		10918.	
17	1030.		11108.		11109.	
18	1029.		11299.		11299.	
19	1028.		11490.		11490.	
20	1027.		11680.		11680.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. ± 1/2 SSE + REFUELING LOADS

BODY NO. 130

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	0.	809.	0.	-738.	-0.
2	5.	804.	1.	-732.	12.
3	10.	799.	14.	-722.	24.
4	15.	794.	39.	-709.	36.
5	20.	789.	76.	-692.	48.
6	24.	785.	123.	-671.	60.
7	29.	780.	182.	-647.	72.
8	34.	776.	252.	-619.	84.
9	38.	771.	334.	-588.	95.
10	42.	767.	426.	-553.	107.
11	47.	762.	529.	-514.	119.
12	51.	758.	643.	-471.	130.
13	55.	754.	768.	-425.	141.
14	59.	750.	903.	-375.	153.
15	63.	746.	1049.	-321.	164.
16	67.	742.	1205.	-264.	175.
17	71.	738.	1372.	-202.	186.
18	75.	734.	1548.	-137.	198.
19	79.	731.	1735.	-68.	209.
20	82.	727.	1932.	5.	220.
21	86.	723.	2139.	81.	231.
22	89.	720.	2356.	162.	241.
23	93.	716.	2582.	246.	252.
24	96.	713.	2818.	334.	263.
25	100.	709.	3064.	426.	274.
26	103.	706.	3320.	523.	285.
27	106.	703.	3585.	622.	295.
28	110.	700.	3860.	726.	306.
29	113.	696.	4144.	834.	316.
30	116.	693.	4437.	946.	327.
31	119.	690.	4739.	1061.	337.
32	122.	687.	5051.	1181.	348.
33	125.	684.	5372.	1304.	358.
34	128.	681.	5702.	1432.	368.
35	131.	678.	6041.	1563.	379.
36	133.	676.	6389.	1698.	389.
37	136.	673.	6745.	1838.	399.
38	139.	670.	7111.	1981.	409.
39	142.	667.	7485.	2128.	419.
40	144.	665.	7868.	2279.	429.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 130.

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.6811E 00	0.3381E-02	-0.2149E-01
2	-0.6603E 00	0.3374E-02	-0.2145E-01
3	-0.6395E 00	0.3368E-02	-0.2141E-01
4	-0.6188E 00	0.3362E-02	-0.2136E-01
5	-0.5981E 00	0.3356E-02	-0.2131E-01
6	-0.5775E 00	0.3351E-02	-0.2126E-01
7	-0.5569E 00	0.3345E-02	-0.2119E-01
8	-0.5364E 00	0.3340E-02	-0.2112E-01
9	-0.5160E 00	0.3335E-02	-0.2103E-01
10	-0.4957E 00	0.3330E-02	-0.2093E-01
11	-0.4755E 00	0.3325E-02	-0.2081E-01
12	-0.4554E 00	0.3320E-02	-0.2068E-01
13	-0.4354E 00	0.3315E-02	-0.2052E-01
14	-0.4156E 00	0.3311E-02	-0.2035E-01
15	-0.3960E 00	0.3307E-02	-0.2015E-01
16	-0.3766E 00	0.3302E-02	-0.1992E-01
17	-0.3574E 00	0.3298E-02	-0.1967E-01
18	-0.3385E 00	0.3295E-02	-0.1940E-01
19	-0.3198E 00	0.3291E-02	-0.1909E-01
20	-0.3015E 00	0.3287E-02	-0.1875E-01
21	-0.2835E 00	0.3284E-02	-0.1837E-01
22	-0.2659E 00	0.3280E-02	-0.1797E-01
23	-0.2487E 00	0.3277E-02	-0.1752E-01
24	-0.2320E 00	0.3274E-02	-0.1704E-01
25	-0.2157E 00	0.3271E-02	-0.1652E-01
26	-0.2000E 00	0.3268E-02	-0.1596E-01
27	-0.1848E 00	0.3265E-02	-0.1536E-01
28	-0.1703E 00	0.3262E-02	-0.1471E-01
29	-0.1563E 00	0.3260E-02	-0.1401E-01
30	-0.1431E 00	0.3257E-02	-0.1327E-01
31	-0.1306E 00	0.3255E-02	-0.1248E-01
32	-0.1190E 00	0.3252E-02	-0.1164E-01
33	-0.1081E 00	0.3250E-02	-0.1075E-01
34	-0.9814E-01	0.3248E-02	-0.9805E-02
35	-0.8912E-01	0.3246E-02	-0.8806E-02
36	-0.8110E-01	0.3244E-02	-0.7751E-02
37	-0.7412E-01	0.3243E-02	-0.6639E-02
38	-0.6825E-01	0.3241E-02	-0.5468E-02
39	-0.6355E-01	0.3239E-02	-0.4237E-02
40	-0.6006E-01	0.3238E-02	-0.2944E-02

IV.10.3.121

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 130

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	0.	616.	1.	-1955.	-1.	3188.
2	4.	613.	9.	-1937.	-1.	3162.
3	8.	609.	58.	-1906.	-43.	3124.
4	11.	605.	148.	-1863.	-125.	3073.
5	15.	601.	278.	-1807.	-248.	3010.
6	19.	598.	448.	-1739.	-411.	2935.
7	22.	594.	657.	-1659.	-613.	2847.
8	26.	591.	905.	-1565.	-854.	2747.
9	29.	587.	1192.	-1459.	-1134.	2634.
10	32.	584.	1516.	-1340.	-1452.	2509.
11	36.	581.	1879.	-1209.	-1808.	2370.
12	39.	578.	2279.	-1064.	-2202.	2219.
13	42.	574.	2717.	-906.	-2633.	2055.
14	45.	571.	3191.	-735.	-3101.	1878.
15	48.	568.	3702.	-551.	-3605.	1687.
16	51.	565.	4249.	-353.	-4146.	1484.
17	54.	562.	4831.	-142.	-4723.	1267.
18	57.	559.	5450.	82.	-5336.	1037.
19	60.	557.	6103.	319.	-5983.	794.
20	63.	554.	6792.	570.	-6666.	538.
21	65.	551.	7515.	834.	-7384.	268.
22	68.	548.	8273.	1112.	-8136.	-15.
23	71.	546.	9064.	1403.	-8923.	-311.
24	73.	543.	9890.	1708.	-9743.	-621.
25	76.	541.	10749.	2026.	-10597.	-945.
26	78.	538.	11642.	2358.	-11485.	-1282.
27	81.	536.	12568.	2703.	-12406.	-1632.
28	83.	533.	13527.	3063.	-13360.	-1997.
29	86.	531.	14518.	3436.	-14346.	-2374.
30	88.	528.	15542.	3822.	-15365.	-2766.
31	91.	526.	16598.	4223.	-16417.	-3171.
32	93.	524.	17686.	4637.	-17500.	-3589.
33	95.	521.	18805.	5064.	-18615.	-4022.
34	97.	519.	19957.	5506.	-19762.	-4468.
35	100.	517.	21139.	5961.	-20940.	-4928.
36	102.	515.	22353.	6431.	-22150.	-5401.
37	104.	513.	23598.	6914.	-23390.	-5888.
38	106.	511.	24873.	7410.	-24661.	-6389.
39	108.	507.	26179.	7921.	-25963.	-6904.
40	110.	506.	27516.	8445.	-27296.	-7432.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 130 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	616.		1956.		3189.	
2	625.		1946.		3163.	
3	633.		1964.		3166.	
4	641.		2011.		3198.	
5	650.		2085.		3258.	
6	658.		2187.		3346.	
7	666.		2316.		3460.	
8	675.		2470.		3601.	
9	683.		2651.		3768.	
10	691.		2857.		3961.	
11	700.		3088.		4178.	
12	708.		3343.		4421.	
13	716.		3623.		4688.	
14	725.		3926.		4978.	
15	733.		4252.		5293.	
16	742.		4602.		5630.	
17	750.		4974.		5990.	
18	759.		5450.		6373.	
19	767.		6103.		6778.	
20	775.		6792.		7204.	
21	784.		7515.		7652.	
22	792.		8273.		8136.	
23	801.		9064.		8923.	
24	809.		9890.		9743.	
25	818.		10749.		10597.	
26	826.		11642.		11485.	
27	835.		12568.		12406.	
28	843.		13527.		13360.	
29	852.		14518.		14346.	
30	860.		15542.		15365.	
31	869.		16598.		16417.	
32	877.		17686.		17500.	
33	886.		18805.		18615.	
34	894.		19957.	*	19762.	*
35	903.		21139.	*	20940.	*
36	911.		22353.	*	22150.	*
37	920.		23598.	*	23390.	*
38	941.		24873.	*	24661.	*
39	964.		26179.	*	25963.	*
40	987.		27516.	*	27296.	*

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 190

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	0.	1.	0.	0.	0.
2	0.	0.	0.	0.	0.
3	0.	-0.	0.	0.	0.
4	0.	-1.	0.	0.	0.
5	0.	-2.	0.	0.	-0.
6	0.	-3.	-0.	-0.	-0.
7	0.	-3.	-1.	-0.	-0.
8	0.	-2.	-2.	-0.	-0.
9	0.	3.	-3.	-1.	-0.
10	0.	15.	-3.	-1.	-0.
11	0.	33.	-2.	-1.	1.
12	0.	56.	3.	1.	2.
13	0.	72.	13.	4.	3.
14	0.	53.	31.	9.	5.
15	0.	-44.	54.	16.	5.
16	0.	-274.	71.	21.	2.
17	0.	-675.	57.	17.	-9.
18	0.	-1204.	-30.	-9.	-32.
19	0.	-1630.	-246.	-74.	-66.
20	0.	-1411.	-631.	-189.	-104.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 190

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.5842E-05	0.6043E-01	0.7418E-06
2	0.2412E-05	0.6043E-01	0.7981E-06
3	-0.1739E-05	0.6043E-01	0.1089E-05
4	-0.7826E-05	0.6043E-01	0.1636E-05
5	-0.1651E-04	0.6043E-01	0.2160E-05
6	-0.2626E-04	0.6043E-01	0.1946E-05
7	-0.3112E-04	0.6044E-01	-0.2622E-06
8	-0.1834E-04	0.6044E-01	-0.6149E-05
9	0.3227E-04	0.6044E-01	-0.1717E-04
10	0.1442E-03	0.6043E-01	-0.3291E-04
11	0.3295E-03	0.6043E-01	-0.4818E-04
12	0.5586E-03	0.6043E-01	-0.4906E-04
13	0.7126E-03	0.6043E-01	-0.9464E-05
14	0.5270E-03	0.6042E-01	0.1080E-03
15	-0.4371E-03	0.6042E-01	0.3397E-03
16	-0.2724E-02	0.6043E-01	0.6883E-03
17	-0.6704E-02	0.6046E-01	0.1061E-02
18	-0.1195E-01	0.6053E-01	0.1180E-02
19	-0.1618E-01	0.6063E-01	0.4988E-03
20	-0.1401E-01	0.6074E-01	-0.1811E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 190

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	0.	1.	0.	1.	0.	1.
2	0.	0.	0.	0.	-0.	0.
3	0.	-0.	1.	0.	-1.	-1.
4	0.	-1.	1.	-1.	-1.	-2.
5	0.	-2.	1.	-2.	-1.	-3.
6	0.	-4.	-2.	-5.	2.	-3.
7	0.	-5.	-9.	-7.	9.	-2.
8	0.	-3.	-19.	-8.	19.	3.
9	0.	5.	-32.	-5.	32.	14.
10	0.	21.	-40.	9.	40.	33.
11	0.	48.	-26.	40.	26.	56.
12	0.	82.	32.	92.	-32.	72.
13	0.	104.	167.	155.	-167.	54.
14	0.	77.	396.	196.	-396.	-42.
15	0.	-64.	688.	142.	-688.	-270.
16	0.	-399.	905.	-128.	-905.	-671.
17	0.	-982.	729.	-764.	-729.	-1201.
18	0.	-1751.	-383.	-1866.	383.	-1636.
19	0.	-2371.	-3124.	-3309.	3124.	-1434.
20	0.	-2053.	-8015.	-4457.	8015.	352.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL SEAL AREA
VESSEL SUBJECTED TO FILLER MAT'L. E.P. + 1/2 SSE + REFUELING LOADS

BODY NO. 190 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	1.		1.		1.	
2	0.		0.		1.	
3	0.		1.		1.	
4	1.		2.		2.	
5	2.		3.		3.	
6	4.		5.		5.	
7	5.		9.		11.	
8	3.		19.		19.	
9	5.		32.		32.	
10	21.		49.		40.	
11	49.		67.		56.	
12	85.		92.		105.	
13	111.		167.		221.	
14	88.		396.		396.	
15	75.		688.		688.	
16	403.		1033.		905.	
17	1003.		1492.		1201.	
18	1819.		1866.		2019.	
19	2515.		3309.		4558.	
20	2279.		8015.		8015.	

AS SEEN FROM THE PREVIOUSLY ENCLOSED COMPUTER OUTPUT, ALL STRESSES ARE WITHIN THEIR CORRESPONDING ALLOWABLES, AND THE ANALYSIS SHOWS THAT THE STRUCTURE IS ADEQUATE FOR THE LOADINGS PRESENTED. (SEE ARTICLE 4 FOR JET LOADING EFFECTS.)

FROM REFERENCE 1, A MAXIMUM ½SSE SHEAR AT ELEV. 573'-3¼" IS GIVEN AS $0.2 * 10^3$ KIPS. THIS CAUSES A SHEAR STRESS IN THE ⁷⁄₈" CONE PLATE AS FOLLOWS:

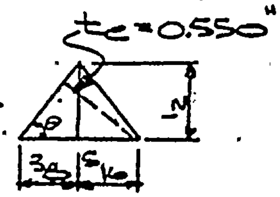
$$\tau_V = V/\pi R t \cos\theta = \frac{(200)}{(\pi)(237.786)(.8125)\cos 29.9514°}$$

$$\tau_V = 380.\ \text{psi}$$

THIS SHOULD PROVE INCONSEQUENTIAL, AND WILL BE IGNORED.

TWO AISC WELDS MUST BE EXAMINED — THOSE CONNECTING THE TWO ANNULAR SEAL PLATES TO THE 1½" CYLINDRICAL SHELL PLATE. THE AISC MINIMUM WELD FOR THESE IS AS FOLLOWS:

$$\text{2" ANNULAR PL., } t_{MIN} = \sqrt{12/16} = 0.5"$$
$$\text{1 15/16" ANNULAR PL., } t_{MIN} = \sqrt{1\tfrac{15}{16}/16} = 0.468"$$
} USE



NOW CHECK THESE WELDS FOR STRENGTH. FOR THE LOWER 2" SEAL PLATE, THE LOADS ON THE WELD ARE AS FOLLOWS:

$$V = 170 * 1.2 * \frac{207}{190.78125} = 221.\#/\text{in}$$

$$M = V_{0.5} * \frac{R_O}{R_I}(R_O - R_I) = (204)\left(\frac{207}{190.78125}\right)(207 - 190.78125)$$

$$M = 3590\ \text{IN}\#/\text{IN}$$

ACCORDING TO PAGE IV.10.3.57, THE CONNECTION IS IN LONGITUDINAL COMPRESSION, BUT THIS WILL BE IGNORED

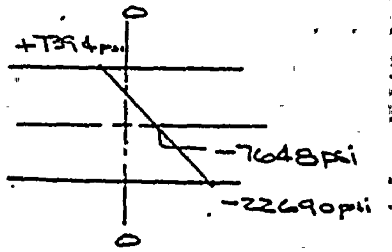
$\therefore \tau_A = (\frac{M}{S}\sin\theta + \frac{V}{A}\cos\theta)/\text{THROAT} = 2.73 \text{ ksi} \leq 21 \text{ ksi} \therefore \text{OK}$

$\tau_Y = (\frac{M}{S}\cos\theta + \frac{V}{A}\sin\theta)/\text{THROAT} = 2.12 \text{ ksi} \leq .4F_Y \therefore \text{OK}$

W/S = 2 IN², A = 2 IN, θ = 53.13°

$\text{THROAT REQD} = \frac{2.12}{4.838} \times .55 = 0.08 \text{ IN} < 0.55 \therefore \text{OK}$

DUE TO THE JET LOADING, THE LONGITUDINAL STRESSES FROM PAGES IV.10.4.100 THRU IV.10.4.102 ARE AS FOLLOWS:



THIS GIVES AN EFFECTIVE MOMENT OF

$M = \frac{t^2\sigma}{6} = \frac{(2)^2(7394+7648)}{6}$

M = 10,028. IN#/IN.

THE CORRESPONDING SHEAR IS (221)(1.4)/1.2 = 258 #/IN. IF THE LONGITUDINAL COMPRESSIVE STRESS IS IGNORED,

$\tau_A = 7.43 \text{ ksi} \leq 0.9F_Y = 29.93 \text{ ksi} \therefore \text{OK}$

$\tau_Y = 5.66 \text{ ksi} \leq 0.9F_Y/\sqrt{3} = 17.28 \text{ ksi} \therefore \text{OK}$

THEREFORE,

$\text{THROAT REQUIRED} = \frac{5.66}{17.28} \times 0.55 = 0.18 \leq 0.55 \therefore \text{OK}$

FOR THE UPPER 1 5/16" SEAL PLATE, THE LOADS ARE AS FOLLOWS: (S = 1516 IN²)

FROM PAGE IV.10.3.129, V = 429#/IN. AND M = 7868 IN#/IN. ALSO, N_ϕ = 144#

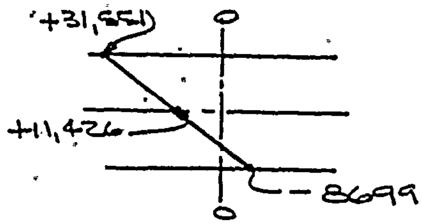
$\therefore \tau_A = [(\frac{P}{A} + \frac{M}{S})\sin\theta + \frac{V}{A}\cos\theta]/\text{THROAT} = 9.06 \text{ ksi} \leq 21 \text{ ksi}$

$\tau_V = [(\frac{P}{A} + \frac{M}{S})\cos\theta + \frac{V}{A}\sin\theta]/\text{THROAT} = 6.93 \text{ ksi} \leq .4F_Y$

∴ OK

THIS STRESS CONDITION YIELDS A THROAT REQUIREMENT OF $6.93/.4F_y * .55 = 0.25 \le 0.55$ ∴ OK

DUE TO THE JET LOADING, THE LONGITUDINAL STRESSES FROM PAGE IV.10.4.109 THRU IV.10.4.111 ARE AS FOLLOWS



THIS GIVES AN EFFECTIVE MOMENT OF

$$M = \frac{t^2 \sigma}{6} = \frac{(1\tfrac{5}{16})^2 (8699 + 11426)}{6}$$

$M = 5778.$ IN#/IN.

THE CORRESPONDING SHEAR IS $(429)(1.4)/1.2 = 501.$ #/IN.

∴

$\sigma_A = 14.99$ ksi $\le 0.9 F_y$ ∴ OK

$\tau_y = 11.40$ ksi $\le 0.9 F_y/\sqrt{3}$ ∴ OK

OR, A THROAT REQUIREMENT OF $\frac{11.40}{17.23} * .55 = 0.36$ ∴ OK

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 10
PREPARED BY / DATE: RAM/7-28-73	RAM/1-9-74				ARTICLE: 4
CHECKED BY / DATE: BJW/8-3-73	JHB 1-9-74				PAGE: 1
REVISION NUMBER:	C				

JET LOADING

ACCORDING TO REFERENCE 1, ¶ 3.4.3, THE SHELL AREA BELOW THE TOP HEAD MATING FLANGES IS SUBJECTED TO A JET LOAD OF 534. KIPS OVER AN AREA OF 429 IN², THE TEMPERATURE BEING 340°F. THIS ARTICLE CONTAINS THE ANALYSIS FOR THIS DESIGN LOADING.

THE COMPUTER PROGRAM "NASTRAN" (REFERENCE 16) WILL BE USED TO ANALYZE FOR THIS LOADING CONDITION, PLUS INTERNAL PRESSURE, AND LOCA BELLOWS LOADS SUBJECTED TO SSE VERTICAL EARTHQUAKE DOWNWARD. (ASSUME A "g"-FACTOR OF 0.40) BECAUSE THE JET LOADING IS ASYMMETRIC RELATIVE TO THE VESSEL, A FOURIER SERIES WILL BE USED TO APPROXIMATE THE CONDITION. THE COEFFICIENTS ARE CALCULATED IN A PDM IN-HOUSE PROGRAM "FOUR3" AND ARE SHOWN ON THE FOLLOWING PAGES ALONG WITH A PLOT OF THE APPROXIMATION TO THE TRUE LOADING.

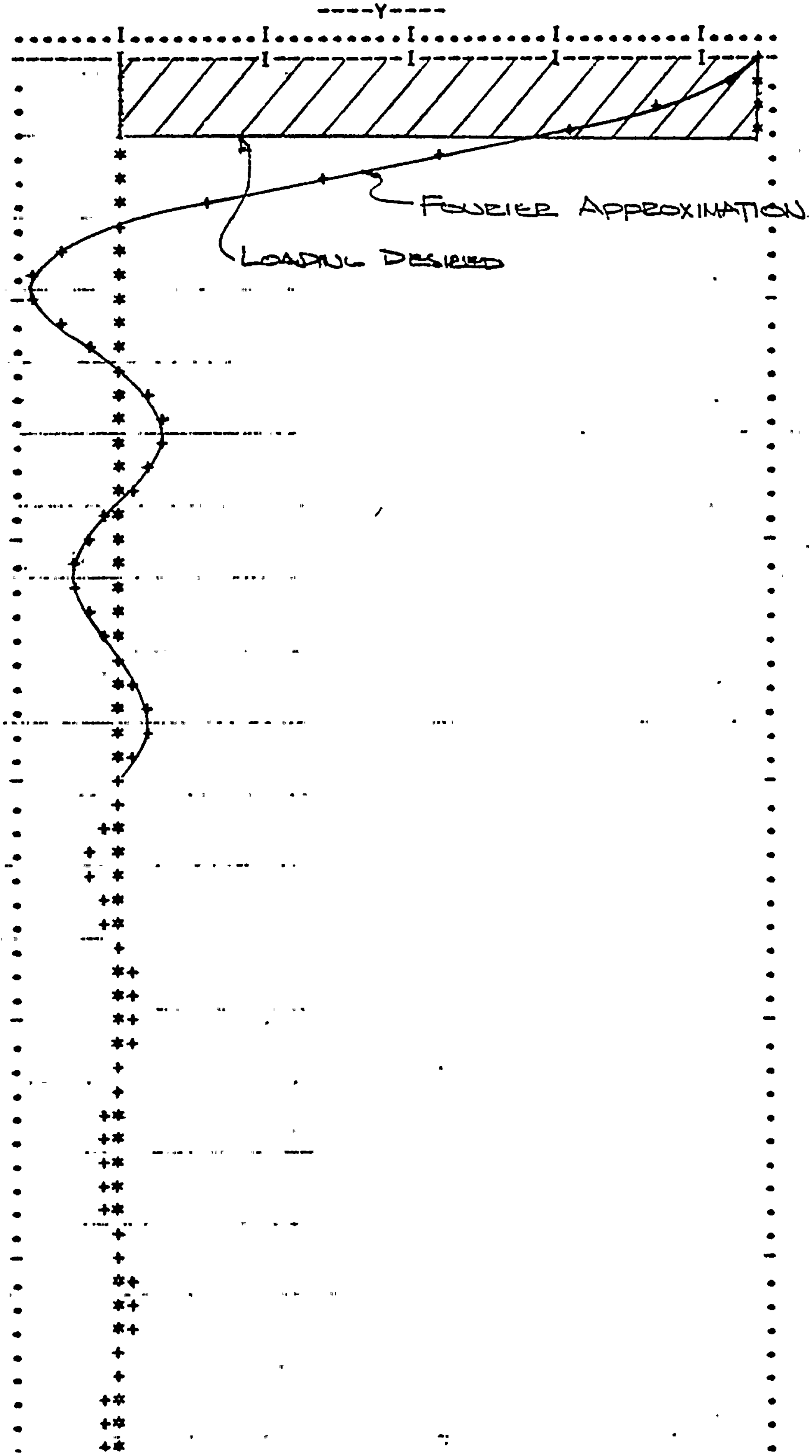
THE SHELL AREA IS ASSUMED TO BE LOADED UNDER THIS JET CONDITION FROM BODIES 501 THRU 503, OR A VERTICAL HEIGHT OF 24.34375 IN. EXAMINING THE FOURIER PLOT, IT IS SEEN THAT THE INPUTTED ANGLE FOR LOADING INTO THE PROGRAM WAS 3°, OR ON A 190.78125" RADIUS, A LENGTH OF 9.985 IN. THE TOTAL SHELL AREA SUBJECTED TO JET LOADING IS THEREFORE $243 \text{ IN}^2 > 429/2 = 214.5 \text{ IN}^2$. THEREFORE, THE ENCLOSED ANALYSIS IS CONSERVATIVE.

FOR THE ANALYSIS OF THE SHELL SUBJECTED TO JET LOADING WHEN BACKED UP BY CONCRETE, SEE SECTION III, SUBSECTION 9 OF THIS FINAL STRESS REPORT. ✓

NO. OF FOURIER TERMS = 30

A(0) =	0.25356E 02
A(1) =	0.50679E 02
A(2) =	0.50578E 02
A(3) =	0.50410E 02
A(4) =	0.50175E 02
A(5) =	0.49874E 02
A(6) =	0.49507E 02
A(7) =	0.49076E 02
A(8) =	0.48581E 02
A(9) =	0.48024E 02
A(10) =	0.47406E 02
A(11) =	0.46727E 02
A(12) =	0.45990E 02
A(13) =	0.45197E 02
A(14) =	0.44349E 02
A(15) =	0.43448E 02
A(16) =	0.42495E 02
A(17) =	0.41495E 02
A(18) =	0.40447E 02
A(19) =	0.39356E 02
A(20) =	0.38223E 02
A(21) =	0.37050E 02
A(22) =	0.35841E 02
A(23) =	0.34599E 02
A(24) =	0.33325E 02
A(25) =	0.32023E 02
A(26) =	0.30695E 02
A(27) =	0.29346E 02
A(28) =	0.27976E 02
A(29) =	0.26590E 02

X	Y
0.0	0.123E 04
1.00	0.119E 04
2.00	0.106E 04
3.00	866.
4.00	633.
5.00	392.
6.00	174.
7.00	0.773
8.00	-112.
9.00	-163.
10.0	-158.
11.0	-112.
12.0	-46.4
13.0	20.0
14.0	70.9
15.0	96.3
16.0	93.7
17.0	67.5
18.0	27.3
19.0	-15.5
20.0	-49.8
21.0	-68.2
22.0	-67.5
23.0	-49.7
24.0	-20.8
25.0	11.0
26.0	37.5
27.0	52.6
28.0	53.2
29.0	40.2
30.0	17.9
31.0	-7.54
32.0	-29.5
33.0	-42.6
34.0	-44.1
35.0	-34.3
36.0	-16.3
37.0	4.90
38.0	23.7
39.0	35.6
40.0	37.8
41.0	30.3
42.0	15.3
43.0	-2.82
44.0	-19.5
45.0	-30.4
46.0	-33.2
47.0	-27.3
48.0	-14.7
49.0	1.15
50.0	16.1
51.0	26.4
52.0	29.6
53.0	25.1
54.0	14.3
55.0	0.235
56.0	-13.4
57.0	-23.2
58.0	-24.7



61.0	-1.40		.	+	.
62.0	11.2		.	+	.
63.0	20.6		.	*+	.
64.0	24.4		.	*+	.
65.0	21.9		.	*+	.
66.0	13.8		.	+	.
67.0	2.39		.	+	.
68.0	-9.32		.	+*	.
69.0	-18.3		.	+*	.
70.0	-22.4		-	+*	-
71.0	-20.6		.	+*	.
72.0	-13.6		.	+*	.
73.0	-3.26		.	+	.
74.0	7.69		.	+	.
75.0	16.4		.	+	.
76.0	20.7		.	*+	.
77.0	19.6		.	+	.
78.0	13.5		.	+	.
79.0	4.02		.	+	.
80.0	-6.28		-	+	-
81.0	-14.8		.	+*	.
82.0	-19.3		.	+*	.
83.0	-18.7		.	+*	.
84.0	-13.4		.	+*	.
85.0	-4.70	I	.	+	.
86.0	5.02	I	.	+	.
87.0	13.3	I	.	+	.
88.0	18.0	I	.	+	.
89.0	17.9	X	.	+	.
90.0	13.3	I	-	+	-
91.0	5.32	I	.	+	.
92.0	-3.90	I	.	+	.
93.0	-12.0	V	.	+*	.
94.0	-16.8		.	+*	.
95.0	-17.2		.	+*	.
96.0	-13.2		.	+*	.
97.0	-5.88		.	+	.
98.0	2.88		.	+	.
99.0	10.8		.	+	.
100.	15.8		-	+	-
101.	16.6		.	+	.
102.	13.2		.	+	.
103.	6.40		.	+	.
104.	-1.94		.	+	.
105.	-9.67		.	+*	.
106.	-14.8		.	+*	.
107.	-16.0		.	+*	.
108.	-13.1		.	+*	.
109.	-6.88		.	+	.
110.	1.08		-	+	-
111.	8.66		.	+	.
112.	13.9		.	+	.
113.	15.5		.	+	.
114.	13.1		.	+	.
115.	7.32		.	+	.
116.	-0.274		.	+	.
117.	-7.72		.	+	.
118.	-13.1		.	+*	.
119.	-15.0		.	+*	.
120.	-13.1		-	+*	-
121.	-7.75		.	+	.
122.	-0.482		.	+	.
123.	6.84		.	+	.
[illegible]	[illegible]			+	.

X	Y
127.	8.15
128.	1.20
129.	-6.01
130.	-11.6
131.	-14.1
132.	-13.0
133.	-8.53
134.	-1.87
135.	5.22
136.	10.9
137.	13.7
138.	13.0
139.	8.90
140.	2.53
141.	-4.46
142.	-10.3
143.	-13.4
144.	-13.0
145.	-9.26
146.	-3.16
147.	3.73
148.	9.62
149.	13.0
150.	13.0
151.	9.60
152.	3.77
153.	-3.02
154.	-9.00
155.	-12.6
156.	-13.0
157.	-9.95
158.	-4.36
159.	2.33
160.	8.40
161.	12.3
162.	13.0
163.	10.3
164.	4.94
165.	-1.66
166.	-7.81
167.	-11.9
168.	-13.0
169.	-10.6
170.	-5.52
171.	0.991
172.	7.24
173.	11.6
174.	12.9
175.	10.9
176.	6.09
177.	-0.329
178.	-6.66
179.	-11.3
180.	-12.9
X	Y

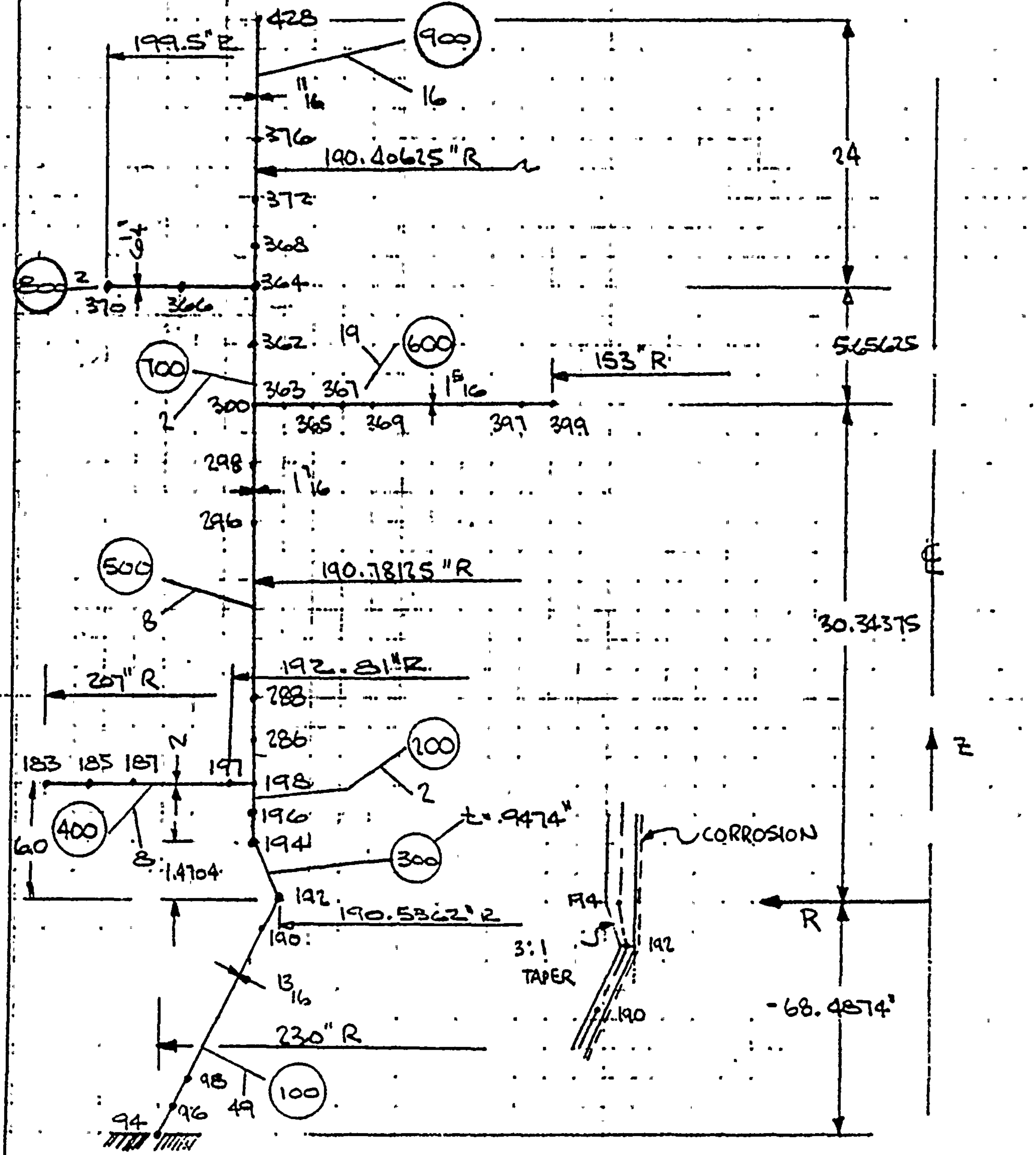
PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 10
PREPARED BY / DATE: RAM/7-28-73					ARTICLE: 4
CHECKED BY / DATE: BJW/8-3-73					PAGE: 6
REVISION NUMBER:					

BECAUSE "NASTRAN" REQUIRES A CONSIDERABLE AMOUNT OF INPUT DATA FOR THE SOLUTION OF ANY FINITE ELEMENT MODEL, PDM HAS WRITTEN AN IN-HOUSE DATA PROCESSOR TO GENERATE THE SPECIFIC DATA. PAGE 7 OF THIS ARTICLE CONTAINS THE DRAWING OF THE MODEL REPRESENTING THE AREA TO BE EXAMINED. "NASTRAN" ELEMENTS ARE REPRESENTED UNDER A BODY NUMBER SHOWN, AND AS INPUT INTO THE PREPROCESSOR. ONE ITEM SHOULD BE POINTED OUT IN THE "NASTRAN" DATA. ALL LOADS OBTAINED FROM THE PREPROCESSOR WILL BE EFFECTIVE NODE LOADS IN "NASTRAN", IE., AN ELEMENT LOADED IN PRESSURE WILL HAVE NODE LOADS AT EACH END, RATHER THAN A UNIFORM PRESSURE LOAD. ALSO, BY GENERATING INPUT DATA, MINOR DISCREPANCIES IN LOADING DATA WILL BE OBSERVED; IE. A CYLINDER MIGHT BE LOADED IN THE LONGITUDINAL DIRECTION DUE TO A NORMAL LOAD. THIS INPUT LOADING IS SMALL (1×10^{-5}) AND WILL BE INCONSEQUENTIAL. PAGES 8 THRU 22 CONTAIN THE INPUT DATA ECHO FOR "NASTRAN" AS PREPARED BY THE DATA PROCESSOR.

PAGES 23 THRU 87 CONTAIN THE DISPLACEMENT VECTOR AS OBTAINED FROM "NASTRAN". PDM HAS WRITTEN AN IN-HOUSE DATA PROCESSOR WHICH USES DISPLACEMENTS AND STRESSES FROM "NASTRAN", AND PRESENTS THESE IN A MORE LOGICAL MANNER, ALSO MAKING ASME STRESS ALLOWABLE COMPARISONS. THE POST PROCESSOR STRESS OUTPUT IS SHOWN ON PAGES 88 THRU 123. UPON OBSERVING THIS OUTPUT, IT IS SHOWN THAT ALL MEMBRANE STRESS INTENSITIES ARE WITHIN SY @ 340°F, WITH ONE EXCEPTION, THAT PRESENTED ON PAGE 103. (MEMBRANE + BENDING IS NOT A DESIGN CONSIDERATION) RATIONALE FOR STRESSES GREATER THAN SY IS GIVEN ON PAGE 103.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764	PDM	FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL			SUBSEC: 10
PREPARED BY / DATE: JKS/5-2-73			ARTICLE: 4
CHECKED BY / DATE: RAM/6-22-73			PAGE: 7
REVISION NUMBER:			

NASTRAN MODEL OF DRYWELL SEAL AREA



NOTE: BODY NUMBERS ARE CIRCLED

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
$EXECUTIVE CONTROL DECK
ID  PDM,RAMATTSON
APP     DISPLACEMENT
SOL     1,0
TIME    10
CEND
```

C A S E   C O N T R O L   D E C K   E C H O

```
CARD
COUNT
  1      $  END OF EXECUTIVE CONTROL DECK
  2      $  BEGIN CASE CONTROL DECK
  3          TITLE # HANFORD NO. 2 CONTAINMENT VESSEL
  4          SUBTITLE # ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING
  5          MAXLINES # 30000
  6          STRESS<PRINT,PUNCH< # ALL
  7          DISPLACEMENT<PRINT,PUNCH< # ALL
  8          ECHO # SORT
  9          SPC # 1
 10              SUBCASE  1
 11              LABEL # VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE
 12              HARMONICS # 29 — See Fourier Input
 13              AXISYMMETRIC # COSINE
 14              LOAD #  1
 15      $  END OF CASE CONTROL DECK
 16      $  BEGIN BULK DATA DECK
 17          BEGIN BULK
```

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
1-	AXIC	29								
2-	CCONEAX	101	1	192	190					
3-	CCONEAX	102	1	190	188					
4-	CCONEAX	103	1	188	186					
5-	CCONEAX	104	1	186	184					
6-	CCONEAX	105	1	184	182					
7-	CCONEAX	106	1	182	180					
8-	CCONEAX	107	1	180	178					
9-	CCONEAX	108	1	178	176					
10-	CCONEAX	109	1	176	174					
11-	CCONEAX	110	1	174	172					
12-	CCONEAX	111	1	172	170					
13-	CCONEAX	112	1	170	168					
14-	CCONEAX	113	1	168	166					
15-	CCONEAX	114	1	166	164					
16-	CCONEAX	115	1	164	162					
17-	CCONEAX	116	1	162	160					
18-	CCONEAX	117	1	160	158					
19-	CCONEAX	118	1	158	156					
20-	CCONEAX	119	1	156	154					
21-	CCONEAX	120	1	154	152					
22-	CCONEAX	121	1	152	150					
23-	CCONEAX	122	1	150	148					
24-	CCONEAX	123	1	148	146					
25-	CCONEAX	124	1	146	144					
26-	CCONEAX	125	1	144	142					
27-	CCONEAX	126	1	142	140					
28-	CCONEAX	127	1	140	138					
29-	CCONEAX	128	1	138	136					
30-	CCONEAX	129	1	136	134					
31-	CCONEAX	130	1	134	132					
32-	CCONEAX	131	1	132	130					
33-	CCONEAX	132	1	130	128					
34-	CCONEAX	133	1	128	126					
35-	CCONEAX	134	1	126	124					
36-	CCONEAX	135	1	124	122					
37-	CCONEAX	136	1	122	120					
38-	CCONEAX	137	1	120	118					
39-	CCONEAX	138	1	118	116					
40-	CCONEAX	139	1	116	114					
41-	CCONEAX	140	1	114	112					
42-	CCONEAX	141	1	112	110					
43-	CCONEAX	142	1	110	108					
44-	CCONEAX	143	1	108	106					
45-	CCONEAX	144	1	106	104					
46-	CCONEAX	145	1	104	102					
47-	CCONEAX	146	1	102	100					
48-	CCONEAX	147	1	100	98					
49-	CCONEAX	148	1	98	96					
50-	CCONEAX	149	1	96	94					

S O R T E D B U L K D A T A E C H O

CARD COUNT	. 1 .. 2 .. 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .. 10 .			
51-	CCONEAX 201	2	198	196
52-	CCONEAX 202	2	196	194
53-	CCONEAX 301	3	192	194
54-	CCONEAX 401	4	198	197
55-	CCONEAX 402	4	197	195
56-	CCONEAX 403	4	195	193
57-	CCONEAX 404	4	193	191
58-	CCONEAX 405	4	191	189
59-	CCONEAX 406	4	189	187
60-	CCONEAX 407	4	187	185
61-	CCONEAX 408	4	185	183
62-	CCONEAX 501	2	300	298
63-	CCONEAX 502	2	298	296
64-	CCONEAX 503	2	296	294
65-	CCONEAX 504	2	294	292
66-	CCONEAX 505	2	292	290
67-	CCONEAX 506	2	290	288
68-	CCONEAX 507	2	288	286
69-	CCONEAX 508	2	286	198
70-	CCONEAX 601	5	399	397
71-	CCONEAX 602	5	397	395
72-	CCONEAX 603	5	395	393
73-	CCONEAX 604	5	393	391
74-	CCONEAX 605	5	391	389
75-	CCONEAX 606	5	389	387
76-	CCONEAX 607	5	387	385
77-	CCONEAX 608	5	385	383
78-	CCONEAX 609	5	383	381
79-	CCONEAX 610	5	381	379
80-	CCONEAX 611	5	379	377
81-	CCONEAX 612	5	377	375
82-	CCONEAX 613	5	375	373
83-	CCONEAX 614	5	373	371
84-	CCONEAX 615	5	371	369
85-	CCONEAX 616	5	369	367
86-	CCONEAX 617	5	367	365
87-	CCONEAX 618	5	365	363
88-	CCONEAX 619	5	363	300
89-	CCONEAX 701	2	364	362
90-	CCONEAX 702	2	362	300
91-	CCONEAX 801	6	364	366
92-	CCONEAX 802	6	366	370
93-	CCONEAX 901	7	428	424
94-	CCONEAX 902	7	424	420
95-	CCONEAX 903	7	420	416
96-	CCONEAX 904	7	416	412
97-	CCONEAX 905	7	412	408
98-	CCONEAX 906	7	408	404
99-	CCONEAX 907	7	404	400
100-	CCONEAX 908	7	400	396

S O R T E D B U L K D A T A E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
101-	CCONEAX	909	7	396	392					
102-	CCONEAX	910	7	392	388					
103-	CCONEAX	911	7	388	384					
104-	CCONEAX	912	7	384	380					
105-	CCONEAX	913	7	380	376					
106-	CCONEAX	914	7	376	372					
107-	CCONEAX	915	7	372	368					
108-	CCONEAX	916	7	368	364					
109-	FORCEAX	1	94	0	1445.	3.145&1	.0	&0	1.812&1	
110-	FORCEAX	1	96	0	1440.	6.290&1	.0	&0	3.624&1	
111-	FORCEAX	1	98	0	1435.	6.290&1	.0	&0	3.624&1	
112-	FORCEAX	1	100	0	1430.	6.290&1	.0	&0	3.624&1	
113-	FORCEAX	1	102	0	1425.	6.290&1	.0	&0	3.624&1	
114-	FORCEAX	1	104	0	1420.	6.290&1	.0	&0	3.624&1	
115-	FORCEAX	1	106	0	1415.	6.290&1	.0	&0	3.624&1	
116-	FORCEAX	1	108	0	1410.	6.290&1	.0	&0	3.624&1	
117-	FORCEAX	1	110	0	1405.	6.290&1	.0	&0	3.624&1	
118-	FORCEAX	1	112	0	1400.	6.290&1	.0	&0	3.624&1	
119-	FORCEAX	1	114	0	1395.	6.290&1	.0	&0	3.624&1	
120-	FORCEAX	1	116	0	1389.	6.290&1	.0	&0	3.624&1	
121-	FORCEAX	1	118	0	1384.	6.290&1	.0	&0	3.624&1	
122-	FORCEAX	1	120	0	1379.	6.290&1	.0	&0	3.624&1	
123-	FORCEAX	1	122	0	1374.	6.290&1	.0	&0	3.624&1	
124-	FORCEAX	1	124	0	1369.	6.290&1	.0	&0	3.624&1	
125-	FORCEAX	1	126	0	1364.	6.290&1	.0	&0	3.624&1	
126-	FORCEAX	1	128	0	1359.	6.290&1	.0	&0	3.624&1	
127-	FORCEAX	1	130	0	1354.	6.290&1	.0	&0	3.624&1	
128-	FORCEAX	1	132	0	1349.	6.290&1	.0	&0	3.624&1	
129-	FORCEAX	1	134	0	1344.	6.290&1	.0	&0	3.624&1	
130-	FORCEAX	1	136	0	1339.	6.290&1	.0	&0	3.624&1	
131-	FORCEAX	1	138	0	1334.	6.290&1	.0	&0	3.624&1	
132-	FORCEAX	1	140	0	1329.	6.290&1	.0	&0	3.624&1	
133-	FORCEAX	1	142	0	1324.	6.290&1	.0	&0	3.624&1	
134-	FORCEAX	1	144	0	1319.	6.290&1	.0	&0	3.624&1	
135-	FORCEAX	1	146	0	1314.	6.290&1	.0	&0	3.624&1	
136-	FORCEAX	1	148	0	1309.	6.290&1	.0	&0	3.624&1	
137-	FORCEAX	1	150	0	1303.	6.290&1	.0	&0	3.624&1	
138-	FORCEAX	1	152	0	1298.	6.290&1	.0	&0	3.624&1	
139-	FORCEAX	1	154	0	1293.	6.290&1	.0	&0	3.624&1	
140-	FORCEAX	1	156	0	1288.	6.290&1	.0	&0	3.624&1	
141-	FORCEAX	1	158	0	1283.	6.290&1	.0	&0	3.624&1	
142-	FORCEAX	1	160	0	1278.	6.290&1	.0	&0	3.624&1	
143-	FORCEAX	1	162	0	1273.	6.290&1	.0	&0	3.624&1	
144-	FORCEAX	1	164	0	1268.	6.290&1	.0	&0	3.624&1	
145-	FORCEAX	1	166	0	1263.	6.290&1	.0	&0	3.624&1	
146-	FORCEAX	1	168	0	1258.	6.290&1	.0	&0	3.624&1	
147-	FORCEAX	1	170	0	1253.	6.290&1	.0	&0	3.624&1	
148-	FORCEAX	1	172	0	1248.	6.290&1	.0	&0	3.624&1	
149-	FORCEAX	1	174	0	1243.	6.290&1	.0	&0	3.624&1	
150-	FORCEAX	1	176	0	1238.	6.290&1	.0	&0	3.624&1	

– 45 psi INTERNAL PRESSURE ELEMENT LOAD TRANSFORMED TO NODE LOADS.

SORTED BULK DATA ECHO

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..		7 ..	8 ..	9 ..	10 .
151-	FORCEAX	1	178	0	1233.	6.290&1	.0	&0	3.624&1		
152-	FORCEAX	1	180	0	1228.	6.290&1	.0	&0	3.624&1		
153-	FORCEAX	1	182	0	1222.	6.290&1	.0	&0	3.624&1		
154-	FORCEAX	1	183	0	1301.	.0	&0	.0	&0	-2.380&2	
155-	FORCEAX	1	184	0	1217.	6.290&1	.0	&0	3.624&1		
156-	FORCEAX	1	186	0	1212.	6.290&1	.0	&0	3.624&1		
157-	FORCEAX	1	188	0	1207.	6.290&1	.0	&0	3.624&1		
158-	FORCEAX	1	190	0	1202.	6.290&1	.0	&0	3.624&1		
159-	FORCEAX	1	192	0	1197.	6.453&1	.0	&0	1.812&1		
160-	FORCEAX	1	194	0	1199.	8.404&1	.0	&0	3.200-5		
161-	FORCEAX	1	196	0	1199.	1.019&2	.0	&0	3.200-5		
162-	FORCEAX	1	198	0	1199.	1.580&2	.0	&0	4.961-5		
163-	FORCEAX	1	198	1	599.	7.711&1	.0	&0	2.421-5		
164-	FORCEAX	1	198	2	599.	7.695&1	.0	&0	2.416-5		
165-	FORCEAX	1	198	3	599.	7.670&1	.0	&0	2.408-5		
166-	FORCEAX	1	198	4	599.	7.634&1	.0	&0	2.397-5		
167-	FORCEAX	1	198	5	599.	7.588&1	.0	&0	2.383-5		
168-	FORCEAX	1	198	6	599.	7.532&1	.0	&0	2.365-5		
169-	FORCEAX	1	198	7	599.	7.467&1	.0	&0	2.344-5		
170-	FORCEAX	1	198	8	599.	7.392&1	.0	&0	2.321-5		
171-	FORCEAX	1	198	9	599.	7.307&1	.0	&0	2.294-5		
172-	FORCEAX	1	198	10	599.	7.213&1	.0	&0	2.265-5		
173-	FORCEAX	1	198	11	599.	7.109&1	.0	&0	2.232-5		
174-	FORCEAX	1	198	12	599.	6.997&1	.0	&0	2.197-5		
175-	FORCEAX	1	198	13	599.	6.877&1	.0	&0	2.159-5		
176-	FORCEAX	1	198	14	599.	6.748&1	.0	&0	2.119-5		
177-	FORCEAX	1	198	15	599.	6.611&1	.0	&0	2.076-5		
178-	FORCEAX	1	198	16	599.	6.466&1	.0	&0	2.030-5		
179-	FORCEAX	1	198	17	599.	6.313&1	.0	&0	1.982-5		
180-	FORCEAX	1	198	18	599.	6.154&1	.0	&0	1.932-5		
181-	FORCEAX	1	198	19	599.	5.988&1	.0	&0	1.880-5		
182-	FORCEAX	1	198	20	599.	5.816&1	.0	&0	1.826-5		
183-	FORCEAX	1	198	21	599.	5.637&1	.0	&0	1.770-5		
184-	FORCEAX	1	198	22	599.	5.453&1	.0	&0	1.712-5		
185-	FORCEAX	1	198	23	599.	5.264&1	.0	&0	1.653-5		
186-	FORCEAX	1	198	24	599.	5.070&1	.0	&0	1.592-5		
187-	FORCEAX	1	198	25	599.	4.872&1	.0	&0	1.530-5		
188-	FORCEAX	1	198	26	599.	4.670&1	.0	&0	1.466-5		
189-	FORCEAX	1	198	27	599.	4.465&1	.0	&0	1.402-5		
190-	FORCEAX	1	198	28	599.	4.257&1	.0	&0	1.336-5		
191-	FORCEAX	1	198	29	599.	4.046&1	.0	&0	1.270-5		
192-	FORCEAX	1	286	0	1199.	2.141&2	.0	&0	6.722-5		
193-	FORCEAX	1	286	1	599.	1.542&2	.0	&0	4.842-5		
194-	FORCEAX	1	286	2	599.	1.539&2	.0	&0	4.832-5		
195-	FORCEAX	1	286	3	599.	1.534&2	.0	&0	4.816-5		
196-	FORCEAX	1	286	4	599.	1.527&2	.0	&0	4.794-5		
197-	FORCEAX	1	286	5	599.	1.518&2	.0	&0	4.765-5		
198-	FORCEAX	1	286	6	599.	1.506&2	.0	&0	4.730-5		
199-	FORCEAX	1	286	7	599.	1.493&2	.0	&0	4.689-5		
200-	FORCEAX	1	286	8	599.	1.478&2	.0	&0	4.642-5		

— LOCA SEAL LOAD W/SCE = 170*1.4 (at card 154)

— DISCREPANCY DUE TO PREPROCESSOR (TYPICAL) (at card 160)

HARMONICS ≥ 0 GIVE JET LOADING

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 .. 2 .. 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .. 10 .
201-	FORCEAX 1 286 9 599. 1.461&2 .0 &0 4.588-5
202-	FORCEAX 1 286 10 599. 1.443&2 .0 &0 4.529-5
203-	FORCEAX 1 286 11 599. 1.422&2 .0 &0 4.464-5
204-	FORCEAX 1 286 12 599. 1.399&2 .0 &0 4.394-5
205-	FORCEAX 1 286 13 599. 1.375&2 .0 &0 4.318-5
206-	FORCEAX 1 286 14 599. 1.350&2 .0 &0 4.237-5
207-	FORCEAX 1 286 15 599. 1.322&2 .0 &0 4.151-5
208-	FORCEAX 1 286 16 599. 1.293&2 .0 &0 4.060-5
209-	FORCEAX 1 286 17 599. 1.263&2 .0 &0 3.965-5
210-	FORCEAX 1 286 18 599. 1.231&2 .0 &0 3.864-5
211-	FORCEAX 1 286 19 599. 1.198&2 .0 &0 3.760-5
212-	FORCEAX 1 286 20 599. 1.163&2 .0 &0 3.652-5
213-	FORCEAX 1 286 21 599. 1.127&2 .0 &0 3.540-5
214-	FORCEAX 1 286 22 599. 1.091&2 .0 &0 3.424-5
215-	FORCEAX 1 286 23 599. 1.053&2 .0 &0 3.306-5
216-	FORCEAX 1 286 24 599. 1.014&2 .0 &0 3.184-5
217-	FORCEAX 1 286 25 599. 9.744&1 .0 &0 3.060-5
218-	FORCEAX 1 286 26 599. 9.340&1 .0 &0 2.933-5
219-	FORCEAX 1 286 27 599. 8.930&1 .0 &0 2.804-5
220-	FORCEAX 1 286 28 599. 8.513&1 .0 &0 2.673-5
221-	FORCEAX 1 286 29 599. 8.091&1 .0 &0 2.540-5
222-	FORCEAX 1 288 0 1199. 2.141&2 .0 &0 6.722-5
223-	FORCEAX 1 288 1 599. 1.542&2 .0 &0 4.842-5
224-	FORCEAX 1 288 2 599. 1.539&2 .0 &0 4.832-5
225-	FORCEAX 1 288 3 599. 1.534&2 .0 &0 4.816-5
226-	FORCEAX 1 288 4 599. 1.527&2 .0 &0 4.794-5
227-	FORCEAX 1 288 5 599. 1.518&2 .0 &0 4.765-5
228-	FORCEAX 1 288 6 599. 1.506&2 .0 &0 4.730-5
229-	FORCEAX 1 288 7 599. 1.493&2 .0 &0 4.689-5
230-	FORCEAX 1 288 8 599. 1.478&2 .0 &0 4.642-5
231-	FORCEAX 1 288 9 599. 1.461&2 .0 &0 4.588-5
232-	FORCEAX 1 288 10 599. 1.443&2 .0 &0 4.529-5
233-	FORCEAX 1 288 11 599. 1.422&2 .0 &0 4.464-5
234-	FORCEAX 1 288 12 599. 1.399&2 .0 &0 4.394-5
235-	FORCEAX 1 288 13 599. 1.375&2 .0 &0 4.318-5
236-	FORCEAX 1 288 14 599. 1.350&2 .0 &0 4.237-5
237-	FORCEAX 1 288 15 599. 1.322&2 .0 &0 4.151-5
238-	FORCEAX 1 288 16 599. 1.293&2 .0 &0 4.060-5
239-	FORCEAX 1 288 17 599. 1.263&2 .0 &0 3.965-5
240-	FORCEAX 1 288 18 599. 1.231&2 .0 &0 3.864-5
241-	FORCEAX 1 288 19 599. 1.198&2 .0 &0 3.760-5
242-	FORCEAX 1 288 20 599. 1.163&2 .0 &0 3.652-5
243-	FORCEAX 1 288 21 599. 1.127&2 .0 &0 3.540-5
244-	FORCEAX 1 288 22 599. 1.091&2 .0 &0 3.424-5
245-	FORCEAX 1 288 23 599. 1.053&2 .0 &0 3.306-5
246-	FORCEAX 1 288 24 599. 1.014&2 .0 &0 3.184-5
247-	FORCEAX 1 288 25 599. 9.744&1 .0 &0 3.060-5
248-	FORCEAX 1 288 26 599. 9.340&1 .0 &0 2.933-5
249-	FORCEAX 1 288 27 599. 8.930&1 .0 &0 2.804-5
250-	FORCEAX 1 288 28 599. 8.513&1 .0 &0 2.673-5

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
251-	FORCEAX	1	288	29	599.	8.091&1 .0	&0	2.540-5		
252-	FORCEAX	1	290	0	1199.	2.141&2 .0	&0	6.722-5		
253-	FORCEAX	1	290	1	599.	1.5426&2 .0	&0	4.842-5		
254-	FORCEAX	1	290	2	599.	1.5396&2 .0	&0	4.832-5		
255-	FORCEAX	1	290	3	599.	1.5346&2 .0	&0	4.816-5		
256-	FORCEAX	1	290	4	599.	1.5276&2 .0	&0	4.794-5		
257-	FORCEAX	1	290	5	599.	1.5186&2 .0	&0	4.765-5		
258-	FORCEAX	1	290	6	599.	1.5066&2 .0	&0	4.730-5		
259-	FORCEAX	1	290	7	599.	1.4936&2 .0	&0	4.689-5		
260-	FORCEAX	1	290	8	599.	1.4786&2 .0	&0	4.642-5		
261-	FORCEAX	1	290	9	599.	1.4616&2 .0	&0	4.588-5		
262-	FORCEAX	1	290	10	599.	1.4436&2 .0	&0	4.529-5		
263-	FORCEAX	1	290	11	599.	1.4226&2 .0	&0	4.464-5		
264-	FORCEAX	1	290	12	599.	1.3996&2 .0	&0	4.394-5		
265-	FORCEAX	1	290	13	599.	1.3756&2 .0	&0	4.318-5		
266-	FORCEAX	1	290	14	599.	1.3506&2 .0	&0	4.237-5		
267-	FORCEAX	1	290	15	599.	1.3226&2 .0	&0	4.151-5		
268-	FORCEAX	1	290	16	599.	1.2936&2 .0	&0	4.060-5		
269-	FORCEAX	1	290	17	599.	1.2636&2 .0	&0	3.965-5		
270-	FORCEAX	1	290	18	599.	1.2316&2 .0	&0	3.864-5		
271-	FORCEAX	1	290	19	599.	1.1986&2 .0	&0	3.760-5		
272-	FORCEAX	1	290	20	599.	1.1636&2 .0	&0	3.652-5		
273-	FORCEAX	1	290	21	599.	1.1276&2 .0	&0	3.540-5		
274-	FORCEAX	1	290	22	599.	1.0916&2 .0	&0	3.424-5		
275-	FORCEAX	1	290	23	599.	1.0536&2 .0	&0	3.306-5		
276-	FORCEAX	1	290	24	599.	1.0146&2 .0	&0	3.184-5		
277-	FORCEAX	1	290	25	599.	9.7446&1 .0	&0	3.060-5		
278-	FORCEAX	1	290	26	599.	9.3406&1 .0	&0	2.933-5		
279-	FORCEAX	1	290	27	599.	8.9306&1 .0	&0	2.804-5		
280-	FORCEAX	1	290	28	599.	8.5136&1 .0	&0	2.673-5		
281-	FORCEAX	1	290	29	599.	8.0916&1 .0	&0	2.540-5		
282-	FORCEAX	1	292	0	1199.	2.1416&2 .0	&0	6.722-5		
283-	FORCEAX	1	292	1	599.	1.5426&2 .0	&0	4.842-5		
284-	FORCEAX	1	292	2	599.	1.5396&2 .0	&0	4.832-5		
285-	FORCEAX	1	292	3	599.	1.5346&2 .0	&0	4.816-5		
286-	FORCEAX	1	292	4	599.	1.5276&2 .0	&0	4.794-5		
287-	FORCEAX	1	292	5	599.	1.5186&2 .0	&0	4.765-5		
288-	FORCEAX	1	292	6	599.	1.5066&2 .0	&0	4.730-5		
289-	FORCEAX	1	292	7	599.	1.4936&2 .0	&0	4.689-5		
290-	FORCEAX	1	292	8	599.	1.4786&2 .0	&0	4.642-5		
291-	FORCEAX	1	292	9	599.	1.4616&2 .0	&0	4.588-5		
292-	FORCEAX	1	292	10	599.	1.4436&2 .0	&0	4.529-5		
293-	FORCEAX	1	292	11	599.	1.4226&2 .0	&0	4.464-5		
294-	FORCEAX	1	292	12	599.	1.3996&2 .0	&0	4.394-5		
295-	FORCEAX	1	292	13	599.	1.3756&2 .0	&0	4.318-5		
296-	FORCEAX	1	292	14	599.	1.3506&2 .0	&0	4.237-5		
297-	FORCEAX	1	292	15	599.	1.3226&2 .0	&0	4.151-5		
298-	FORCEAX	1	292	16	599.	1.2936&2 .0	&0	4.060-5		
299-	FORCEAX	1	292	17	599.	1.2636&2 .0	&0	[illegible]		
300-	FORCEAX	1	292	18	599.	1.2316&2 .0	&0	3.86[illegible]-5		

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
301-	FORCEAX	1	292	19	599.	1.198&2	.0	&0	3.760-5	
302-	FORCEAX	1	292	20	599.	1.163&2	.0	&0	3.652-5	
303-	FORCEAX	1	292	21	599.	1.127&2	.0	&0	3.540-5	
304-	FORCEAX	1	292	22	599.	1.091&2	.0	&0	3.424-5	
305-	FORCEAX	1	292	23	599.	1.053&2	.0	&0	3.306-5	
306-	FORCEAX	1	292	24	599.	1.014&2	.0	&0	3.184-5	
307-	FORCEAX	1	292	25	599.	9.744&1	.0	&0	3.060-5	
308-	FORCEAX	1	292	26	599.	9.340&1	.0	&0	2.933-5	
309-	FORCEAX	1	292	27	599.	8.930&1	.0	&0	2.804-5	
310-	FORCEAX	1	292	28	599.	8.513&1	.0	&0	2.673-5	
311-	FORCEAX	1	292	29	599.	8.091&1	.0	&0	2.540-5	
312-	FORCEAX	1	294	0	1199.	2.141&2	.0	&0	6.722-5	
313-	FORCEAX	1	294	1	599.	1.542&2	.0	&0	4.842-5	
314-	FORCEAX	1	294	2	599.	1.539&2	.0	&0	4.832-5	
315-	FORCEAX	1	294	3	599.	1.534&2	.0	&0	4.816-5	
316-	FORCEAX	1	294	4	599.	1.527&2	.0	&0	4.794-5	
317-	FORCEAX	1	294	5	599.	1.518&2	.0	&0	4.765-5	
318-	FORCEAX	1	294	6	599.	1.506&2	.0	&0	4.730-5	
319-	FORCEAX	1	294	7	599.	1.493&2	.0	&0	4.689-5	
320-	FORCEAX	1	294	8	599.	1.478&2	.0	&0	4.642-5	
321-	FORCEAX	1	294	9	599.	1.461&2	.0	&0	4.588-5	
322-	FORCEAX	1	294	10	599.	1.443&2	.0	&0	4.529-5	
323-	FORCEAX	1	294	11	599.	1.422&2	.0	&0	4.464-5	
324-	FORCEAX	1	294	12	599.	1.399&2	.0	&0	4.394-5	
325-	FORCEAX	1	294	13	599.	1.375&2	.0	&0	4.318-5	
326-	FORCEAX	1	294	14	599.	1.350&2	.0	&0	4.237-5	
327-	FORCEAX	1	294	15	599.	1.322&2	.0	&0	4.151-5	
328-	FORCEAX	1	294	16	599.	1.293&2	.0	&0	4.060-5	
329-	FORCEAX	1	294	17	599.	1.263&2	.0	&0	3.965-5	
330-	FORCEAX	1	294	18	599.	1.231&2	.0	&0	3.864-5	
331-	FORCEAX	1	294	19	599.	1.198&2	.0	&0	3.760-5	
332-	FORCEAX	1	294	20	599.	1.163&2	.0	&0	3.652-5	
333-	FORCEAX	1	294	21	599.	1.127&2	.0	&0	3.540-5	
334-	FORCEAX	1	294	22	599.	1.091&2	.0	&0	3.424-5	
335-	FORCEAX	1	294	23	599.	1.053&2	.0	&0	3.306-5	
336-	FORCEAX	1	294	24	599.	1.014&2	.0	&0	3.184-5	
337-	FORCEAX	1	294	25	599.	9.744&1	.0	&0	3.060-5	
338-	FORCEAX	1	294	26	599.	9.340&1	.0	&0	2.933-5	
339-	FORCEAX	1	294	27	599.	8.930&1	.0	&0	2.804-5	
340-	FORCEAX	1	294	28	599.	8.513&1	.0	&0	2.673-5	
341-	FORCEAX	1	294	29	599.	8.091&1	.0	&0	2.540-5	
342-	FORCEAX	1	296	0	1199.	2.141&2	.0	&0	6.722-5	
343-	FORCEAX	1	296	1	599.	1.542&2	.0	&0	4.842-5	
344-	FORCEAX	1	296	2	599.	1.539&2	.0	&0	4.832-5	
345-	FORCEAX	1	296	3	599.	1.534&2	.0	&0	4.816-5	
346-	FORCEAX	1	296	4	599.	1.527&2	.0	&0	4.794-5	
347-	FORCEAX	1	296	5	599.	1.518&2	.0	&0	4.765-5	
348-	FORCEAX	1	296	6	599.	1.506&2	.0	&0	4.730-5	
349-	FORCEAX	1	296	7	599.	1.493&2	.0	&0	4.689-5	
350-	FORCEAX	1	296	8	599.	1.478&2	.0	&0	4.642-5	

SORTED BULK DATA ECHO

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
351-	FORCEAX	1	296	9	599.	1.46162	.0	60	4.588-5	
352-	FORCEAX	1	296	10	599.	1.44362	.0	60	4.529-5	
353-	FORCEAX	1	296	11	599.	1.42262	.0	60	4.464-5	
354-	FORCEAX	1	296	12	599.	1.39962	.0	60	4.394-5	
355-	FORCEAX	1	296	13	599.	1.37562	.0	60	4.318-5	
356-	FORCEAX	1	296	14	599.	1.35062	.0	60	4.237-5	
357-	FORCEAX	1	296	15	599.	1.32262	.0	60	4.151-5	
358-	FORCEAX	1	296	16	599.	1.29362	.0	60	4.060-5	
359-	FORCEAX	1	296	17	599.	1.26362	.0	60	3.965-5	
360-	FORCEAX	1	296	18	599.	1.23162	.0	60	3.864-5	
361-	FORCEAX	1	296	19	599.	1.19862	.0	60	3.760-5	
362-	FORCEAX	1	296	20	599.	1.16362	.0	60	3.652-5	
363-	FORCEAX	1	296	21	599.	1.12762	.0	60	3.540-5	
364-	FORCEAX	1	296	22	599.	1.09162	.0	60	3.424-5	
365-	FORCEAX	1	296	23	599.	1.05362	.0	60	3.306-5	
366-	FORCEAX	1	296	24	599.	1.01462	.0	60	3.184-5	
367-	FORCEAX	1	296	25	599.	9.74461	.0	60	3.060-5	
368-	FORCEAX	1	296	26	599.	9.34061	.0	60	2.933-5	
369-	FORCEAX	1	296	27	599.	8.93061	.0	60	2.804-5	
370-	FORCEAX	1	296	28	599.	8.51361	.0	60	2.673-5	
371-	FORCEAX	1	296	29	599.	8.09161	.0	60	2.540-5	
372-	FORCEAX	1	298	0	1199.	2.14162	.0	60	6.722-5	
373-	FORCEAX	1	298	1	599.	1.54262	.0	60	4.842-5	
374-	FORCEAX	1	296	2	599.	1.53962	.0	60	4.832-5	
375-	FORCEAX	1	298	3	599.	1.53462	.0	60	4.816-5	
376-	FORCEAX	1	298	4	599.	1.52762	.0	60	4.794-5	
377-	FORCEAX	1	298	5	599.	1.51862	.0	60	4.765-5	
378-	FORCEAX	1	298	6	599.	1.50662	.0	60	4.730-5	
379-	FORCEAX	1	298	7	599.	1.49362	.0	60	4.689-5	
380-	FORCEAX	1	298	8	599.	1.47862	.0	60	4.642-5	
381-	FORCEAX	1	298	9	599.	1.46162	.0	60	4.588-5	
382-	FORCEAX	1	298	10	599.	1.44362	.0	60	4.529-5	
383-	FORCEAX	1	298	11	599.	1.42262	.0	60	4.464-5	
384-	FORCEAX	1	298	12	599.	1.39962	.0	60	4.394-5	
385-	FORCEAX	1	298	13	599.	1.37562	.0	60	4.318-5	
386-	FORCEAX	1	298	14	599.	1.35062	.0	60	4.237-5	
387-	FORCEAX	1	298	15	599.	1.32262	.0	60	4.151-5	
388-	FORCEAX	1	298	16	599.	1.29362	.0	60	4.060-5	
389-	FORCEAX	1	298	17	599.	1.26362	.0	60	3.965-5	
390-	FORCEAX	1	298	18	599.	1.23162	.0	60	3.864-5	
391-	FORCEAX	1	298	19	599.	1.19862	.0	60	3.760-5	
392-	FORCEAX	1	298	20	599.	1.16362	.0	60	3.652-5	
393-	FORCEAX	1	298	21	599.	1.12762	.0	60	3.540-5	
394-	FORCEAX	1	298	22	599.	1.09162	.0	60	3.424-5	
395-	FORCEAX	1	298	23	599.	1.05362	.0	60	3.306-5	
396-	FORCEAX	1	298	24	599.	1.01462	.0	60	3.184-5	
397-	FORCEAX	1	298	25	599.	9.74461	.0	60	3.060-5	
398-	FORCEAX	1	298	26	599.	9.34061	.0	60	2.933-5	
399-	FORCEAX	1	298	27	599.	8.93061	.0	60	2.804-5	
400-	FORCEAX	1	298	28	599.	8.51361	.0	60	2.673-5	

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
401-	FORCEAX	1	298	29	599.	8.091&1 .0	&0	2.540-5		
402-	FORCEAX	1	300	0	1199.	1.707&2 .0	&0	5.359-5		
403-	FORCEAX	1	300	1	599.	7.711&1 .0	&0	2.421-5		
404-	FORCEAX	1	300	2	599.	7.695&1 .0	&0	2.416-5		
405-	FORCEAX	1	300	3	599.	7.670&1 .0	&0	2.408-5		
406-	FORCEAX	1	300	4	599.	7.634&1 .0	&0	2.397-5		
407-	FORCEAX	1	300	5	599.	7.588&1 .0	&0	2.383-5		
408-	FORCEAX	1	300	6	599.	7.532&1 .0	&0	2.365-5		
409-	FORCEAX	1	300	7	599.	7.467&1 .0	&0	2.344-5		
410-	FORCEAX	1	300	8	599.	7.392&1 .0	&0	2.321-5		
411-	FORCEAX	1	300	9	599.	7.307&1 .0	&0	2.294-5		
412-	FORCEAX	1	300	10	599.	7.213&1 .0	&0	2.265-5		
413-	FORCEAX	1	300	11	599.	7.109&1 .0	&0	2.232-5		
414-	FORCEAX	1	300	12	599.	6.997&1 .0	&0	2.197-5		
415-	FORCEAX	1	300	13	599.	6.877&1 .0	&0	2.159-5		
416-	FORCEAX	1	300	14	599.	6.748&1 .0	&0	2.119-5		
417-	FORCEAX	1	300	15	599.	6.611&1 .0	&0	2.076-5		
418-	FORCEAX	1	300	16	599.	6.466&1 .0	&0	2.030-5		
419-	FORCEAX	1	300	17	599.	6.313&1 .0	&0	1.982-5		
420-	FORCEAX	1	300	18	599.	6.154&1 .0	&0	1.932-5		
421-	FORCEAX	1	300	19	599.	5.988&1 .0	&0	1.880-5		
422-	FORCEAX	1	300	20	599.	5.816&1 .0	&0	1.826-5		
423-	FORCEAX	1	300	21	599.	5.637&1 .0	&0	1.770-5		
424-	FORCEAX	1	300	22	599.	5.453&1 .0	&0	1.712-5		
425-	FORCEAX	1	300	23	599.	5.264&1 .0	&0	1.653-5		
426-	FORCEAX	1	300	24	599.	5.070&1 .0	&0	1.592-5		
427-	FORCEAX	1	300	25	599.	4.872&1 .0	&0	1.530-5		
428-	FORCEAX	1	300	26	599.	4.670&1 .0	&0	1.466-5		
429-	FORCEAX	1	300	27	599.	4.465&1 .0	&0	1.402-5		
430-	FORCEAX	1	300	28	599.	4.257&1 .0	&0	1.336-5		
431-	FORCEAX	1	300	29	599.	4.046&1 .0	&0	1.270-5		
432-	FORCEAX	1	362	0	1199.	1.273&2 .0	&0	3.996-5		
433-	FORCEAX	1	364	0	1199.	9.738&1 .0	&0	3.090-5		
434-	FORCEAX	1	368	0	1196.	6.750&1 .0	&0	2.153-5		
435-	FORCEAX	1	372	0	1196.	6.750&1 .0	&0	2.119-5		
436-	FORCEAX	1	376	0	1196.	6.750&1 .0	&0	2.119-5		
437-	FORCEAX	1	380	0	1196.	6.750&1 .0	&0	2.119-5		
438-	FORCEAX	1	384	0	1196.	6.750&1 .0	&0	2.119-5		
439-	FORCEAX	1	388	0	1196.	6.750&1 .0	&0	2.119-5		
440-	FORCEAX	1	392	0	1196.	6.750&1 .0	&0	2.119-5		
441-	FORCEAX	1	396	0	1196.	6.750&1 .0	&0	2.119-5		
442-	FORCEAX	1	399	0	961.	.0 &0 .0	&0	-4.200&1	— LOCA SEAL LOAD W/SSE	
443-	FORCEAX	1	400	0	1196.	6.750&1 .0	&0	2.119-5	= 30 x 1.4	
444-	FORCEAX	1	404	0	1196.	6.750&1 .0	&0	2.119-5		
445-	FORCEAX	1	408	0	1196.	6.750&1 .0	&0	2.119-5		
446-	FORCEAX	1	412	0	1196.	6.750&1 .0	&0	2.119-5		
447-	FORCEAX	1	416	0	1196.	6.750&1 .0	&0	2.119-5		
448-	FORCEAX	1	420	0	1196.	6.750&1 .0	&0	2.119-5		
449-	FORCEAX	1	424	0	1196.	6.750&1 .0	&0	2.119-6		
450-	FORCEAX	1	428	0	1196.	3.375&1 .0	&0	4.284&3	= LIP LINE LOAD ÷ 2	

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
451-	MAT1	1	2.790&7		3.000-1	6.500-6				
452-	PCONEAX	1	1	0.813	1	4.470-2	0	0.0		&P101
453-	&P101	0.0	0.4063	0.						
454-	PCONEAX	2	1	1.438	1	2.475-1	0	0.0		&P102
455-	&P102	0.0	0.7188	0.						
456-	PCONEAX	3	1	0.947	1	7.086-2	0	0.0		&P103
457-	&P103	0.0	0.4737	0.						
458-	PCONEAX	4	1	2.000	1	6.667-1	0	0.0		&P104
459-	&P104	0.0	1.0000	0.						
460-	PCONEAX	5	1	1.313	1	1.884-1	0	0.0		&P105
461-	&P105	0.0	0.6563	0.						
462-	PCONEAX	6	1	6.250	1	2.035&1	0	0.0		&P106
463-	&P106	0.0	3.1250	0.						
464-	PCONEAX	7	1	0.688	1	2.708-2	0	0.0		&P107
465-	&P107	0.0	0.3438	0.						
466-	RINGAX	94		230.0	-68.5			46		
467-	RINGAX	96		229.2	-67.1			46		
468-	RINGAX	98		228.4	-65.7			46		
469-	RINGAX	100		227.6	-64.3			46		
470-	RINGAX	102		226.8	-62.9			46		
471-	RINGAX	104		226.0	-61.5			46		
472-	RINGAX	106		225.2	-60.1			46		
473-	RINGAX	108		224.4	-58.7			46		
474-	RINGAX	110		223.6	-57.3			46		
475-	RINGAX	112		222.8	-55.9			46		
476-	RINGAX	114		221.9	-54.5			46		
477-	RINGAX	116		221.1	-53.1			46		
478-	RINGAX	118		220.3	-51.7			46		
479-	RINGAX	120		219.5	-50.3			46		
480-	RINGAX	122		218.7	-48.9			46		
481-	RINGAX	124		217.9	-47.5			46		
482-	RINGAX	126		217.1	-46.1			46		
483-	RINGAX	128		216.3	-44.7			46		
484-	RINGAX	130		215.5	-43.3			46		
485-	RINGAX	132		214.7	-41.9			46		
486-	RINGAX	134		213.9	-40.5			46		
487-	RINGAX	136		213.1	-39.1			46		
488-	RINGAX	138		212.3	-37.7			46		
489-	RINGAX	140		211.5	-36.3			46		
490-	RINGAX	142		210.7	-34.9			46		
491-	RINGAX	144		209.9	-33.5			46		
492-	RINGAX	146		209.1	-32.1			46		
493-	RINGAX	148		208.3	-30.7			46		
494-	RINGAX	150		207.5	-29.4			46		
495-	RINGAX	152		206.6	-28.0			46		
496-	RINGAX	154		205.8	-26.6			46		
497-	RINGAX	156		205.0	-25.2			46		
498-	RINGAX	158		204.2	-23.8			46		
499-	RINGAX	160		203.4	-22.4			46		
500-	RINGAX	162		202.6	-21.0			46		

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
501-	RINGAX	164		201.8	-19.6			46		
502-	RINGAX	166		201.0	-18.2			46		
503-	RINGAX	168		200.2	-16.8			46		
504-	RINGAX	170		199.4	-15.4			46		
505-	RINGAX	172		198.6	-14.0			46		
506-	RINGAX	174		197.8	-12.6			46		
507-	RINGAX	176		197.0	-11.2			46		
508-	RINGAX	178		196.2	-9.8			46		
509-	RINGAX	180		195.4	-8.4			46		
510-	RINGAX	182		194.6	-7.0			46		
511-	RINGAX	183		207.0	6.0			46		
512-	RINGAX	184		193.8	-5.6			46		
513-	RINGAX	185		205.0	6.0			46		
514-	RINGAX	186		193.0	-4.2			46		
515-	RINGAX	187		202.9	6.0			46		
516-	RINGAX	188		192.1	-2.8			46		
517-	RINGAX	189		200.9	6.0			46		
518-	RINGAX	190		191.3	-1.4			46		
519-	RINGAX	191		198.9	6.0			46		
520-	RINGAX	192		190.5	.0			46		
521-	RINGAX	193		196.9	6.0			46		
522-	RINGAX	194		190.8	1.5			46		
523-	RINGAX	195		194.8	6.0			46		
524-	RINGAX	196		190.8	3.7			46		
525-	RINGAX	197		192.8	6.0			46		
526-	RINGAX	198		190.8	6.0			46		
527-	RINGAX	286		190.8	9.0			46		
528-	RINGAX	288		190.8	12.1			46		
529-	RINGAX	290		190.8	15.1			46		
530-	RINGAX	292		190.8	18.2			46		
531-	RINGAX	294		190.8	21.2			46		
532-	RINGAX	296		190.8	24.3			46		
533-	RINGAX	298		190.8	27.3			46		
534-	RINGAX	300		190.8	30.3			46		
535-	RINGAX	362		190.8	33.2			46		
536-	RINGAX	363		188.8	30.3			46		
537-	RINGAX	364		190.8	36.0			46		
538-	RINGAX	365		186.8	30.3			46		
539-	RINGAX	366		195.1	36.0			46		
540-	RINGAX	367		184.8	30.3			46		
541-	RINGAX	368		190.4	37.5			46		
542-	RINGAX	369		182.8	30.3			46		
543-	RINGAX	370		199.5	36.0			46		
544-	RINGAX	371		180.8	30.3			46		
545-	RINGAX	372		190.4	39.0			46		
546-	RINGAX	373		178.9	30.3			46		
547-	RINGAX	375		176.9	30.3			46		
548-	RINGAX	376		190.4	40.5			46		
549-	RINGAX	377		174.9	30.[illegible]			46		
550-	RINGAX	379		172.9	30.3			46		

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
551-	RINGAX	380		190.4	42.0			46		
552-	RINGAX	381		170.9	30.3			46		
553-	RINGAX	383		168.9	30.3			46		
554-	RINGAX	384		190.4	43.5			46		
555-	RINGAX	385		166.9	30.3			46		
556-	RINGAX	387		164.9	30.3			46		
557-	RINGAX	388		190.4	45.0			46		
558-	RINGAX	389		162.9	30.3			46		
559-	RINGAX	391		161.0	30.3			46		
560-	RINGAX	392		190.4	46.5			46		
561-	RINGAX	393		159.0	30.3			46		
562-	RINGAX	395		157.0	30.3			46		
563-	RINGAX	396		190.4	48.0			46		
564-	RINGAX	397		155.0	30.3			46		
565-	RINGAX	399		153.0	30.3			46		
566-	RINGAX	400		190.4	49.5			46		
567-	RINGAX	404		190.4	51.0			46		
568-	RINGAX	408		190.4	52.5			46		
569-	RINGAX	412		190.4	54.0			46		
570-	RINGAX	416		190.4	55.5			46		
571-	RINGAX	420		190.4	57.0			46		
572-	RINGAX	424		190.4	58.5			46		
573-	RINGAX	428		190.4	60.0			46		
574-	SPCAX	1	94	0	1235					
575-	SPCAX	1	94	1	1235					
576-	SPCAX	1	94	2	1235					
577-	SPCAX	1	94	3	1235					
578-	SPCAX	1	94	4	1235					
579-	SPCAX	1	94	5	1235					
580-	SPCAX	1	94	6	1235					
581-	SPCAX	1	94	7	1235					
582-	SPCAX	1	94	8	1235					
583-	SPCAX	1	94	9	1235					
584-	SPCAX	1	94	10	1235					
585-	SPCAX	1	94	11	1235					
586-	SPCAX	1	94	12	1235					
587-	SPCAX	1	94	13	1235					
588-	SPCAX	1	94	14	1235					
589-	SPCAX	1	94	15	1235					
590-	SPCAX	1	94	16	1235					
591-	SPCAX	1	94	17	1235					
592-	SPCAX	1	94	18	1235					
593-	SPCAX	1	94	19	1235					
594-	SPCAX	1	94	20	1235					
595-	SPCAX	1	94	21	1235					
596-	SPCAX	1	94	22	1235					
597-	SPCAX	1	94	23	1235					
598-	SPCAX	1	94	24	1235					
599-	SPCAX	1	94	25	1235					
600-	SPCAX	1	94	26	1235					

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
601-	SPCAX	1	94	27	1235					
602-	SPCAX	1	94	28	1235					
603-	SPCAX	1	94	29	1235					
	ENDDATA									

NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
94	0	0.0	0.0	0.0	0.0	0.0	0.0
96	0	1.580644E-03	0.0	1.307444E-03	0.0	2.386270E-03	0.0
98	0	6.024234E-03	0.0	4.244287E-03	0.0	4.102912E-03	0.0
100	0	1.247178E-02	0.0	8.313544E-03	0.0	5.260002E-03	0.0
102	0	2.021671E-02	0.0	1.310725E-02	0.0	5.961861E-03	0.0
104	0	2.869054E-02	0.0	1.829767E-02	0.0	6.305095E-03	0.0
106	0	3.745415E-02	0.0	2.363230E-02	0.0	6.377205E-03	0.0
108	0	4.618444E-02	0.0	2.892596E-02	0.0	6.255709E-03	0.0
110	0	5.465844E-02	0.0	3.405107E-02	0.0	6.007873E-03	0.0
112	0	6.274003E-02	0.0	3.893042E-02	0.0	5.690668E-03	0.0
114	0	7.021141E-02	0.0	4.398896E-02	0.0	5.051624E-03	0.0
116	0	7.656312E-02	0.0	4.784000E-02	0.0	4.162744E-03	0.0
118	0	8.170080E-02	0.0	5.098107E-02	0.0	3.311349E-03	0.0
120	0	8.569103E-02	0.0	5.345286E-02	0.0	2.517954E-03	0.0
122	0	8.862442E-02	0.0	5.530979E-02	0.0	1.796847E-03	0.0
124	0	9.060812E-02	0.0	5.661549E-02	0.0	1.157221E-03	0.0
126	0	9.175932E-02	0.0	5.743912E-02	0.0	6.044060E-04	0.0
128	0	9.220099E-02	0.0	5.785275E-02	0.0	1.409457E-04	0.0
130	0	9.205824E-02	0.0	5.792956E-02	0.0	-2.324218E-04	0.0
132	0	9.145623E-02	0.0	5.774238E-02	0.0	-5.159762E-04	0.0
134	0	9.051996E-02	0.0	5.736365E-02	0.0	-7.104457E-04	0.0
136	0	8.937329E-02	0.0	5.686487E-02	0.0	-8.164567E-04	0.0
138	0	8.813983E-02	0.0	5.631712E-02	0.0	-8.341300E-04	0.0
140	0	8.694345E-02	0.0	5.579126E-02	0.0	-7.628261E-04	0.0
142	0	8.590978E-02	0.0	5.535884E-02	0.0	-6.011336E-04	0.0
144	0	8.516687E-02	0.0	5.509249E-02	0.0	-3.470297E-04	0.0
146	0	8.484614E-02	0.0	5.506633E-02	0.0	1.809907E-06	0.0
148	0	8.508259E-02	0.0	5.535623E-02	0.0	4.476027E-04	0.0
150	0	8.575368E-02	0.0	5.597610E-02	0.0	5.783581E-04	0.0
152	0	8.636373E-02	0.0	5.647137E-02	0.0	3.996463E-04	0.0
154	0	8.679265E-02	0.0	5.685917E-02	0.0	3.166962E-04	0.0
156	0	8.717191E-02	0.0	5.721482E-02	0.0	3.257087E-04	0.0
158	0	8.762687E-02	0.0	5.760992E-02	0.0	4.214235E-04	0.0
160	0	8.827454E-02	0.0	5.811085E-02	0.0	5.969238E-04	0.0
162	0	8.922082E-02	0.0	5.877746E-02	0.0	8.434346E-04	0.0
164	0	9.055829E-02	0.0	5.966154E-02	0.0	1.149992E-03	0.0
166	0	9.236228E-02	0.0	6.080490E-02	0.0	1.502838E-03	0.0
168	0	9.468675E-02	0.0	6.223679E-02	0.0	1.884822E-03	0.0
170	0	9.755856E-02	0.0	6.397104E-02	0.0	2.274427E-03	0.0
172	0	1.009713E-01	0.0	6.600213E-02	0.0	2.644912E-03	0.0
174	0	1.048765E-01	0.0	6.830078E-02	0.0	2.963449E-03	0.0
176	0	1.091751E-01	0.0	7.080883E-02	0.0	3.190128E-03	0.0
178	0	1.137066E-01	0.0	7.343322E-02	0.0	3.277159E-03	0.0
180	0	1.182371E-01	0.0	7.603991E-02	0.0	3.168128E-03	0.0
182	0	1.224478E-01	0.0	7.844669E-02	0.0	2.797621E-03	0.0
183	0	7.229000E-02	0.0	1.475646E-01	0.0	-3.742621E-03	0.0
184	0	1.259209E-01	0.0	8.041596E-02	0.0	2.091292E-03	0.0
185	0	7.260398E-02	0.0	1.400527E-01	0.0	-3.777144E-03	0.0
186	0	1.281279E-01	0.0	8.164847E-02	0.0	9.664756E-04	0.0
187	0	7.273835E-02	0.0	1.320378E-01	0.0	-3.865041E-03	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
188	0	1.282723E-01	0.0	6.169949E-02	0.0	-9.656872E-04	0.0
189	0	7.297111E-02	0.0	1.241821E-01	0.0	-3.998943E-03	0.0
190	0	1.251105E-01	0.0	7.985383E-02	0.0	-3.685441E-03	0.0
191	0	7.321345E-02	0.0	1.160087E-01	0.0	-4.182830E-03	0.0
192	0	1.176535E-01	0.0	7.556379E-02	0.0	-7.110558E-03	0.0
193	0	7.346570E-02	0.0	1.074167E-01	0.0	-4.417729E-03	0.0
194	0	1.062160E-01	0.0	7.776761E-02	0.0	-8.017942E-03	0.0
195	0	7.374156E-02	0.0	9.783179E-02	0.0	-4.720453E-03	0.0
196	0	8.917499E-02	0.0	7.762879E-02	0.0	-7.297534E-03	0.0
197	0	7.401508E-02	0.0	8.805698E-02	0.0	-5.063321E-03	0.0
198	0	7.429940E-02	0.0	7.754225E-02	0.0	-5.460598E-03	0.0
286	0	5.993015E-02	0.0	7.751572E-02	0.0	-4.173022E-03	0.0
288	0	4.860881E-02	0.0	7.755053E-02	0.0	-3.190503E-03	0.0
290	0	4.004959E-02	0.0	7.763070E-02	0.0	-2.565446E-03	0.0
292	0	3.273070E-02	0.0	7.775193E-02	0.0	-2.197121E-03	0.0
294	0	2.642794E-02	0.0	7.790118E-02	0.0	-2.026339E-03	0.0
296	0	2.031167E-02	0.0	7.808554E-02	0.0	-1.920562E-03	0.0
298	0	1.476813E-02	0.0	7.829154E-02	0.0	-1.751218E-03	0.0
300	0	1.003193E-02	0.0	7.852203E-02	0.0	-1.353640E-03	0.0
362	0	7.561475E-03	0.0	7.876414E-02	0.0	-3.618822E-04	0.0
363	0	1.004184E-02	0.0	7.537144E-02	0.0	-1.793816E-03	0.0
364	0	7.850111E-03	0.0	7.900262E-02	0.0	5.715308E-04	0.0
365	0	1.005299E-02	0.0	7.135928E-02	0.0	-2.215195E-03	0.0
366	0	7.792577E-03	0.0	7.655418E-02	0.0	5.673415E-04	0.0
367	0	1.006542E-02	0.0	6.652343E-02	0.0	-2.617422E-03	0.0
368	0	1.120868E-02	0.0	8.018547E-02	0.0	3.565829E-03	0.0
369	0	1.007916E-02	0.0	6.090264E-02	0.0	-3.000132E-03	0.0
370	0	7.738881E-03	0.0	7.406658E-02	0.0	5.634313E-04	0.0
371	0	1.009428E-02	0.0	5.453622E-02	0.0	-3.362943E-03	0.0
372	0	1.721499E-02	0.0	8.045667E-02	0.0	4.361495E-03	0.0
373	0	1.010994E-02	0.0	4.783414E-02	0.0	-3.688823E-03	0.0
375	0	1.012785E-02	0.0	4.013015E-02	0.0	-4.011683E-03	0.0
376	0	2.408013E-02	0.0	8.071256E-02	0.0	4.730634E-03	0.0
377	0	1.014726E-02	0.0	3.180146E-02	0.0	-4.313443E-03	0.0
379	0	1.016824E-02	0.0	2.289072E-02	0.0	-4.593659E-03	0.0
380	0	3.124939E-02	0.0	8.095175E-02	0.0	4.784252E-03	0.0
381	0	1.019082E-02	0.0	1.344148E-02	0.0	-4.851878E-03	0.0
383	0	1.021507E-02	0.0	3.498195E-03	0.0	-5.087618E-03	0.0
384	0	3.832334E-02	0.0	8.117402E-02	0.0	4.618250E-03	0.0
385	0	1.024105E-02	0.0	-6.893679E-03	0.0	-5.300388E-03	0.0
387	0	1.026883E-02	0.0	-1.768770E-02	0.0	-5.489673E-03	0.0
388	0	4.503486E-02	0.0	8.138001E-02	0.0	4.313197E-03	0.0
389	0	1.029846E-02	0.0	-2.883637E-02	0.0	-5.654942E-03	0.0
391	0	1.032848E-02	0.0	-3.971190E-02	0.0	-5.789191E-03	0.0
392	0	5.122650E-02	0.0	8.157068E-02	0.0	3.934819E-03	0.0
393	0	1.036187E-02	0.0	-5.141132E-02	0.0	-5.905990E-03	0.0
395	0	1.039740E-02	0.0	-6.331867E-02	0.0	-5.997054E-03	0.0
396	0	[illegible]	0.0	[illegible]	0.0	3.534960E-03	0.0
397	0	1.043509E-02	0.0	-7.538193E-02	0.0	-6.061748E-03	0.0
399	0	1.047502E-02	0.0	-8.754766E-02	0.0	-6.099410E-03	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
400	0	6.184040E-02	0.0	8.191162E-02	0.0	3.152759E-03	0.0
404	0	6.630993E-02	0.0	8.206469E-02	0.0	2.815942E-03	0.0
408	0	7.031977E-02	0.0	8.220766E-02	0.0	2.542033E-03	0.0
412	0	7.397181E-02	0.0	8.234167E-02	0.0	2.339427E-03	0.0
416	0	7.737392E-02	0.0	8.246738E-02	0.0	2.208281E-03	0.0
420	0	8.062875E-02	0.0	8.258516E-02	0.0	2.141158E-03	0.0
424	0	8.382225E-02	0.0	8.269542E-02	0.0	2.123460E-03	0.0
428	0	8.701319E-02	0.0	8.279806E-02	0.0	2.133651E-03	0.0
94	1	0.0	0.0	0.0	0.0	0.0	0.0
96	1	6.056130E-05	-1.468677E-04	1.466968E-06	0.0	6.344440E-05	0.0
98	1	1.988453E-04	-2.946362E-04	4.780019E-05	0.0	1.115302E-04	0.0
100	1	3.944626E-04	-4.433112E-04	1.271911E-04	0.0	1.458068E-04	0.0
102	1	6.292299E-04	-5.928881E-04	2.291401E-04	0.0	1.677980E-04	0.0
104	1	8.869760E-04	-7.433631E-04	3.443318E-04	0.0	1.789498E-04	0.0
106	1	1.153478E-03	-8.947237E-04	4.646042E-04	0.0	1.805881E-04	0.0
108	1	1.416296E-03	-1.046963E-03	5.828496E-04	0.0	1.739074E-04	0.0
110	1	1.664517E-03	-1.200071E-03	6.928530E-04	0.0	1.599605E-04	0.0
112	1	1.888605E-03	-1.354037E-03	7.892207E-04	0.0	1.396669E-04	0.0
114	1	2.091293E-03	-1.514218E-03	8.860391E-04	0.0	1.343888E-04	0.0
116	1	2.301171E-03	-1.669936E-03	9.747676E-04	0.0	1.456214E-04	0.0
118	1	2.524272E-03	-1.826503E-03	1.071271E-03	0.0	1.535199E-04	0.0
120	1	2.756355E-03	-1.983915E-03	1.173102E-03	0.0	1.586601E-04	0.0
122	1	2.993903E-03	-2.142161E-03	1.278238E-03	0.0	1.615118E-04	0.0
124	1	3.233984E-03	-2.301238E-03	1.385000E-03	0.0	1.624341E-04	0.0
126	1	3.474075E-03	-2.461136E-03	1.491947E-03	0.0	1.616676E-04	0.0
128	1	3.711906E-03	-2.621848E-03	1.597788E-03	0.0	1.593278E-04	0.0
130	1	3.945272E-03	-2.783368E-03	1.701276E-03	0.0	1.554021E-04	0.0
132	1	4.171867E-03	-2.945685E-03	1.801111E-03	0.0	1.497548E-04	0.0
134	1	4.389107E-03	-3.108797E-03	1.895846E-03	0.0	1.421366E-04	0.0
136	1	4.593987E-03	-3.272695E-03	1.983794E-03	0.0	1.321938E-04	0.0
138	1	4.782919E-03	-3.437379E-03	2.062950E-03	0.0	1.194769E-04	0.0
140	1	4.951641E-03	-3.602846E-03	2.130932E-03	0.0	1.034561E-04	0.0
142	1	5.095094E-03	-3.769096E-03	2.184916E-03	0.0	8.354821E-05	0.0
144	1	5.207375E-03	-3.936134E-03	2.221616E-03	0.0	5.914872E-05	0.0
146	1	5.281746E-03	-4.103974E-03	2.237282E-03	0.0	2.967282E-05	0.0
148	1	5.310655E-03	-4.272625E-03	2.227721E-03	0.0	-5.400931E-06	0.0
150	1	5.300798E-03	-4.440214E-03	2.194870E-03	0.0	-2.137756E-05	0.0
152	1	5.284023E-03	-4.610755E-03	2.161036E-03	0.0	-1.831798E-05	0.0
154	1	5.267750E-03	-4.782185E-03	2.128482E-03	0.0	-2.002191E-05	0.0
156	1	5.245466E-03	-4.954532E-03	2.093912E-03	0.0	-2.622006E-05	0.0
158	1	5.211178E-03	-5.127829E-03	2.052749E-03	0.0	-3.640119E-05	0.0
160	1	5.159799E-03	-5.302109E-03	2.003347E-03	0.0	-4.978434E-05	0.0
162	1	5.087532E-03	-5.477410E-03	1.943215E-03	0.0	-6.529171E-05	0.0
164	1	4.992317E-03	-5.653765E-03	1.871255E-03	0.0	-8.151667E-05	0.0
166	1	4.874300E-03	-5.831223E-03	1.787648E-03	0.0	-9.667994E-05	0.0
168	1	4.736416E-03	-6.009828E-03	1.694160E-03	0.0	-1.085904E-04	0.0
170	1	4.584990E-03	-6.189637E-03	1.594480E-03	0.0	-1.145944E-04	0.0
172	1	4.430398E-03	-6.370697E-03	1.494596E-03	0.0	-1.115398E-04	0.0
174	1	4.287831E-03	-6.553072E-03	1.403212E-03	0.0	-9.875515E-05	0.0
176	1	4.178010E-03	-6.736815E-03	1.332141E-03	0.0	-6.303824E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE   SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
178	1	4.127908E-03	-6.921977E-03	1.296703E-03	0.0	-8.679497E-06	0.0
180	1	4.171491E-03	-7.108599E-03	1.316118E-03	0.0	7.248395E-05	0.0
182	1	4.350193E-03	-7.296715E-03	1.413766E-03	0.0	1.859591E-04	0.0
183	1	1.928552E-02	-7.853862E-03	-2.455572E-02	0.0	1.724757E-03	0.0
184	1	4.713424E-03	-7.486328E-03	1.617446E-03	0.0	3.374228E-04	0.0
185	1	1.931920E-02	-7.963084E-03	-2.110140E-02	0.0	1.729640E-03	0.0
186	1	5.318601E-03	-7.677425E-03	1.959364E-03	0.0	5.324737E-04	0.0
187	1	1.935575E-02	-8.075077E-03	-1.746336E-02	0.0	1.735267E-03	0.0
188	1	6.240338E-03	-7.875744E-03	2.547027E-03	0.0	7.928330E-04	0.0
189	1	1.939175E-02	-8.179136E-03	-1.398705E-02	0.0	1.741119E-03	0.0
190	1	7.566549E-03	-8.069292E-03	3.298288E-03	0.0	1.107085E-03	0.0
191	1	1.942894E-02	-8.280605E-03	-1.049855E-02	0.0	1.747468E-03	0.0
192	1	9.373873E-03	-8.263968E-03	4.321240E-03	0.0	1.478440E-03	0.0
193	1	1.946738E-02	-8.379441E-03	-6.996837E-03	0.0	1.754330E-03	0.0
194	1	1.174713E-02	-8.408982E-03	3.835693E-03	0.0	1.686533E-03	0.0
195	1	1.950914E-02	-8.480329E-03	-3.304671E-03	0.0	1.762109E-03	0.0
196	1	1.552970E-02	-8.534770E-03	3.812895E-03	0.0	1.747833E-03	0.0
197	1	1.955030E-02	-8.573603E-03	2.274286E-04	0.0	1.770083E-03	0.0
198	1	1.959287E-02	-8.664079E-03	3.776044E-03	0.0	1.778629E-03	0.0
286	1	2.480215E-02	-8.774001E-03	3.707438E-03	0.0	1.637460E-03	0.0
288	1	2.925989E-02	-8.878142E-03	3.614071E-03	0.0	1.199084E-03	0.0
290	1	3.199019E-02	-8.967292E-03	3.507899E-03	0.0	6.012132E-04	0.0
292	1	3.278673E-02	-9.045769E-03	3.390651E-03	0.0	-9.232324E-05	0.0
294	1	3.151041E-02	-9.108089E-03	3.279406E-03	0.0	-7.485233E-04	0.0
296	1	2.827199E-02	-9.159196E-03	3.176441E-03	0.0	-1.313374E-03	0.0
298	1	2.375935E-02	-9.197630E-03	3.096105E-03	0.0	-1.651624E-03	0.0
300	1	1.868379E-02	-9.227805E-03	3.039362E-03	0.0	-1.667699E-03	0.0
362	1	1.409846E-02	-9.190006E-03	3.006994E-03	0.0	-1.486661E-03	0.0
363	1	1.869746E-02	-9.372503E-03	-2.900297E-04	0.0	-1.661805E-03	0.0
364	1	1.022445E-02	-9.151004E-03	2.994232E-03	0.0	-1.275799E-03	0.0
365	1	1.871170E-02	-9.514961E-03	-3.608211E-03	0.0	-1.656471E-03	0.0
366	1	1.021647E-02	-9.129066E-03	8.457277E-03	0.0	-1.265458E-03	0.0
367	1	1.872655E-02	-9.655155E-03	-6.916296E-03	0.0	-1.651714E-03	0.0
368	1	8.584816E-03	-9.125363E-03	2.556111E-03	0.0	-9.173036E-04	0.0
369	1	1.874201E-02	-9.793058E-03	-1.021546E-02	0.0	-1.647550E-03	0.0
370	1	1.020889E-02	-9.105347E-03	1.400540E-02	0.0	-1.256720E-03	0.0
371	1	1.875812E-02	-9.928647E-03	-1.350690E-02	0.0	-1.643998E-03	0.0
372	1	7.433970E-03	-9.101074E-03	2.558866E-03	0.0	-6.263712E-04	0.0
373	1	1.877404E-02	-1.005528E-02	-1.662775E-02	0.0	-1.641208E-03	0.0
375	1	1.879149E-02	-1.018628E-02	-1.990775E-02	0.0	-1.638905E-03	0.0
376	1	6.678861E-03	-9.077024E-03	2.563789E-03	0.0	-3.890565E-04	0.0
377	1	1.880968E-02	-1.031487E-02	-2.318382E-02	0.0	-1.637274E-03	0.0
379	1	1.882862E-02	-1.044103E-02	-2.645731E-02	0.0	-1.636337E-03	0.0
380	1	6.242175E-03	-9.053312E-03	2.570040E-03	0.0	-2.009533E-04	0.0
381	1	1.884837E-02	-1.056472E-02	-2.972964E-02	0.0	-1.636119E-03	0.0
383	1	1.886895E-02	-1.068591E-02	-3.300228E-02	0.0	-1.636645E-03	0.0
384	1	6.054200E-03	-9.029999E-03	2.576951E-03	0.0	-5.643023E-05	0.0
385	1	1.889041E-02	-1.080458E-02	-3.627674E-02	0.0	-1.637941E-03	0.0
387	1	1.891278E-02	-1.092060E-02	-3.955458E-02	0.0	-1.640037E-03	0.0
388	1	6.054215E-03	-9.007111E-03	2.584011E-03	0.0	5.075963E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
389	1	1.893612E-02	-1.103403E-02	-4.283744E-02	0.0	-1.642962E-03	0.0
391	1	1.895922E-02	-1.113931E-02	-4.596235E-02	0.0	-1.646540E-03	0.0
392	1	6.191015E-03	-8.984644E-03	2.590840E-03	0.0	1.270109E-04	0.0
393	1	1.898456E-02	-1.124747E-02	-4.925992E-02	0.0	-1.651178E-03	0.0
395	1	1.901101E-02	-1.135280E-02	-5.256769E-02	0.0	-1.656747E-03	0.0
396	1	6.422881E-03	-8.962575E-03	2.597169E-03	0.0	1.785182E-04	0.0
397	1	1.903862E-02	-1.145543E-02	-5.588755E-02	0.0	-1.663286E-03	0.0
399	1	1.906745E-02	-1.155510E-02	-5.922151E-02	0.0	-1.670836E-03	0.0
400	1	6.717078E-03	-8.940868E-03	2.602814E-03	0.0	2.110280E-04	0.0
404	1	7.049043E-03	-8.919477E-03	2.607662E-03	0.0	2.296711E-04	0.0
408	1	7.401377E-03	-8.898355E-03	2.611646E-03	0.0	2.388561E-04	0.0
412	1	7.762708E-03	-8.877445E-03	2.614734E-03	0.0	2.422084E-04	0.0
416	1	8.126505E-03	-8.856695E-03	2.616914E-03	0.0	2.425390E-04	0.0
420	1	8.489821E-03	-8.836050E-03	2.618186E-03	0.0	2.418336E-04	0.0
424	1	8.852080E-03	-8.815452E-03	2.618552E-03	0.0	2.412506E-04	0.0
428	1	9.213816E-03	-8.794852E-03	2.618013E-03	0.0	2.411229E-04	0.0
94	2	0.0	0.0	0.0	0.0	0.0	0.0
96	2	1.880301E-04	-2.136573E-04	2.801363E-06	0.0	1.958783E-04	0.0
98	2	6.158159E-04	-4.304892E-04	1.438626E-04	0.0	3.439775E-04	0.0
100	2	1.219977E-03	-6.504967E-04	3.864921E-04	0.0	4.491904E-04	0.0
102	2	1.944072E-03	-8.736365E-04	6.981152E-04	0.0	5.162975E-04	0.0
104	2	2.737956E-03	-1.099845E-03	1.049863E-03	0.0	5.498123E-04	0.0
106	2	3.557562E-03	-1.329033E-03	1.416456E-03	0.0	5.538550E-04	0.0
108	2	4.364338E-03	-1.561117E-03	1.775886E-03	0.0	5.321261E-04	0.0
110	2	5.124476E-03	-1.796008E-03	2.108908E-03	0.0	4.878785E-04	0.0
112	2	5.808398E-03	-2.033627E-03	2.398811E-03	0.0	4.239506E-04	0.0
114	2	6.425511E-03	-2.285897E-03	2.688836E-03	0.0	4.083021E-04	0.0
116	2	7.067379E-03	-2.528535E-03	2.956143E-03	0.0	4.455296E-04	0.0
118	2	7.753626E-03	-2.773759E-03	3.249457E-03	0.0	4.724413E-04	0.0
120	2	8.471187E-03	-3.021513E-03	3.561236E-03	0.0	4.909001E-04	0.0
122	2	9.209361E-03	-3.271723E-03	3.885323E-03	0.0	5.024553E-04	0.0
124	2	9.959400E-03	-3.524326E-03	4.216705E-03	0.0	5.083240E-04	0.0
126	2	1.071397E-02	-3.779239E-03	4.551191E-03	0.0	5.093690E-04	0.0
128	2	1.146670E-02	-4.036386E-03	4.885156E-03	0.0	5.060725E-04	0.0
130	2	1.221162E-02	-4.295696E-03	5.215205E-03	0.0	4.985258E-04	0.0
132	2	1.294254E-02	-4.557084E-03	5.537882E-03	0.0	4.864386E-04	0.0
134	2	1.365282E-02	-4.820485E-03	5.849376E-03	0.0	4.691642E-04	0.0
136	2	1.433436E-02	-5.085830E-03	6.145228E-03	0.0	4.457179E-04	0.0
138	2	1.497763E-02	-5.353056E-03	6.420065E-03	0.0	4.147941E-04	0.0
140	2	1.557105E-02	-5.622119E-03	6.667402E-03	0.0	3.748017E-04	0.0
142	2	1.610057E-02	-5.892970E-03	6.879393E-03	0.0	3.239303E-04	0.0
144	2	1.654955E-02	-6.165605E-03	7.046741E-03	0.0	2.602329E-04	0.0
146	2	1.689853E-02	-6.440014E-03	7.158592E-03	0.0	1.817312E-04	0.0
148	2	1.712523E-02	-6.716236E-03	7.202558E-03	0.0	8.652628E-05	0.0
150	2	1.724184E-02	-7.009290E-03	7.197350E-03	0.0	5.437891E-05	0.0
152	2	1.737613E-02	-7.289425E-03	7.193420E-03	0.0	8.519554E-05	0.0
154	2	1.754141E-02	-7.571641E-03	7.209703E-03	0.0	1.001375E-04	0.0
156	2	1.771534E-02	-7.856023E-03	7.233445E-03	0.0	9.910301E-05	0.0
158	2	1.787569E-02	-8.142661E-03	7.251997E-03	0.0	8.244283E-05	0.0
160	2	1.800108E-02	-8.431654E-03	7.253271E-03	0.0	5.100724E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
162	2	1.807166E-02	-8.723117E-03	7.226110E-03	0.0	6.194167E-06	0.0
164	2	1.806992E-02	-9.017166E-03	7.160764E-03	0.0	-4.997849E-05	0.0
166	2	1.798168E-02	-9.313956E-03	7.049408E-03	0.0	-1.147483E-04	0.0
168	2	1.779717E-02	-9.613667E-03	6.886818E-03	0.0	-1.844813E-04	0.0
170	2	1.751246E-02	-9.916518E-03	6.671097E-03	0.0	-2.544802E-04	0.0
172	2	1.713099E-02	-1.022276E-02	6.404605E-03	0.0	-3.188066E-04	0.0
174	2	1.666551E-02	-1.053267E-02	6.095003E-03	0.0	-3.701064E-04	0.0
176	2	1.614022E-02	-1.084657E-02	5.756442E-03	0.0	-3.994131E-04	0.0
178	2	1.559309E-02	-1.116480E-02	5.410880E-03	0.0	-3.959911E-04	0.0
180	2	1.507850E-02	-1.148772E-02	5.089529E-03	0.0	-3.472036E-04	0.0
182	2	1.466992E-02	-1.181568E-02	4.834317E-03	0.0	-2.384581E-04	0.0
183	2	3.284226E-02	-9.760525E-03	-3.245165E-02	0.0	2.363624E-03	0.0
184	2	1.446277E-02	-1.214901E-02	4.699498E-03	0.0	-5.325933E-05	0.0
185	2	3.288012E-02	-1.029805E-02	-2.771883E-02	0.0	2.369473E-03	0.0
186	2	1.457694E-02	-1.248799E-02	4.752990E-03	0.0	2.266146E-04	0.0
187	2	3.291819E-02	-1.085664E-02	-2.273495E-02	0.0	2.377410E-03	0.0
188	2	1.518177E-02	-1.285268E-02	5.133629E-03	0.0	6.636798E-04	0.0
189	2	3.295280E-02	-1.138345E-02	-1.797109E-02	0.0	2.386743E-03	0.0
190	2	1.650870E-02	-1.320312E-02	5.886029E-03	0.0	1.253298E-03	0.0
191	2	3.298575E-02	-1.190556E-02	-1.318678E-02	0.0	2.397871E-03	0.0
192	2	1.877036E-02	-1.355922E-02	7.172253E-03	0.0	2.002065E-03	0.0
193	2	3.301699E-02	-1.242333E-02	-8.378360E-03	0.0	2.410863E-03	0.0
194	2	2.206832E-02	-1.370573E-02	6.509930E-03	0.0	2.387824E-03	0.0
195	2	3.304786E-02	-1.296273E-02	-3.299403E-03	0.0	2.426590E-03	0.0
196	2	2.741932E-02	-1.383925E-02	6.501697E-03	0.0	2.463948E-03	0.0
197	2	3.307535E-02	-1.347280E-02	1.570478E-03	0.0	2.443634E-03	0.0
198	2	3.310088E-02	-1.397972E-02	6.476533E-03	0.0	2.462779E-03	0.0
286	2	4.029666E-02	-1.407086E-02	6.417520E-03	0.0	2.272561E-03	0.0
288	2	4.661264E-02	-1.415149E-02	6.327342E-03	0.0	1.760173E-03	0.0
290	2	5.090431E-02	-1.420926E-02	6.218519E-03	0.0	1.079843E-03	0.0
292	2	5.304417E-02	-1.424277E-02	6.093457E-03	0.0	2.946509E-04	0.0
294	2	5.278653E-02	-1.424737E-02	5.970594E-03	0.0	-4.580617E-04	0.0
296	2	5.027596E-02	-1.422354E-02	5.852412E-03	0.0	-1.137607E-03	0.0
298	2	4.609442E-02	-1.417550E-02	5.755421E-03	0.0	-1.611744E-03	0.0
300	2	4.088996E-02	-1.410745E-02	5.681708E-03	0.0	-1.800803E-03	0.0
362	2	3.572901E-02	-1.403112E-02	5.634792E-03	0.0	-1.708663E-03	0.0
363	2	4.092576E-02	-1.481126E-02	2.109152E-03	0.0	-1.772049E-03	0.0
364	2	3.138800E-02	-1.394963E-02	5.610909E-03	0.0	-1.349777E-03	0.0
365	2	4.095881E-02	-1.550907E-02	-1.407671E-03	0.0	-1.745072E-03	0.0
366	2	3.135317E-02	-1.287425E-02	1.138376E-02	0.0	-1.336115E-03	0.0
367	2	4.098900E-02	-1.620146E-02	-4.872341E-03	0.0	-1.719902E-03	0.0
368	2	2.957863E-02	-1.395925E-02	5.122010E-03	0.0	-1.068576E-03	0.0
369	2	4.101618E-02	-1.688901E-02	-8.288506E-03	0.0	-1.696572E-03	0.0
370	2	3.130672E-02	-1.176076E-02	-1.724123E-02	0.0	-1.327195E-03	0.0
371	2	4.104023E-02	-1.757236E-02	-1.165988E-02	0.0	-1.675118E-03	0.0
372	2	2.815955E-02	-1.387357E-02	5.119827E-03	0.0	-8.291455E-04	0.0
373	2	4.106008E-02	-1.821824E-02	-1.482464E-02	0.0	-1.656508E-03	0.0
375	2	4.107743E-02	-1.889529E-02	[illegible]	0.0	-1.638824E-03	0.0
376	2	2.707402E-02	-1.378777E-02	5.120162E-03	0.0	-6.239910E-04	0.0
377	2	4.109118E-02	-1.957016E-02	-2.138127E-02	0.0	-1.623138E-03	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
379	2	4.110102E-02	-2.024359E-02	-2.461356E-02	0.0	-1.609501E-03	0.0
380	2	2.627051E-02	-1.370210E-02	5.122285E-03	0.0	-4.529245E-04	0.0
381	2	4.110672E-02	-2.091638E-02	-2.782067E-02	0.0	-1.597966E-03	0.0
383	2	4.110800E-02	-2.158938E-02	-3.100687E-02	0.0	-1.588591E-03	0.0
384	2	2.569910E-02	-1.361675E-02	5.125593E-03	0.0	-3.141102E-04	0.0
385	2	4.110456E-02	-2.226346E-02	-3.417652E-02	0.0	-1.581440E-03	0.0
387	2	4.109606E-02	-2.293957E-02	-3.733415E-02	0.0	-1.576581E-03	0.0
388	2	2.531350E-02	-1.353183E-02	5.129598E-03	0.0	-2.046150E-04	0.0
389	2	4.108214E-02	-2.361871E-02	-4.048442E-02	0.0	-1.574088E-03	0.0
391	2	4.106352E-02	-2.426765E-02	-4.347475E-02	0.0	-1.573987E-03	0.0
392	2	2.507238E-02	-1.344741E-02	5.133912E-03	0.0	-1.208555E-04	0.0
393	2	4.103782E-02	-2.495578E-02	-4.662466E-02	0.0	-1.576351E-03	0.0
395	2	4.100536E-02	-2.565023E-02	-4.978190E-02	0.0	-1.581341E-03	0.0
396	2	2.494001E-02	-1.336351E-02	5.138248E-03	0.0	-5.894968E-05	0.0
397	2	4.096561E-02	-2.635228E-02	-5.295185E-02	0.0	-1.589064E-03	0.0
399	2	4.091797E-02	-2.706327E-02	-5.614005E-02	0.0	-1.599630E-03	0.0
400	2	2.488656E-02	-1.328011E-02	5.142387E-03	0.0	-1.498594E-05	0.0
404	2	2.488796E-02	-1.319719E-02	5.146179E-03	0.0	1.477931E-05	0.0
408	2	2.492553E-02	-1.311470E-02	5.149521E-03	0.0	3.378128E-05	0.0
412	2	2.498544E-02	-1.303259E-02	5.152348E-03	0.0	4.505242E-05	0.0
416	2	2.505811E-02	-1.295077E-02	5.154628E-03	0.0	5.116242E-05	0.0
420	2	2.513739E-02	-1.286921E-02	5.156338E-03	0.0	5.418314E-05	0.0
424	2	2.521990E-02	-1.278781E-02	5.157467E-03	0.0	5.566981E-05	0.0
428	2	2.530416E-02	-1.270651E-02	5.158018E-03	0.0	5.665208E-05	0.0
94	3	0.0	0.0	0.0	0.0	0.0	0.0
96	3	1.686737E-04	-1.366491E-04	6.991621E-06	0.0	1.785917E-04	0.0
98	3	5.568739E-04	-2.768966E-04	1.407074E-04	0.0	3.150073E-04	0.0
100	3	1.108636E-03	-4.207429E-04	3.687518E-04	0.0	4.135449E-04	0.0
102	3	1.774095E-03	-5.681324E-04	6.623489E-04	0.0	4.784092E-04	0.0
104	3	2.508931E-03	-7.189757E-04	9.959838E-04	0.0	5.135753E-04	0.0
106	3	3.274169E-03	-8.731552E-04	1.347305E-03	0.0	5.226743E-04	0.0
108	3	4.035711E-03	-1.030550E-03	1.696842E-03	0.0	5.089678E-04	0.0
110	3	4.763626E-03	-1.191039E-03	2.027558E-03	0.0	4.753219E-04	0.0
112	3	5.431715E-03	-1.354509E-03	2.324650E-03	0.0	4.242333E-04	0.0
114	3	6.046701E-03	-1.532693E-03	2.630715E-03	0.0	4.129666E-04	0.0
116	3	6.684557E-03	-1.701298E-03	2.912201E-03	0.0	4.455145E-04	0.0
118	3	7.361166E-03	-1.872672E-03	3.216603E-03	0.0	4.691158E-04	0.0
120	3	8.065246E-03	-2.046728E-03	3.537421E-03	0.0	4.854575E-04	0.0
122	3	8.787658E-03	-2.223366E-03	3.869409E-03	0.0	4.959542E-04	0.0
124	3	9.521060E-03	-2.402490E-03	4.208371E-03	0.0	5.017351E-04	0.0
126	3	1.025945E-02	-2.583992E-03	4.550893E-03	0.0	5.036304E-04	0.0
128	3	1.099777E-02	-2.767762E-03	4.894104E-03	0.0	5.021514E-04	0.0
130	3	1.173146E-02	-2.953696E-03	5.235422E-03	0.0	4.974848E-04	0.0
132	3	1.245598E-02	-3.141684E-03	5.572304E-03	0.0	4.895027E-04	0.0
134	3	1.316642E-02	-3.331633E-03	5.901992E-03	0.0	4.777831E-04	0.0
136	3	1.385704E-02	-3.523444E-03	6.221291E-03	0.0	4.616256E-04	0.0
138	3	1.452094E-02	-3.717029E-03	6.526332E-03	0.0	4.400634E-04	0.0
140	3	1.514970E-02	-3.912311E-03	6.812416E-03	0.0	4.118904E-04	0.0
142	3	1.573305E-02	-4.109230E-03	7.073794E-03	0.0	3.757083E-04	0.0
144	3	1.625865E-02	-4.307747E-03	7.303592E-03	0.0	3.299902E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
146	3	1.671195E-02	-4.507843E-03	7.493705E-03	0.0	2.731546E-04	0.0
148	3	1.707616E-02	-4.709527E-03	7.634781E-03	0.0	2.036483E-04	0.0
150	3	1.734723E-02	-4.942749E-03	7.755529E-03	0.0	1.834499E-04	0.0
152	3	1.765293E-02	-5.147301E-03	7.867821E-03	0.0	2.129767E-04	0.0
154	3	1.799101E-02	-5.353708E-03	8.000869E-03	0.0	2.310435E-04	0.0
156	3	1.834529E-02	-5.562045E-03	8.145411E-03	0.0	2.374787E-04	0.0
158	3	1.869950E-02	-5.772375E-03	8.292176E-03	0.0	2.323885E-04	0.0
160	3	1.903771E-02	-5.984772E-03	8.432154E-03	0.0	2.161795E-04	0.0
162	3	1.934480E-02	-6.199319E-03	8.556813E-03	0.0	1.895825E-04	0.0
164	3	1.960685E-02	-6.416112E-03	8.658390E-03	0.0	1.536940E-04	0.0
166	3	1.981180E-02	-6.635271E-03	8.730188E-03	0.0	1.100573E-04	0.0
168	3	1.995007E-02	-6.856948E-03	8.766986E-03	0.0	6.074767E-05	0.0
170	3	2.001543E-02	-7.081334E-03	8.765511E-03	0.0	8.508324E-06	0.0
172	3	2.000602E-02	-7.308654E-03	8.725010E-03	0.0	-4.311939E-05	0.0
174	3	1.992558E-02	-7.539175E-03	8.647922E-03	0.0	-8.966026E-05	0.0
176	3	1.978486E-02	-7.773198E-03	8.540709E-03	0.0	-1.255452E-04	0.0
178	3	1.960327E-02	-8.011069E-03	8.414738E-03	0.0	-1.439694E-04	0.0
180	3	1.941074E-02	-8.253168E-03	8.287322E-03	0.0	-1.367537E-04	0.0
182	3	1.924963E-02	-8.499876E-03	8.182812E-03	0.0	-9.424462E-05	0.0
183	3	3.029028E-02	-2.957735E-03	-1.582440E-02	0.0	1.512019E-03	0.0
184	3	1.917701E-02	-8.751579E-03	8.133817E-03	0.0	-5.273574E-06	0.0
185	3	3.034998E-02	-3.800443E-03	-1.279724E-02	0.0	1.515496E-03	0.0
186	3	1.926674E-02	-9.008635E-03	8.182351E-03	0.0	1.428192E-04	0.0
187	3	3.040747E-02	-4.671860E-03	-9.608805E-03	0.0	1.521546E-03	0.0
188	3	1.962403E-02	-9.304419E-03	8.414134E-03	0.0	3.887273E-04	0.0
189	3	3.045720E-02	-5.490415E-03	-6.557968E-03	0.0	1.529682E-03	0.0
190	3	2.039614E-02	-9.572670E-03	8.860815E-03	0.0	7.344317E-04	0.0
191	3	3.050192E-02	-6.299298E-03	-3.488468E-03	0.0	1.540229E-03	0.0
192	3	2.172522E-02	-9.846751E-03	9.628013E-03	0.0	1.188423E-03	0.0
193	3	3.054151E-02	-7.099964E-03	-3.953821E-04	0.0	1.553284E-03	0.0
194	3	2.371006E-02	-9.743020E-03	9.238198E-03	0.0	1.453260E-03	0.0
195	3	3.057736E-02	-7.933479E-03	2.883362E-03	0.0	1.569812E-03	0.0
196	3	2.700461E-02	-9.626724E-03	9.243898E-03	0.0	1.538616E-03	0.0
197	3	3.060584E-02	-8.722104E-03	6.041065E-03	0.0	1.588359E-03	0.0
198	3	3.062854E-02	-9.507336E-03	9.238709E-03	0.0	1.609774E-03	0.0
286	3	3.547128E-02	-9.182531E-03	9.211466E-03	0.0	1.548431E-03	0.0
288	3	3.968796E-02	-8.832883E-03	9.157624E-03	0.0	1.123509E-03	0.0
290	3	4.215932E-02	-8.471884E-03	9.085882E-03	0.0	4.998723E-04	0.0
292	3	4.257747E-02	-8.068897E-03	8.999869E-03	0.0	-2.359454E-04	0.0
294	3	4.081202E-02	-7.647101E-03	8.914370E-03	0.0	-9.288823E-04	0.0
296	3	3.698070E-02	-7.179275E-03	8.832972E-03	0.0	-1.510756E-03	0.0
298	3	3.189163E-02	-6.699756E-03	8.768041E-03	0.0	-1.832099E-03	0.0
300	3	2.635307E-02	-6.200213E-03	8.720424E-03	0.0	-1.787913E-03	0.0
362	3	2.154732E-02	-6.910389E-03	8.692898E-03	0.0	-1.484814E-03	0.0
363	3	2.636635E-02	-6.804906E-03	5.205151E-03	0.0	-1.727984E-03	0.0
364	3	1.807034E-02	-5.624741E-03	8.682534E-03	0.0	-9.618432E-04	0.0
365	3	2.637650E-02	-7.402822E-03	1.805995E-03	0.0	-1.671798E-03	0.0
366	3	1.804786E-02	-4.560988E-03	1.279159E-02	0.0	-9.505264E-04	0.0
367	3	2.638344E-02	-7.995307E-03	-1.484532E-03	0.0	-1.619353E-03	0.0
368	3	1.673999E-02	-5.517345E-03	8.326203E-03	0.0	-8.150949E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
369	3	2.638700E-02	-8.583762E-03	-4.673917E-03	0.0	-1.570656E-03	0.0
370	3	1.800589E-02	-3.457178E-03	1.696140E-02	0.0	-9.459762E-04	0.0
371	3	2.638701E-02	-9.169649E-03	-7.769659E-03	0.0	-1.525715E-03	0.0
372	3	1.561033E-02	-5.316075E-03	8.326627E-03	0.0	-6.945529E-04	0.0
373	3	2.638350E-02	-9.725265E-03	-1.063073E-02	0.0	-1.486516E-03	0.0
375	3	2.637585E-02	-1.031065E-02	-1.356556E-02	0.0	-1.448954E-03	0.0
376	3	1.464618E-02	-5.114935E-03	8.328062E-03	0.0	-5.942800E-04	0.0
377	3	2.636380E-02	-1.089825E-02	-1.642910E-02	0.0	-1.415219E-03	0.0
379	3	2.634699E-02	-1.148986E-02	-1.922902E-02	0.0	-1.385349E-03	0.0
380	3	1.381795E-02	-4.914086E-03	8.330148E-03	0.0	-5.130644E-04	0.0
381	3	2.632493E-02	-1.208737E-02	-2.197310E-02	0.0	-1.359392E-03	0.0
383	3	2.629711E-02	-1.269282E-02	-2.466923E-02	0.0	-1.337406E-03	0.0
384	3	1.309837E-02	-4.713628E-03	8.332603E-03	0.0	-4.490826E-04	0.0
385	3	2.626293E-02	-1.330834E-02	-2.732542E-02	0.0	-1.319459E-03	0.0
387	3	2.622167E-02	-1.393622E-02	-2.994981E-02	0.0	-1.305630E-03	0.0
388	3	1.246318E-02	-4.513610E-03	8.335207E-03	0.0	-4.001565E-04	0.0
389	3	2.617254E-02	-1.457890E-02	-3.255075E-02	0.0	-1.296012E-03	0.0
391	3	2.611775E-02	-1.520554E-02	-3.500768E-02	0.0	-1.290872E-03	0.0
392	3	1.189154E-02	-4.314050E-03	8.337796E-03	0.0	-3.639583E-04	0.0
393	3	2.605054E-02	-1.588476E-02	-3.758758E-02	0.0	-1.289785E-03	0.0
395	3	2.597239E-02	-1.658706E-02	-4.016986E-02	0.0	-1.293268E-03	0.0
396	3	1.136610E-02	-4.114933E-03	8.340243E-03	0.0	-3.381639E-04	0.0
397	3	2.588198E-02	-1.731564E-02	-4.276381E-02	0.0	-1.301476E-03	0.0
399	3	2.577781E-02	-1.807402E-02	-4.537904E-02	0.0	-1.314584E-03	0.0
400	3	1.087295E-02	-3.916238E-03	8.342471E-03	0.0	-3.205652E-04	0.0
404	3	1.040132E-02	-3.717917E-03	8.344416E-03	0.0	-3.091511E-04	0.0
408	3	9.943288E-03	-3.519915E-03	8.346044E-03	0.0	-3.021595E-04	0.0
412	3	9.493373E-03	-3.322177E-03	8.347336E-03	0.0	-2.981115E-04	0.0
416	3	9.048074E-03	-3.124641E-03	8.348282E-03	0.0	-2.958321E-04	0.0
420	3	8.605428E-03	-2.927245E-03	8.348878E-03	0.0	-2.944604E-04	0.0
424	3	8.164514E-03	-2.729924E-03	8.349117E-03	0.0	-2.934560E-04	0.0
428	3	7.724989E-03	-2.532614E-03	8.348998E-03	0.0	-2.926027E-04	0.0
94	4	0.0	0.0	0.0	0.0	0.0	0.0
96	4	1.568644E-04	-9.762865E-05	9.719608E-06	0.0	1.681719E-04	0.0
98	4	5.212075E-04	-1.993253E-04	1.392499E-04	0.0	2.977317E-04	0.0
100	4	1.041809E-03	-3.050908E-04	3.589506E-04	0.0	3.926400E-04	0.0
102	4	1.673060E-03	-4.148579E-04	6.425125E-04	0.0	4.567611E-04	0.0
104	4	2.374446E-03	-5.285165E-04	9.666176E-04	0.0	4.937386E-04	0.0
106	4	3.110340E-03	-6.459230E-04	1.310843E-03	0.0	5.068930E-04	0.0
108	4	3.849578E-03	-7.669269E-04	1.657400E-03	0.0	4.991991E-04	0.0
110	4	4.564777E-03	-8.913761E-04	1.990710E-03	0.0	4.732618E-04	0.0
112	4	5.231962E-03	-1.019132E-03	2.297222E-03	0.0	4.313404E-04	0.0
114	4	5.856313E-03	-1.162864E-03	2.619980E-03	0.0	4.241401E-04	0.0
116	4	6.504290E-03	-1.296036E-03	2.917366E-03	0.0	4.551848E-04	0.0
118	4	7.189516E-03	-1.432245E-03	3.236891E-03	0.0	4.781715E-04	0.0
120	4	7.901873E-03	-1.571380E-03	3.572736E-03	0.0	4.946850E-04	0.0
122	4	8.633252E-03	-1.713316E-03	3.920257E-03	0.0	5.060614E-04	0.0
124	4	9.377271E-03	-1.857930E-03	4.275821E-03	0.0	5.133818E-04	0.0
126	4	1.012882E-02	-2.005088E-03	4.636522E-03	0.0	5.174596E-04	0.0
128	4	1.088377E-02	-2.154655E-03	5.000021E-03	0.0	5.188270E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
130	4	1.163851E-02	-2.306498E-03	5.364291E-03	0.0	5.177301E-04	0.0
132	4	1.238959E-02	-2.460481E-03	5.727388E-03	0.0	5.141376E-04	0.0
134	4	1.313332E-02	-2.616485E-03	6.087270E-03	0.0	5.077573E-04	0.0
136	4	1.386543E-02	-2.774363E-03	6.441537E-03	0.0	4.980478E-04	0.0
138	4	1.458068E-02	-2.934060E-03	6.787281E-03	0.0	4.842253E-04	0.0
140	4	1.527262E-02	-3.095412E-03	7.120885E-03	0.0	4.652815E-04	0.0
142	4	1.593322E-02	-3.258346E-03	7.437848E-03	0.0	4.400178E-04	0.0
144	4	1.655265E-02	-3.422796E-03	7.732701E-03	0.0	4.070906E-04	0.0
146	4	1.711912E-02	-3.588715E-03	7.998854E-03	0.0	3.650668E-04	0.0
148	4	1.761875E-02	-3.756083E-03	8.228574E-03	0.0	3.124804E-04	0.0
150	4	1.803309E-02	-3.970187E-03	8.460097E-03	0.0	3.000938E-04	0.0
152	4	1.849629E-02	-4.139349E-03	8.673545E-03	0.0	3.285301E-04	0.0
154	4	1.899181E-02	-4.310213E-03	8.907493E-03	0.0	3.474550E-04	0.0
156	4	1.950610E-02	-4.482809E-03	9.154171E-03	0.0	3.565059E-04	0.0
158	4	2.002512E-02	-4.657160E-03	9.405579E-03	0.0	3.554558E-04	0.0
160	4	2.053465E-02	-4.833315E-03	9.653654E-03	0.0	3.442261E-04	0.0
162	4	2.102042E-02	-5.011298E-03	9.890344E-03	0.0	3.228988E-04	0.0
164	4	2.146842E-02	-5.191173E-03	1.010778E-02	0.0	2.917477E-04	0.0
166	4	2.186513E-02	-5.373020E-03	1.029844E-02	0.0	2.513044E-04	0.0
168	4	2.219801E-02	-5.556948E-03	1.045537E-02	0.0	2.024314E-04	0.0
170	4	2.245598E-02	-5.743142E-03	1.057253E-02	0.0	1.464448E-04	0.0
172	4	2.263023E-02	-5.931610E-03	1.064520E-02	0.0	8.523944E-05	0.0
174	4	2.271502E-02	-6.123219E-03	1.067043E-02	0.0	2.143360E-05	0.0
176	4	2.270890E-02	-6.317716E-03	1.064780E-02	0.0	-4.145603E-05	0.0
178	4	2.261605E-02	-6.515697E-03	1.058008E-02	0.0	-9.883336E-05	0.0
180	4	2.244800E-02	-6.717652E-03	1.047423E-02	0.0	-1.448265E-04	0.0
182	4	2.222543E-02	-6.924108E-03	1.034248E-02	0.0	-1.720951E-04	0.0
183	4	2.568065E-02	3.547783E-04	-2.583705E-03	0.0	7.601806E-04	0.0
184	4	2.198053E-02	-7.135656E-03	1.020350E-02	0.0	-1.716595E-04	0.0
185	4	2.575514E-02	-6.299405E-04	-1.061057E-03	0.0	7.628002E-04	0.0
186	4	2.175932E-02	-7.352915E-03	1.008364E-02	0.0	-1.327510E-04	0.0
187	4	2.582457E-02	-1.641965E-03	5.456086E-04	0.0	7.677462E-04	0.0
188	4	2.162968E-02	-7.623941E-03	1.001444E-02	0.0	-3.011122E-05	0.0
189	4	2.588231E-02	-2.587995E-03	2.087625E-03	0.0	7.746310E-04	0.0
190	4	2.169404E-02	-7.855054E-03	1.007022E-02	0.0	1.467847E-04	0.0
191	4	2.593184E-02	-3.519742E-03	3.645607E-03	0.0	7.837270E-04	0.0
192	4	2.206236E-02	-8.093715E-03	1.030500E-02	0.0	4.103067E-04	0.0
193	4	2.597300E-02	-4.440360E-03	5.224071E-03	0.0	7.951329E-04	0.0
194	4	2.282764E-02	-7.815912E-03	1.017217E-02	0.0	6.055650E-04	0.0
195	4	2.600692E-02	-5.398616E-03	6.908689E-03	0.0	8.097142E-04	0.0
196	4	2.426627E-02	-7.518195E-03	1.019673E-02	0.0	7.066010E-04	0.0
197	4	2.603001E-02	-6.306827E-03	8.544177E-03	0.0	8.262072E-04	0.0
198	4	2.604362E-02	-7.214367E-03	1.021530E-02	0.0	8.453785E-04	0.0
286	4	2.874603E-02	-6.597310E-03	1.022264E-02	0.0	8.775189E-04	0.0
288	4	3.097515E-02	-5.953174E-03	1.020592E-02	0.0	5.067193E-04	0.0
290	4	3.164654E-02	-5.312622E-03	1.017076E-02	0.0	-8.489823E-05	0.0
292	4	3.030200E-02	-4.625108E-03	1.012264E-02	0.0	-7.862367E-04	0.0
294	4	2.696202E-02	-3.931869E-03	1.007325E-02	0.0	-1.422082E-03	0.0
296	4	2.175392E-02	-3.188217E-03	1.002752E-02	0.0	-1.896082E-03	0.0
298	4	1.575155E-02	-2.447366E-03	9.993888E-03	0.0	-2.041657E-03	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
300	4	9.962410E-03	-1.692864E-03	9.971879E-03	0.0	-1.727874E-03	0.0
362	4	5.660843E-03	-1.143994E-03	9.960953E-03	0.0	-1.221473E-03	0.0
363	4	9.950615E-03	-1.948453E-03	6.609581E-03	0.0	-1.635495E-03	0.0
364	4	3.039695E-03	-6.118729E-04	9.957310E-03	0.0	-6.347161E-04	0.0
365	4	9.937912E-03	-2.198741E-03	3.425665E-03	0.0	-1.549470E-03	0.0
366	4	3.030870E-03	-3.663271E-04	1.266903E-02	0.0	-6.278225E-04	0.0
367	4	9.924315E-03	-2.444837E-03	4.075428E-04	0.0	-1.469682E-03	0.0
368	4	2.033593E-03	-3.280656E-04	9.687167E-03	0.0	-7.052736E-04	0.0
369	4	9.909812E-03	-2.687894E-03	-2.457147E-03	0.0	-1.396021E-03	0.0
370	4	3.016389E-03	-1.077566E-04	1.542982E-02	0.0	-6.282914E-04	0.0
371	4	9.894349E-03	-2.929111E-03	-5.180564E-03	0.0	-1.328394E-03	0.0
372	4	9.346132E-04	-2.728168E-05	9.685095E-03	0.0	-7.577469E-04	0.0
373	4	9.878684E-03	-3.157707E-03	-7.647857E-03	0.0	-1.269658E-03	0.0
375	4	9.861048E-03	-3.399008E-03	-1.013011E-02	0.0	-1.213565E-03	0.0
376	4	-2.332461E-04	2.739604E-04	9.682909E-03	0.0	-7.974203E-04	0.0
377	4	9.842053E-03	-3.642365E-03	-1.250600E-02	0.0	-1.163294E-03	0.0
379	4	9.821463E-03	-3.889243E-03	-1.478714E-02	0.0	-1.118804E-03	0.0
380	4	-1.452188E-03	5.756849E-04	9.680737E-03	0.0	-8.261746E-04	0.0
381	4	9.798985E-03	-4.141200E-03	-1.698505E-02	0.0	-1.080066E-03	0.0
383	4	9.774256E-03	-4.399892E-03	-1.911123E-02	0.0	-1.047072E-03	0.0
384	4	-2.707257E-03	8.778875E-04	9.678669E-03	0.0	-8.458991E-04	0.0
385	4	9.746838E-03	-4.667096E-03	-2.117717E-02	0.0	-1.019829E-03	0.0
387	4	9.716198E-03	-4.944708E-03	-2.319440E-02	0.0	-9.983666E-04	0.0
388	4	-3.986277E-03	1.180544E-03	9.676766E-03	0.0	-8.584033E-04	0.0
389	4	9.681717E-03	-5.234774E-03	-2.517452E-02	0.0	-9.827344E-04	0.0
391	4	9.644736E-03	-5.523894E-03	-2.703197E-02	0.0	-9.733515E-04	0.0
392	4	-5.279694E-03	1.483616E-03	9.675067E-03	0.0	-8.653619E-04	0.0
393	4	9.600535E-03	-5.844776E-03	-2.897364E-02	0.0	-9.693266E-04	0.0
395	4	9.549949E-03	-6.185185E-03	-3.091336E-02	0.0	-9.714295E-04	0.0
396	4	-6.580345E-03	1.787059E-03	9.673584E-03	0.0	-8.682776E-04	0.0
397	4	9.491831E-03	-6.547943E-03	-3.286355E-02	0.0	-9.798198E-04	0.0
399	4	9.424847E-03	-6.936140E-03	-3.483696E-02	0.0	-9.946919E-04	0.0
400	4	-7.883169E-03	2.090825E-03	9.672321E-03	0.0	-8.684658E-04	0.0
404	4	-9.184942E-03	2.394864E-03	9.671275E-03	0.0	-8.670483E-04	0.0
408	4	-1.048398E-02	2.699127E-03	9.670433E-03	0.0	-8.649572E-04	0.0
412	4	-1.177986E-02	3.003569E-03	9.669784E-03	0.0	-8.629428E-04	0.0
416	4	-1.307314E-02	3.308144E-03	9.669319E-03	0.0	-8.615826E-04	0.0
420	4	-1.436514E-02	3.612811E-03	9.669028E-03	0.0	-8.612901E-04	0.0
424	4	-1.565767E-02	3.917523E-03	9.668913E-03	0.0	-8.623209E-04	0.0
428	4	-1.695282E-02	4.222248E-03	9.668972E-03	0.0	-8.647738E-04	0.0
94	5	0.0	0.0	0.0	0.0	0.0	0.0
96	5	1.220501E-04	-5.220006E-05	5.867200E-06	0.0	1.298313E-04	0.0
98	5	4.043491E-04	-1.082793E-04	1.040560E-04	0.0	2.298497E-04	0.0
100	5	8.074346E-04	-1.682241E-04	2.717522E-04	0.0	3.032412E-04	0.0
102	5	1.296320E-03	-2.319591E-04	4.887944E-04	0.0	3.530639E-04	0.0
104	5	1.840023E-03	-2.993688E-04	7.373707E-04	0.0	3.821610E-04	0.0
106	5	2.411353E-03	-3.703106E-04	1.001912E-03	0.0	3.930898E-04	0.0
108	5	2.986534E-03	-4.446353E-04	1.268863E-03	0.0	3.881117E-04	0.0
110	5	3.544648E-03	-5.221954E-04	1.526340E-03	0.0	3.691816E-04	0.0
112	5	4.067309E-03	-6.028593E-04	1.763966E-03	0.0	3.379707E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
114	5	4.559729E-03	-6.976391E-04	2.016216E-03	0.0	3.356929E-04	0.0
116	5	5.076624E-03	-7.833240E-04	2.251866E-03	0.0	3.647984E-04	0.0
118	5	5.629417E-03	-8.718735E-04	2.508610E-03	0.0	3.875548E-04	0.0
120	5	6.210111E-03	-9.631808E-04	2.781851E-03	0.0	4.051914E-04	0.0
122	5	6.812289E-03	-1.057127E-03	3.067909E-03	0.0	4.187396E-04	0.0
124	5	7.430844E-03	-1.153590E-03	3.363867E-03	0.0	4.290261E-04	0.0
126	5	8.061640E-03	-1.252438E-03	3.667375E-03	0.0	4.366604E-04	0.0
128	5	8.701261E-03	-1.353536E-03	3.976483E-03	0.0	4.420215E-04	0.0
130	5	9.346649E-03	-1.456748E-03	4.289463E-03	0.0	4.452516E-04	0.0
132	5	9.994760E-03	-1.561937E-03	4.604604E-03	0.0	4.462576E-04	0.0
134	5	1.064229E-02	-1.668975E-03	4.920039E-03	0.0	4.447235E-04	0.0
136	5	1.128530E-02	-1.777732E-03	5.233563E-03	0.0	4.401125E-04	0.0
138	5	1.191897E-02	-1.888084E-03	5.542453E-03	0.0	4.316708E-04	0.0
140	5	1.253726E-02	-1.999917E-03	5.843319E-03	0.0	4.184355E-04	0.0
142	5	1.313265E-02	-2.113127E-03	6.131928E-03	0.0	3.992601E-04	0.0
144	5	1.369590E-02	-2.227641E-03	6.403096E-03	0.0	3.728466E-04	0.0
146	5	1.421584E-02	-2.343400E-03	6.650571E-03	0.0	3.377881E-04	0.0
148	5	1.467926E-02	-2.460379E-03	6.866943E-03	0.0	2.926148E-04	0.0
150	5	1.506642E-02	-2.627677E-03	7.086728E-03	0.0	2.810098E-04	0.0
152	5	1.549579E-02	-2.745765E-03	7.287178E-03	0.0	3.030600E-04	0.0
154	5	1.594828E-02	-2.865393E-03	7.502276E-03	0.0	3.148459E-04	0.0
156	5	1.640921E-02	-2.986599E-03	7.723626E-03	0.0	3.159223E-04	0.0
158	5	1.686331E-02	-3.109414E-03	7.942531E-03	0.0	3.059404E-04	0.0
160	5	1.729487E-02	-3.233905E-03	8.150123E-03	0.0	2.846718E-04	0.0
162	5	1.768797E-02	-3.360135E-03	8.337434E-03	0.0	2.520422E-04	0.0
164	5	1.802671E-02	-3.488215E-03	8.495551E-03	0.0	2.081844E-04	0.0
166	5	1.829549E-02	-3.618300E-03	8.615814E-03	0.0	1.535283E-04	0.0
168	5	1.847962E-02	-3.750596E-03	8.690111E-03	0.0	8.890717E-05	0.0
170	5	1.856587E-02	-3.885413E-03	8.711241E-03	0.0	1.571402E-05	0.0
172	5	1.854350E-02	-4.023112E-03	8.673452E-03	0.0	-6.393071E-05	0.0
174	5	1.840525E-02	-4.164178E-03	8.573066E-03	0.0	-1.469850E-04	0.0
176	5	1.814895E-02	-4.309185E-03	8.409318E-03	0.0	-2.292544E-04	0.0
178	5	1.777918E-02	-4.458619E-03	8.185372E-03	0.0	-3.051474E-04	0.0
180	5	1.730954E-02	-4.613902E-03	7.909510E-03	0.0	-3.674093E-04	0.0
182	5	1.676503E-02	-4.775342E-03	7.596556E-03	0.0	-4.068520E-04	0.0
183	5	1.837944E-02	1.690703E-03	-5.419284E-03	0.0	7.135118E-04	0.0
184	5	1.618510E-02	-4.944149E-03	7.269528E-03	0.0	-4.121040E-04	0.0
185	5	1.845243E-02	8.002419E-04	-3.991168E-03	0.0	7.150669E-04	0.0
186	5	1.562684E-02	-5.121395E-03	6.961416E-03	0.0	-3.693795E-04	0.0
187	5	1.851882E-02	-1.082703E-04	-2.485169E-03	0.0	7.197598E-04	0.0
188	5	1.517469E-02	-5.350612E-03	6.690148E-03	0.0	-2.474275E-04	0.0
189	5	1.857247E-02	-9.527619E-04	-1.038645E-03	0.0	7.272698E-04	0.0
190	5	1.495651E-02	-5.549621E-03	6.590620E-03	0.0	-3.235541E-05	0.0
191	5	1.861686E-02	-1.781447E-03	4.259816E-04	0.0	7.378866E-04	0.0
192	5	1.511074E-02	-5.760327E-03	6.710272E-03	0.0	2.923645E-04	0.0
193	5	1.865188E-02	-2.598858E-03	1.915077E-03	0.0	7.517666E-04	0.0
194	5	1.573180E-02	-5.529907E-03	6.613031E-03	0.0	5.292788E-04	0.0
195	5	1.867829E-02	-3.450152E-03	3.512302E-03	0.0	7.700457E-04	0.0
196	5	1.702213E-02	-5.298678E-03	6.648537E-03	0.0	6.489526E-04	0.0
197	5	1.869312E-02	-4.259381E-03	5.072910E-03	0.0	7.911895E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
198	5	1.869722E-02	-5.072363E-03	6.679639E-03	0.0	8.162048E-04	0.0
286	5	2.140187E-02	-4.562687E-03	6.703902E-03	0.0	9.025442E-04	0.0
288	5	2.375727E-02	-4.039306E-03	6.704055E-03	0.0	5.595689E-04	0.0
290	5	2.460773E-02	-3.521882E-03	6.684523E-03	0.0	-1.986822E-05	0.0
292	5	2.347746E-02	-2.965447E-03	6.651668E-03	0.0	-7.129270E-04	0.0
294	5	2.037516E-02	-2.401279E-03	6.616004E-03	0.0	-1.335831E-03	0.0
296	5	1.547074E-02	-1.792776E-03	6.582908E-03	0.0	-1.782732E-03	0.0
298	5	9.873634E-03	-1.184698E-03	6.559459E-03	0.0	-1.880830E-03	0.0
300	5	4.673328E-03	-5.653340E-04	6.544899E-03	0.0	-1.490829E-03	0.0
362	5	1.124798E-03	-1.043367E-04	5.537352E-03	0.0	-9.499965E-04	0.0
363	5	4.653148E-03	-6.939801E-04	3.677288E-03	0.0	-1.378289E-03	0.0
364	5	-7.596451E-04	3.421225E-04	6.532922E-03	0.0	-3.894130E-04	0.0
365	5	4.632980E-03	-8.175431E-04	1.025845E-03	0.0	-1.274603E-03	0.0
366	5	-7.650161E-04	2.595761E-04	8.194733E-03	0.0	-3.847321E-04	0.0
367	5	4.612915E-03	-9.369482E-04	-1.426808E-03	0.0	-1.179445E-03	0.0
368	5	-1.469618E-03	5.923719E-04	6.339725E-03	0.0	-5.534675E-04	0.0
369	5	4.593018E-03	-1.053146E-03	-3.697419E-03	0.0	-1.092512E-03	0.0
370	5	-7.672548E-04	1.782052E-04	9.890143E-03	0.0	-3.870395E-04	0.0
371	5	4.573323E-03	-1.167117E-03	-5.802147E-03	0.0	-1.013519E-03	0.0
372	5	-2.395138E-03	8.298922E-04	6.335080E-03	0.0	-6.754387E-04	0.0
373	5	4.554801E-03	-1.274255E-03	-7.662214E-03	0.0	-9.455904E-04	0.0
375	5	4.535459E-03	-1.386857E-03	-9.487927E-03	0.0	-8.813450E-04	0.0
376	5	-3.481561E-03	1.068611E-03	6.330162E-03	0.0	-7.686741E-04	0.0
377	5	4.516199E-03	-1.500372E-03	-1.119241E-02	0.0	-8.243290E-04	0.0
379	5	4.496895E-03	-1.615977E-03	-1.278993E-02	0.0	-7.743472E-04	0.0
380	5	-4.688852E-03	1.308616E-03	6.325271E-03	0.0	-8.372979E-04	0.0
381	5	4.477363E-03	-1.734917E-03	-1.429438E-02	0.0	-7.312291E-04	0.0
383	5	4.457366E-03	-1.858522E-03	-1.571933E-02	0.0	-6.948307E-04	0.0
384	5	-5.983233E-03	1.549911E-03	6.320614E-03	0.0	-8.854759E-04	0.0
385	5	4.436582E-03	-1.988219E-03	-1.707810E-02	0.0	-6.650349E-04	0.0
387	5	4.414625E-03	-2.125547E-03	-1.838381E-02	0.0	-6.417544E-04	0.0
388	5	-7.337067E-03	1.792444E-03	6.316334E-03	0.0	-9.172163E-04	0.0
389	5	4.391015E-03	-2.272175E-03	-1.964943E-02	0.0	-6.249330E-04	0.0
391	5	4.366528E-03	-2.421741E-03	-2.082637E-02	0.0	-6.149153E-04	0.0
392	5	-8.728527E-03	2.036120E-03	6.312504E-03	0.0	-9.362353E-04	0.0
393	5	4.337911E-03	-2.591883E-03	-2.205086E-02	0.0	-6.106587E-04	0.0
395	5	4.305560E-03	-2.777202E-03	-2.327334E-02	0.0	-6.129036E-04	0.0
396	5	-1.014109E-02	2.280820E-03	6.309170E-03	0.0	-9.458764E-04	0.0
397	5	4.268497E-03	-2.980098E-03	-2.450687E-02	0.0	-6.217447E-04	0.0
399	5	4.225560E-03	-3.203231E-03	-2.576481E-02	0.0	-6.373243E-04	0.0
400	5	-1.156294E-02	2.526415E-03	6.306335E-03	0.0	-9.490671E-04	0.0
404	5	-1.298632E-02	2.772768E-03	6.303988E-03	0.0	-9.483043E-04	0.0
408	5	-1.440692E-02	3.019746E-03	6.302115E-03	0.0	-9.456584E-04	0.0
412	5	-1.582319E-02	3.267216E-03	6.300684E-03	0.0	-9.427876E-04	0.0
416	5	-1.723581E-02	3.515051E-03	6.299675E-03	0.0	-9.409562E-04	0.0
420	5	-1.864703E-02	3.763129E-03	6.299078E-03	0.0	-9.410502E-04	0.0
424	5	-2.006019E-02	4.011326E-03	6.298881E-03	0.0	-9.435895E-04	0.0
428	5	-2.147910E-02	4.259519E-03	6.299101E-03	0.0	-9.487302E-04	0.0
94	6	0.0	0.0	0.0	0.0	0.0	0.0
96	6	7.784562E-05	-2.256411E-05	2.719529E-06	0.0	8.220800E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
98	6	2.572739E-04	-4.808561E-05	6.380420E-05	0.0	1.456227E-04	0.0
100	6	5.134717E-04	-7.654233E-05	1.689255E-04	0.0	1.923472E-04	0.0
102	6	8.245527E-04	-1.078665E-04	3.054861E-04	0.0	2.243641E-04	0.0
104	6	1.171209E-03	-1.419699E-04	4.624007E-04	0.0	2.434876E-04	0.0
106	6	1.536533E-03	-1.787347E-04	6.300013E-04	0.0	2.513239E-04	0.0
108	6	1.905747E-03	-2.160479E-04	7.998750E-04	0.0	2.492720E-04	0.0
110	6	2.265827E-03	-2.597973E-04	9.646327E-04	0.0	2.385203E-04	0.0
112	6	2.605274E-03	-3.038861E-04	1.117795E-03	0.0	2.200658E-04	0.0
114	6	2.928205E-03	-3.582404E-04	1.282336E-03	0.0	2.213281E-04	0.0
116	6	3.271466E-03	-4.060862E-04	1.438434E-03	0.0	2.436350E-04	0.0
118	6	3.642850E-03	-4.561094E-04	1.610914E-03	0.0	2.618402E-04	0.0
120	6	4.037187E-03	-5.082304E-04	1.796802E-03	0.0	2.767239E-04	0.0
122	6	4.450299E-03	-5.623598E-04	1.993698E-03	0.0	2.889351E-04	0.0
124	6	4.878826E-03	-6.184042E-04	2.199685E-03	0.0	2.989871E-04	0.0
126	6	5.320016E-03	-6.762615E-04	2.413189E-03	0.0	3.072477E-04	0.0
128	6	5.771529E-03	-7.358259E-04	2.632873E-03	0.0	3.139290E-04	0.0
130	6	6.231204E-03	-7.969693E-04	2.857509E-03	0.0	3.190800E-04	0.0
132	6	6.696831E-03	-8.596424E-04	3.085841E-03	0.0	3.225862E-04	0.0
134	6	7.165939E-03	-9.236211E-04	3.316471E-03	0.0	3.241755E-04	0.0
136	6	7.635545E-03	-9.889985E-04	3.547712E-03	0.0	3.234160E-04	0.0
138	6	8.101959E-03	-1.055491E-03	3.777470E-03	0.0	3.197149E-04	0.0
140	6	8.560549E-03	-1.123063E-03	4.003126E-03	0.0	3.123223E-04	0.0
142	6	9.005513E-03	-1.191627E-03	4.221402E-03	0.0	3.003427E-04	0.0
144	6	9.429708E-03	-1.261119E-03	4.428282E-03	0.0	2.827570E-04	0.0
146	6	9.824488E-03	-1.331488E-03	4.618898E-03	0.0	2.584464E-04	0.0
148	6	1.017954E-02	-1.402711E-03	4.787456E-03	0.0	2.262237E-04	0.0
150	6	1.047782E-02	-1.516571E-03	4.959650E-03	0.0	2.168005E-04	0.0
152	6	1.080532E-02	-1.588291E-03	5.114760E-03	0.0	2.299186E-04	0.0
154	6	1.114479E-02	-1.661207E-03	5.277514E-03	0.0	2.343287E-04	0.0
156	6	1.148378E-02	-1.735359E-03	5.440813E-03	0.0	2.296624E-04	0.0
158	6	1.180931E-02	-1.810788E-03	5.597290E-03	0.0	2.156089E-04	0.0
160	6	1.210803E-02	-1.887578E-03	5.739417E-03	0.0	1.919462E-04	0.0
162	6	1.236637E-02	-1.965818E-03	5.859565E-03	0.0	1.585802E-04	0.0
164	6	1.257071E-02	-2.045657E-03	5.950127E-03	0.0	1.156046E-04	0.0
166	6	1.270769E-02	-2.127291E-03	6.003715E-03	0.0	6.339054E-05	0.0
168	6	1.276475E-02	-2.210987E-03	6.013416E-03	0.0	2.693547E-06	0.0
170	6	1.273069E-02	-2.297119E-03	5.973171E-03	0.0	-6.519651E-05	0.0
172	6	1.259658E-02	-2.386134E-03	5.878266E-03	0.0	-1.382925E-04	0.0
174	6	1.235685E-02	-2.478603E-03	5.725943E-03	0.0	-2.137200E-04	0.0
176	6	1.201065E-02	-2.575216E-03	5.516212E-03	0.0	-2.874946E-04	0.0
178	6	1.156365E-02	-2.676785E-03	5.252823E-03	0.0	-3.542830E-04	0.0
180	6	1.103006E-02	-2.784270E-03	4.944425E-03	0.0	-4.071414E-04	0.0
182	6	1.043506E-02	-2.898733E-03	4.605949E-03	0.0	-4.372480E-04	0.0
183	6	1.200865E-02	1.937774E-03	-8.530110E-03	0.0	7.151586E-04	0.0
184	6	9.817697E-03	-3.021349E-03	4.260208E-03	0.0	-4.336482E-06	0.0
185	6	1.207258E-02	1.237397E-03	-7.100757E-03	0.0	7.148357E-04	0.0
186	6	9.234052E-03	-3.153368E-03	3.939666E-03	0.0	-3.830171E-04	0.0
187	6	1.213004E-02	5.295677E-04	-5.596306E-03	0.0	7.187182E-04	0.0
188	6	8.766104E-03	-3.326500E-03	3.659795E-03	0.0	-2.562667E-04	0.0
189	6	1.217598E-02	-1.233760E-04	-4.151657E-03	0.0	7.266321E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R.

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
190	6	8.535903E-03	-3.483067E-03	3.554356E-03	0.0	-4.054976E-05	0.0
191	6	1.221360E-02	-7.607106E-04	-2.686888E-03	0.0	7.388818E-04	0.0
192	6	8.677181E-03	-3.652807E-03	3.667235E-03	0.0	2.819283E-04	0.0
193	6	1.224294E-02	-1.387555E-03	-1.193074E-03	0.0	7.557196E-04	0.0
194	6	9.286430E-03	-3.519117E-03	3.572718E-03	0.0	5.244738E-04	0.0
195	6	1.226463E-02	-2.040261E-03	4.170500E-04	0.0	7.786544E-04	0.0
196	6	1.057447E-02	-3.398348E-03	3.609736E-03	0.0	6.530175E-04	0.0
197	6	1.227618E-02	-2.662461E-03	2.000651E-03	0.0	8.058478E-04	0.0
198	6	1.227814E-02	-3.291142E-03	3.644177E-03	0.0	8.386462E-04	0.0
286	6	1.514443E-02	-2.955347E-03	3.674874E-03	0.0	9.855684E-04	0.0
288	6	1.783748E-02	-2.616218E-03	3.683130E-03	0.0	6.924968E-04	0.0
290	6	1.914682E-02	-2.279517E-03	3.672336E-03	0.0	1.517029E-04	0.0
292	6	1.859958E-02	-1.910614E-03	3.648805E-03	0.0	-5.096151E-04	0.0
294	6	1.614478E-02	-1.527709E-03	3.621716E-03	0.0	-1.108486E-03	0.0
296	6	1.197603E-02	-1.106062E-03	3.596416E-03	0.0	-1.536316E-03	0.0
298	6	7.140648E-03	-6.787796E-04	3.578953E-03	0.0	-1.620088E-03	0.0
300	6	2.741190E-03	-2.407986E-04	3.568461E-03	0.0	-1.217592E-03	0.0
362	6	-3.884433E-05	7.183042E-05	3.562669E-03	0.0	-7.028987E-04	0.0
363	6	2.716693E-03	-3.211615E-04	1.255180E-03	0.0	-1.097550E-03	0.0
364	6	-1.329800E-03	3.746147E-04	3.558214E-03	0.0	-2.211736E-04	0.0
365	6	2.692584E-03	-3.961574E-04	-8.289847E-04	0.0	-9.883759E-04	0.0
366	6	-1.332114E-03	2.069691E-04	4.499685E-03	0.0	-2.177279E-04	0.0
367	6	2.669013E-03	-4.666536E-04	-2.705177E-03	0.0	-8.894829E-04	0.0
368	6	-1.782754E-03	5.423839E-04	3.433201E-03	0.0	-3.788231E-04	0.0
369	6	2.646101E-03	-5.335261E-04	-4.393402E-03	0.0	-8.003223E-04	0.0
370	6	-1.327822E-03	3.478490E-05	5.460788E-03	0.0	-2.200638E-04	0.0
371	6	2.623938E-03	-5.976658E-04	-5.912609E-03	0.0	-7.203799E-04	0.0
372	6	-2.441068E-03	6.905019E-04	3.428313E-03	0.0	-4.940215E-04	0.0
373	6	2.603630E-03	-6.568965E-04	-7.215656E-03	0.0	-6.525367E-04	0.0
375	6	2.583059E-03	-7.183580E-04	-8.456070E-03	0.0	-5.892257E-04	0.0
376	6	-3.251087E-03	8.399868E-04	3.423278E-03	0.0	-5.817628E-04	0.0
377	6	2.563294E-03	-7.798704E-04	-9.577833E-03	0.0	-5.338225E-04	0.0
379	6	2.544274E-03	-8.424593E-04	-1.059638E-02	0.0	-4.859534E-04	0.0
380	6	-4.174661E-03	9.909326E-04	3.418359E-03	0.0	-6.461116E-04	0.0
381	6	2.525881E-03	-9.072069E-04	-1.152644E-02	0.0	-4.452805E-04	0.0
383	6	2.507943E-03	-9.752742E-04	-1.238210E-02	0.0	-4.115023E-04	0.0
384	6	-5.179752E-03	1.143340E-03	3.413738E-03	0.0	-6.911161E-04	0.0
385	6	2.490219E-03	-1.047897E-03	-1.317687E-02	0.0	-3.843550E-04	0.0
387	6	2.472393E-03	-1.126422E-03	-1.392379E-02	0.0	-3.636132E-04	0.0
388	6	-6.240267E-03	1.297145E-03	3.409529E-03	0.0	-7.206318E-04	0.0
389	6	2.454061E-03	-1.212315E-03	-1.463547E-02	0.0	-3.490925E-04	0.0
391	6	2.435722E-03	-1.302204E-03	-1.529014E-02	0.0	-3.409293E-04	0.0
392	6	-7.335681E-03	1.452242E-03	3.405791E-03	0.0	-7.382082E-04	0.0
393	6	2.414845E-03	-1.407248E-03	-1.596824E-02	0.0	-3.381686E-04	0.0
395	6	2.391616E-03	-1.524925E-03	-1.664676E-02	0.0	-3.413374E-04	0.0
396	6	-8.450519E-03	1.608498E-03	3.402548E-03	0.0	-7.470213E-04	0.0
397	6	2.365125E-03	-1.657433E-03	-1.733754E-02	0.0	-3.504320E-04	0.0
399	6	2.334274E-03	-1.807246E-03	-1.805247E-02	0.0	-3.655031E-04	0.0
400	6	-9.573758E-03	1.765768E-03	3.399796E-03	0.0	-7.498446E-04	0.0
404	6	-1.069824E-02	1.923904E-03	3.397514E-03	0.0	-7.490413E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE   SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
408	6	-1.182006E-02	2.082759E-03	3.395675E-03	0.0	-7.465780E-04	0.0
412	6	-1.293795E-02	2.242191E-03	3.394247E-03	0.0	-7.440418E-04	0.0
416	6	-1.405277E-02	2.402062E-03	3.393208E-03	0.0	-7.426625E-04	0.0
420	6	-1.516696E-02	2.562241E-03	3.392538E-03	0.0	-7.433316E-04	0.0
424	6	-1.628408E-02	2.722597E-03	3.392233E-03	0.0	-7.466145E-04	0.0
428	6	-1.740824E-02	2.882995E-03	3.392301E-03	0.0	-7.527529E-04	0.0
94	7	0.0	0.0	0.0	0.0	0.0	0.0
96	7	4.666737E-05	-9.150224E-06	1.386881E-06	0.0	4.916009E-05	0.0
98	7	1.542262E-04	-2.035196E-05	3.767201E-05	0.0	8.724433E-05	0.0
100	7	3.080906E-04	-3.359253E-05	1.004432E-04	0.0	1.155502E-04	0.0
102	7	4.954657E-04	-4.879110E-05	1.823457E-04	0.0	1.352799E-04	0.0
104	7	7.051085E-04	-6.590661E-05	2.769330E-04	0.0	1.475162E-04	0.0
106	7	9.271982E-04	-8.485574E-05	3.785975E-04	0.0	1.532027E-04	0.0
108	7	1.153155E-03	-1.055521E-04	4.824628E-04	0.0	1.531474E-04	0.0
110	7	1.375404E-03	-1.279203E-04	5.842366E-04	0.0	1.480233E-04	0.0
112	7	1.587222E-03	-1.518945E-04	6.801374E-04	0.0	1.383825E-04	0.0
114	7	1.791431E-03	-1.828927E-04	7.848672E-04	0.0	1.410533E-04	0.0
116	7	2.010807E-03	-2.094123E-04	8.855094E-04	0.0	1.566737E-04	0.0
118	7	2.250197E-03	-2.374399E-04	9.977480E-04	0.0	1.698286E-04	0.0
120	7	2.506491E-03	-2.669212E-04	1.119793E-03	0.0	1.809838E-04	0.0
122	7	2.777169E-03	-2.977946E-04	1.250198E-03	0.0	1.905235E-04	0.0
124	7	3.060195E-03	-3.299946E-04	1.387799E-03	0.0	1.987470E-04	0.0
126	7	3.353877E-03	-3.634491E-04	1.531627E-03	0.0	2.058620E-04	0.0
128	7	3.656756E-03	-3.980829E-04	1.680846E-03	0.0	2.119779E-04	0.0
130	7	3.967449E-03	-4.338182E-04	1.834665E-03	0.0	2.171001E-04	0.0
132	7	4.284505E-03	-4.705756E-04	1.992257E-03	0.0	2.211285E-04	0.0
134	7	4.606266E-03	-5.082786E-04	2.152676E-03	0.0	2.238584E-04	0.0
136	7	4.930697E-03	-5.468479E-04	2.314768E-03	0.0	2.249789E-04	0.0
138	7	5.255271E-03	-5.862061E-04	2.477088E-03	0.0	2.240687E-04	0.0
140	7	5.576778E-03	-6.262795E-04	2.637815E-03	0.0	2.205967E-04	0.0
142	7	5.891189E-03	-6.670016E-04	2.794664E-03	0.0	2.139266E-04	0.0
144	7	6.193515E-03	-7.083211E-04	2.944818E-03	0.0	2.033282E-04	0.0
146	7	6.477684E-03	-7.501978E-04	3.084846E-03	0.0	1.879902E-04	0.0
148	7	6.736405E-03	-7.926116E-04	3.210647E-03	0.0	1.670378E-04	0.0
150	7	6.955698E-03	-8.683379E-04	3.340416E-03	0.0	1.599833E-04	0.0
152	7	7.193837E-03	-9.108097E-04	3.455902E-03	0.0	1.664669E-04	0.0
154	7	7.436324E-03	-9.541421E-04	3.574291E-03	0.0	1.664126E-04	0.0
156	7	7.673822E-03	-9.983706E-04	3.690263E-03	0.0	1.595499E-04	0.0
158	7	7.896584E-03	-1.043538E-03	3.798299E-03	0.0	1.456344E-04	0.0
160	7	8.094564E-03	-1.089726E-03	3.892746E-03	0.0	1.244776E-04	0.0
162	7	8.257505E-03	-1.137037E-03	3.967851E-03	0.0	9.598362E-05	0.0
164	7	8.375075E-03	-1.185617E-03	4.017871E-03	0.0	6.020328E-05	0.0
166	7	8.437153E-03	-1.235674E-03	4.037213E-03	0.0	1.741028E-05	0.0
168	7	8.434180E-03	-1.287479E-03	4.020654E-03	0.0	-3.180707E-05	0.0
170	7	8.357707E-03	-1.341406E-03	3.963642E-03	0.0	-8.642083E-05	0.0
172	7	8.201089E-03	-1.397902E-03	3.862712E-03	0.0	-1.448257E-04	0.0
174	7	7.960387E-03	-1.457535E-03	3.715995E-03	0.0	-2.046769E-04	0.0
176	7	7.635579E-03	-1.520988E-03	3.523890E-03	0.0	-2.627010E-04	0.0
178	7	7.231958E-03	-1.589063E-03	3.289887E-03	0.0	-3.144902E-04	0.0
180	7	6.761920E-03	-1.662702E-03	3.021545E-03	0.0	-3.542742E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE   SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
182	7	6.246991E-03	-1.742952E-03	2.731663E-03	0.0	-3.746841E-04	0.0
183	7	7.898323E-03	1.750935E-03	-9.402122E-03	0.0	6.632928E-04	0.0
184	7	5.720310E-03	-1.830971E-03	2.439654E-03	0.0	-3.665192E-04	0.0
185	7	7.952634E-03	1.214214E-03	-8.078508E-03	0.0	6.611063E-04	0.0
186	7	5.229346E-03	-1.927992E-03	2.173072E-03	0.0	-3.185242E-04	0.0
187	7	8.001134E-03	6.777821E-04	-6.688092E-03	0.0	6.640193E-04	0.0
188	7	4.842538E-03	-2.055631E-03	1.945410E-03	0.0	-2.078505E-04	0.0
189	7	8.039832E-03	1.874213E-04	-5.352922E-03	0.0	6.720263E-04	0.0
190	7	4.660059E-03	-2.176495E-03	1.866495E-03	0.0	-2.362602E-05	0.0
191	7	8.071642E-03	-2.881568E-04	-3.996372E-03	0.0	6.854539E-04	0.0
192	7	4.794564E-03	-2.309909E-03	1.974186E-03	0.0	2.516375E-04	0.0
193	7	8.096732E-03	-7.542528E-04	-2.607252E-03	0.0	7.046666E-04	0.0
194	7	5.342811E-03	-2.247598E-03	1.890269E-03	0.0	4.748825E-04	0.0
195	7	8.115754E-03	-1.239444E-03	-1.100484E-03	0.0	7.315322E-04	0.0
196	7	6.522261E-03	-2.202743E-03	1.925669E-03	0.0	6.055855E-04	0.0
197	7	8.126497E-03	-1.703500E-03	3.938887E-04	0.0	7.640072E-04	0.0
198	7	8.129355E-03	-2.175601E-03	1.960412E-03	0.0	8.037856E-04	0.0
286	7	1.097520E-02	-1.963151E-03	1.994100E-03	0.0	1.006078E-03	0.0
288	7	1.381448E-02	-1.752625E-03	2.007750E-03	0.0	7.654605E-04	0.0
290	7	1.541206E-02	-1.541033E-03	2.003750E-03	0.0	2.698756E-04	0.0
292	7	1.529432E-02	-1.300500E-03	1.988028E-03	0.0	-3.520823E-04	0.0
294	7	1.335843E-02	-1.040631E-03	1.968410E-03	0.0	-9.216582E-04	0.0
296	7	9.802200E-03	-7.449219E-04	1.949931E-03	0.0	-1.329880E-03	0.0
298	7	5.600642E-03	-4.388392E-04	1.937631E-03	0.0	-1.405809E-03	0.0
300	7	1.842431E-03	-1.220490E-04	1.930599E-03	0.0	-1.005996E-03	0.0
362	7	-3.636272E-04	9.166649E-05	1.926356E-03	0.0	-5.270413E-04	0.0
363	7	1.815086E-03	-1.802398E-04	4.334544E-05	0.0	-8.834463E-04	0.0
364	7	-1.264648E-03	2.987324E-04	1.922194E-03	0.0	-1.257313E-04	0.0
365	7	1.788295E-03	-2.326272E-04	-1.611633E-03	0.0	-7.735684E-04	0.0
366	7	-1.264786E-03	1.164075E-04	2.455494E-03	0.0	-1.231131E-04	0.0
367	7	1.762260E-03	-2.800857E-04	-3.058785E-03	0.0	-6.754769E-04	0.0
368	7	-1.552915E-03	4.067509E-04	1.841182E-03	0.0	-2.550399E-04	0.0
369	7	1.737149E-03	-3.234802E-04	-4.320845E-03	0.0	-5.883453E-04	0.0
370	7	-1.256883E-03	-7.381199E-05	2.999838E-03	0.0	-1.250388E-04	0.0
371	7	1.713096E-03	-3.636729E-04	-5.418956E-03	0.0	-5.114055E-04	0.0
372	7	-2.007612E-03	4.944461E-04	1.836624E-03	0.0	-3.471812E-04	0.0
373	7	1.691321E-03	-3.996782E-04	-6.328229E-03	0.0	-4.471040E-04	0.0
375	7	1.669593E-03	-4.361339E-04	-7.161953E-03	0.0	-3.880395E-04	0.0
376	7	-2.583200E-03	5.834722E-04	1.832078E-03	0.0	-4.168090E-04	0.0
377	7	1.649113E-03	-4.719936E-04	-7.885884E-03	0.0	-3.372214E-04	0.0
379	7	1.629863E-03	-5.081943E-04	-8.515961E-03	0.0	-2.940940E-04	0.0
380	7	-3.248534E-03	6.739018E-04	1.827738E-03	0.0	-4.674236E-04	0.0
381	7	1.611773E-03	-5.457182E-04	-9.067051E-03	0.0	-2.581524E-04	0.0
383	7	1.594715E-03	-5.856086E-04	-9.553060E-03	0.0	-2.289423E-04	0.0
384	7	-3.977675E-03	7.657241E-04	1.823729E-03	0.0	-5.024422E-04	0.0
385	7	1.578500E-03	-6.289841E-04	-9.987038E-03	0.0	-2.060584E-04	0.0
387	7	1.562860E-03	-6.770589E-04	-1.038127E-02	0.0	-1.891450E-04	0.0
388	7	-4.749671E-03	8.588710E-04	1.820124E-03	0.0	-5.250708E-04	0.0
389	7	1.547442E-03	-7.311641E-04	-1.074739E-02	0.0	-1.778959E-04	0.0
391	7	1.532592E-03	-7.894903E-04	-1.107925E-02	0.0	-1.722220E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
392	7	-5.548157E-03	9.532375E-04	1.816954E-03	0.0	-5.382271E-04	0.0
393	7	1.516190E-03	-6.597444E-04	-1.142194E-02	0.0	-1.713282E-04	0.0
395	7	1.498305E-03	-9.408961E-04	-1.176793E-02	0.0	-1.754915E-04	0.0
396	7	-6.360915E-03	1.048698E-03	1.814221E-03	0.0	-5.445001E-04	0.0
397	7	1.478063E-03	-1.035028E-03	-1.212721E-02	0.0	-1.846113E-04	0.0
399	7	1.454392E-03	-1.144511E-03	-1.250965E-02	0.0	-1.986443E-04	0.0
400	7	-7.179346E-03	1.145117E-03	1.811910E-03	0.0	-5.461366E-04	0.0
404	7	-7.997967E-03	1.242359E-03	1.809992E-03	0.0	-5.450475E-04	0.0
408	7	-8.813925E-03	1.340290E-03	1.808434E-03	0.0	-5.428239E-04	0.0
412	7	-9.626523E-03	1.438784E-03	1.807205E-03	0.0	-5.407599E-04	0.0
416	7	-1.043680E-02	1.537721E-03	1.806279E-03	0.0	-5.398756E-04	0.0
420	7	-1.124713E-02	1.636983E-03	1.805637E-03	0.0	-5.409354E-04	0.0
424	7	-1.206084E-02	1.736456E-03	1.805274E-03	0.0	-5.444600E-04	0.0
428	7	-1.288188E-02	1.836023E-03	1.805196E-03	0.0	-5.507306E-04	0.0
94	8	0.0	0.0	0.0	0.0	0.0	0.0
96	8	2.782329E-05	-3.780225E-06	9.959322E-07	0.0	2.943458E-05	0.0
98	8	9.223753E-05	-8.927561E-06	2.292289E-05	0.0	5.240491E-05	0.0
100	8	1.847511E-04	-1.542283E-05	6.058959E-05	0.0	6.970153E-05	0.0
102	8	2.979564E-04	-2.322918E-05	1.106437E-04	0.0	8.204578E-05	0.0
104	8	4.253704E-04	-3.229834E-05	1.684730E-04	0.0	9.007791E-05	0.0
106	8	5.613456E-04	-4.257604E-05	2.311571E-04	0.0	9.434752E-05	0.0
108	8	7.009520E-04	-5.400792E-05	2.958979E-04	0.0	9.531737E-05	0.0
110	8	8.398267E-04	-6.654211E-05	3.602281E-04	0.0	9.336515E-05	0.0
112	8	9.740884E-04	-8.013491E-05	4.219636E-04	0.0	8.879232E-05	0.0
114	8	1.105500E-03	-9.849820E-05	4.906191E-04	0.0	9.160693E-05	0.0
116	8	1.247624E-03	-1.137262E-04	5.571037E-04	0.0	1.020935E-04	0.0
118	8	1.403339E-03	-1.299555E-04	6.314423E-04	0.0	1.111275E-04	0.0
120	8	1.570815E-03	-1.471494E-04	7.125824E-04	0.0	1.189863E-04	0.0
122	8	1.748570E-03	-1.652658E-04	7.996741E-04	0.0	1.258962E-04	0.0
124	8	1.935410E-03	-1.842606E-04	8.920331E-04	0.0	1.320310E-04	0.0
126	8	2.130333E-03	-2.040828E-04	9.890872E-04	0.0	1.375073E-04	0.0
128	8	2.332466E-03	-2.246822E-04	1.090334E-03	0.0	1.423810E-04	0.0
130	8	2.540970E-03	-2.460037E-04	1.195291E-03	0.0	1.466423E-04	0.0
132	8	2.754939E-03	-2.679923E-04	1.303440E-03	0.0	1.502148E-04	0.0
134	8	2.973321E-03	-2.905929E-04	1.414178E-03	0.0	1.529550E-04	0.0
136	8	3.194806E-03	-3.137493E-04	1.526757E-03	0.0	1.546492E-04	0.0
138	8	3.417739E-03	-3.374054E-04	1.640229E-03	0.0	1.550107E-04	0.0
140	8	3.640012E-03	-3.615064E-04	1.753391E-03	0.0	1.536774E-04	0.0
142	8	3.858949E-03	-3.860034E-04	1.864720E-03	0.0	1.502131E-04	0.0
144	8	4.071217E-03	-4.108564E-04	1.972328E-03	0.0	1.441126E-04	0.0
146	8	4.272729E-03	-4.360341E-04	2.073898E-03	0.0	1.348070E-04	0.0
148	8	4.458539E-03	-4.615183E-04	2.166637E-03	0.0	1.216728E-04	0.0
150	8	4.617468E-03	-5.124279E-04	2.263258E-03	0.0	1.164300E-04	0.0
152	8	4.787993E-03	-5.377026E-04	2.348218E-03	0.0	1.187312E-04	0.0
154	8	4.958414E-03	-5.635740E-04	2.433326E-03	0.0	1.163787E-04	0.0
156	8	5.122077E-03	-5.900704E-04	2.514804E-03	0.0	1.091791E-04	0.0
158	8	5.272035E-03	-6.172298E-04	2.588724E-03	0.0	9.694519E-05	0.0
160	8	5.401094E-03	-6.451276E-04	2.651051E-03	0.0	7.952063E-05	0.0
162	8	5.501878E-03	-6.738550E-04	2.697661E-03	0.0	5.681193E-05	0.0
164	8	5.566932E-03	-7.035541E-04	2.724417E-03	0.0	2.883277E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
166	8	5.588908E-03	-7.344154E-04	2.727279E-03	0.0	-4.235063E-06	0.0
168	8	5.560860E-03	-7.666897E-04	2.702469E-03	0.0	-4.196780E-05	0.0
170	8	5.476650E-03	-8.007161E-04	2.646706E-03	0.0	-8.360113E-05	0.0
172	8	5.331494E-03	-8.369114E-04	2.557530E-03	0.0	-1.279197E-04	0.0
174	8	5.122676E-03	-8.757864E-04	2.433700E-03	0.0	-1.731259E-04	0.0
176	8	4.850481E-03	-9.179641E-04	2.275732E-03	0.0	-2.166862E-04	0.0
178	8	4.519336E-03	-9.641764E-04	2.086550E-03	0.0	-2.551610E-04	0.0
180	8	4.139215E-03	-1.015279E-03	1.872269E-03	0.0	-2.840154E-04	0.0
182	8	3.727300E-03	-1.072230E-03	1.643152E-03	0.0	-2.974167E-04	0.0
183	8	5.359251E-03	1.465255E-03	-9.074640E-03	0.0	5.875588E-04	0.0
184	8	3.309984E-03	-1.136088E-03	1.414726E-03	0.0	-2.880301E-04	0.0
185	8	5.405132E-03	1.050750E-03	-7.904179E-03	0.0	5.837991E-04	0.0
186	8	2.925126E-03	-1.207988E-03	1.209045E-03	0.0	-2.468145E-04	0.0
187	8	5.445927E-03	6.415283E-04	-6.677192E-03	0.0	5.858100E-04	0.0
188	8	2.626423E-03	-1.302690E-03	1.037376E-03	0.0	-1.572588E-04	0.0
189	8	5.478550E-03	2.712114E-04	-5.498644E-03	0.0	5.937507E-04	0.0
190	8	2.491037E-03	-1.395827E-03	9.840382E-04	0.0	-1.034131E-05	0.0
191	8	5.505648E-03	-8.541602E-05	-4.297994E-03	0.0	6.079844E-04	0.0
192	8	2.609041E-03	-1.500505E-03	1.080430E-03	0.0	2.104818E-04	0.0
193	8	5.527496E-03	-4.336415E-04	-3.062190E-03	0.0	6.289980E-04	0.0
194	8	3.075348E-03	-1.483005E-03	1.010883E-03	0.0	4.082324E-04	0.0
195	8	5.544774E-03	-7.962035E-04	-1.711280E-03	0.0	6.589917E-04	0.0
196	8	4.104637E-03	-1.482872E-03	1.043902E-03	0.0	5.371089E-04	0.0
197	8	5.555484E-03	-1.144527E-03	-3.578777E-04	0.0	6.958186E-04	0.0
198	8	5.559895E-03	-1.501917E-03	1.077906E-03	0.0	7.415174E-04	0.0
286	8	8.283857E-03	-1.368500E-03	1.113042E-03	0.0	9.872350E-04	0.0
288	8	1.113477E-02	-1.239892E-03	1.130613E-03	0.0	7.916999E-04	0.0
290	8	1.287453E-02	-1.106711E-03	1.132145E-03	0.0	3.378941E-04	0.0
292	8	1.302871E-02	-9.463597E-04	1.123108E-03	0.0	-2.457632E-04	0.0
294	8	1.145806E-02	-7.628056E-04	1.110038E-03	0.0	-7.859895E-04	0.0
296	8	8.355714E-03	-5.447506E-04	1.097578E-03	0.0	-1.174769E-03	0.0
298	8	4.632197E-03	-3.131013E-04	1.089804E-03	0.0	-1.244373E-03	0.0
300	8	1.351738E-03	-7.059530E-05	1.085744E-03	0.0	-8.509764E-04	0.0
362	8	-4.438425E-04	8.465264E-05	1.082773E-03	0.0	-4.054189E-04	0.0
363	8	1.322461E-03	-1.173897E-04	-4.906089E-04	0.0	-7.278800E-04	0.0
364	8	-1.092238E-03	2.352610E-04	1.078795E-03	0.0	-7.292371E-05	0.0
365	8	1.293683E-03	-1.579007E-04	-1.835360E-03	0.0	-6.191630E-04	0.0
366	8	-1.091172E-03	5.894223E-05	1.386774E-03	0.0	-7.094213E-05	0.0
367	8	1.265833E-03	-1.930517E-04	-2.976031E-03	0.0	-5.236028E-04	0.0
368	8	-1.281698E-03	3.059707E-04	1.024168E-03	0.0	-1.764727E-04	0.0
369	8	1.239060E-03	-2.237346E-04	-3.937788E-03	0.0	-4.400706E-04	0.0
370	8	-1.081460E-03	-1.271950E-04	1.701043E-03	0.0	-7.245845E-05	0.0
371	8	1.213542E-03	-2.508182E-04	-4.743636E-03	0.0	-3.675274E-04	0.0
372	8	-1.602328E-03	3.574139E-04	1.019883E-03	0.0	-2.477556E-04	0.0
373	8	1.190585E-03	-2.739904E-04	-5.383935E-03	0.0	-3.079188E-04	0.0
375	8	1.167870E-03	-2.965105E-04	-5.944520E-03	0.0	-2.541295E-04	0.0
376	8	-2.015896E-03	4.101428E-04	1.015757E-03	0.0	-3.008991E-04	0.0
377	8	1.146700E-03	-3.179514E-04	-6.406050E-03	0.0	-2.087391E-04	0.0
379	8	1.127088E-03	-3.391886E-04	-6.784588E-03	0.0	-1.710178E-04	0.0
380	8	-2.497468E-03	4.641970E-04	1.011917E-03	0.0	-3.389232E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
381	8	1.108995E-03	-3.611296E-04	-7.094793E-03	0.0	-1.403058E-04	0.0
383	8	1.092341E-03	-3.847305E-04	-7.350087E-03	0.0	-1.160100E-04	0.0
384	8	-3.026546E-03	5.195464E-04	1.008441E-03	0.0	-3.647003E-04	0.0
385	8	1.076959E-03	-4.110124E-04	-7.562757E-03	0.0	-9.760096E-05	0.0
387	8	1.062624E-03	-4.410835E-04	-7.744100E-03	0.0	-8.461090E-05	0.0
388	8	-3.586771E-03	5.761145E-04	1.005365E-03	0.0	-3.808716E-04	0.0
389	8	1.049021E-03	-4.761626E-04	-7.904541E-03	0.0	-7.663183E-05	0.0
391	8	1.036401E-03	-5.153620E-04	-8.046400E-03	0.0	-7.337384E-05	0.0
392	8	-4.165545E-03	6.337967E-04	1.002694E-03	0.0	-3.898025E-04	0.0
393	8	1.022916E-03	-5.642683E-04	-8.193281E-03	0.0	-7.421218E-05	0.0
395	8	1.008567E-03	-6.227200E-04	-8.346010E-03	0.0	-7.919357E-05	0.0
396	8	-4.753597E-03	6.924735E-04	1.000414E-03	0.0	-3.935646E-04	0.0
397	8	9.925033E-04	-6.927045E-04	-8.512691E-03	0.0	-8.813587E-05	0.0
399	8	9.736691E-04	-7.765198E-04	-8.701112E-03	0.0	-1.009141E-04	0.0
400	8	-5.344547E-03	7.520209E-04	9.984979E-04	0.0	-3.939380E-04	0.0
404	8	-5.934473E-03	8.123170E-04	9.969112E-04	0.0	-3.924265E-04	0.0
408	8	-6.521516E-03	8.732458E-04	9.956183E-04	0.0	-3.902793E-04	0.0
412	8	-7.105507E-03	9.346979E-04	9.945864E-04	0.0	-3.885156E-04	0.0
416	8	-7.687662E-03	9.965713E-04	9.937889E-04	0.0	-3.879480E-04	0.0
420	8	-8.270264E-03	1.058768E-03	9.932073E-04	0.0	-3.892011E-04	0.0
424	8	-8.856405E-03	1.121192E-03	9.928346E-04	0.0	-3.927238E-04	0.0
428	8	-9.449713E-03	1.183743E-03	9.926751E-04	0.0	-3.987926E-04	0.0
94	9	0.0	0.0	0.0	0.0	0.0	0.0
96	9	1.690512E-05	-1.771210E-06	9.571904E-07	0.0	1.811473E-05	0.0
98	9	5.643163E-05	-4.435824E-06	1.484320E-05	0.0	3.239102E-05	0.0
100	9	1.135482E-04	-7.979579E-06	3.876320E-05	0.0	4.331616E-05	0.0
102	9	1.838890E-04	-1.237680E-05	7.021388E-05	0.0	5.132942E-05	0.0
104	9	2.636476E-04	-1.759453E-05	1.070185E-04	0.0	5.681615E-05	0.0
106	9	3.495179E-04	-2.359615E-05	1.472938E-04	0.0	6.010299E-05	0.0
108	9	4.386175E-04	-3.034501E-05	1.894062E-04	0.0	6.146095E-05	0.0
110	9	5.283949E-04	-3.780627E-05	2.319128E-04	0.0	6.110694E-05	0.0
112	9	6.165660E-04	-4.595055E-05	2.735320E-04	0.0	5.920946E-05	0.0
114	9	7.041479E-04	-5.738540E-05	3.205938E-04	0.0	6.161969E-05	0.0
116	9	7.990145E-04	-6.653802E-05	3.662156E-04	0.0	6.845959E-05	0.0
118	9	9.028115E-04	-7.633984E-05	4.169981E-04	0.0	7.444408E-05	0.0
120	9	1.014465E-03	-8.676517E-05	4.723242E-04	0.0	7.974180E-05	0.0
122	9	1.133112E-03	-9.778501E-05	5.317000E-04	0.0	8.448883E-05	0.0
124	9	1.258060E-03	-1.093680E-04	5.947296E-04	0.0	8.878805E-05	0.0
126	9	1.388731E-03	-1.214822E-04	6.610823E-04	0.0	9.270674E-05	0.0
128	9	1.524619E-03	-1.340697E-04	7.304670E-04	0.0	9.627400E-05	0.0
130	9	1.665231E-03	-1.471538E-04	8.025989E-04	0.0	9.947816E-05	0.0
132	9	1.810024E-03	-1.606356E-04	8.771662E-04	0.0	1.022653E-04	0.0
134	9	1.958357E-03	-1.744969E-04	9.537998E-04	0.0	1.045385E-04	0.0
136	9	2.109414E-03	-1.886978E-04	1.032031E-03	0.0	1.061553E-04	0.0
138	9	2.262149E-03	-2.031975E-04	1.111260E-03	0.0	1.069246E-04	0.0
140	9	2.415217E-03	-2.179567E-04	1.190713E-03	0.0	1.066042E-04	0.0
142	9	2.566888E-03	-2.329386E-04	1.269405E-03	0.0	1.049006E-04	0.0
144	9	2.714993E-03	-2.481125E-04	1.346099E-03	0.0	1.014692E-04	0.0
146	9	2.856838E-03	-2.634532E-04	1.419268E-03	0.0	9.591698E-05	0.0
148	9	2.989139E-03	-2.789446E-04	1.487049E-03	0.0	8.780559E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
150	9	3.103147E-03	-3.137554E-04	1.558233E-03	0.0	8.380633E-05	0.0
152	9	3.223797E-03	-3.289001E-04	1.620031E-03	0.0	8.362447E-05	0.0
154	9	3.341908E-03	-3.444463E-04	1.680487E-03	0.0	8.022675E-05	0.0
156	9	3.452677E-03	-3.604204E-04	1.736995E-03	0.0	7.347402E-05	0.0
158	9	3.551883E-03	-3.768463E-04	1.786836E-03	0.0	6.322200E-05	0.0
160	9	3.633908E-03	-3.937958E-04	1.827208E-03	0.0	4.934163E-05	0.0
162	9	3.693777E-03	-4.113435E-04	1.855222E-03	0.0	3.174474E-05	0.0
164	9	3.726223E-03	-4.296165E-04	1.867970E-03	0.0	1.041964E-05	0.0
166	9	3.726032E-03	-4.487820E-04	1.862598E-03	0.0	-1.452189E-05	0.0
168	9	3.686254E-03	-4.690595E-04	1.836429E-03	0.0	-4.278656E-05	0.0
170	9	3.608508E-03	-4.907460E-04	1.787143E-03	0.0	-7.382377E-05	0.0
172	9	3.483401E-03	-5.142002E-04	1.713023E-03	0.0	-1.067389E-04	0.0
174	9	3.311072E-03	-5.398716E-04	1.613259E-03	0.0	-1.401889E-04	0.0
176	9	3.091911E-03	-5.683019E-04	1.488369E-03	0.0	-1.722603E-04	0.0
178	9	2.829448E-03	-6.001291E-04	1.340705E-03	0.0	-2.003308E-04	0.0
180	9	2.531462E-03	-6.361010E-04	1.175068E-03	0.0	-2.209135E-04	0.0
182	9	2.211288E-03	-6.770585E-04	9.994733E-04	0.0	-2.294874E-04	0.0
183	9	3.757656E-03	1.194231E-03	-8.279264E-03	0.0	5.085769E-04	0.0
184	9	1.889427E-03	-7.239352E-04	8.260401E-04	0.0	-2.203190E-04	0.0
185	9	3.796503E-03	8.691782E-04	-7.268105E-03	0.0	5.035577E-04	0.0
186	9	1.595376E-03	-7.777363E-04	6.720263E-04	0.0	-1.862816E-04	0.0
187	9	3.830933E-03	5.524731E-04	-6.210554E-03	0.0	5.047803E-04	0.0
188	9	1.370153E-03	-8.482679E-04	5.465758E-04	0.0	-1.161193E-04	0.0
189	9	3.858595E-03	2.689720E-04	-5.194332E-03	0.0	5.125587E-04	0.0
190	9	1.271400E-03	-9.204750E-04	5.125962E-04	0.0	-2.365170E-06	0.0
191	9	3.881912E-03	-2.023901E-06	-4.155677E-03	0.0	5.273072E-04	0.0
192	9	1.369699E-03	-1.002745E-03	5.956700E-04	0.0	1.703379E-04	0.0
193	9	3.901234E-03	-2.656973E-04	-3.080048E-03	0.0	5.496440E-04	0.0
194	9	1.756463E-03	-1.012244E-03	5.399853E-04	0.0	3.435065E-04	0.0
195	9	3.917262E-03	-5.405135E-04	-1.893427E-03	0.0	5.820787E-04	0.0
196	9	2.637675E-03	-1.037272E-03	5.704875E-04	0.0	4.681107E-04	0.0
197	9	3.928147E-03	-8.061293E-04	-6.905263E-04	0.0	6.224487E-04	0.0
198	9	3.934052E-03	-1.081551E-03	6.032453E-04	0.0	6.731411E-04	0.0
286	9	6.499134E-03	-9.593410E-04	6.387946E-04	0.0	9.504044E-04	0.0
288	9	9.291489E-03	-9.232445E-04	6.591026E-04	0.0	7.912198E-04	0.0
290	9	1.108450E-02	-8.402814E-04	6.650111E-04	0.0	3.738082E-04	0.0
292	9	1.140573E-02	-7.308994E-04	6.615287E-04	0.0	-1.746376E-04	0.0
294	9	1.009239E-02	-5.956502E-04	6.540201E-04	0.0	-6.868998E-04	0.0
296	9	7.329453E-03	-4.266007E-04	6.467036E-04	0.0	-1.056864E-03	0.0
298	9	3.971592E-03	-2.418650E-04	6.427695E-04	0.0	-1.120699E-03	0.0
300	9	1.054188E-03	-4.618964E-05	6.411714E-04	0.0	-7.347714E-04	0.0
362	9	-4.393698E-04	7.372173E-05	6.391809E-04	0.0	-3.185044E-04	0.0
363	9	1.023413E-03	-8.661064E-05	-7.029830E-04	0.0	-6.121888E-04	0.0
364	9	-9.176338E-04	1.903337E-04	6.352554E-04	0.0	-4.290829E-05	0.0
365	9	9.932737E-04	-1.202758E-04	-1.818243E-03	0.0	-5.055997E-04	0.0
366	9	-9.160123E-04	2.702107E-05	8.156216E-04	0.0	-4.145713E-05	0.0
367	9	9.640646E-04	-1.481878E-04	-2.734981E-03	0.0	-4.134141E-04	0.0
368	9	-1.047173E-03	2.376064E-04	5.965477E-04	0.0	-1.268585E-04	0.0
369	9	9.360355E-04	-1.712921E-04	-3.480532E-03	0.0	-3.341821E-04	0.0
370	9	-9.055764E-04	-1.470285E-04	9.997590E-04	0.0	-4.265450E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
371	9	9.093951E-04	-1.904875E-04	-4.079461E-03	0.0	-2.665827E-04	0.0
372	9	-1.250961E-03	2.676244E-04	5.924122E-04	0.0	-1.821537E-04	0.0
373	9	8.855232E-04	-2.058863E-04	-4.532740E-03	0.0	-2.120439E-04	0.0
375	9	8.620301E-04	-2.199194E-04	-4.907083E-03	0.0	-1.637796E-04	0.0
376	9	-1.536211E-03	2.987124E-04	5.885572E-04	0.0	-2.225989E-04	0.0
377	9	8.402939E-04	-2.325309E-04	-5.193464E-03	0.0	-1.239255E-04	0.0
379	9	8.203522E-04	-2.445497E-04	-5.407795E-03	0.0	-9.159298E-05	0.0
380	9	-1.942675E-03	3.310733E-04	5.850610E-04	0.0	-2.508720E-04	0.0
381	9	8.021933E-04	-2.568217E-04	-5.564317E-03	0.0	-6.598521E-05	0.0
383	9	7.857510E-04	-2.702272E-04	-5.675744E-03	0.0	-4.639105E-05	0.0
384	9	-2.333982E-03	3.646542E-04	5.819614E-04	0.0	-2.694472E-04	0.0
385	9	7.708967E-04	-2.856997E-04	-5.753469E-03	0.0	-3.217961E-05	0.0
387	9	7.574309E-04	-3.042500E-04	-5.807679E-03	0.0	-2.279502E-05	0.0
388	9	-2.747285E-03	3.993667E-04	5.792652E-04	0.0	-2.805479E-04	0.0
389	9	7.450692E-04	-3.269925E-04	-5.847540E-03	0.0	-1.775190E-05	0.0
391	9	7.340033E-04	-3.536153E-04	-5.879641E-03	0.0	-1.659976E-05	0.0
392	9	-3.172869E-03	4.351025E-04	5.769576E-04	0.0	-2.861260E-04	0.0
393	9	7.225801E-04	-3.882766E-04	-5.914543E-03	0.0	-1.887410E-05	0.0
395	9	7.107563E-04	-4.313526E-04	-5.957324E-03	0.0	-2.443066E-05	0.0
396	9	-3.603747E-03	4.717454E-04	5.750107E-04	0.0	-2.878637E-04	0.0
397	9	6.977106E-04	-4.847297E-04	-6.014291E-03	0.0	-3.302614E-05	0.0
399	9	6.824024E-04	-5.506326E-04	-6.091326E-03	0.0	-4.447164E-05	0.0
400	9	-4.035257E-03	5.091792E-04	5.733883E-04	0.0	-2.871861E-04	0.0
404	9	-4.464697E-03	5.472929E-04	5.720519E-04	0.0	-2.852851E-04	0.0
408	9	-4.890993E-03	5.859637E-04	5.709631E-04	0.0	-2.831439E-04	0.0
412	9	-5.314410E-03	6.251570E-04	5.700889E-04	0.0	-2.815637E-04	0.0
416	9	-5.736291E-03	6.647259E-04	5.694018E-04	0.0	-2.811879E-04	0.0
420	9	-6.158832E-03	7.046084E-04	5.688828E-04	0.0	-2.825197E-04	0.0
424	9	-6.584894E-03	7.447237E-04	5.685238E-04	0.0	-2.859342E-04	0.0
428	9	-7.017802E-03	7.849690E-04	5.683270E-04	0.0	-2.916832E-04	0.0
94	10	0.0	0.0	0.0	0.0	0.0	0.0
96	10	1.062148E-05	-1.061770E-06	1.002404E-06	0.0	1.163594E-05	0.0
98	10	3.584377E-05	-2.701875E-06	1.035415E-05	0.0	2.090828E-05	0.0
100	10	7.257391E-05	-4.910848E-06	2.627711E-05	0.0	2.812599E-05	0.0
102	10	1.181401E-04	-7.671460E-06	4.724077E-05	0.0	3.356530E-05	0.0
104	10	1.702213E-04	-1.096150E-05	7.191881E-05	0.0	3.746685E-05	0.0
106	10	2.268070E-04	-1.475615E-05	9.916721E-05	0.0	4.003292E-05	0.0
108	10	2.861491E-04	-1.903053E-05	1.279958E-04	0.0	4.142967E-05	0.0
110	10	3.467002E-04	-2.376067E-05	1.575301E-04	0.0	4.178818E-05	0.0
112	10	4.070734E-04	-2.892618E-05	1.869922E-04	0.0	4.120787E-05	0.0
114	10	4.677835E-04	-3.642622E-05	2.207302E-04	0.0	4.305944E-05	0.0
116	10	5.332795E-04	-4.218770E-05	2.532611E-04	0.0	4.739827E-05	0.0
118	10	6.044602E-04	-4.836380E-05	2.890872E-04	0.0	5.122868E-05	0.0
120	10	6.806909E-04	-5.493553E-05	3.278449E-04	0.0	5.465654E-05	0.0
122	10	7.614684E-04	-6.188222E-05	3.692470E-04	0.0	5.776636E-05	0.0
124	10	8.463962E-04	-6.918216E-05	4.130679E-04	0.0	6.062124E-05	0.0
126	10	9.351459E-04	-7.681169E-05	4.591204E-04	0.0	6.326166E-05	0.0
128	10	1.027433E-03	-8.474565E-05	5.072409E-04	0.0	6.570408E-05	0.0
130	10	1.122979E-03	-9.295781E-05	5.572673E-04	0.0	6.793940E-05	0.0
132	10	1.221471E-03	-1.014211E-04	6.090202E-04	0.0	6.993183E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE

SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
134	10	1.322530E-03	-1.101065E-04	6.622814E-04	0.0	7.161802E-05	0.0
136	10	1.425666E-03	-1.189916E-04	7.167675E-04	0.0	7.290495E-05	0.0
138	10	1.530238E-03	-1.290410E-04	7.721086E-04	0.0	7.366756E-05	0.0
140	10	1.635408E-03	-1.372276E-04	8.278219E-04	0.0	7.374630E-05	0.0
142	10	1.740085E-03	-1.465240E-04	8.632822E-04	0.0	7.294570E-05	0.0
144	10	1.842586E-03	-1.559062E-04	9.376977E-04	0.0	7.103353E-05	0.0
146	10	1.942053E-03	-1.653532E-04	9.900755E-04	0.0	6.774061E-05	0.0
148	10	2.035453E-03	-1.748496E-04	1.039194E-03	0.0	6.276114E-05	0.0
150	10	2.116344E-03	-1.990583E-04	1.091058E-03	0.0	5.959168E-05	0.0
152	10	2.200516E-03	-2.061585E-04	1.135422E-03	0.0	5.799846E-05	0.0
154	10	2.280917E-03	-2.175256E-04	1.177701E-03	0.0	5.423385E-05	0.0
156	10	2.354432E-03	-2.271727E-04	1.216136E-03	0.0	4.819506E-05	0.0
158	10	2.417780E-03	-2.371250E-04	1.248886E-03	0.0	3.976905E-05	0.0
160	10	2.467519E-03	-2.474345E-04	1.274034E-03	0.0	2.884876E-05	0.0
162	10	2.500076E-03	-2.581698E-04	1.289598E-03	0.0	1.535362E-05	0.0
164	10	2.511783E-03	-2.694367E-04	1.293562E-03	0.0	-7.427263E-07	0.0
166	10	2.498987E-03	-2.813765E-04	1.283936E-03	0.0	-1.937654E-05	0.0
168	10	2.456202E-03	-2.941762E-04	1.258851E-03	0.0	-4.034910E-05	0.0
170	10	2.386339E-03	-3.080855E-04	1.216689E-03	0.0	-6.326893E-05	0.0
172	10	2.281016E-03	-3.234083E-04	1.156268E-03	0.0	-8.748444E-05	0.0
174	10	2.140979E-03	-3.405253E-04	1.077081E-03	0.0	-1.120017E-04	0.0
176	10	1.966645E-03	-3.598947E-04	9.796096E-04	0.0	-1.353880E-04	0.0
178	10	1.760794E-03	-3.820597E-04	8.657237E-04	0.0	-1.556601E-04	0.0
180	10	1.529430E-03	-4.076560E-04	7.391621E-04	0.0	-1.701573E-04	0.0
182	10	1.282811E-03	-4.374033E-04	6.061315E-04	0.0	-1.753993E-04	0.0
183	10	2.714243E-03	9.669450E-04	-7.354986E-03	0.0	4.348981E-04	0.0
184	10	1.036732E-03	-4.721044E-04	4.760223E-04	0.0	-1.669341E-04	0.0
185	10	2.747313E-03	7.078813E-04	-6.492212E-03	0.0	4.288987E-04	0.0
186	10	2.140022E-04	-5.126290E-04	3.622447E-04	0.0	-1.391763E-04	0.0
187	10	2.776554E-03	4.589637E-04	-5.592231E-03	0.0	4.294403E-04	0.0
188	10	6.455695E-04	-5.653193E-04	2.721057E-04	0.0	-6.492629E-05	0.0
189	10	2.800207E-03	2.386874E-04	-4.726999E-03	0.0	4.369814E-04	0.0
190	10	5.736994E-04	-6.213922E-04	2.518303E-04	0.0	2.003125E-06	0.0
191	10	2.820502E-03	2.974007E-05	-3.839324E-03	0.0	4.520009E-04	0.0
192	10	6.532993E-04	-6.860690E-04	3.221210E-04	0.0	1.357223E-04	0.0
193	10	2.837842E-03	-1.729098E-04	-2.913512E-03	0.0	4.752548E-04	0.0
194	10	9.712146E-04	-7.114508E-04	2.782422E-04	0.0	2.872264E-04	0.0
195	10	2.852942E-03	-3.845760E-04	-1.881342E-03	0.0	5.095433E-04	0.0
196	10	1.721840E-03	-7.500728E-04	3.062745E-04	0.0	4.061342E-04	0.0
197	10	2.864049E-03	-5.907670E-04	-8.208598E-04	0.0	5.527642E-04	0.0
198	10	2.871230E-03	-8.073172E-04	3.374915E-04	0.0	6.076579E-04	0.0
286	10	5.271014E-03	-7.592221E-04	3.726787E-04	0.0	9.067715E-04	0.0
288	10	7.971317E-03	-7.178662E-04	3.947336E-04	0.0	7.763542E-04	0.0
290	10	9.766329E-03	-6.680253E-04	4.039775E-04	0.0	3.902831E-04	0.0
292	10	1.018887E-02	-5.922299E-04	4.049742E-04	0.0	-1.261958E-04	0.0
294	10	9.061888E-03	-4.888331E-04	4.020554E-04	0.0	-6.122265E-04	0.0
296	10	6.561112E-03	-3.521678E-04	3.990028E-04	0.0	-9.642788E-04	0.0
298	10	3.492154E-03	-1.985418E-04	3.982165E-04	0.0	-1.022845E-03	0.0
300	10	8.596871E-04	-3.403860E-05	3.985751E-04	0.0	-6.448296E-04	0.0
362	10	-4.041675E-04	6.309856E-05	3.972966E-04	0.0	-2.540646E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE

SUBCASE 1

DISPLACEMENT VECTOR

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
363	10	8.278645E-04	-7.060058E-05	-7.666075E-04	0.0	-5.234464E-04	0.0
364	10	-7.625541E-04	1.578657E-04	3.933418E-04	0.0	-2.527249E-05	0.0
365	10	7.966780E-04	-9.996508E-05	-1.706875E-03	0.0	-4.195669E-04	0.0
366	10	-7.607406E-04	1.002531E-05	4.991090E-04	0.0	-2.427709E-05	0.0
367	10	7.664661E-04	-1.232379E-04	-2.455219E-03	0.0	-3.312097E-04	0.0
368	10	-8.546775E-04	1.904409E-04	3.645034E-04	0.0	-9.476233E-05	0.0
369	10	7.375146E-04	-1.414376E-04	-3.040868E-03	0.0	-2.565894E-04	0.0
370	10	-7.502348E-04	-1.487810E-04	6.073939E-04	0.0	-2.524535E-05	0.0
371	10	7.100585E-04	-1.555086E-04	-3.489660E-03	0.0	-1.940999E-04	0.0
372	10	-1.631671E-03	2.071376E-04	3.604337E-04	0.0	-1.381491E-04	0.0
373	10	6.855307E-04	-1.658549E-04	-3.810042E-03	0.0	-1.446568E-04	0.0
375	10	6.614898E-04	-1.743760E-04	-4.055038E-03	0.0	-1.018161E-04	0.0
376	10	-1.262929E-03	2.251033E-04	3.567459E-04	0.0	-1.691366E-04	0.0
377	10	6.393665E-04	-1.812562E-04	-4.222836E-03	0.0	-6.728018E-05	0.0
379	10	6.192133E-04	-1.872856E-04	-4.329003E-03	0.0	-4.001999E-05	0.0
380	10	-1.533499E-03	2.443118E-04	3.534781E-04	0.0	-1.901521E-04	0.0
381	10	6.010332E-04	-1.932549E-04	-4.387159E-03	0.0	-1.912333E-05	0.0
383	10	5.847763E-04	-1.999737E-04	-4.409201E-03	0.0	-3.784961E-06	0.0
384	10	-1.829493E-03	2.646868E-04	3.506364E-04	0.0	-2.033752E-04	0.0
385	10	5.703329E-04	-2.082925E-04	-4.405528E-03	0.0	6.702709E-06	0.0
387	10	5.575255E-04	-2.191274E-04	-4.385211E-03	0.0	1.295813E-05	0.0
388	10	-2.140689E-03	2.861267E-04	3.482052E-04	0.0	-2.107174E-04	0.0
389	10	5.460952E-04	-2.334888E-04	-4.356157E-03	0.0	1.551854E-05	0.0
391	10	5.361924E-04	-2.514326E-04	-4.326779E-03	0.0	1.495121E-05	0.0
392	10	-2.459531E-03	3.085183E-04	3.461537E-04	0.0	-2.138221E-04	0.0
393	10	5.263160E-04	-2.760992E-04	-4.299805E-03	0.0	1.157771E-05	0.0
395	10	5.164004E-04	-3.081633E-04	-4.282143E-03	0.0	5.688624E-06	0.0
396	10	-2.780735E-03	3.317457E-04	3.444436E-04	0.0	-2.140788E-04	0.0
397	10	5.056530E-04	-3.494734E-04	-4.278537E-03	0.0	-2.432970E-06	0.0
399	10	4.930547E-04	-4.021050E-04	-4.293207E-03	0.0	-1.255342E-05	0.0
400	10	-3.100926E-03	3.556984E-04	3.430322E-04	0.0	-2.126468E-04	0.0
404	10	-3.418311E-03	3.802737E-04	3.418771E-04	0.0	-2.104817E-04	0.0
408	10	-3.732398E-03	4.053786E-04	3.409386E-04	0.0	-2.083650E-04	0.0
412	10	-4.043747E-03	4.309306E-04	3.401828E-04	0.0	-2.069306E-04	0.0
416	10	-4.353784E-03	4.568545E-04	3.395819E-04	0.0	-2.066887E-04	0.0
420	10	-4.664615E-03	4.830814E-04	3.391164E-04	0.0	-2.080440E-04	0.0
424	10	-4.978873E-03	5.095436E-04	3.387767E-04	0.0	-2.113081E-04	0.0
428	10	-5.299605E-03	5.361708E-04	3.385635E-04	0.0	-2.167032E-04	0.0
94	11	0.0	0.0	0.0	0.0	0.0	0.0
96	11	6.949978E-06	-8.097990E-07	1.026211E-06	0.0	7.844572E-06	0.0
98	11	2.378483E-05	-1.992225E-06	7.716187E-06	0.0	1.416077E-05	0.0
100	11	4.850655E-05	-3.541652E-06	1.892177E-05	0.0	1.915240E-05	0.0
102	11	7.939563E-05	-5.447570E-06	3.365841E-05	0.0	2.300121E-05	0.0
104	11	1.149626E-04	-7.694535E-06	5.107539E-05	0.0	2.586505E-05	0.0
106	11	1.539216E-04	-1.026583E-05	7.044128E-05	0.0	2.787633E-05	0.0
108	11	1.951584E-04	-1.314420E-05	9.112523E-05	0.0	2.914341E-05	0.0
110	11	2.376893E-04	-1.631273E-05	1.125714E-04	0.0	2.975114E-05	0.0
112	11	2.806338E-04	-1.975658E-05	1.342857E-04	0.0	2.976306E-05	0.0
114	11	3.241887E-04	-2.491138E-05	1.593420E-04	0.0	3.108247E-05	0.0
116	11	3.707695E-04	-2.868880E-05	1.832603E-04	0.0	3.374231E-05	0.0

VESSEL SUBJECTED TO I.P. & JET-LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
118	11	4.206321E-04	-3.272607E-05	2.092114E-04	0.0	3.609578E-05	0.0
120	11	4.739969E-04	-3.701472E-05	2.369796E-04	0.0	3.821170E-05	0.0
122	11	5.299696E-04	-4.153329E-05	2.663985E-04	0.0	4.014441E-05	0.0
124	11	5.885251E-04	-4.626799E-05	2.973406E-04	0.0	4.193420E-05	0.0
126	11	6.494804E-04	-5.120160E-05	3.297026E-04	0.0	4.360669E-05	0.0
128	11	7.126611E-04	-5.631603E-05	3.633962E-04	0.0	4.517236E-05	0.0
130	11	7.779766E-04	-6.159440E-05	3.983343E-04	0.0	4.662563E-05	0.0
132	11	8.451950E-04	-6.701534E-05	4.344182E-04	0.0	4.794404E-05	0.0
134	11	9.141241E-04	-7.256039E-05	4.715249E-04	0.0	4.908761E-05	0.0
136	11	9.844792E-04	-7.820905E-05	5.094903E-04	0.0	4.999716E-05	0.0
138	11	1.055881E-03	-8.393987E-05	5.480938E-04	0.0	5.059245E-05	0.0
140	11	1.127822E-03	-8.973115E-05	5.870429E-04	0.0	5.077015E-05	0.0
142	11	1.199630E-03	-9.556179E-05	6.259512E-04	0.0	5.040200E-05	0.0
144	11	1.270439E-03	-1.014127E-04	6.643222E-04	0.0	4.933339E-05	0.0
146	11	1.339144E-03	-1.072659E-04	7.015243E-04	0.0	4.738194E-05	0.0
148	11	1.404359E-03	-1.131065E-04	7.367679E-04	0.0	4.433637E-05	0.0
150	11	1.460966E-03	-1.301764E-04	7.740813E-04	0.0	4.173185E-05	0.0
152	11	1.518602E-03	-1.356269E-04	8.054250E-04	0.0	3.939164E-05	0.0
154	11	1.571945E-03	-1.412472E-04	8.343738E-04	0.0	3.562345E-05	0.0
156	11	1.618934E-03	-1.470465E-04	8.597723E-04	0.0	3.034814E-05	0.0
158	11	1.657383E-03	-1.530432E-04	8.804002E-04	0.0	2.347516E-05	0.0
160	11	1.684971E-03	-1.592788E-04	8.949728E-04	0.0	1.491531E-05	0.0
162	11	1.699266E-03	-1.658092E-04	9.021487E-04	0.0	4.596633E-06	0.0
164	11	1.697750E-03	-1.727213E-04	9.005524E-04	0.0	-7.513903E-06	0.0
166	11	1.677891E-03	-1.801317E-04	8.888170E-04	0.0	-2.138343E-05	0.0
168	11	1.637263E-03	-1.861944E-04	8.656546E-04	0.0	-3.687867E-05	0.0
170	11	1.573714E-03	-1.971155E-04	8.299530E-04	0.0	-5.372237E-05	0.0
172	11	1.485599E-03	-2.071460E-04	7.809184E-04	0.0	-7.144107E-05	0.0
174	11	1.372097E-03	-2.186004E-04	7.182537E-04	0.0	-8.930083E-05	0.0
176	11	1.233628E-03	-2.318586E-04	6.424012E-04	0.0	-1.062313E-04	0.0
178	11	1.072384E-03	-2.473716E-04	5.548499E-04	0.0	-1.207358E-04	0.0
180	11	8.929987E-04	-2.656698E-04	4.585099E-04	0.0	-1.307885E-04	0.0
182	11	7.033562E-04	-2.873559E-04	3.581871E-04	0.0	-1.337165E-04	0.0
183	11	2.008320E-03	7.229976E-04	-6.430976E-03	0.0	3.684983E-04	0.0
184	11	5.156072E-04	-3.131055E-04	2.611487E-04	0.0	-1.260694E-04	0.0
185	11	2.036608E-03	5.737722E-04	-5.701751E-03	0.0	3.617709E-04	0.0
186	11	3.473640E-04	-3.436552E-04	1.778023E-04	0.0	-1.034796E-04	0.0
187	11	2.061582E-03	3.756566E-04	-4.943393E-03	0.0	3.617222E-04	0.0
188	11	2.217945E-04	-3.828451E-04	1.139258E-04	0.0	-6.178729E-05	0.0
189	11	2.081964E-03	2.024374E-04	-4.213963E-03	0.0	3.689453E-04	0.0
190	11	1.693510E-04	-4.262789E-04	1.030659E-04	0.0	4.132221E-06	0.0
191	11	2.099813E-03	3.941482E-05	-3.462402E-03	0.0	3.839910E-04	0.0
192	11	2.325992E-04	-4.769026E-04	1.619094E-04	0.0	1.071438E-04	0.0
193	11	2.115564E-03	-1.182607E-04	-2.672193E-03	0.0	4.077565E-04	0.0
194	11	4.930622E-04	-5.112027E-04	1.276404E-04	0.0	2.398628E-04	0.0
195	11	2.129937E-03	-2.835195E-04	-1.780595E-03	0.0	4.433084E-04	0.0
196	11	1.132033E-03	-5.564978E-04	1.532626E-04	0.0	3.520998E-04	0.0
197	11	2.197263E-03	-4.460877E-04	-8.506142E-04	0.0	4.886761E-04	0.0
198	11	2.169464E-03	-6.194143E-04	1.827080E-04	0.0	5.469532E-04	0.0
286	11	4.385564E-03	-5.946164E-04	2.168874E-04	0.0	8.598426E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
288	11	6.973941E-03	-5.763414E-04	2.398338E-04	0.0	7.523727E-04	0.0
290	11	8.737914E-03	-5.495236E-04	2.514876E-04	0.0	3.941711E-04	0.0
292	11	9.219460E-03	-4.967316E-04	2.559857E-04	0.0	-9.221306E-05	0.0
294	11	8.234181E-03	-4.153827E-04	2.567533E-04	0.0	-5.527562E-04	0.0
296	11	5.947895E-03	-3.014656E-04	2.571323E-04	0.0	-8.872247E-04	0.0
298	11	3.120623E-03	-1.692296E-04	2.586320E-04	0.0	-9.410139E-04	0.0
300	11	7.234833E-04	-2.761923E-05	2.606635E-04	0.0	-5.720849E-04	0.0
362	11	-3.586372E-04	5.349089E-05	2.598569E-04	0.0	-2.045052E-04	0.0
363	11	6.909836E-04	-6.158696E-05	-7.606606E-04	0.0	-4.526039E-04	0.0
364	11	-6.290057E-04	1.324497E-04	2.558411E-04	0.0	-1.459132E-05	0.0
365	11	6.591164E-04	-4.796843E-05	-1.562324E-03	0.0	-3.519906E-04	0.0
366	11	-6.271880E-04	1.314104E-06	3.167342E-04	0.0	-1.398980E-05	0.0
367	11	6.282695E-04	-1.079902E-04	-2.179609E-03	0.0	-2.678558E-04	0.0
368	11	-6.968582E-04	1.555599E-04	2.333651E-04	0.0	-7.314613E-05	0.0
369	11	5.987524E-04	-1.227547E-04	-2.643311E-03	0.0	-1.980747E-04	0.0
370	11	-6.170224E-04	-1.403602E-04	3.795992E-04	0.0	-1.479811E-05	0.0
371	11	5.708239E-04	-1.332620E-04	-2.980214E-03	0.0	-1.407608E-04	0.0
372	11	-6.337914E-04	1.641186E-04	2.293302E-04	0.0	-1.074856E-04	0.0
373	11	5.459462E-04	-1.401265E-04	-3.204019E-03	0.0	-9.633751E-05	0.0
375	11	5.216498E-04	-1.448937E-04	-3.357616E-03	0.0	-5.871062E-05	0.0
376	11	-1.014078E-03	1.739595E-04	2.257581E-04	0.0	-1.313428E-04	0.0
377	11	4.993938E-04	-1.479048E-04	-3.444249E-03	0.0	-2.917043E-05	0.0
379	11	4.792355E-04	-1.499165E-04	-3.478921E-03	0.0	-6.570758E-06	0.0
380	11	-1.223693E-03	1.850184E-04	2.226540E-04	0.0	-1.469378E-04	0.0
381	11	4.611644E-04	-1.516661E-04	-3.474488E-03	0.0	1.009094E-05	0.0
383	11	4.451994E-04	-1.538947E-04	-3.441931E-03	0.0	2.168822E-05	0.0
384	11	-1.451735E-03	1.971984E-04	2.199998E-04	0.0	-1.562112E-04	0.0
385	11	4.311821E-04	-1.573699E-04	-3.390603E-03	0.0	2.897930E-05	0.0
387	11	4.169711E-04	-1.629129E-04	-3.328445E-03	0.0	3.261949E-05	0.0
388	11	-1.690001E-03	2.103864E-04	2.177620E-04	0.0	-1.608250E-04	0.0
389	11	4.083279E-04	-1.714285E-04	-3.262181E-03	0.0	3.317278E-05	0.0
391	11	3.993735E-04	-1.832015E-04	-3.200608E-03	0.0	3.128024E-05	0.0
392	11	-1.932584E-03	2.244642E-04	2.158978E-04	0.0	-1.621780E-04	0.0
393	11	3.907359E-04	-2.006095E-04	-3.141851E-03	0.0	2.714003E-05	0.0
395	11	3.823389E-04	-2.245328E-04	-3.093284E-03	0.0	2.114476E-05	0.0
396	11	-2.175468E-03	2.393172E-04	2.143608E-04	0.0	-1.614300E-04	0.0
397	11	3.734243E-04	-2.566420E-04	-3.058306E-03	0.0	1.359707E-05	0.0
399	11	3.630056E-04	-2.989655E-04	-3.039756E-03	0.0	4.756795E-06	0.0
400	11	-2.416301E-03	2.548387E-04	2.131036E-04	0.0	-1.595314E-04	0.0
404	11	-2.653896E-03	2.709334E-04	2.120817E-04	0.0	-1.572545E-04	0.0
408	11	-2.888189E-03	2.875174E-04	2.112543E-04	0.0	-1.552230E-04	0.0
412	11	-3.119941E-03	3.045178E-04	2.105869E-04	0.0	-1.539402E-04	0.0
416	11	-3.350588E-03	3.218700E-04	2.100515E-04	0.0	-1.538118E-04	0.0
420	11	-3.582118E-03	3.395160E-04	2.096283E-04	0.0	-1.551641E-04	0.0
424	11	-3.816951E-03	3.573988E-04	2.093059E-04	0.0	-1.582557E-04	0.0
428	11	-4.057851E-03	3.754601E-04	2.090829E-04	0.0	-1.632825E-04	0.0
94	12	0.0	0.0	0.0	0.0	0.0	0.0
96	12	4.750859E-06	-6.950343E-07	1.001038E-06	0.0	5.546490E-06	0.0
98	12	1.651076E-05	-1.630470E-06	6.030237E-06	0.0	1.004750E-05	0.0
100	12	3.391370E-05	-2.803941E-06	1.430261E-05	0.0	1.364443E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
102	12	5.57[illegible]E-05	-4.205015E-06	2.514727E-05	0.0	1.646340E-05	0.0
104	12	6.112089E-05	-5.834625E-06	3.798604E-05	0.0	1.861414E-05	0.0
106	12	1.090420E-04	-7.670293E-06	5.232364E-05	0.0	2.018892E-05	0.0
108	12	1.388003E-04	-9.703400E-06	6.773502E-05	0.0	2.126335E-05	0.0
110	12	1.697360E-04	-1.192159E-05	8.384723E-05	0.0	2.189672E-05	0.0
112	12	2.012816E-04	-1.431370E-05	1.003306E-04	0.0	2.213332E-05	0.0
114	12	2.333850E-04	-1.800164E-05	1.194119E-04	0.0	2.301887E-05	0.0
116	12	2.673401E-04	-2.056048E-05	1.374007E-04	0.0	2.458155E-05	0.0
118	12	3.033206E-04	-2.329634E-05	1.565931E-04	0.0	2.595629E-05	0.0
120	12	3.411144E-04	-2.617962E-05	1.768596E-04	0.0	2.718931E-05	0.0
122	12	3.805303E-04	-2.920441E-05	1.981033E-04	0.0	2.831672E-05	0.0
124	12	4.214460E-04	-3.235682E-05	2.202533E-04	0.0	2.936515E-05	0.0
126	12	4.637626E-04	-3.563031E-05	2.432546E-04	0.0	3.035170E-05	0.0
128	12	5.073997E-04	-3.900583E-05	2.670619E-04	0.0	3.128378E-05	0.0
130	12	5.522803E-04	-4.247183E-05	2.916320E-04	0.0	3.215871E-05	0.0
132	12	5.983163E-04	-4.601449E-05	3.169139E-04	0.0	3.296336E-05	0.0
134	12	6.453944E-04	-4.961985E-05	3.428431E-04	0.0	3.367341E-05	0.0
136	12	6.933575E-04	-5.327286E-05	3.693285E-04	0.0	3.425228E-05	0.0
138	12	7.419898E-04	-5.695755E-05	3.962454E-04	0.0	3.464973E-05	0.0
140	12	7.909948E-04	-6.065733E-05	4.234214E-04	0.0	3.480015E-05	0.0
142	12	8.399708E-04	-6.435567E-05	4.506256E-04	0.0	3.462088E-05	0.0
144	12	8.883893E-04	-6.803875E-05	4.775543E-04	0.0	3.401052E-05	0.0
146	12	9.355641E-04	-7.168486E-05	5.038143E-04	0.0	3.284696E-05	0.0
148	12	9.806205E-04	-7.528544E-05	5.289053E-04	0.0	3.098584E-05	0.0
150	12	1.019695E-03	-8.748748E-05	5.554683E-04	0.0	2.877972E-05	0.0
152	12	1.058333E-03	-9.072594E-05	5.772721E-04	0.0	2.610030E-05	0.0
154	12	1.092564E-03	-9.407733E-05	5.966192E-04	0.0	2.251216E-05	0.0
156	12	1.121063E-03	-9.753485E-05	6.127751E-04	0.0	1.795104E-05	0.0
158	12	1.142406E-03	-1.011142E-04	6.249503E-04	0.0	1.234237E-05	0.0
160	12	1.155055E-03	-1.048472E-04	6.323017E-04	0.0	5.611097E-06	0.0
162	12	1.157378E-03	-1.087781E-04	6.339366E-04	0.0	-2.305878E-06	0.0
164	12	1.147665E-03	-1.129764E-04	6.289294E-04	0.0	-1.144311E-05	0.0
166	12	1.124180E-03	-1.175360E-04	6.163530E-04	0.0	-2.178630E-05	0.0
168	12	1.085253E-03	-1.225613E-04	5.953331E-04	0.0	-3.324593E-05	0.0
170	12	1.029402E-03	-1.282781E-04	5.651186E-04	0.0	-4.562437E-05	0.0
172	12	9.555141E-04	-1.348300E-04	5.251921E-04	0.0	-5.857581E-05	0.0
174	12	8.630785E-04	-1.424916E-04	4.754039E-04	0.0	-7.155571E-05	0.0
176	12	7.525112E-04	-1.515718E-04	4.161596E-04	0.0	-8.376144E-05	0.0
178	12	6.255605E-04	-1.624385E-04	3.486567E-04	0.0	-9.406023E-05	0.0
180	12	4.858279E-04	-1.755250E-04	2.751769E-04	0.0	-1.009058E-04	0.0
182	12	3.394068E-04	-1.913268E-04	1.994613E-04	0.0	-1.022410E-04	0.0
183	12	1.517010E-03	6.365632E-04	-5.568590E-03	0.0	3.101295E-04	0.0
184	12	1.956825E-04	-2.104018E-04	1.271567E-04	0.0	-9.538769E-05	0.0
185	12	1.541335E-03	4.655996E-04	-4.956611E-03	0.0	3.028936E-04	0.0
186	12	6.829835E-05	-2.333612E-04	6.636779E-05	0.0	-7.692575E-05	0.0
187	12	1.562797E-03	3.061444E-04	-4.322439E-03	0.0	3.023341E-04	0.0
188	12	-2.547758E-05	-2.622339E-04	2.162560E-05	0.0	-4.492731E-05	0.0
189	12	1.580506E-03	1.664756E-04	-3.712203E-03	0.0	3.091672E-04	0.0
190	12	-6.411239E-06	-2.956698E-04	1.700960E-05	0.0	4.850422E-06	0.0
191	12	1.596367E-03	3.994638E-05	-3.080431E-03	0.0	3.240206E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
192	12	-1.463189E-05	-3.349916E-04	6.594161E-05	0.0	8.407945E-05	0.0
193	12	1.610838E-03	-8.409318E-05	-2.410087E-03	0.0	3.479326E-04	0.0
194	12	1.988062E-04	-3.738117E-04	3.930654E-05	0.0	2.006952E-04	0.0
195	12	1.624631E-03	-2.147312E-04	-1.643462E-03	0.0	3.842101E-04	0.0
196	12	7.439223E-04	-4.216104E-04	6.262148E-05	0.0	3.057988E-04	0.0
197	12	1.636103E-03	-3.447812E-04	-8.303565E-04	0.0	4.310755E-04	0.0
198	12	1.645155E-03	-4.858566E-04	9.016485E-05	0.0	4.919721E-04	0.0
286	12	3.724942E-03	-4.771184E-04	1.228630E-04	0.0	8.124020E-04	0.0
288	12	6.192219E-03	-4.755196E-04	1.460104E-04	0.0	7.232882E-04	0.0
290	12	7.905234E-03	-4.637702E-04	1.592846E-04	0.0	3.901178E-04	0.0
292	12	8.418344E-03	-4.271411E-04	1.664167E-04	0.0	-6.782101E-05	0.0
294	12	7.544652E-03	-3.616153E-04	1.700486E-04	0.0	-5.036648E-04	0.0
296	12	5.439926E-03	-2.642798E-04	1.730911E-04	0.0	-8.210249E-04	0.0
298	12	2.820966E-03	-1.491830E-04	1.766624E-04	0.0	-6.706353E-04	0.0
300	12	6.232671E-04	-2.385108E-05	1.795224E-04	0.0	-5.119282E-04	0.0
362	12	-3.122485E-04	4.511198E-05	1.789745E-04	0.0	-1.657158E-04	0.0
363	12	5.904131E-04	-5.591614E-05	-7.236670E-04	0.0	-3.948614E-04	0.0
364	12	-5.165329E-04	1.129396E-04	1.748885E-04	0.0	-8.009453E-06	0.0
365	12	5.581987E-04	-8.006050E-05	-1.413302E-03	0.0	-2.978756E-04	0.0
366	12	-5.147965E-04	-2.831083E-06	2.083694E-04	0.0	-7.743163E-06	0.0
367	12	5.270457E-04	-9.764111E-05	-1.926679E-03	0.0	-2.181659E-04	0.0
368	12	-5.681398E-04	1.287181E-04	1.566571E-04	0.0	-5.805014E-05	0.0
369	12	4.972960E-04	-1.098551E-04	-2.295834E-03	0.0	-1.532689E-04	0.0
370	12	-5.052090E-04	-1.286101E-04	2.436643E-04	0.0	-8.442060E-06	0.0
371	12	4.692213E-04	-1.177620E-04	-2.548186E-03	0.0	-1.010286E-04	0.0
372	12	-6.769439E-04	1.321944E-04	1.526528E-04	0.0	-8.535180E-05	0.0
373	12	4.442902E-04	-1.221408E-04	-2.701077E-03	0.0	-6.140610E-05	0.0
375	12	4.200300E-04	-1.242757E-04	-2.789726E-03	0.0	-2.865354E-05	0.0
376	12	-8.197448E-04	1.369497E-04	1.491732E-04	0.0	-1.037426E-04	0.0
377	12	3.979029E-04	-1.246300E-04	-2.820872E-03	0.0	-3.680111E-06	0.0
379	12	3.779638E-04	-1.239237E-04	-2.808803E-03	0.0	1.475333E-05	0.0
380	12	-9.847365E-04	1.428931E-04	1.461976E-04	0.0	-1.152530E-04	0.0
381	12	3.602209E-04	-1.228426E-04	-2.765503E-03	0.0	2.771482E-05	0.0
383	12	3.446334E-04	-1.220601E-04	-2.700977E-03	0.0	3.612162E-05	0.0
384	12	-1.162934E-03	1.499109E-04	1.436882E-04	0.0	-1.216146E-04	0.0
385	12	3.311087E-04	-1.222625E-04	-2.623528E-03	0.0	4.075853E-05	0.0
387	12	3.194956E-04	-1.241762E-04	-2.540008E-03	0.0	4.229468E-05	0.0
388	12	-1.347735E-03	1.578812E-04	1.415981E-04	0.0	-1.242773E-04	0.0
389	12	3.095728E-04	-1.286003E-04	-2.456035E-03	0.0	4.129887E-05	0.0
391	12	3.014372E-04	-1.359522E-04	-2.380012E-03	0.0	3.844821E-05	0.0
392	12	-1.534517E-03	1.666833E-04	1.398755E-04	0.0	-1.244355E-04	0.0
393	12	2.938327E-04	-1.480266E-04	-2.307481E-03	0.0	3.383738E-05	0.0
395	12	2.866797E-04	-1.657915E-04	-2.245531E-03	0.0	2.792147E-05	0.0
396	12	-1.720278E-03	1.762043E-04	1.384682E-04	0.0	-1.230605E-04	0.0
397	12	2.792613E-04	-1.907877E-04	-2.196460E-03	0.0	2.100553E-05	0.0
399	12	2.706330E-04	-2.249177E-04	-2.161995E-03	0.0	1.335945E-05	0.0
400	12	-1.903325E-03	1.863427E-04	1.373261E-04	0.0	-1.209334E-04	0.0
404	12	-2.083016E-03	1.970100E-04	1.364031E-04	0.0	-1.186785E-04	0.0
408	12	-2.259547E-03	2.081307E-04	1.356583E-04	0.0	-1.167943E-04	0.0
412	12	-2.433785E-03	2.196410E-04	1.350567E-04	0.0	-1.156798E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
416	12	-2.607134E-03	2.314861E-04	1.345704E-04	0.0	-1.156579E-04	0.0
420	12	-2.781434E-03	2.436176E-04	1.341788E-04	0.0	-1.169925E-04	0.0
424	12	-2.958399E-03	2.559594E-04	1.338692E-04	0.0	-1.199001E-04	0.0
428	12	-3.142012E-03	2.685532E-04	1.336378E-04	0.0	-1.245551E-04	0.0
94	13	0.0	0.0	0.0	0.0	0.0	0.0
96	13	3.381819E-06	-6.074605E-07	9.305936E-07	0.0	4.080446E-06	0.0
98	13	1.192621E-05	-1.371215E-06	4.838369E-06	0.0	7.406321E-06	0.0
100	13	2.464768E-05	-2.290986E-06	1.115692E-05	0.0	1.008110E-05	0.0
102	13	4.070392E-05	-3.362830E-06	1.940384E-05	0.0	1.219723E-05	0.0
104	13	5.936909E-05	-4.580212E-06	2.916467E-05	0.0	1.383538E-05	0.0
106	13	8.002177E-05	-5.934960E-06	4.008596E-05	0.0	1.506367E-05	0.0
108	13	1.021294E-04	-7.418216E-06	5.186623E-05	0.0	1.593812E-05	0.0
110	13	1.252269E-04	-9.020733E-06	6.424265E-05	0.0	1.650296E-05	0.0
112	13	1.489034E-04	-1.073368E-05	7.698454E-05	0.0	1.679135E-05	0.0
114	13	1.730673E-04	-1.345669E-05	9.173685E-05	0.0	1.735552E-05	0.0
116	13	1.982806E-04	-1.524248E-05	1.054672E-04	0.0	1.822395E-05	0.0
118	13	2.246054E-04	-1.714531E-05	1.198745E-04	0.0	1.897493E-05	0.0
120	13	2.518990E-04	-1.913770E-05	1.348801E-04	0.0	1.964021E-05	0.0
122	13	2.800582E-04	-2.121621E-05	1.504274E-04	0.0	2.024439E-05	0.0
124	13	3.090103E-04	-2.337166E-05	1.664777E-04	0.0	2.080551E-05	0.0
126	13	3.387022E-04	-2.559462E-05	1.830031E-04	0.0	2.133532E-05	0.0
128	13	3.690945E-04	-2.787536E-05	1.999823E-04	0.0	2.183940E-05	0.0
130	13	4.001511E-04	-3.020388E-05	2.173959E-04	0.0	2.231708E-05	0.0
132	13	4.318296E-04	-3.256999E-05	2.352209E-04	0.0	2.276117E-05	0.0
134	13	4.640748E-04	-3.496338E-05	2.534259E-04	0.0	2.315758E-05	0.0
136	13	4.968047E-04	-3.737277E-05	2.719648E-04	0.0	2.348446E-05	0.0
138	13	5.299021E-04	-3.978595E-05	2.907696E-04	0.0	2.371123E-05	0.0
140	13	5.632003E-04	-4.218999E-05	3.097444E-04	0.0	2.379726E-05	0.0
142	13	5.964676E-04	-4.457148E-05	3.287552E-04	0.0	2.369043E-05	0.0
144	13	6.293906E-04	-4.691699E-05	3.476224E-04	0.0	2.332538E-05	0.0
146	13	6.615538E-04	-4.921235E-05	3.661076E-04	0.0	2.262165E-05	0.0
148	13	6.924162E-04	-5.144329E-05	3.839005E-04	0.0	2.148181E-05	0.0
150	13	7.190630E-04	-6.028698E-05	4.026836E-04	0.0	1.957123E-05	0.0
152	13	7.443679E-04	-6.220452E-05	4.176493E-04	0.0	1.680087E-05	0.0
154	13	7.653823E-04	-6.418566E-05	4.302347E-04	0.0	1.347783E-05	0.0
156	13	7.812872E-04	-6.622861E-05	4.399924E-04	0.0	9.546974E-06	0.0
158	13	7.911769E-04	-6.834170E-05	4.464281E-04	0.0	4.944947E-06	0.0
160	13	7.940528E-04	-7.054776E-05	4.490006E-04	0.0	-3.921582E-07	0.0
162	13	7.888328E-04	-7.288107E-05	4.471261E-04	0.0	-6.519178E-06	0.0
164	13	7.743658E-04	-7.539573E-05	4.401898E-04	0.0	-1.346915E-05	0.0
166	13	7.494737E-04	-7.816569E-05	4.275716E-04	0.0	-2.123811E-05	0.0
168	13	7.130164E-04	-8.128911E-05	4.086855E-04	0.0	-2.976488E-05	0.0
170	13	6.639874E-04	-8.489718E-05	3.830348E-04	0.0	-3.890639E-05	0.0
172	13	6.016481E-04	-8.915142E-05	3.502963E-04	0.0	-4.840668E-05	0.0
174	13	5.257109E-04	-9.425446E-05	3.104219E-04	0.0	-5.785753E-05	0.0
176	13	4.365435E-04	-1.004527E-04	2.637852E-04	0.0	-6.665166E-05	0.0
178	13	3.356845E-04	-1.080407E-04	2.113633E-04	0.0	-7.392526E-05	0.0
180	13	2.258494E-04	-1.173661E-04	1.549600E-04	0.0	-7.849054E-05	0.0
182	13	1.118341E-04	-1.288284E-04	9.753238E-05	0.0	-7.875577E-05	0.0
183	13	1.166518E-03	5.205395E-04	-4.790969E-03	0.0	2.595854E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
184	13	9.471592E-07	-1.426792E-04	4.348588E-05	0.0	-7.263268E-05	0.0
185	13	1.187546E-03	3.793377E-04	-4.280381E-03	0.0	2.520292E-04	0.0
186	13	-9.616739E-05	-1.600145E-04	-6.197653E-07	0.0	-5.743293E-05	0.0
187	13	1.206107E-03	2.497290E-04	-3.753477E-03	0.0	2.510287E-04	0.0
188	13	-1.666677E-04	-1.809513E-04	-3.186188E-05	0.0	-3.283915E-05	0.0
189	13	1.221620E-03	1.392968E-04	-3.248301E-03	0.0	2.574120E-04	0.0
190	13	-1.956809E-04	-2.064392E-04	-3.254374E-05	0.0	4.660107E-06	0.0
191	13	1.235860E-03	3.703692E-05	-2.718441E-03	0.0	2.718850E-04	0.0
192	13	-1.576341E-04	-2.366378E-04	7.914563E-06	0.0	6.562484E-05	0.0
193	13	1.249291E-03	-6.149190E-05	-2.152591E-03	0.0	2.956225E-04	0.0
194	13	1.756706E-05	-2.771928E-04	-1.271821E-05	0.0	1.684858E-04	0.0
195	13	1.262614E-03	-1.659275E-04	-1.495679E-03	0.0	3.321457E-04	0.0
196	13	4.842132E-04	-3.249818E-04	8.421172E-06	0.0	2.663564E-04	0.0
197	13	1.274215E-03	-2.713653E-04	-7.859105E-04	0.0	3.799195E-04	0.0
198	13	1.283923E-03	-3.879860E-04	3.401229E-05	0.0	4.427314E-04	0.0
286	13	3.217186E-03	-3.902989E-04	6.490498E-05	0.0	7.659486E-04	0.0
288	13	5.560469E-03	-3.997898E-04	8.771660E-05	0.0	6.915650E-04	0.0
290	13	7.210802E-03	-3.988766E-04	1.019581E-04	0.0	3.810562E-04	0.0
292	13	7.737391E-03	-3.738150E-04	1.109806E-04	0.0	-4.995173E-05	0.0
294	13	6.954338E-03	-3.199943E-04	1.167568E-04	0.0	-4.619509E-04	0.0
296	13	5.007342E-03	-2.353591E-04	1.217837E-04	0.0	-7.627972E-04	0.0
298	13	2.571886E-03	-1.331482E-04	1.266842E-04	0.0	-8.088623E-04	0.0
300	13	5.464414E-04	-2.121794E-05	1.301832E-04	0.0	-4.613702E-04	0.0
362	13	-2.692286E-04	3.799147E-05	1.297125E-04	0.0	-1.350408E-04	0.0
363	13	5.135138E-04	-5.176193E-05	-6.744284E-04	0.0	-3.470604E-04	0.0
364	13	-4.232244E-04	9.644032E-05	1.255573E-04	0.0	-3.915045E-06	0.0
365	13	4.812393E-04	-7.413857E-05	-1.272148E-03	0.0	-2.539023E-04	0.0
366	13	-4.215993E-04	-4.498571E-06	1.421695E-04	0.0	-3.928302E-06	0.0
367	13	4.500784E-04	-8.978511E-05	-1.701978E-03	0.0	-1.786694E-04	0.0
368	13	-4.636359E-04	1.074292E-04	1.102571E-04	0.0	-4.712197E-05	0.0
369	13	4.203946E-04	-1.000168E-04	-1.996905E-03	0.0	-1.185678E-04	0.0
370	13	-4.127121E-04	-1.146108E-04	1.606389E-04	0.0	-4.553173E-06	0.0
371	13	3.924679E-04	-1.059559E-04	-2.184720E-03	0.0	-7.118437E-05	0.0
372	13	-5.516659E-04	1.077323E-04	1.062924E-04	0.0	-6.881783E-05	0.0
373	13	3.677548E-04	-1.085080E-04	-2.285205E-03	0.0	-3.605506E-05	0.0
375	13	3.437996E-04	-1.067729E-04	-2.327672E-03	0.0	-7.766601E-06	0.0
376	13	-6.663075E-04	1.092949E-04	1.028979E-04	0.0	-8.293922E-05	0.0
377	13	3.220462E-04	-1.072966E-04	-2.321203E-03	0.0	1.311642E-05	0.0
379	13	3.025406E-04	-1.047657E-04	-2.279266E-03	0.0	2.790257E-05	0.0
380	13	-7.976249E-04	1.120045E-04	1.000316E-04	0.0	-9.133364E-05	0.0
381	13	2.852820E-04	-1.018154E-04	-2.212913E-03	0.0	3.770243E-05	0.0
383	13	2.702249E-04	-9.905375E-05	-2.131151E-03	0.0	4.345475E-05	0.0
384	13	-9.382195E-04	1.157357E-04	9.764089E-05	0.0	-9.554092E-05	0.0
385	13	2.572762E-04	-9.708786E-05	-2.041262E-03	0.0	4.595015E-05	0.0
387	13	2.462904E-04	-9.655232E-05	-1.949077E-03	0.0	4.585223E-05	0.0
388	13	-1.082789E-03	1.203610E-04	9.566853E-05	0.0	-9.682254E-05	0.0
389	13	2.370596E-04	-9.814225E-05	-1.859210E-03	0.0	4.371688E-05	0.0
391	13	2.296601E-04	-1.023401E-04	-1.779267E-03	0.0	4.022631E-05	0.0
392	13	-1.227736E-03	1.257598E-04	9.405657E-05	0.0	-9.619647E-05	0.0
393	13	2.229425E-04	-1.104900E-04	-1.703480E-03	0.0	3.539072E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
395	13	2.168289E-04	-1.235794E-04	-1.638277E-03	0.0	2.969484E-05	0.0
396	13	-1.370533E-03	1.318226E-04	9.274922E-05	0.0	-9.447365E-05	0.0
397	13	2.106479E-04	-1.430105E-04	-1.585077E-03	0.0	2.343273E-05	0.0
399	13	2.035063E-04	-1.705462E-04	-1.544745E-03	0.0	1.687148E-05	0.0
400	13	-1.510931E-03	1.384535E-04	9.169472E-05	0.0	-9.229413E-05	0.0
404	13	-1.647740E-03	1.455725E-04	9.084045E-05	0.0	-9.016061E-05	0.0
408	13	-1.781635E-03	1.531115E-04	9.016362E-05	0.0	-8.846901E-05	0.0
412	13	-1.913526E-03	1.610158E-04	8.961163E-05	0.0	-8.753447E-05	0.0
416	13	-2.044746E-03	1.692400E-04	8.916239E-05	0.0	-8.761318E-05	0.0
420	13	-2.176980E-03	1.777451E-04	8.879461E-05	0.0	-8.891894E-05	0.0
424	13	-2.312208E-03	1.864947E-04	8.849410E-05	0.0	-9.163465E-05	0.0
428	13	-2.452668E-03	1.954511E-04	8.825441E-05	0.0	-9.591802E-05	0.0
94	14	0.0	0.0	0.0	0.0	0.0	0.0
96	14	2.484169E-06	-5.179035E-07	8.284612E-07	0.0	3.084048E-06	0.0
98	14	8.869090E-06	-1.136780E-06	3.913813E-06	0.0	5.600382E-06	0.0
100	14	1.841385E-05	-1.863666E-06	8.830043E-06	0.0	7.628380E-06	0.0
102	14	3.048820E-05	-2.690481E-06	1.521624E-05	0.0	9.238987E-06	0.0
104	14	4.455096E-05	-3.614904E-06	2.276337E-05	0.0	1.049418E-05	0.0
106	14	6.014129E-05	-4.631151E-06	3.120938E-05	0.0	1.144646E-05	0.0
108	14	7.686703E-05	-5.732703E-06	4.033238E-05	0.0	1.213914E-05	0.0
110	14	9.438826E-05	-6.912533E-06	4.994037E-05	0.0	1.260660E-05	0.0
112	14	1.124073E-04	-8.163671E-06	5.986638E-05	0.0	1.287478E-05	0.0
114	14	1.307892E-04	-1.021766E-05	7.134139E-05	0.0	1.321774E-05	0.0
116	14	1.497325E-04	-1.149598E-05	8.189776E-05	0.0	1.366433E-05	0.0
118	14	1.692268E-04	-1.284299E-05	9.281008E-05	0.0	1.403641E-05	0.0
120	14	1.891885E-04	-1.425086E-05	1.040303E-04	0.0	1.435607E-05	0.0
122	14	2.095491E-04	-1.571262E-05	1.155258E-04	0.0	1.464020E-05	0.0
124	14	2.302691E-04	-1.721935E-05	1.272759E-04	0.0	1.490112E-05	0.0
126	14	2.513204E-04	-1.876563E-05	1.392672E-04	0.0	1.514696E-05	0.0
128	14	2.726850E-04	-2.034350E-05	1.514914E-04	0.0	1.538193E-05	0.0
130	14	2.943473E-04	-2.194548E-05	1.639417E-04	0.0	1.560641E-05	0.0
132	14	3.162897E-04	-2.356393E-05	1.766097E-04	0.0	1.581683E-05	0.0
134	14	3.384873E-04	-2.519168E-05	1.894827E-04	0.0	1.600540E-05	0.0
136	14	3.609008E-04	-2.681832E-05	2.025393E-04	0.0	1.615964E-05	0.0
138	14	3.834695E-04	-2.843612E-05	2.157456E-04	0.0	1.626155E-05	0.0
140	14	4.061044E-04	-3.003408E-05	2.290510E-04	0.0	1.628675E-05	0.0
142	14	4.286761E-04	-3.160110E-05	2.423815E-04	0.0	1.620324E-05	0.0
144	14	4.510055E-04	-3.312549E-05	2.556345E-04	0.0	1.596984E-05	0.0
146	14	4.728476E-04	-3.459430E-05	2.686703E-04	0.0	1.553453E-05	0.0
148	14	4.938752E-04	-3.599355E-05	2.813009E-04	0.0	1.483252E-05	0.0
150	14	5.118775E-04	-4.249654E-05	2.945610E-04	0.0	1.315599E-05	0.0
152	14	5.280282E-04	-4.363120E-05	3.047313E-04	0.0	1.044656E-05	0.0
154	14	5.401364E-04	-4.480155E-05	3.126732E-04	0.0	7.423746E-06	0.0
156	14	5.477219E-04	-4.600310E-05	3.181319E-04	0.0	4.037727E-06	0.0
158	14	5.502268E-04	-4.723953E-05	3.208108E-04	0.0	2.330676E-07	0.0
160	14	5.470151E-04	-4.852726E-05	3.203717E-04	0.0	-4.045427E-06	0.0
162	14	5.373766E-04	-4.989156E-05	3.164390E-04	0.0	-8.845253E-06	0.0
164	14	6.206425E-04	-5.137348E-05	3.086093E-04	0.0	-1.419643E-05	0.0
166	14	4.957162E-04	-5.302980E-05	2.964723E-04	0.0	-2.010014E-05	0.0
168	14	4.621244E-04	-5.493635E-05	2.796410E-04	0.0	-2.651314E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
170	14	4.190912E-04	-5.719466E-05	2.577940E-04	0.0	-3.332927E-05	0.0
172	14	3.661406E-04	-5.993045E-05	2.307419E-04	0.0	-4.035546E-05	0.0
174	14	3.031383E-04	-6.330168E-05	1.985047E-04	0.0	-4.728082E-05	0.0
176	14	2.304505E-04	-6.750107E-05	1.614260E-04	0.0	-5.363990E-05	0.0
178	14	1.493391E-04	-7.275974E-05	1.203152E-04	0.0	-5.876672E-05	0.0
180	14	6.190642E-05	-7.935097E-05	7.662793E-05	0.0	-6.174034E-05	0.0
182	14	-2.783461E-05	-8.759002E-05	3.270071E-05	0.0	-6.131938E-05	0.0
183	14	9.105096E-04	4.281644E-04	-4.100960E-03	0.0	2.161290E-04	0.0
184	14	-1.143539E-04	-9.783373E-05	-7.966794E-06	0.0	-5.586460E-05	0.0
185	14	9.287724E-04	3.103386E-04	-3.677405E-03	0.0	2.084161E-04	0.0
186	14	-1.891942E-04	-1.104753E-04	-4.034910E-05	0.0	-4.325125E-05	0.0
187	14	9.449164E-04	2.043368E-04	-3.242451E-03	0.0	2.070389E-04	0.0
188	14	-2.428155E-04	-1.252840E-04	-6.173905E-05	0.0	-2.430200E-05	0.0
189	14	9.586096E-04	1.150910E-04	-2.823737E-03	0.0	2.129229E-04	0.0
190	14	-2.652789E-04	-1.444318E-04	-6.014318E-05	0.0	3.888324E-06	0.0
191	14	9.715096E-04	3.313986E-05	-2.385403E-03	0.0	2.268504E-04	0.0
192	14	-2.367126E-04	-1.672463E-04	-2.692072E-05	0.0	5.085554E-05	0.0
193	14	9.840794E-04	-4.574393E-05	-1.910112E-03	0.0	2.501258E-04	0.0
194	14	-9.267463E-05	-2.077566E-04	-4.283914E-05	0.0	1.419082E-04	0.0
195	14	9.970050E-04	-1.300306E-04	-1.349024E-03	0.0	2.864529E-04	0.0
196	14	3.081108E-04	-2.540124E-04	-2.373720E-05	0.0	2.326328E-04	0.0
197	14	1.008692E-03	-2.165204E-04	-7.304007E-04	0.0	3.345809E-04	0.0
198	14	1.018907E-03	-3.142529E-04	-1.013732E-07	0.0	3.986286E-04	0.0
286	14	2.815092E-03	-3.240595E-04	2.876706E-05	0.0	7.208306E-04	0.0
288	14	5.033836E-03	-3.410478E-04	5.082834E-05	0.0	6.583298E-04	0.0
290	14	6.613968E-03	-3.476564E-04	6.550438E-05	0.0	3.686401E-04	0.0
292	14	7.141668E-03	-3.309679E-04	7.579265E-05	0.0	-3.661330E-05	0.0
294	14	6.434571E-03	-2.860771E-04	8.309899E-05	0.0	-4.254382E-04	0.0
296	14	4.628409E-03	-2.115110E-04	8.952856E-05	0.0	-7.102618E-04	0.0
298	14	2.358575E-03	-1.198125E-04	9.529597E-05	0.0	-7.533617E-04	0.0
300	14	4.852156E-04	-1.898949E-05	9.910771E-05	0.0	-4.180793E-04	0.0
362	14	-2.310566E-04	3.204316E-05	9.856757E-05	0.0	-1.105585E-04	0.0
363	14	4.524712E-04	-4.828582E-05	-6.217617E-04	0.0	-3.068044E-04	0.0
364	14	-3.464106E-04	8.258034E-05	9.435117E-05	0.0	-1.361054E-06	0.0
365	14	4.204016E-04	-6.913375E-05	-1.142614E-03	0.0	-2.176064E-04	0.0
366	14	-3.449006E-04	-4.860929E-06	1.005802E-04	0.0	-1.602280E-06	0.0
367	14	3.895028E-04	-8.317598E-05	-1.504463E-03	0.0	-1.468399E-04	0.0
368	14	-3.788832E-04	9.015997E-05	6.115306E-05	0.0	-3.891261E-05	0.0
369	14	3.601566E-04	-9.180752E-05	-1.740374E-03	0.0	-9.139015E-05	0.0
370	14	-3.367641E-04	-1.005381E-04	1.087997E-04	0.0	-2.176743E-06	0.0
371	14	3.326470E-04	-9.621274E-05	-1.878457E-03	0.0	-4.860491E-05	0.0
372	14	-4.510218E-04	8.850997E-05	7.724552E-05	0.0	-5.604795E-05	0.0
373	14	3.083982E-04	-9.739739E-05	-1.940035E-03	0.0	-1.763539E-05	0.0
375	14	2.849924E-04	-9.632407E-05	-1.949770E-03	0.0	6.610408E-06	0.0
376	14	-5.438286E-04	8.808149E-05	7.393857E-05	0.0	-6.677538E-05	0.0
377	14	2.538369E-04	-9.359773E-05	-1.918242E-03	0.0	2.387389E-05	0.0
379	14	2.449616E-04	-8.987176E-05	-1.858020E-03	0.0	3.551050E-05	0.0
380	14	-6.489824E-04	8.874669E-05	7.117359E-05	0.0	-7.276164E-05	0.0
381	14	2.283525E-04	-8.573236E-05	-1.779192E-03	0.0	4.265200E-05	0.0
383	14	2.139538E-04	-8.172472E-05	-1.689778E-03	0.0	4.623915E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
384	14	-7.604270E-04	9.037218E-05	6.656679E-05	0.0	-7.536609E-05	0.0
385	14	2.016675E-04	-7.838011E-05	-1.596083E-03	0.0	4.705069E-05	0.0
387	14	1.913494E-04	-7.624530E-05	-1.502995E-03	0.0	4.572909E-05	0.0
388	14	-8.739387E-04	9.282894E-05	6.701368E-05	0.0	-7.567908E-05	0.0
389	14	1.828031E-04	-7.591563E-05	-1.414234E-03	0.0	4.280344E-05	0.0
391	14	1.760654E-04	-7.752096E-05	-1.336440E-03	0.0	3.893692E-05	0.0
392	14	-9.867523E-04	9.599659E-05	6.549225E-05	0.0	-7.456233E-05	0.0
393	14	1.701474E-04	-8.316796E-05	-1.263321E-03	0.0	3.407254E-05	0.0
395	14	1.649157E-04	-9.270257E-05	-1.200489E-03	0.0	2.869862E-05	0.0
396	14	-1.097749E-03	9.977695E-05	6.426491E-05	0.0	-7.268820E-05	0.0
397	14	1.597681E-04	-1.077555E-04	-1.148683E-03	0.0	2.308859E-05	0.0
399	14	1.538700E-04	-1.299403E-04	-1.108122E-03	0.0	1.749698E-05	0.0
400	14	-1.204700E-03	1.040754E-04	6.327940E-05	0.0	-7.057666E-05	0.0
404	14	-1.309063E-03	1.088210E-04	6.248943E-05	0.0	-6.862864E-05	0.0
408	14	-1.410824E-03	1.139550E-04	6.185489E-05	0.0	-6.715524E-05	0.0
412	14	-1.510889E-03	1.194310E-04	6.134169E-05	0.0	-6.640263E-05	0.0
416	14	-1.610494E-03	1.252127E-04	6.092183E-05	0.0	-6.657247E-05	0.0
420	14	-1.711155E-03	1.312699E-04	6.057331E-05	0.0	-6.783761E-05	0.0
424	14	-1.814632E-03	1.375760E-04	6.028035E-05	0.0	-7.035339E-05	0.0
428	14	-1.922912E-03	1.441030E-04	6.003384E-05	0.0	-7.426379E-05	0.0
94	15	0.0	0.0	0.0	0.0	0.0	0.0
96	15	1.858438E-06	-4.246494E-07	7.085906E-07	0.0	2.359499E-06	0.0
98	15	6.697081E-06	-9.183085E-07	3.146196E-06	0.0	4.281602E-06	0.0
100	15	1.394580E-05	-1.482678E-06	6.984958E-06	0.0	5.829225E-06	0.0
102	15	2.312285E-05	-2.116823E-06	1.194903E-05	0.0	7.058431E-06	0.0
104	15	3.381640E-05	-2.817907E-06	1.780334E-05	0.0	8.018114E-06	0.0
106	15	4.567801E-05	-3.581608E-06	2.434987E-05	0.0	8.749680E-06	0.0
108	15	5.841354E-05	-4.403708E-06	3.142240E-05	0.0	9.287314E-06	0.0
110	15	7.177000E-05	-5.278256E-06	3.867818E-05	0.0	9.658196E-06	0.0
112	15	8.552786E-05	-6.200174E-06	4.659426E-05	0.0	9.882871E-06	0.0
114	15	9.954382E-05	-7.765365E-06	5.549709E-05	0.0	1.008336E-05	0.0
116	15	1.138327E-04	-8.688553E-06	6.360901E-05	0.0	1.028715E-05	0.0
118	15	1.283557E-04	-9.658686E-06	7.189174E-05	0.0	1.044346E-05	0.0
120	15	1.430562E-04	-1.066935E-05	8.031620E-05	0.0	1.056761E-05	0.0
122	15	1.578959E-04	-1.171453E-05	8.886380E-05	0.0	1.067112E-05	0.0
124	15	1.728511E-04	-1.278667E-05	9.752417E-05	0.0	1.076229E-05	0.0
126	15	1.879072E-04	-1.388626E-05	1.062918E-04	0.0	1.084660E-05	0.0
128	15	2.030558E-04	-1.500173E-05	1.151647E-04	0.0	1.092707E-05	0.0
130	15	2.182915E-04	-1.612942E-05	1.241421E-04	0.0	1.100442E-05	0.0
132	15	2.336077E-04	-1.726359E-05	1.332226E-04	0.0	1.107708E-05	0.0
134	15	2.489947E-04	-1.839831E-05	1.424031E-04	0.0	1.114099E-05	0.0
136	15	2.644346E-04	-1.952691E-05	1.516752E-04	0.0	1.118930E-05	0.0
138	15	2.798985E-04	-2.064182E-05	1.610241E-04	0.0	1.121190E-05	0.0
140	15	2.953405E-04	-2.173457E-05	1.704249E-04	0.0	1.119471E-05	0.0
142	15	3.106915E-04	-2.279579E-05	1.798394E-04	0.0	1.111875E-05	0.0
144	15	3.258521E-04	-2.381520E-05	1.892118E-04	0.0	1.095882E-05	0.0
146	15	3.406827E-04	-2.478094E-05	1.984627E-04	0.0	1.068204E-05	0.0
148	15	3.549908E-04	-2.567980E-05	2.074823E-04	0.0	1.024619E-05	0.0
150	15	3.670816E-04	-3.052672E-05	2.168770E-04	0.0	8.770106E-06	0.0
152	15	3.770937E-04	-3.120776E-05	2.237498E-04	0.0	6.218743E-06	0.0

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE

SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
154	15	3.833903E-04	-3.190755E-05	2.285698E-04	0.0	3.510686E-06	0.0
156	15	3.857126E-04	-3.261954E-05	2.312579E-04	0.0	5.992876E-07	0.0
158	15	3.837317E-04	-3.334423E-05	2.316167E-04	0.0	-2.565178E-06	0.0
160	15	3.770487E-04	-3.409236E-05	2.294309E-04	0.0	-6.031029E-06	0.0
162	15	3.652009E-04	-3.488161E-05	2.244729E-04	0.0	-9.839426E-06	0.0
164	15	3.476746E-04	-3.574270E-05	2.164806E-04	0.0	-1.401685E-05	0.0
166	15	3.239315E-04	-3.671755E-05	2.051842E-04	0.0	-1.856657E-05	0.0
168	15	2.934465E-04	-3.786327E-05	1.903308E-04	0.0	-2.345663E-05	0.0
170	15	2.557698E-04	-3.925659E-05	1.717180E-04	0.0	-2.860591E-05	0.0
172	15	2.106044E-04	-4.099301E-05	1.492446E-04	0.0	-3.386545E-05	0.0
174	15	1.579162E-04	-4.319281E-05	1.229734E-04	0.0	-3.899420E-05	0.0
176	15	9.608411E-05	-4.600313E-05	9.321874E-05	0.0	-4.363005E-05	0.0
178	15	3.209033E-05	-4.960090E-05	6.065886E-05	0.0	-4.725298E-05	0.0
180	15	-3.822734E-05	-5.419544E-05	2.647963E-05	0.0	-4.914141E-05	0.0
182	15	-1.098586E-04	-6.002870E-05	-7.441955E-06	0.0	-4.831851E-05	0.0
183	15	7.186863E-04	3.536686E-04	-3.489718E-03	0.0	1.787200E-04	0.0
184	15	-1.782234E-04	-6.737438E-05	-3.830725E-05	0.0	-4.348808E-05	0.0
185	15	7.345886E-04	2.551102E-04	-3.140930E-03	0.0	1.710032E-04	0.0
186	15	-2.366544E-04	-7.653338E-05	-6.210628E-05	0.0	-3.296100E-05	0.0
187	15	7.486818E-04	1.676362E-04	-2.784821E-03	0.0	1.693114E-04	0.0
188	15	-2.780736E-04	-8.660601E-05	-7.679430E-05	0.0	-1.834170E-05	0.0
189	15	7.608349E-04	9.518753E-05	-2.442072E-03	0.0	1.746518E-04	0.0
190	15	-2.961743E-04	-1.006822E-04	-7.408405E-05	0.0	2.770729E-06	0.0
191	15	7.725961E-04	2.923218E-05	-2.080966E-03	0.0	1.878762E-04	0.0
192	15	-2.754915E-04	-1.175057E-04	-4.707697E-05	0.0	3.896283E-05	0.0
193	15	7.844223E-04	-3.423456E-05	-1.684374E-03	0.0	2.104049E-04	0.0
194	15	-1.571216E-04	-1.567623E-04	-5.927122E-05	0.0	1.196919E-04	0.0
195	15	7.969791E-04	-1.027129E-04	-1.207423E-03	0.0	2.460866E-04	0.0
196	15	1.875809E-04	-2.005364E-04	-4.208999E-05	0.0	2.033502E-04	0.0
197	15	8.086921E-04	-1.742890E-04	-6.698512E-04	0.0	2.939845E-04	0.0
198	15	8.192696E-04	-2.570667E-04	-2.040695E-05	0.0	3.585252E-04	0.0
286	15	2.484626E-03	-2.717604E-04	6.267624E-06	0.0	6.761488E-04	0.0
288	15	4.576448E-03	-2.936127E-04	2.723918E-05	0.0	6.233382E-04	0.0
290	15	6.079335E-03	-3.053425E-04	4.190354E-05	0.0	3.534025E-04	0.0
292	15	6.598629E-03	-2.946248E-04	5.292740E-05	0.0	-2.647887E-05	0.0
294	15	5.957820E-03	-2.569200E-04	6.123955E-05	0.0	-3.921348E-04	0.0
296	15	4.282586E-03	-1.907002E-04	6.857593E-05	0.0	-6.609433E-04	0.0
298	15	2.168231E-03	-1.080006E-04	7.481964E-05	0.0	-7.015187E-04	0.0
300	15	4.341984E-04	-1.682861E-05	7.667704E-05	0.0	-3.798448E-04	0.0
362	15	-1.976722E-04	2.709658E-05	7.795783E-05	0.0	-9.076160E-05	0.0
363	15	4.019109E-04	-4.495918E-05	-5.689857E-04	0.0	-2.719967E-04	0.0
364	15	-2.830629E-04	7.070764E-05	7.369989E-05	0.0	2.205435E-07	0.0
365	15	3.703237E-04	-6.445478E-05	-1.024508E-03	0.0	-1.869708E-04	0.0
366	15	-2.816634E-04	-4.568828E-06	7.360194E-05	0.0	-2.011164E-07	0.0
367	15	3.399670E-04	-7.710297E-05	-1.329368E-03	0.0	-1.207154E-04	0.0
368	15	-3.097351E-04	7.583377E-05	-6.208249E-05	0.0	-3.248613E-05	0.0
369	15	3.112357E-04	-8.439535E-05	-1.517595E-03	0.0	-6.981648E-05	0.0
370	15	-2.742931E-04	-8.709950E-05	7.565023E-05	0.0	-7.394943E-07	0.0
371	15	2.844124E-04	-8.757410E-05	-1.616949E-03	0.0	-3.140690E-05	0.0
372	15	-3.692587E-04	7.302930E-05	5.825986E-05	0.0	-4.584281E-05	0.0

VESSEL SUBJECTED TO T.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
373	15	2.608728E-04	-5.772223E-05	-1.649572E-03	0.0	-4.297515E-06	0.0
375	15	2.382576E-04	-8.569637E-05	-1.636365E-03	0.0	1.628851E-05	0.0
376	15	-4.445843E-04	7.139021E-05	5.505406E-05	0.0	-5.383002E-05	0.0
377	15	2.179122E-04	-8.214165E-05	-1.588754E-03	0.0	3.035966E-05	0.0
379	15	1.998654E-04	-7.767726E-05	-1.518345E-03	0.0	3.929493E-05	0.0
380	15	-5.238119E-04	7.077645E-05	5.239387E-05	0.0	-5.793407E-05	0.0
381	15	1.840675E-04	-7.284121E-05	-1.434239E-03	0.0	4.422640E-05	0.0
383	15	1.704549E-04	-6.811808E-05	-1.343488E-03	0.0	4.607870E-05	0.0
384	15	-6.170424E-04	7.105722E-05	5.020747E-05	0.0	-5.934190E-05	0.0
385	15	1.589217E-04	-6.396722E-05	-1.251473E-03	0.0	4.560321E-05	0.0
387	15	1.493234E-04	-6.325253E-05	-1.162219E-03	0.0	4.340817E-05	0.0
388	15	-7.059593E-04	7.209896E-05	4.842588E-05	0.0	-5.898593E-05	0.0
389	15	1.414696E-04	-5.927536E-05	-1.078657E-03	0.0	3.998511E-05	0.0
391	15	1.354018E-04	-5.972170E-05	-1.006414E-03	0.0	3.595949E-05	0.0
392	15	-7.934817E-04	7.379010E-05	4.698505E-05	0.0	-5.758750E-05	0.0
393	15	1.301669E-04	-6.291176E-05	-9.391704E-04	0.0	3.122247E-05	0.0
395	15	1.256968E-04	-6.974362E-05	-8.816831E-04	0.0	2.624592E-05	0.0
396	15	-8.784779E-04	7.603315E-05	4.582695E-05	0.0	-5.569740E-05	0.0
397	15	1.214221E-04	-8.133342E-05	-8.341819E-04	0.0	2.127586E-05	0.0
399	15	1.165727E-04	-9.513763E-05	-7.964191E-04	0.0	1.654713E-05	0.0
400	15	-9.605374E-04	7.874741E-05	4.490002E-05	0.0	-5.373222E-05	0.0
404	15	-1.039796E-03	8.186816E-05	4.415911E-05	0.0	-5.200660E-05	0.0
408	15	-1.116798E-03	8.534518E-05	4.356522E-05	0.0	-5.076063E-05	0.0
412	15	-1.192412E-03	8.914054E-05	4.308515E-05	0.0	-5.018305E-05	0.0
416	15	-1.267760E-03	9.322807E-05	4.269117E-05	0.0	-5.043007E-05	0.0
420	15	-1.344184E-03	9.756640E-05	4.236077E-05	0.0	-5.164018E-05	0.0
424	15	-1.423228E-03	1.021856E-04	4.207669E-05	0.0	-5.394490E-05	0.0
428	15	-1.506632E-03	1.070236E-04	4.182718E-05	0.0	-5.747552E-05	0.0
94	16	0.0	0.0	0.0	0.0	0.0	0.0
96	16	1.402591E-06	-3.352502E-07	5.858577E-07	0.0	1.810206E-06	0.0
98	16	5.036968E-06	-7.177343E-07	2.498306E-06	0.0	3.279941E-06	0.0
100	16	1.061014E-05	-1.149373E-06	5.482620E-06	0.0	4.460038E-06	0.0
102	16	1.760099E-05	-1.629896E-06	9.326401E-06	0.0	5.395502E-06	0.0
104	16	2.574411E-05	-2.157446E-06	1.384972E-05	0.0	6.125389E-06	0.0
106	16	3.477458E-05	-2.729084E-06	1.890220E-05	0.0	6.682652E-06	0.0
108	16	4.447077E-05	-3.341263E-06	2.435880E-05	0.0	7.094412E-06	0.0
110	16	5.464350E-05	-3.989940E-06	3.011302E-05	0.0	7.382181E-06	0.0
112	16	6.513015E-05	-4.671060E-06	3.607402E-05	0.0	7.562175E-06	0.0
114	16	7.579839E-05	-5.868651E-06	4.294055E-05	0.0	7.677259E-06	0.0
116	16	8.658160E-05	-6.540417E-06	4.915238E-05	0.0	7.751994E-06	0.0
118	16	9.743271E-05	-7.246198E-06	5.543625E-05	0.0	7.796717E-06	0.0
120	16	1.083160E-04	-7.980629E-06	6.177506E-05	0.0	7.821935E-06	0.0
122	16	1.192083E-04	-8.739593E-06	6.815883E-05	0.0	7.835332E-06	0.0
124	16	1.300960E-04	-9.518217E-06	7.458299E-05	0.0	7.842303E-06	0.0
126	16	1.409711E-04	-1.031252E-05	8.104611E-05	0.0	7.846362E-06	0.0
128	16	1.518299E-04	-1.111832E-05	8.754898E-05	0.0	7.849477E-06	0.0
130	16	1.626706E-04	-1.193137E-05	9.409338E-05	0.0	7.852278E-06	0.0
132	16	1.734910E-04	-1.274732E-05	1.006809E-04	0.0	7.854122E-06	0.0
134	16	1.842875E-04	-1.356164E-05	1.073124E-04	0.0	7.852995E-06	0.0
136	16	1.950523E-04	-1.436914E-05	1.139862E-04	0.0	7.845317E-06	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
138	16	2.057718E-04	-1.516375E-05	1.206967E-04	0.0	7.825658E-06	0.0
140	16	2.164230E-04	-1.593849E-05	1.274333E-04	0.0	7.786263E-06	0.0
142	16	2.269702E-04	-1.668542E-05	1.341777E-04	0.0	7.716318E-06	0.0
144	16	2.373599E-04	-1.739546E-05	1.409013E-04	0.0	7.600907E-06	0.0
146	16	2.475143E-04	-1.805779E-05	1.475613E-04	0.0	7.419802E-06	0.0
148	16	2.573233E-04	-1.865962E-05	1.540953E-04	0.0	7.146022E-06	0.0
150	16	2.654667E-04	-2.232839E-05	1.608369E-04	0.0	5.848266E-06	0.0
152	16	2.714959E-04	-2.275503E-05	1.655014E-04	0.0	3.508661E-06	0.0
154	16	2.741723E-04	-2.319117E-05	1.683466E-04	0.0	1.111092E-06	0.0
156	16	2.733767E-04	-2.362898E-05	1.693222E-04	0.0	-1.389142E-06	0.0
158	16	2.689247E-04	-2.406655E-05	1.683421E-04	0.0	-4.037561E-06	0.0
160	16	2.605689E-04	-2.451023E-05	1.652857E-04	0.0	-6.877096E-06	0.0
162	16	2.480054E-04	-2.497190E-05	1.600038E-04	0.0	-9.943655E-06	0.0
164	16	2.308870E-04	-2.547295E-05	1.523255E-04	0.0	-1.326031E-05	0.0
166	16	2.088432E-04	-2.604394E-05	1.420728E-04	0.0	-1.683086E-05	0.0
168	16	1.815145E-04	-2.672660E-05	1.290804E-04	0.0	-2.063048E-05	0.0
170	16	1.485992E-04	-2.757729E-05	1.132230E-04	0.0	-2.459509E-05	0.0
172	16	1.099163E-04	-2.866662E-05	9.445589E-05	0.0	-2.860684E-05	0.0
174	16	6.549395E-05	-3.008374E-05	7.286410E-05	0.0	-3.247465E-05	0.0
176	16	1.568637E-05	-3.193795E-05	4.873288E-05	0.0	-3.591159E-05	0.0
178	16	-3.867406E-05	-3.436083E-05	2.263629E-05	0.0	-3.850501E-05	0.0
180	16	-9.607591E-05	-3.750778E-05	-4.448581E-06	0.0	-3.968141E-05	0.0
182	16	-1.540740E-04	-4.155825E-05	-3.099145E-05	0.0	-3.866268E-05	0.0
183	16	5.732661E-04	2.935894E-04	-2.957608E-03	0.0	1.469709E-04	0.0
184	16	-2.089734E-04	-4.671419E-05	-5.473020E-05	0.0	-3.441294E-05	0.0
185	16	5.871579E-04	2.105248E-04	-2.672142E-03	0.0	1.393697E-04	0.0
186	16	-2.554045E-04	-5.319569E-05	-7.242830E-05	0.0	-2.557745E-05	0.0
187	16	5.995135E-04	1.381021E-04	-2.382669E-03	0.0	1.374204E-04	0.0
188	16	-2.881116E-04	-5.964501E-05	-8.257636E-05	0.0	-1.427431E-05	0.0
189	16	6.103634E-04	7.902879E-05	-2.104219E-03	0.0	1.421962E-04	0.0
190	16	-3.034247E-04	-6.970084E-05	-7.954067E-05	0.0	1.482824E-06	0.0
191	16	6.211556E-04	2.572809E-05	-1.808800E-03	0.0	1.546101E-04	0.0
192	16	-2.892637E-04	-8.170847E-05	-5.783276E-05	0.0	2.941814E-05	0.0
193	16	6.323359E-04	-2.558113E-05	-1.479683E-03	0.0	1.761834E-04	0.0
194	16	-1.919784E-04	-1.190547E-04	-6.709338E-05	0.0	1.011732E-04	0.0
195	16	6.445495E-04	-8.158676E-05	-1.075659E-03	0.0	2.108742E-04	0.0
196	16	1.051500E-04	-1.598125E-04	-5.168551E-05	0.0	1.780660E-04	0.0
197	16	6.562397E-04	-1.413455E-04	-6.092722E-04	0.0	2.580774E-04	0.0
198	16	6.670656E-04	-2.121893E-04	-3.188869E-05	0.0	3.225028E-04	0.0
286	16	2.209871E-03	-2.298757E-04	-7.461158E-08	0.0	6.330390E-04	0.0
288	16	4.176605E-03	-2.546865E-04	1.220630E-05	0.0	5.880669E-04	0.0
290	16	5.599402E-03	-2.697916E-04	2.653139E-05	0.0	3.366359E-04	0.0
292	16	6.104119E-03	-2.637776E-04	3.787770E-05	0.0	-1.874550E-05	0.0
294	16	5.521517E-03	-2.314568E-04	4.677824E-05	0.0	-3.617774E-04	0.0
296	16	3.967453E-03	-1.722649E-04	5.462841E-05	0.0	-6.149621E-04	0.0
298	16	1.997985E-03	-9.737181E-05	6.104773E-05	0.0	-6.534273E-04	0.0
300	16	3.910242E-04	-1.467243E-05	6.475465E-05	0.0	-3.461158E-04	0.0
362	16	-1.691840E-04	2.305374E-05	8.378399E-05	0.0	-7.478819E-05	0.0
363	16	3.593920E-04	-4.172171E-05	-5.189332E-04	0.0	-2.418898E-04	0.0
364	16	-2.314103E-04	6.058330E-05	5.950400E-05	0.0	1.179213E-06	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
365	16	3.284491E-04	-5.599174E-05	-9.183954E-04	0.0	-1.610806E-04	0.0
366	16	-2.301688E-04	-3.944919E-06	5.564840E-05	0.0	6.190754E-07	0.0
367	16	2.988766E-04	-7.141268E-05	-1.175888E-03	0.0	-9.924543E-05	0.0
368	16	-2.538147E-04	6.394979E-05	4.910158E-05	0.0	-2.734436E-05	0.0
369	16	2.709595E-04	-7.756926E-05	-1.325550E-03	0.0	-5.269113E-05	0.0
370	16	-2.234760E-04	-7.467184E-05	5.408356E-05	0.0	1.076631E-07	0.0
371	16	2.450156E-04	-7.975595E-05	-1.394769E-03	0.0	-1.836024E-05	0.0
372	16	-3.031567E-04	6.951509E-05	4.538882E-05	0.0	-3.757683E-05	0.0
373	16	2.223563E-04	-7.911501E-05	-1.406025E-03	0.0	5.232577E-06	0.0
375	16	2.007019E-04	-7.641969E-05	-1.377094E-03	0.0	2.256200E-05	0.0
376	16	-3.643243E-04	5.817710E-05	4.229741E-05	0.0	-4.335692E-05	0.0
377	16	1.813297E-04	-7.234084E-05	-1.319787E-03	0.0	3.386469E-05	0.0
379	16	1.642299E-04	-6.746326E-05	-1.244725E-03	0.0	4.052343E-05	0.0
380	16	-4.316613E-04	5.679201E-05	3.974697E-05	0.0	-4.599550E-05	0.0
381	16	1.493507E-04	-6.227836E-05	-1.160040E-03	0.0	4.365375E-05	0.0
383	16	1.366066E-04	-5.721375E-05	-1.071862E-03	0.0	4.415013E-05	0.0
384	16	-5.012567E-04	5.622303E-05	3.766043E-05	0.0	-4.651803E-05	0.0
385	16	1.258815E-04	-5.266222E-05	-9.847174E-04	0.0	4.272538E-05	0.0
387	16	1.170281E-04	-4.901148E-05	-9.018616E-04	0.0	3.994479E-05	0.0
388	16	-5.705548E-04	5.634659E-05	3.596640E-05	0.0	-4.571326E-05	0.0
389	16	1.098618E-04	-4.667658E-05	-8.255418E-04	0.0	3.625562E-05	0.0
391	16	1.044082E-04	-4.610881E-05	-7.604186E-04	0.0	3.223361E-05	0.0
392	16	-6.380335E-04	5.705540E-05	3.460039E-05	0.0	-4.417797E-05	0.0
393	16	9.980515E-05	-4.781644E-05	-7.004282E-04	0.0	2.773147E-05	0.0
395	16	9.599068E-05	-5.261812E-05	-6.495176E-04	0.0	2.319098E-05	0.0
396	16	-7.029478E-04	5.825964E-05	3.350516E-05	0.0	-4.235731E-05	0.0
397	16	9.244864E-05	-6.148941E-05	-6.075462E-04	0.0	1.882730E-05	0.0
399	16	8.847624E-05	-7.573080E-05	-5.739504E-04	0.0	1.485144E-05	0.0
400	16	-7.651285E-04	5.988676E-05	3.263060E-05	0.0	-4.057985E-05	0.0
404	16	-8.248310E-04	6.186024E-05	3.193323E-05	0.0	-3.908770E-05	0.0
408	16	-8.826253E-04	6.419785E-05	3.137565E-05	0.0	-3.806193E-05	0.0
412	16	-9.393210E-04	6.680934E-05	3.092577E-05	0.0	-3.764368E-05	0.0
416	16	-9.959196E-04	6.969410E-05	3.055643E-05	0.0	-3.795132E-05	0.0
420	16	-1.053592E-03	7.283832E-05	3.024482E-05	0.0	-3.909403E-05	0.0
424	16	-1.113674E-03	7.623209E-05	2.997243E-05	0.0	-4.118212E-05	0.0
428	16	-1.177671E-03	7.986618E-05	2.972511E-05	0.0	-4.433416E-05	0.0
94	17	0.0	0.0	0.0	0.0	0.0	0.0
96	17	1.058378E-06	-2.554851E-07	4.698932E-07	0.0	1.381557E-06	0.0
98	17	3.854187E-06	-5.439786E-07	1.951385E-06	0.0	2.498424E-06	0.0
100	17	8.043793E-06	-8.673397E-07	4.246952E-06	0.0	3.391910E-06	0.0
102	17	1.334241E-05	-1.225645E-06	7.193699E-06	0.0	4.098253E-06	0.0
104	17	1.950956E-05	-1.617669E-06	1.065461E-05	0.0	4.648670E-06	0.0
106	17	2.634505E-05	-2.041390E-06	1.451623E-05	0.0	5.069322E-06	0.0
108	17	3.368306E-05	-2.494165E-06	1.868518E-05	0.0	5.381598E-06	0.0
110	17	4.138311E-05	-2.973015E-06	2.308266E-05	0.0	5.602364E-06	0.0
112	17	4.932559E-05	-3.474898E-06	2.764206E-05	0.0	5.744226E-06	0.0
114	17	5.739817E-05	-4.389281E-06	3.288953E-05	0.0	5.811797E-06	0.0
116	17	6.550809E-05	-4.879280E-06	3.761442E-05	0.0	5.825765E-06	0.0
118	17	7.361124E-05	-5.395424E-06	4.236438E-05	0.0	5.821311E-06	0.0
120	17	8.168569E-05	-5.933647E-06	4.713010E-05	0.0	5.805472E-06	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSF — SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
122	17	8.971767E-05	-6.496327E-06	5.190087E-05	0.0	5.783188E-06	0.0
124	17	9.769943E-05	-7.052248E-06	5.669348E-05	0.0	5.757767E-06	0.0
126	17	1.056267E-04	-7.645307E-06	6.149056E-05	0.0	5.731251E-06	0.0
128	17	1.134974E-04	-8.234414E-06	6.630005E-05	0.0	5.704723E-06	0.0
130	17	1.213109E-04	-8.838429E-06	7.112449E-05	0.0	5.678521E-06	0.0
132	17	1.290655E-04	-9.440104E-06	7.596632E-05	0.0	5.652329E-06	0.0
134	17	1.367598E-04	-1.004101E-05	8.082775E-05	0.0	5.625128E-06	0.0
136	17	1.443896E-04	-1.063708E-05	8.570962E-05	0.0	5.595109E-06	0.0
138	17	1.519478E-04	-1.122350E-05	9.061098E-05	0.0	5.559497E-06	0.0
140	17	1.594228E-04	-1.179451E-05	9.552817E-05	0.0	5.514251E-06	0.0
142	17	1.667957E-04	-1.234339E-05	1.004534E-04	0.0	5.453512E-06	0.0
144	17	1.740383E-04	-1.286219E-05	1.053733E-04	0.0	5.368799E-06	0.0
146	17	1.811081E-04	-1.334115E-05	1.102660E-04	0.0	5.248035E-06	0.0
148	17	1.879423E-04	-1.376838E-05	1.150974E-04	0.0	5.074367E-06	0.0
150	17	1.934961E-04	-1.658652E-05	1.200339E-04	0.0	3.940532E-06	0.0
152	17	1.970243E-04	-1.687540E-05	1.232485E-04	0.0	1.840897E-06	0.0
154	17	1.975760E-04	-1.716973E-05	1.248615E-04	0.0	-2.576060E-07	0.0
156	17	1.951153E-04	-1.746108E-05	1.248699E-04	0.0	-2.398253E-06	0.0
158	17	1.895454E-04	-1.774589E-05	1.232365E-04	0.0	-4.623286E-06	0.0
160	17	1.807116E-04	-1.802713E-05	1.198926E-04	0.0	-6.971364E-06	0.0
162	17	1.684093E-04	-1.831213E-05	1.147434E-04	0.0	-9.474138E-06	0.0
164	17	1.523955E-04	-1.861525E-05	1.076753E-04	0.0	-1.215174E-05	0.0
166	17	1.324076E-04	-1.895770E-05	9.856814E-05	0.0	-1.500785E-05	0.0
168	17	1.081910E-04	-1.936892E-05	8.731199E-05	0.0	-1.802234E-05	0.0
170	17	7.953824E-05	-1.988895E-05	7.382933E-05	0.0	-2.114316E-05	0.0
172	17	4.633953E-05	-2.056827E-05	5.610813E-05	0.0	-2.427470E-05	0.0
174	17	8.654666E-06	-2.147074E-05	4.024172E-05	0.0	-2.726234E-05	0.0
176	17	-3.319262E-05	-2.267471E-05	2.048537E-05	0.0	-2.987427E-05	0.0
178	17	-7.849373E-05	-2.427436E-05	-6.725680E-07	0.0	-3.177735E-05	0.0
180	17	-1.259909E-04	-2.638026E-05	-2.241840E-05	0.0	-3.250870E-05	0.0
182	17	-1.736721E-04	-2.911936E-05	-4.349119E-05	0.0	-3.143988E-05	0.0
183	17	4.613211E-04	2.447749E-04	-2.497196E-03	0.0	1.201769E-04	0.0
184	17	-2.185171E-04	-3.263242E-05	-6.203995E-05	0.0	-2.773300E-05	0.0
185	17	4.734874E-04	1.744377E-04	-2.265036E-03	0.0	1.127896E-04	0.0
186	17	-2.561461E-04	-3.706972E-05	-7.542303E-05	0.0	-2.029008E-05	0.0
187	17	4.843590E-04	1.142343E-04	-2.031520E-03	0.0	1.106369E-04	0.0
188	17	-2.826494E-04	-4.077656E-05	-8.256300E-05	0.0	-1.154280E-05	0.0
189	17	4.940948E-04	6.591265E-05	-1.807151E-03	0.0	1.148415E-04	0.0
190	17	-2.962474E-04	-4.766807E-05	-7.970662E-05	0.0	1.561489E-07	0.0
191	17	5.040492E-04	2.271670E-05	-1.567282E-03	0.0	1.263670E-04	0.0
192	17	-2.874616E-04	-5.583183E-05	-6.250587E-05	0.0	2.174987E-05	0.0
193	17	5.146549E-04	-1.891179E-05	-1.295743E-03	0.0	1.468189E-04	0.0
194	17	-2.075693E-04	-9.084097E-05	-6.944977E-05	0.0	8.565132E-05	0.0
195	17	5.265353E-04	-6.496877E-05	-9.647295E-04	0.0	1.802281E-06	0.0
196	17	4.897796E-05	-1.283638E-04	-5.566965E-05	0.0	1.561241E-04	0.0
197	17	5.381531E-04	-1.152441E-04	-5.507802E-04	0.0	2.263280E-04	0.0
198	17	5.491255E-04	-1.764226E-04	-3.767198E-05	0.0	2.900821E-04	0.0
286	17	1.976959E-03	-1.957147E-04	1.548624E-05	0.0	5.914946E-04	0.0
288	17	3.821001E-03	-2.220858E-04	2.740339E-06	0.0	5.628559E-04	0.0
290	17	5.162206E-03	-2.392818E-04	1.648323E-05	0.0	3.188648E-04	0.0

VESSEL SUBJECTED TO I.P. [illegible] JET LOAD [illegible] SSE — SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
292	17	5.647920E-03	-2.365591E-04	2.783016E-05	0.0	-1.281630E-05	0.0
294	17	5.117267E-03	-2.8[illegible]E-04	3.594931E-05	0.0	-3.337534E-04	0.0
296	17	3.676542E-03	-1.55657[illegible]E-04	4.504593E-05	0.0	-5.716779E-04	0.0
298	17	1.843403E-03	-3.765[illegible]E-05	5.141333E-05	0.0	-6.083588E-04	0.0
300	17	3.536730E-04	-1.[illegible]E-05	5.483367E-05	0.0	-3.160005E-04	0.0
362	17	-1.450382E-04	1.476644E-05	5.357282E-05	0.0	-6.183697E-05	0.0
363	17	3.228642E-04	-3.954264E-05	-4.723044E-04	0.0	-2.155676E-04	0.0
364	17	-1.493559E-04	5.192202E-05	4.929584E-05	0.0	1.737083E-06	0.0
365	17	2.928136E-04	-5.567727E-05	-6.233201E-04	0.0	-1.389953E-04	0.0
366	17	-1.281403E-04	-3.[illegible]E-06	4.331206E-05	0.0	1.074878E-06	0.0
367	17	2.641117E-04	-5.577794E-05	-1.040963E-03	0.0	-6.146967E-05	0.0
368	17	-2.086424E-04	5.403392E-05	3.984320E-05	0.0	-2.312458E-05	0.0
369	17	2.371700E-04	-7.117499E-05	-1.159248E-03	0.0	-3.904363E-05	0.0
370	17	-1.822055E-04	-6.599953E-05	3.973376E-05	0.0	5.854404E-07	0.0
371	17	2.122583E-04	-7.254996E-05	-1.205043E-03	0.0	-8.495743E-06	0.0
372	17	-2.496177E-04	5.031419E-05	3.625691E-05	0.0	-3.078225E-05	0.0
373	17	1.906176E-04	-7.130775E-05	-1.200630E-03	0.0	1.191125E-05	0.0
375	17	1.700476E-04	-6.[illegible]E-05	-1.161304E-03	0.0	2.636177E-05	0.0
376	17	-2.991767E-04	4.761451E-05	3.330638E-05	0.0	-3.479270E-05	0.0
377	17	1.517541E-04	-6.377330E-05	-1.098861E-03	0.0	3.528323E-05	0.0
379	17	1.357011E-04	-5.671562E-05	-1.022938E-03	0.0	4.004432E-05	0.0
380	17	-3.527482E-04	4.575961E-05	3.087503E-05	0.0	-3.629919E-05	0.0
381	17	1.218154E-04	-5.342756E-05	-9.407289E-04	0.0	4.172963E-05	0.0
383	17	1.099945E-04	-4.828356E-05	-8.574973E-04	0.0	4.119211E-05	0.0
384	17	-4.072636E-04	4.470369E-05	2.889284E-05	0.0	-3.617775E-05	0.0
385	17	1.001112E-04	-4.351554E-05	-7.769950E-04	0.0	3.909774E-05	0.0
387	17	9.201420E-05	-3.974244E-05	-7.017972E-04	0.0	3.596302E-05	0.0
388	17	-4.607998E-04	4.424600E-05	2.728775E-05	0.0	-3.508764E-05	0.0
389	17	8.552360E-05	-3.700171E-05	-6.335683E-04	0.0	3.218712E-05	0.0
391	17	8.064989E-05	-3.579622E-05	-5.760863E-04	0.0	2.828895E-05	0.0
392	17	-5.122880E-04	4.429981E-05	2.599609E-05	0.0	-3.351616E-05	0.0
393	17	7.661691E-05	-3.647730E-05	-5.237050E-04	0.0	2.409403E-05	0.0
395	17	7.336849E-05	-3.976835E-05	-4.796388E-04	0.0	2.000546E-05	0.0
396	17	-5.612862E-04	4.479950E-05	2.496233E-05	0.0	-3.181750E-05	0.0
397	17	7.044105E-05	-4.651425E-05	-4.434902E-04	0.0	1.620638E-05	0.0
399	17	6.720013E-05	-5.796285E-05	-4.144975E-04	0.0	1.288193E-05	0.0
400	17	-6.078051E-04	4.567513E-05	2.413641E-05	0.0	-3.024575E-05	0.0
404	17	-6.521787E-04	4.687787E-05	2.348304E-05	0.0	-2.898269E-05	0.0
408	17	-6.949741E-04	4.837268E-05	2.296064E-05	0.0	-2.816069E-05	0.0
412	17	-7.369325E-04	5.013602E-05	2.254064E-05	0.0	-2.788167E-05	0.0
416	17	-7.789340E-04	5.215363E-05	2.219665E-05	0.0	-2.823246E-05	0.0
420	17	-8.219365E-04	5.441211E-05	2.190594E-05	0.0	-2.929702E-05	0.0
424	17	-8.672273E-04	5.692628E-05	2.164912E-05	0.0	-3.116623E-05	0.0
428	17	-9.159397E-04	5.967643E-05	2.141007E-05	0.0	-3.394505E-05	0.0
94	18	0.0	0.0	0.0	0.0	0.0	0.0
96	18	7.926710E-07	-1.583706E-07	3.663415E-07	0.0	1.042481E-06	0.0
98	18	2.893221E-06	-4.001957E-07	1.494894E-06	0.0	1.881196E-06	0.0
100	18	6.037778E-06	-6.371140E-07	3.234062E-06	0.0	2.549553E-06	0.0
102	18	1.001041E-05	-8.993580E-07	5.460448E-06	0.0	3.076538E-06	0.0
104	18	1.463017E-05	-1.186152E-06	8.071096E-06	0.0	3.486886E-06	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
106	18	1.974792E-05	[illegible]	1.096105E-05	0.0	3.801147E-06	0.0
108	18	2.524152E-05	[illegible]	1.412354E-05	0.0	4.035970E-06	0.0
110	18	3.100831E-05	-2.177432E-06	1.743936E-05	0.0	4.204364E-06	0.0
112	18	3.696170E-05	-2.544543E-06	2.086118E-05	0.0	4.315926E-06	0.0
114	18	4.301204E-05	-3.237542E-06	2.464294E-05	0.0	4.359158E-06	0.0
116	18	4.906514E-05	-3.594063E-06	2.840176E-05	0.0	4.350580E-06	0.0
118	18	5.509362E-05	-3.971651E-06	3.196759E-05	0.0	4.331380E-06	0.0
120	18	6.107571E-05	-4.367137E-06	3.553613E-05	0.0	4.306118E-06	0.0
122	18	6.700683E-05	-4.777637E-06	3.910603E-05	0.0	4.277797E-06	0.0
124	18	7.2???7E-05	-5.201407E-06	4.267602E-05	0.0	4.248253E-06	0.0
126	18	7.870153E-05	-5.635618E-06	4.625377E-05	0.0	4.218467E-06	0.0
128	18	8.446150E-05	-6.078256E-06	4.983561E-05	0.0	4.188834E-06	0.0
130	18	9.016173E-05	-6.527065E-06	5.342608E-05	0.0	4.159353E-06	0.0
132	18	9.580074E-05	-6.979682E-06	5.702759E-05	0.0	4.129728E-06	0.0
134	18	1.013766E-04	-7.433556E-06	6.064247E-05	0.0	4.099360E-06	0.0
136	18	1.068861E-04	-7.885579E-06	6.427235E-05	0.0	4.067308E-06	0.0
138	18	1.123245E-04	-8.331936E-06	6.791796E-05	0.0	4.032206E-06	0.0
140	18	1.176847E-04	-8.767967E-06	7.157689E-05	0.0	3.992080E-06	0.0
142	18	1.229562E-04	-9.188030E-06	7.525251E-05	0.0	3.943949E-06	0.0
144	18	1.281235E-04	-9.585278E-06	7.893336E-05	0.0	3.883220E-06	0.0
146	18	1.331630E-04	-9.951077E-06	8.261109E-05	0.0	3.802929E-06	0.0
148	18	1.380393E-04	-1.027465E-05	8.626813E-05	0.0	3.692800E-06	0.0
150	18	1.419120E-04	-1.246637E-05	8.997340E-05	0.0	2.712637E-06	0.0
152	18	1.439261E-04	-1.268297E-05	9.224766E-05	0.0	8.651550E-07	0.0
154	18	1.433396E-04	-1.290435E-05	9.313510E-05	0.0	-9.486130E-07	0.0
156	18	1.401630E-04	-1.312196E-05	9.265855E-05	0.0	-2.770544E-06	0.0
158	18	1.343496E-04	-1.333130E-05	9.080855E-05	0.0	-4.640095E-06	0.0
160	18	1.257989E-04	-1.353292E-05	8.754623E-05	0.0	-6.592422E-06	0.0
162	18	1.143657E-04	-1.373069E-05	8.280930E-05	0.0	-8.655740E-06	0.0
164	18	9.987113E-05	-1.393304E-05	7.651860E-05	0.0	-1.084779E-05	0.0
166	18	8.211849E-05	-1.415572E-05	6.858954E-05	0.0	-1.317206E-05	0.0
168	18	6.091777E-05	-1.441671E-05	5.894490E-05	0.0	-1.561186E-05	0.0
170	18	3.611803E-05	-1.474380E-05	4.753511E-05	0.0	-1.812402E-05	0.0
172	18	7.649127E-06	-1.517151E-05	3.436446E-05	0.0	-2.062954E-05	0.0
174	18	-2.441905E-05	-1.574347E-05	1.952430E-05	0.0	-2.300102E-05	0.0
176	18	-5.979951E-05	-1.651308E-05	3.238996E-06	0.0	-2.504798E-05	0.0
178	18	-9.788890E-05	-1.754417E-05	-1.407604E-05	0.0	-2.649716E-05	0.0
180	18	-1.376346E-04	-1.891056E-05	-3.173911E-05	0.0	-2.696936E-05	0.0
182	18	-1.773641E-04	-2.069559E-05	-4.870206E-05	0.0	-2.594998E-05	0.0
183	18	3.737290E-04	2.046887E-04	-2.099236E-03	0.0	9.761598E-05	0.0
184	18	-2.145815E-04	-2.298874E-05	-6.343564E-05	0.0	-2.275285E-05	0.0
185	18	3.843978E-04	1.449466E-04	-1.911828E-03	0.0	9.052637E-05	0.0
186	18	-2.456727E-04	-2.588062E-05	-7.376203E-05	0.0	-1.647841E-05	0.0
187	18	3.939858E-04	9.478316E-05	-1.725141E-03	0.0	8.822291E-05	0.0
188	18	-2.677292E-04	-2.754419E-05	-7.895115E-05	0.0	-9.720783E-06	0.0
189	18	4.027525E-04	5.520016E-05	-1.546100E-03	0.0	9.186009E-05	0.0
190	18	-2.802918E-04	-3.196846E-05	-7.656951E-05	0.0	-1.109579E-06	0.0
191	18	4.119650E-04	2.015967E-05	-1.359082E-03	0.0	1.024397E-04	0.0
192	18	-2.759001E-04	-3.709228E-05	-6.319226E-05	0.0	1.558672E-05	0.0
193	18	4.220400E-04	-1.367312E-05	-1.130613E-03	0.0	1.216307E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
194	18	-2.104482E-04	-5.552761E-05	-6.830110E-05	0.0	7.252545E-05	0.0
195	18	4.335779E-04	-5.142219E-05	-8.440891E-04	0.0	1.534978E-04	0.0
196	18	1.114597E-05	-1.837247E-04	-5.601065E-05	0.0	1.368936E-04	0.0
197	18	4.450660E-04	-9.423915E-05	-4.951062E-04	0.0	1.981093E-04	0.0
198	18	4.560373E-04	-1.474441E-04	-3.972981E-05	0.0	2.606448E-04	0.0
286	18	1.774856E-03	-1.673120E-04	-1.975025E-05	0.0	5.510577E-04	0.0
288	18	3.497630E-03	-1.941944E-04	-3.050772E-06	0.0	5.175495E-04	0.0
290	18	4.755743E-03	-2.125158E-04	9.928094E-06	0.0	3.002386E-04	0.0
292	18	5.218942E-03	-2.121806E-04	2.102324E-05	0.0	-8.262754E-06	0.0
294	18	4.735615E-03	-1.851066E-04	3.017977E-05	0.0	-3.074068E-04	0.0
296	18	3.402731E-03	-1.403749E-04	3.820342E-05	0.0	-5.302469E-04	0.0
298	18	1.700084E-03	-7.865539E-05	4.435037E-05	0.0	-5.653631E-04	0.0
300	18	3.205647E-04	-1.042059E-05	4.739624E-05	0.0	-2.886083E-04	0.0
362	18	-1.245067E-04	1.709122E-05	4.583674E-05	0.0	-5.126071E-05	0.0
363	18	2.907387E-04	-3.541485E-05	-4.228948E-04	0.0	-1.921949E-04	0.0
364	18	-1.549950E-04	4.446178E-05	4.159570E-05	0.0	2.033788E-06	0.0
365	18	2.616977E-04	-5.146961E-05	-7.374464E-04	0.0	-1.199168E-04	0.0
366	18	-1.538566E-04	-2.721252E-06	3.452573E-05	0.0	1.301197E-06	0.0
367	18	2.340586E-04	-6.074360E-05	-9.211923E-04	0.0	-6.661788E-05	0.0
368	18	-1.721681E-04	4.569230E-05	3.287340E-05	0.0	-1.956530E-05	0.0
369	18	2.082359E-04	-6.510392E-05	-1.013773E-03	0.0	-2.812888E-05	0.0
370	18	-1.485693E-04	-5.443313E-05	2.993621E-05	0.0	8.317787E-07	0.0
371	18	1.844884E-04	-6.580955E-05	-1.041329E-03	0.0	-1.095420E-06	0.0
372	18	-2.061198E-04	4.191507E-05	2.946392E-05	0.0	-2.511576E-05	0.0
373	18	1.639773E-04	-6.411337E-05	-1.025670E-03	0.0	1.642651E-05	0.0
375	18	1.445974E-04	-6.666328E-05	-9.799364E-04	0.0	2.833879E-05	0.0
376	18	-2.460477E-04	3.907706E-05	2.665551E-05	0.0	-2.772154E-05	0.0
377	18	1.274695E-04	-5.514705E-05	-9.156573E-04	0.0	3.522373E-05	0.0
379	18	1.125332E-04	-5.107960E-05	-8.414944E-04	0.0	3.841908E-05	0.0
380	18	-2.883084E-04	3.763340E-05	2.435797E-05	0.0	-2.836775E-05	0.0
381	18	9.969386E-05	-4.586253E-05	-7.637416E-04	0.0	3.896542E-05	0.0
383	18	8.883208E-05	-4.082244E-05	-6.868595E-04	0.0	3.766500E-05	0.0
384	18	-3.305438E-04	3.565461E-05	2.249026E-05	0.0	-2.779340E-05	0.0
385	18	7.980970E-05	-3.623552E-05	-6.139008E-04	0.0	3.513061E-05	0.0
387	18	7.247120E-05	-3.235937E-05	-5.468477E-04	0.0	3.182632E-05	0.0
388	18	-3.713525E-04	3.483026E-05	2.098110E-05	0.0	-2.654213E-05	0.0
389	18	6.664077E-05	-2.946265E-05	-4.868740E-04	0.0	2.810158E-05	0.0
391	18	6.231504E-05	-2.789820E-05	-4.369759E-04	0.0	2.441468E-05	0.0
392	18	-4.100294E-04	3.446758E-05	1.976863E-05	0.0	-2.500568E-05	0.0
393	18	5.879895E-05	-2.788710E-05	-3.920086E-04	0.0	2.057375E-05	0.0
395	18	5.604171E-05	-3.006641E-05	-3.545436E-04	0.0	1.693825E-05	0.0
396	18	-4.463666E-04	3.449291E-05	1.879975E-05	0.0	-2.346055E-05	0.0
397	18	5.363081E-05	-3.515536E-05	-3.240176E-04	0.0	1.365975E-05	0.0
399	18	5.099965E-05	-4.415559E-05	-2.995615E-04	0.0	1.089700E-05	0.0
400	18	-4.805038E-04	3.484928E-05	1.802902E-05	0.0	-2.209854E-05	0.0
404	18	-5.128204E-04	3.549474E-05	1.741761E-05	0.0	-2.105164E-05	0.0
408	18	-5.438628E-04	3.640041E-05	1.693216E-05	0.0	-2.041257E-05	0.0
412	18	-5.742973E-04	3.754823E-05	1.654384E-05	0.0	-2.025126E-05	0.0
416	18	-6.048859E-04	3.892904E-05	1.622742E-05	0.0	-2.062826E-05	0.0
420	18	-6.364821E-04	4.054028E-05	1.596067E-05	0.0	-2.160585E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
424	18	-6.700396E-04	4.238460E-05	1.572381E-05	0.0	-2.325674E-05	0.0
428	18	-7.066338E-04	4.446434E-05	1.549943E-05	0.0	-2.567125E-05	0.0
94	19	0.0	0.0	0.0	0.0	0.0	0.0
96	19	5.873710E-07	-1.349341E-07	2.785995E-07	0.0	7.760967E-07	0.0
98	19	2.146157E-06	-2.367365E-07	1.123610E-06	0.0	1.397411E-06	0.0
100	19	4.476450E-06	-4.567096E-07	2.420265E-06	0.0	1.890681E-06	0.0
102	19	7.417025E-06	-6.453034E-07	4.076533E-06	0.0	2.278833E-06	0.0
104	19	1.083395E-05	-8.515509E-07	6.016326E-06	0.0	2.581224E-06	0.0
106	19	1.461806E-05	-1.075418E-06	8.178054E-06	0.0	2.813776E-06	0.0
108	19	1.868104E-05	-1.314727E-06	1.051233E-05	0.0	2.989253E-06	0.0
110	19	2.294953E-05	-1.568254E-06	1.297825E-05	0.0	3.117509E-06	0.0
112	19	2.736202E-05	-1.834444E-06	1.554206E-05	0.0	3.205695E-06	0.0
114	19	3.185030E-05	-2.354795E-06	1.849572E-05	0.0	3.237532E-06	0.0
116	19	3.633661E-05	-2.613105E-06	2.115026E-05	0.0	3.225606E-06	0.0
118	19	4.079333E-05	-2.888797E-06	2.360712E-05	0.0	3.208281E-06	0.0
120	19	4.521385E-05	-3.179558E-06	2.646628E-05	0.0	3.188389E-06	0.0
122	19	4.959466E-05	-3.483439E-06	2.912442E-05	0.0	3.167615E-06	0.0
124	19	5.393404E-05	-3.796602E-06	3.179543E-05	0.0	3.146801E-06	0.0
126	19	5.823090E-05	-4.124112E-06	3.446950E-05	0.0	3.126214E-06	0.0
128	19	6.248427E-05	-4.457856E-06	3.715306E-05	0.0	3.105763E-06	0.0
130	19	6.669285E-05	-4.798480E-06	3.984843E-05	0.0	3.085160E-06	0.0
132	19	7.085472E-05	-5.144333E-06	4.255775E-05	0.0	3.064017E-06	0.0
134	19	7.496739E-05	-5.493580E-06	4.528306E-05	0.0	3.041860E-06	0.0
136	19	7.902742E-05	-5.843904E-06	4.802599E-05	0.0	3.018122E-06	0.0
138	19	8.303059E-05	-6.192357E-06	5.078760E-05	0.0	2.992120E-06	0.0
140	19	8.697156E-05	-6.535223E-06	5.356921E-05	0.0	2.962947E-06	0.0
142	19	9.084326E-05	-6.867871E-06	5.637003E-05	0.0	2.929200E-06	0.0
144	19	9.463620E-05	-7.184508E-06	5.918865E-05	0.0	2.888526E-06	0.0
146	19	9.833660E-05	-7.477681E-06	6.202084E-05	0.0	2.837058E-06	0.0
148	19	1.019239E-04	-7.737791E-06	6.485812E-05	0.0	2.768672E-06	0.0
150	19	1.047131E-04	-9.461155E-06	6.771674E-05	0.0	1.931373E-06	0.0
152	19	1.058509E-04	-9.640446E-06	6.938635E-05	0.0	3.332233E-07	0.0
154	19	1.047490E-04	-9.825801E-06	6.987277E-05	0.0	-1.215744E-06	0.0
156	19	1.014409E-04	-1.000895E-05	6.921121E-05	0.0	-2.755820E-06	0.0
158	19	9.590568E-05	-1.018494E-05	6.740625E-05	0.0	-4.323928E-06	0.0
160	19	8.807289E-05	-1.035278E-05	6.443514E-05	0.0	-5.952268E-06	0.0
162	19	7.783130E-05	-1.051382E-05	6.025391E-05	0.0	-7.666294E-06	0.0
164	19	6.503942E-05	-1.067319E-05	5.480341E-05	0.0	-9.481931E-06	0.0
166	19	4.953990E-05	-1.083937E-05	4.801685E-05	0.0	-1.140261E-05	0.0
168	19	3.118037E-05	-1.102479E-05	3.984234E-05	0.0	-1.341447E-05	0.0
170	19	9.841146E-06	-1.124679E-05	3.023843E-05	0.0	-1.548133E-05	0.0
172	19	-1.452972E-05	-1.152748E-05	1.921697E-05	0.0	-1.753705E-05	0.0
174	19	-4.186695E-05	-1.189469E-05	6.860515E-06	0.0	-1.947519E-05	0.0
176	19	-7.192387E-05	-1.238216E-05	-6.637525E-06	0.0	-2.113689E-05	0.0
178	19	-1.041903E-04	-1.302950E-05	-2.092503E-05	0.0	-2.229461E-05	0.0
180	19	-1.377821E-04	-1.388105E-05	-3.542901E-05	0.0	-2.263313E-05	0.0
182	19	-1.712986E-04	-1.498459E-05	-4.927206E-05	0.0	-2.172514E-05	0.0
183	19	3.046365E-04	1.716887E-04	-1.758580E-03	0.0	7.880937E-05	0.0
184	19	-2.026570E-04	-1.638729E-05	-6.117990E-05	0.0	-1.900112E-05	0.0
185	19	3.140052E-04	1.207985E-04	-1.608353E-03	0.0	7.207705E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
186	19	-2.284423E-04	-1.812988E-05	-6.933988E-05	0.0	-1.371500E-05	0.0
187	19	3.224809E-04	7.890956E-05	-1.460433E-03	0.0	6.967029E-05	0.0
188	19	-2.476794E-04	-1.730618E-05	-7.329887E-05	0.0	-8.514191E-06	0.0
189	19	3.304025E-04	4.644785E-05	-1.318973E-03	0.0	7.275940E-05	0.0
190	19	-2.596399E-04	-2.083599E-05	-7.153714E-05	0.0	-2.252653E-06	0.0
191	19	3.389532E-04	1.800646E-05	-1.165057E-03	0.0	8.237133E-05	0.0
192	19	-2.587966E-04	-2.359111E-05	-6.137321E-05	0.0	1.065820E-05	0.0
193	19	3.485333E-04	-9.529216E-06	-9.840106E-04	0.0	1.002189E-04	0.0
194	19	-2.053161E-04	-5.337646E-05	-6.503139E-05	0.0	6.143226E-05	0.0
195	19	3.597203E-04	-4.102621E-05	-7.442157E-04	0.0	1.303647E-04	0.0
196	19	-1.379049E-05	-6.430288E-05	-5.410494E-05	0.0	1.200796E-04	0.0
197	19	3.710303E-04	-7.723772E-05	-4.432718E-04	0.0	1.731994E-04	0.0
198	19	3.820190E-04	-1.238149E-04	-3.941744E-05	0.0	2.340816E-04	0.0
286	19	1.598294E-03	-1.435318E-04	-2.155552E-05	0.0	5.122067E-04	0.0
288	19	3.203104E-03	-1.701805E-04	-6.402434E-06	0.0	4.828195E-04	0.0
290	19	4.378550E-03	-1.889260E-04	5.701645E-06	0.0	2.813279E-04	0.0
292	19	4.817083E-03	-1.902561E-04	1.636910E-05	0.0	-4.787424E-06	0.0
294	19	4.376892E-03	-1.694464E-04	2.533483E-05	0.0	-2.627368E-04	0.0
296	19	3.145995E-03	-1.264097E-04	3.315724E-05	0.0	-4.908748E-04	0.0
298	19	1.567366E-03	-7.037616E-05	3.897614E-05	0.0	-5.246075E-04	0.0
300	19	2.910334E-04	-8.422154E-06	4.160716E-05	0.0	-2.637026E-04	0.0
362	19	-1.071516E-04	1.485087E-05	3.976548E-05	0.0	-4.262119E-05	0.0
363	19	2.623003E-04	-3.240370E-05	-3.889657E-04	0.0	-1.714369E-04	0.0
364	19	-1.270333E-04	3.806897E-05	3.559508E-05	0.0	2.163252E-06	0.0
365	19	2.343761E-04	-4.743029E-05	-6.602821E-04	0.0	-1.034302E-04	0.0
366	19	-1.259634E-04	-2.160506E-06	2.809216E-05	0.0	1.386070E-06	0.0
367	19	2.079006E-04	-5.582078E-05	-8.151899E-04	0.0	-5.421620E-05	0.0
368	19	-1.432803E-04	3.270577E-05	2.732687E-05	0.0	-1.649148E-05	0.0
369	19	1.832892E-04	-5.938693E-05	-8.867483E-04	0.0	-1.943519E-05	0.0
370	19	-1.212680E-04	-4.615032E-05	2.310658E-05	0.0	9.357655E-07	0.0
371	19	1.607868E-04	-5.954228E-05	-9.002311E-04	0.0	4.370092E-06	0.0
372	19	-1.712622E-04	3.500875E-05	2.411364E-05	0.0	-2.034387E-05	0.0
373	19	1.414701E-04	-5.750811E-05	-8.767168E-04	0.0	1.930771E-05	0.0
375	19	1.233349E-04	-5.388402E-05	-8.275192E-04	0.0	2.900719E-05	0.0
376	19	-2.031461E-04	3.217126E-05	2.147956E-05	0.0	-2.185564E-05	0.0
377	19	1.074136E-04	-4.935222E-05	-7.637020E-04	0.0	3.417245E-05	0.0
379	19	9.362165E-05	-4.439100E-05	-6.929832E-04	0.0	3.609664E-05	0.0
380	19	-2.360819E-04	3.005148E-05	1.933271E-05	0.0	-2.186596E-05	0.0
381	19	8.184377E-05	-3.936209E-05	-6.208129E-04	0.0	3.576661E-05	0.0
383	19	7.194477E-05	-3.454494E-05	-5.509185E-04	0.0	3.392759E-05	0.0
384	19	-2.683038E-04	2.852599E-05	1.759258E-05	0.0	-2.099057E-05	0.0
385	19	6.377623E-05	-3.016694E-05	-4.857343E-04	0.0	3.113580E-05	0.0
387	19	5.717890E-05	-2.643194E-05	-4.267343E-04	0.0	2.780177E-05	0.0
388	19	-2.988337E-04	2.749098E-05	1.618965E-05	0.0	-1.967150E-05	0.0
389	19	5.198078E-05	-2.354891E-05	-3.746867E-04	0.0	2.422575E-05	0.0
391	19	4.816595E-05	-2.181774E-05	-3.319161E-04	0.0	2.080524E-05	0.0
392	19	-3.272528E-04	2.686199E-05	1.506467E-05	0.0	-1.821837E-05	0.0
393	19	4.511501E-06	-2.136617E-05	-2.938064E-04	0.0	1.733891E-05	0.0
395	19	4.278189E-05	-2.274131E-05	-2.623813E-04	0.0	1.414107E-05	0.0
396	19	-3.535287E-04	2.657255E-05	1.416738E-05	0.0	-1.684240E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD + LOCA LOADS + SSE   SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
397	19	4.080245E-05	-2.554954E-05	-2.369822E-04	0.0	1.133359E-05	0.0
399	19	3.867556E-05	-3.365663E-05	-2.166987E-04	0.0	9.049771E-06	0.0
400	19	-3.778895E-04	2.657236E-05	1.345527E-05	0.0	-1.568400E-05	0.0
404	19	-4.007358E-04	2.682529E-05	1.289225E-05	0.0	-1.483490E-05	0.0
408	19	-4.225795E-04	2.730732E-05	1.244740E-05	0.0	-1.435598E-05	0.0
412	19	-4.440108E-04	2.800454E-05	1.209391E-05	0.0	-1.429146E-05	0.0
416	19	-4.656205E-04	2.891124E-05	1.180810E-05	0.0	-1.468046E-05	0.0
420	19	-4.883006E-04	3.002614E-05	1.156867E-05	0.0	-1.556643E-05	0.0
424	19	-5.126558E-04	3.136063E-05	1.135616E-05	0.0	-1.700506E-05	0.0
428	19	-5.392906E-04	3.291677E-05	1.115264E-05	0.0	-1.907097E-05	0.0
94	20	0.0	0.0	0.0	0.0	0.0	0.0
96	20	4.292334E-07	-9.405750E-08	2.069340E-07	0.0	5.686722E-07	0.0
98	20	1.568703E-06	-2.003388E-07	8.280581E-07	0.0	1.021703E-06	0.0
100	20	3.269443E-06	-3.192607E-07	1.777926E-06	0.0	1.380172E-06	0.0
102	20	5.413299E-06	-4.529541E-07	2.989168E-06	0.0	1.661937E-06	0.0
104	20	7.903017E-06	-5.992594E-07	4.406644E-06	0.0	1.881912E-06	0.0
106	20	1.066035E-05	-7.581351E-07	5.936331E-06	0.0	2.052229E-06	0.0
108	20	1.362297E-05	-9.287214E-07	7.693495E-06	0.0	2.182506E-06	0.0
110	20	1.673950E-05	-1.109967E-06	9.499717E-06	0.0	2.280066E-06	0.0
112	20	1.996756E-05	-1.300888E-06	1.138187E-05	0.0	2.350120E-06	0.0
114	20	2.325734E-05	-1.686982E-06	1.355593E-05	0.0	2.376925E-06	0.0
116	20	2.654782E-05	-1.872797E-06	1.551161E-05	0.0	2.369664E-06	0.0
118	20	2.981946E-05	-2.073109E-06	1.747288E-05	0.0	2.360423E-06	0.0
120	20	3.306979E-05	-2.286253E-06	1.944066E-05	0.0	2.350873E-06	0.0
122	20	3.629783E-05	-2.510882E-06	2.141693E-05	0.0	2.341837E-06	0.0
124	20	3.950365E-05	-2.745911E-06	2.340415E-05	0.0	2.333539E-06	0.0
126	20	4.268666E-05	-2.990350E-06	2.540482E-05	0.0	2.325805E-06	0.0
128	20	4.584691E-05	-3.243235E-06	2.742134E-05	0.0	2.318242E-06	0.0
130	20	4.898246E-05	-3.503567E-06	2.945584E-05	0.0	2.310370E-06	0.0
132	20	5.209132E-05	-3.770259E-06	3.151021E-05	0.0	2.301706E-06	0.0
134	20	5.517069E-05	-4.042062E-06	3.358620E-05	0.0	2.291779E-06	0.0
136	20	5.821690E-05	-4.317316E-06	3.568524E-05	0.0	2.280156E-06	0.0
138	20	6.122574E-05	-4.593817E-06	3.780863E-05	0.0	2.266438E-06	0.0
140	20	6.419235E-05	-4.868684E-06	3.995745E-05	0.0	2.250215E-06	0.0
142	20	6.711109E-05	-5.138203E-06	4.213245E-05	0.0	2.230880E-06	0.0
144	20	6.997517E-05	-5.397600E-06	4.433384E-05	0.0	2.207305E-06	0.0
146	20	7.277566E-05	-5.640559E-06	4.656041E-05	0.0	2.177411E-06	0.0
148	20	7.549976E-05	-5.858839E-06	4.880858E-05	0.0	2.137622E-06	0.0
150	20	7.758441E-05	-7.224087E-06	5.106948E-05	0.0	1.432481E-06	0.0
152	20	7.824109E-05	-7.383032E-06	5.234657E-05	0.0	7.315083E-08	0.0
154	20	7.699766E-05	-7.550218E-06	5.262978E-05	0.0	-1.232209E-06	0.0
156	20	7.389589E-05	-7.717966E-06	5.195824E-05	0.0	-2.521944E-06	0.0
158	20	6.892631E-05	-7.881322E-06	5.034232E-05	0.0	-3.830484E-06	0.0
160	20	6.203372E-05	-8.038330E-06	4.776708E-05	0.0	-5.187400E-06	0.0
162	20	5.312554E-05	-8.188741E-06	4.419815E-05	0.0	-6.615865E-06	0.0
164	20	4.208171E-05	-8.334890E-06	3.958738E-05	0.0	-8.130453E-06	0.0
166	20	2.876738E-05	-8.481299E-06	3.388115E-05	0.0	-9.734785E-06	0.0
168	20	1.305111E-05	-8.634980E-06	2.703135E-05	0.0	-1.141756E-05	0.0
170	20	-5.171504E-06	-8.805915E-06	1.900844E-05	0.0	-1.314850E-05	0.0
172	20	-2.594784E-05	-9.006625E-06	9.821090E-06	0.0	-1.487199E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
174	20	-4.922661E-05	-9.253486E-06	-4.610432E-07	0.0	-1.649834E-05	0.0
176	20	-7.480351E-05	-9.564460E-06	-1.167503E-05	0.0	-1.789376E-05	0.0
178	20	-1.022524E-04	-9.560502E-06	-2.352487E-05	0.0	-1.886673E-05	0.0
180	20	-1.306321E-04	-1.046268E-05	-3.552937E-05	0.0	-1.915210E-05	0.0
182	20	-1.593657E-04	-1.109047E-05	-4.695171E-05	0.0	-1.839064E-05	0.0
183	20	2.494012E-04	1.442548E-04	-1.467000E-03	0.0	6.317155E-05	0.0
184	20	-1.861044E-04	-1.185682E-05	-5.672427E-05	0.0	-1.610410E-05	0.0
185	20	2.576290E-04	1.008426E-04	-1.347569E-03	0.0	5.684470E-05	0.0
186	20	-2.085120E-04	-1.276154E-05	-6.332755E-05	0.0	-1.166652E-05	0.0
187	20	2.651303E-04	5.583963E-05	-1.231609E-03	0.0	5.438048E-05	0.0
188	20	-2.249631E-04	-1.189127E-05	-6.652746E-05	0.0	-7.697109E-06	0.0
189	20	2.723015E-04	3.923061E-05	-1.121175E-03	0.0	5.694853E-05	0.0
190	20	-2.365404E-04	-1.299265E-05	-6.542912E-05	0.0	-3.231721E-06	0.0
191	20	2.802478E-04	1.617214E-05	-9.997790E-04	0.0	6.558704E-05	0.0
192	20	-2.385140E-04	-1.393523E-05	-5.794952E-05	0.0	6.732869E-06	0.0
193	20	2.893510E-04	-5.232593E-06	-8.536370E-04	0.0	8.203105E-05	0.0
194	20	-1.950672E-04	-4.106652E-05	-6.045999E-05	0.0	5.198331E-05	0.0
195	20	3.001657E-04	-3.238082E-05	-6.539410E-04	0.0	1.103037E-04	0.0
196	20	-2.957453E-05	-6.882090E-05	-5.076869E-05	0.0	1.052456E-04	0.0
197	20	3.112429E-04	-6.332742E-05	-3.951327E-04	0.0	1.510975E-04	0.0
198	20	3.221179E-04	-1.043009E-04	-3.757511E-05	0.0	2.099058E-04	0.0
286	20	1.441072E-03	-1.233385E-04	-2.172859E-05	0.0	4.745305E-04	0.0
288	20	2.930258E-03	-1.491991E-04	-8.109678E-06	0.0	4.484658E-04	0.0
290	20	4.023191E-03	-1.678394E-04	3.051800E-06	0.0	2.621571E-04	0.0
292	20	4.435323E-03	-1.704042E-04	1.316600E-05	0.0	-2.155365E-06	0.0
294	20	4.035059E-03	-1.522561E-04	2.180495E-05	0.0	-2.593393E-04	0.0
296	20	2.901796E-03	-1.135255E-04	2.931112E-05	0.0	-4.530065E-04	0.0
298	20	1.442518E-03	-6.273334E-05	3.474210E-05	0.0	-4.854568E-04	0.0
300	20	2.642146E-04	-6.569268E-06	3.695910E-05	0.0	-2.407113E-04	0.0
362	20	-9.236791E-05	1.302261E-05	3.488164E-05	0.0	-3.552101E-05	0.0
363	20	2.366819E-04	-2.951921E-05	-3.519359E-04	0.0	-1.527733E-04	0.0
364	20	-1.041989E-04	3.258670E-05	3.083175E-05	0.0	2.187611E-06	0.0
365	20	2.099769E-04	-4.354751E-05	-5.902431E-04	0.0	-8.905071E-05	0.0
366	20	-1.031944E-04	-1.674203E-06	2.329612E-05	0.0	1.386022E-06	0.0
367	20	1.647593E-04	-5.107914E-05	-7.204299E-04	0.0	-4.380678E-05	0.0
368	20	-1.221591E-04	3.288661E-05	2.237171E-05	0.0	-1.361985E-05	0.0
369	20	1.614418E-04	-5.398173E-05	-7.747591E-04	0.0	-1.252984E-05	0.0
370	20	-9.903834E-05	-3.900479E-05	1.828290E-05	0.0	9.539390E-07	0.0
371	20	1.402532E-04	-5.368041E-05	-7.774916E-04	0.0	8.306651E-06	0.0
372	20	-1.447382E-04	2.933218E-05	1.940069E-05	0.0	-1.611083E-05	0.0
373	20	1.221822E-04	-5.140358E-05	-7.487719E-04	0.0	2.093193E-05	0.0
375	20	1.053310E-04	-4.770294E-05	-6.983320E-04	0.0	2.870994E-05	0.0
376	20	-1.695851E-04	2.656272E-05	1.697952E-05	0.0	-1.678069E-05	0.0
377	20	9.064106E-05	-4.324701E-05	-6.366251E-04	0.0	3.243500E-05	0.0
379	20	7.800521E-05	-3.847729E-05	-5.704630E-04	0.0	3.334302E-05	0.0
380	20	-1.945254E-04	2.444185E-05	1.501614E-05	0.0	-1.633457E-05	0.0
381	20	6.728929E-06	-3.371570E-05	-5.045091E-04	0.0	3.235898E-05	0.0
383	20	5.834400E-05	-2.919974E-05	-4.418285E-04	0.0	3.016634E-05	0.0
384	20	-2.182858E-04	2.285192E-05	1.343149E-05	0.0	-1.527763E-05	0.0
385	20	5.101222E-05	-2.511304E-05	-3.843142E-04	0.0	2.726294E-05	0.0

ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
387	20	4.513202E-05	-2.161282E-05	-3.330100E-04	0.0	2.400605E-05	0.0
388	20	-2.402311E-04	2.169566E-05	1.215867E-05	0.0	-1.396266E-05	0.0
389	20	4.053552E-05	-1.885692E-05	-2.883554E-04	0.0	2.064857E-05	0.0
391	20	3.719586E-05	-1.709418E-05	-2.521076E-04	0.0	1.752890E-05	0.0
392	20	-2.601654E-04	2.089594E-05	1.114151E-05	0.0	-1.262868E-05	0.0
393	20	3.456409E-05	-1.638339E-05	-2.201783E-04	0.0	1.444304E-05	0.0
395	20	3.259823E-05	-1.718687E-05	-1.941330E-04	0.0	1.166057E-05	0.0
396	20	-2.781865E-04	2.039192E-05	1.033302E-05	0.0	-1.143201E-05	0.0
397	20	3.097957E-05	-2.001025E-05	-1.732788E-04	0.0	9.276381E-06	0.0
399	20	2.926971E-05	-2.559270E-05	-1.566899E-04	0.0	7.399964E-06	0.0
400	20	-2.945799E-04	2.013660E-05	9.693908E-06	0.0	-1.047075E-05	0.0
404	20	-3.097465E-04	2.010475E-05	9.191123E-06	0.0	-9.804069E-06	0.0
408	20	-3.241571E-04	2.026896E-05	8.796530E-06	0.0	-9.467349E-06	0.0
412	20	-3.383253E-04	2.061977E-05	8.485769E-06	0.0	-9.484070E-06	0.0
416	20	-3.527964E-04	2.115304E-05	8.237277E-06	0.0	-9.875341E-06	0.0
420	20	-3.681516E-04	2.187050E-05	8.031485E-06	0.0	-1.066769E-05	0.0
424	20	-3.850190E-04	2.277832E-05	7.850217E-06	0.0	-1.189967E-05	0.0
428	20	-4.040983E-04	2.388566E-05	7.676290E-06	0.0	-1.362773E-05	0.0
94	21	0.0	0.0	0.0	0.0	0.0	0.0
96	21	3.093955E-07	-6.387944E-08	1.504633E-07	0.0	4.103539E-07	0.0
98	21	1.130292E-06	-1.366275E-07	5.991687E-07	0.0	7.357251E-07	0.0
100	21	2.353500E-06	-2.190454E-07	1.283543E-06	0.0	9.924779E-07	0.0
102	21	3.894002E-06	-3.113512E-07	2.155187E-06	0.0	1.194306E-06	0.0
104	21	5.682550E-06	-4.133655E-07	3.174915E-06	0.0	1.352519E-06	0.0
106	21	7.664257E-06	-5.246607E-07	4.311939E-06	0.0	1.476215E-06	0.0
108	21	9.796127E-06	-6.446804E-07	5.542426E-06	0.0	1.572522E-06	0.0
110	21	1.204320E-05	-7.727563E-07	6.847165E-06	0.0	1.646785E-06	0.0
112	21	1.437698E-05	-9.082204E-07	8.210790E-06	0.0	1.702725E-06	0.0
114	21	1.676258E-05	-1.191409E-06	9.791303E-06	0.0	1.727384E-06	0.0
116	21	1.915520E-05	-1.324140E-06	1.121805E-05	0.0	1.727174E-06	0.0
118	21	2.154191E-05	-1.468949E-06	1.265430E-05	0.0	1.727121E-06	0.0
120	21	2.392282E-05	-1.624684E-06	1.410218E-05	0.0	1.728157E-06	0.0
122	21	2.629879E-05	-1.790459E-06	1.556426E-05	0.0	1.730594E-06	0.0
124	21	2.867079E-05	-1.965608E-06	1.704345E-05	0.0	1.734312E-06	0.0
126	21	3.103935E-05	-2.149560E-06	1.854230E-05	0.0	1.738917E-06	0.0
128	21	3.340427E-05	-2.341764E-06	2.006321E-05	0.0	1.743875E-06	0.0
130	21	3.576452E-05	-2.541649E-06	2.160824E-05	0.0	1.748617E-06	0.0
132	21	3.811812E-05	-2.748572E-06	2.317919E-05	0.0	1.752604E-06	0.0
134	21	4.046237E-05	-2.961752E-06	2.477765E-05	0.0	1.755355E-06	0.0
136	21	4.279373E-05	-3.180069E-06	2.640496E-05	0.0	1.756462E-06	0.0
138	21	4.510817E-05	-3.401948E-06	2.806239E-05	0.0	1.755619E-06	0.0
140	21	4.740119E-05	-3.625230E-06	2.975117E-05	0.0	1.752600E-06	0.0
142	21	4.966781E-05	-3.847030E-06	3.147240E-05	0.0	1.747140E-06	0.0
144	21	5.190256E-05	-4.063516E-06	3.322707E-05	0.0	1.738701E-06	0.0
146	21	5.409884E-05	-4.269484E-06	3.501546E-05	0.0	1.726162E-06	0.0
148	21	5.624781E-05	-4.457994E-06	3.683647E-05	0.0	1.707396E-06	0.0
150	21	5.788350E-05	-5.548772E-06	3.867366E-05	0.0	1.123459E-06	0.0
152	21	5.831580E-05	-5.695251E-06	3.970192E-05	0.0	-1.300886E-08	0.0
154	21	5.716138E-05	-5.850559E-06	3.998902E-05	0.0	-1.097094E-06	0.0
156	21	5.446172E-05	-6.013776E-06	3.933310E-05	0.0	-2.164805E-06	0.0

VESSEL SUBJECTED TO TMP. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
158	21	5.021060E-05	-6.174254E-06	3.798553E-05	0.0	-3.248031E-06	0.0
160	21	4.435942E-05	-6.331069E-06	3.585432E-05	0.0	-4.373943E-06	0.0
162	21	3.632544E-05	-6.484023E-06	3.290975E-05	0.0	-5.563818E-06	0.0
164	21	2.750049E-05	-6.633810E-06	2.910937E-05	0.0	-6.831306E-06	0.0
166	21	1.626204E-05	-6.780990E-06	2.440522E-05	0.0	-8.180523E-06	0.0
168	21	2.989205E-06	-6.929372E-06	1.875336E-05	0.0	-9.602752E-06	0.0
170	21	-1.241736E-05	-7.083700E-06	1.212502E-05	0.0	-1.107307E-05	0.0
172	21	-3.000935E-05	-7.249901E-06	4.523319E-06	0.0	-1.254496E-05	0.0
174	21	-4.975585E-05	-7.434933E-06	-3.997455E-06	0.0	-1.394288E-05	0.0
176	21	-7.149646E-05	-7.646137E-06	-1.330441E-05	0.0	-1.515378E-05	0.0
178	21	-9.488311E-05	-7.890162E-06	-2.315248E-05	0.0	-1.601537E-05	0.0
180	21	-1.193006E-04	-8.170524E-06	-3.314027E-05	0.0	-1.630276E-05	0.0
182	21	-1.437621E-04	-8.485043E-06	-4.264982E-05	0.0	-1.571112E-05	0.0
183	21	2.051259E-04	1.214769E-04	-1.219413E-03	0.0	5.029862E-05	0.0
184	21	-1.667968E-04	-8.820226E-06	-5.078503E-05	0.0	-1.383444E-05	0.0
185	21	2.123573E-04	8.437037E-05	-1.125222E-03	0.0	4.440657E-05	0.0
186	21	-1.862613E-04	-9.143787E-06	-5.626654E-05	0.0	-1.014168E-05	0.0
187	21	2.190071E-04	5.508452E-05	-1.035312E-03	0.0	4.192622E-05	0.0
188	21	-2.009453E-04	-7.595389E-06	-5.903655E-05	0.0	-7.168804E-06	0.0
189	21	2.255139E-04	3.327271E-05	-9.501912E-04	0.0	4.401203E-05	0.0
190	21	-2.123232E-04	-7.669157E-06	-5.861519E-05	0.0	-4.095980E-06	0.0
191	21	2.329079E-04	1.459144E-05	-8.555399E-04	0.0	5.170060E-05	0.0
192	21	-2.165950E-04	-7.286312E-06	-5.340153E-05	0.0	3.552514E-06	0.0
193	21	2.415529E-04	-3.645097E-06	-7.385102E-04	0.0	6.672915E-05	0.0
194	21	-1.814849E-04	-3.181887E-05	-5.497510E-05	0.0	4.388255E-05	0.0
195	21	2.519798E-04	-2.541751E-05	-5.729203E-04	0.0	9.304960E-05	0.0
196	21	-3.876162E-05	-5.655459E-05	-4.638039E-05	0.0	9.216338E-05	0.0
197	21	2.627801E-04	-5.199687E-05	-3.507885E-04	0.0	1.316293E-04	0.0
198	21	2.734733E-04	-8.824107E-05	-3.454347E-05	0.0	1.880541E-04	0.0
286	21	1.301012E-03	-1.062789E-04	-2.054093E-05	0.0	4.385039E-04	0.0
288	21	2.678699E-03	-1.310159E-04	-8.342423E-06	0.0	4.151054E-04	0.0
290	21	3.690975E-03	-1.492153E-04	1.934927E-06	0.0	2.432085E-04	0.0
292	21	4.076038E-03	-1.526172E-04	1.153143E-05	0.0	-1.770723E-07	0.0
294	21	3.712573E-03	-1.368138E-04	1.989106E-05	0.0	-2.373365E-04	0.0
296	21	2.671787E-03	-1.019790E-04	2.718270E-05	0.0	-4.170090E-04	0.0
298	21	1.325988E-03	-5.595277E-05	3.239828E-05	0.0	-4.483035E-04	0.0
300	21	2.397360E-04	-4.975464E-06	3.444818E-05	0.0	-2.197213E-04	0.0
362	21	-8.046397E-05	1.164704E-05	3.241881E-05	0.0	-2.982657E-05	0.0
363	21	2.134756E-04	-2.685169E-05	-3.168513E-04	0.0	-1.361646E-04	0.0
364	21	-8.632327E-05	2.843523E-05	2.874862E-05	0.0	2.236655E-06	0.0
365	21	1.880594E-04	-3.989256E-05	-5.261933E-04	0.0	-7.664028E-05	0.0
366	21	-8.542252E-05	-1.119964E-06	2.111560E-05	0.0	1.390002E-06	0.0
367	21	1.641618E-04	-4.661223E-05	-6.354256E-04	0.0	-3.518134E-05	0.0
368	21	-1.381048E-04	2.942048E-05	1.192484E-05	0.0	-7.874218E-06	0.0
369	21	1.421891E-04	-4.891733E-05	-6.758526E-04	0.0	-7.159679E-06	0.0
370	21	-8.174173E-05	-3.308046E-05	1.611427E-05	0.0	9.497324E-07	0.0
371	21	1.223521E-04	-4.823873E-05	-6.706265E-04	0.0	1.099001E-05	0.0
372	21	-1.509972E-04	2.556783E-05	9.558816E-06	0.0	-9.041477E-06	0.0
373	21	1.055495E-04	-4.579326E-05	-6.388202E-04	0.0	2.157912E-05	0.0
375	21	8.999267E-05	-4.208884E-05	-5.858075E-04	0.0	2.771708E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
376	21	-1.645874E-04	2.251148E-05	7.684296E-06	0.0	-8.917541E-06	0.0
377	21	7.653199E-05	-3.777319E-05	-5.303391E-04	0.0	3.026037E-05	0.0
379	21	6.503941E-05	-3.325047E-05	-4.693754E-04	0.0	3.037888E-05	0.0
380	21	-1.773924E-04	2.009764E-05	6.217579E-06	0.0	-8.073128E-06	0.0
381	21	5.536417E-05	-2.554426E-05	-4.098627E-04	0.0	2.893059E-05	0.0
383	21	4.734511E-05	-2.403377E-05	-3.542805E-04	0.0	2.653532E-05	0.0
384	21	-1.886449E-04	1.519900E-05	5.067321E-06	0.0	-6.900802E-06	0.0
385	21	4.081827E-05	-2.084395E-05	-3.040566E-04	0.0	2.363301E-05	0.0
387	21	3.562047E-05	-1.767212E-05	-2.598800E-04	0.0	2.052978E-05	0.0
388	21	-1.980628E-04	1.671234E-05	4.172469E-06	0.0	-5.661689E-06	0.0
389	21	3.155851E-05	-1.511304E-05	-2.219306E-04	0.0	1.743450E-05	0.0
391	21	2.868632E-05	-1.340622E-05	-1.914977E-04	0.0	1.463024E-05	0.0
392	21	-2.056807E-04	1.555556E-05	3.480138E-06	0.0	-4.522008E-06	0.0
393	21	2.642999E-05	-1.256687E-05	-1.649988E-04	0.0	1.191566E-05	0.0
395	21	2.478114E-05	-1.297372E-05	-1.436236E-04	0.0	9.518069E-06	0.0
396	21	-2.117290E-04	1.466461E-05	2.947584E-06	0.0	-3.581198E-06	0.0
397	21	2.346301E-05	-1.504515E-05	-1.266681E-04	0.0	7.508645E-06	0.0
399	21	2.209483E-05	-1.540624E-05	-1.132725E-04	0.0	5.975392E-06	0.0
400	21	-2.165512E-04	1.399036E-05	2.540392E-06	0.0	-2.893269E-06	0.0
404	21	-2.205478E-04	1.349580E-05	2.230869E-06	0.0	-2.482734E-06	0.0
408	21	-2.241415E-04	1.315350E-05	1.996716E-06	0.0	-2.356318E-06	0.0
412	21	-2.277575E-04	1.294334E-05	1.619919E-06	0.0	-2.511367E-06	0.0
416	21	-2.318133E-04	1.285051E-05	1.685896E-06	0.0	-2.941732E-06	0.0
420	21	-2.367174E-04	1.286372E-05	1.582857E-06	0.0	-3.641670E-06	0.0
424	21	-2.428715E-04	1.297360E-05	1.501380E-06	0.0	-4.608193E-06	0.0
428	21	-2.506755E-04	1.317111E-05	1.434187E-06	0.0	-5.842087E-06	0.0
94	22	0.0	0.0	0.0	0.0	0.0	0.0
96	22	2.196731E-07	-4.282773E-08	1.077125E-07	0.0	2.918578E-07	0.0
98	22	8.028646E-07	-9.202029E-08	4.271102E-07	0.0	5.221987E-07	0.0
100	22	1.670108E-06	-1.451698E-07	9.130414E-07	0.0	7.035232E-07	0.0
102	22	2.761444E-06	-2.114544E-07	1.531307E-06	0.0	8.461686E-07	0.0
104	22	4.028407E-06	-2.817775E-07	2.254546E-06	0.0	9.585856E-07	0.0
106	22	5.433213E-06	-3.588773E-07	3.061638E-06	0.0	1.047500E-06	0.0
108	22	6.946861E-06	-4.424124E-07	3.936607E-06	0.0	1.118116E-06	0.0
110	22	8.546133E-06	-5.319713E-07	4.866807E-06	0.0	1.174290E-06	0.0
112	22	1.021245E-05	-6.271517E-07	5.842361E-06	0.0	1.218641E-06	0.0
114	22	1.192196E-05	-8.324598E-07	6.977640E-06	0.0	1.240906E-06	0.0
116	22	1.364246E-05	-9.265387E-07	8.006825E-06	0.0	1.245454E-06	0.0
118	22	1.536588E-05	-1.030524E-06	9.047708E-06	0.0	1.251394E-06	0.0
120	22	1.709383E-05	-1.143642E-06	1.010296E-05	0.0	1.259181E-06	0.0
122	22	1.882811E-05	-1.265345E-06	1.117544E-05	0.0	1.268819E-06	0.0
124	22	2.057035E-05	-1.395272E-06	1.226600E-05	0.0	1.280008E-06	0.0
126	22	2.232149E-05	-1.533142E-06	1.338322E-05	0.0	1.292256E-06	0.0
128	22	2.408164E-05	-1.678708E-06	1.452339E-05	0.0	1.304979E-06	0.0
130	22	2.585007E-05	-1.831706E-06	1.569046E-05	0.0	1.317588E-06	0.0
132	22	2.762502E-05	-1.991820E-06	1.688609E-05	0.0	1.329528E-06	0.0
134	22	2.940404E-05	-2.158625E-06	1.811175E-05	0.0	1.340317E-06	0.0
136	22	3.118381E-05	-2.331425E-06	1.936866E-05	0.0	1.349953E-06	0.0
138	22	3.296052E-05	-2.509150E-06	2.065803E-05	0.0	1.356959E-06	0.0
140	22	3.472996E-05	-2.690244E-06	2.198106E-05	0.0	1.362378E-06	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
142	22	3.646759E-05	-2.872530E-06	2.333897E-05	0.0	1.365698E-06	0.0
144	22	3.822862E-05	-3.053006E-06	2.473306E-05	0.0	1.366702E-06	0.0
146	22	3.99477[illegible]E-05	-3.227487E-06	2.616434E-05	0.0	1.364837E-06	0.0
148	22	4.163841E-05	-3.390237E-06	2.763314E-05	0.0	1.358912E-06	0.0
150	22	4.291716E-05	-4.257685E-06	2.911907E-05	0.0	8.772844E-07	0.0
152	22	4.318808E-05	-4.391502E-06	2.994318E-05	0.0	-6.711269E-08	0.0
154	22	4.214096E-05	-4.538356E-06	3.009271E-05	0.0	-9.633650E-07	0.0
156	22	3.981349E-05	-4.691654E-06	2.960261E-05	0.0	-1.845005E-06	0.0
158	22	3.619908E-05	-4.847197E-06	2.848322E-05	0.0	-2.741408E-06	0.0
160	22	3.129222E-05	-5.002519E-06	2.672344E-05	0.0	-3.677452E-06	0.0
162	22	2.489616E-05	-5.155909E-06	2.429602E-05	0.0	-4.672649E-06	0.0
164	22	1.703064E-05	-5.306730E-06	2.116198E-05	0.0	-5.739754E-06	0.0
166	22	7.541692E-06	-5.454975E-06	1.727695E-05	0.0	-6.883212E-06	0.0
168	22	-3.684632E-06	-5.601189E-06	1.259943E-05	0.0	-8.096355E-06	0.0
170	22	-1.674496E-05	-5.746340E-06	7.100255E-06	0.0	-9.358549E-06	0.0
172	22	-3.169586E-05	-5.891371E-06	7.772844E-07	0.0	-1.063056E-05	0.0
174	22	-4.852393E-05	-6.036631E-06	-6.328445E-06	0.0	-1.184808E-05	0.0
176	22	-6.710511E-05	-6.180914E-06	-1.410888E-05	0.0	-1.291443E-05	0.0
178	22	-8.715451E-05	-6.319533E-06	-2.236034E-05	0.0	-1.369042E-05	0.0
180	22	-1.081577E-04	-6.443349E-06	-3.074572E-05	0.0	-1.398282E-05	0.0
182	22	-1.292791E-04	-6.531571E-06	-3.874216E-05	0.0	-1.352952E-05	0.0
183	22	1.691433E-04	1.623810E-04	-1.011970E-03	0.0	3.981184E-05	0.0
184	22	-1.492682E-04	-6.549366E-06	-4.559044E-05	0.0	-1.198141E-05	0.0
185	22	1.754958E-04	7.066023E-05	-9.382451E-04	0.0	3.435904E-05	0.0
186	22	-1.662914E-04	-6.437565E-06	-5.020240E-05	0.0	-8.882382E-06	0.0
187	22	1.813936E-04	4.617641E-05	-8.693407E-04	0.0	3.189025E-05	0.0
188	22	-1.794356E-04	-4.396510E-06	-5.263966E-05	0.0	-6.647001E-06	0.0
189	22	1.873939E-04	2.834314E-05	-8.046580E-04	0.0	3.353381E-05	0.0
190	22	-1.903949E-04	-3.671375E-06	-5.271162E-05	0.0	-4.578608E-06	0.0
191	22	1.941859E-04	1.326576E-05	-7.317923E-04	0.0	4.031365E-05	0.0
192	22	-1.960885E-04	-2.240218E-06	-4.919160E-05	0.0	1.320177E-06	0.0
193	22	2.023854E-04	-1.532519E-06	-6.388449E-04	0.0	5.395331E-05	0.0
194	22	-1.675743E-04	-2.437989E-05	-5.013071E-05	0.0	3.723626E-05	0.0
195	22	2.124121E-04	-1.965187E-05	-5.020604E-04	0.0	7.830869E-05	0.0
196	22	-4.402221E-05	-4.639420E-05	-4.255753E-05	0.0	8.086466E-05	0.0
197	22	2.229036E-04	-4.251132E-05	-3.116450E-04	0.0	1.145935E-04	0.0
198	22	2.333727E-04	-7.462977E-05	-3.201173E-05	0.0	1.684506E-04	0.0
286	22	1.175714E-03	-9.139330E-05	-1.981533E-05	0.0	4.043654E-04	0.0
288	22	2.446935E-03	-1.146828E-04	-9.133410E-06	0.0	3.830525E-04	0.0
290	22	3.381261E-03	-1.320870E-04	2.860173E-08	0.0	2.247145E-04	0.0
292	22	3.739072E-03	-1.359315E-04	8.735597E-06	0.0	1.222388E-06	0.0
294	22	3.409274E-03	-1.220852E-04	1.634889E-05	0.0	-2.167979E-04	0.0
296	22	2.455493E-03	-9.077592E-05	2.285931E-05	0.0	-3.829906E-04	0.0
298	22	1.217180E-03	-4.924138E-05	2.725035E-05	0.0	-4.130707E-04	0.0
300	22	2.179707E-04	-3.351713E-06	2.848118E-05	0.0	-2.000813E-04	0.0
362	22	-6.862462E-05	1.008022E-05	2.583794E-05	0.0	-2.476582E-05	0.0
363	22	1.929820E-04	-2.426874E-05	-2.880269E-04	0.0	-1.209837E-04	0.0
364	22	-6.976693E-05	2.337557E-05	2.190672E-08	0.0	1.969283E-06	0.0
365	22	1.688430E-04	-3.643788E-05	-4.712217E-04	0.0	-6.560162E-05	0.0
366	22	-6.883945E-05	-1.092241E-06	1.524890E-05	0.0	1.203679E-06	0.0

IV.10-4.72

HANFORD NO. 2 CONTAINMENT VESSEL JUNE 28, 1973 NASTRAN 10/12/72 PAGE 68

ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
367	22	1.462432E-04	-4.245750E-05	-5.621065E-04	0.0	-2.777879E-05	0.0
368	22	-6.407194E-05	2.263038E-05	2.001594E-05	0.0	-1.177446E-05	0.0
369	22	1.255826E-04	-4.426810E-05	-5.908763E-04	0.0	-2.806775E-06	0.0
370	22	-6.561116E-05	-2.755405E-05	1.090152E-05	0.0	8.355855E-07	0.0
371	22	1.070539E-04	-4.330208E-05	-5.794978E-04	0.0	1.288902E-05	0.0
372	22	-8.256553E-05	1.991466E-05	1.725652E-05	0.0	-1.264727E-05	0.0
373	22	9.147021E-05	-4.075876E-05	-5.456801E-04	0.0	2.166754E-05	0.0
375	22	7.714824E-05	-3.710856E-05	-4.971835E-04	0.0	2.639115E-05	0.0
376	22	-1.014605E-04	1.778643E-05	1.499675E-05	0.0	-1.240719E-05	0.0
377	22	6.485169E-05	-3.297490E-05	-4.424127E-04	0.0	2.795506E-05	0.0
379	22	5.443416E-05	-2.872660E-05	-3.867315E-04	0.0	2.745603E-05	0.0
380	22	-1.194798E-04	1.613521E-05	1.315204E-05	0.0	-1.154767E-05	0.0
381	22	4.573070E-05	-2.461240E-05	-3.334335E-04	0.0	2.568170E-05	0.0
383	22	3.857045E-05	-2.079776E-05	-2.844804E-04	0.0	2.318773E-05	0.0
384	22	-1.359653E-04	1.486993E-05	1.165134E-05	0.0	-1.040824E-05	0.0
385	22	3.278452E-05	-1.739479E-05	-2.409039E-04	0.0	2.035762E-05	0.0
387	22	2.820956E-05	-1.448776E-05	-2.031002E-04	0.0	1.744926E-05	0.0
388	22	-1.506788E-04	1.391788E-05	1.043539E-05	0.0	-9.214881E-06	0.0
389	22	2.468732E-05	-1.215629E-05	-1.710454E-04	0.0	1.463109E-05	0.0
391	22	2.217440E-05	-1.056031E-05	-1.456504E-04	0.0	1.213580E-05	0.0
392	22	-1.636558E-04	1.322282E-05	9.455030E-06	0.0	-8.111466E-06	0.0
393	22	2.024484E-05	-9.674635E-06	-1.237953E-04	0.0	9.768060E-06	0.0
395	22	1.886333E-05	-9.816150E-06	-1.063673E-04	0.0	7.716580E-06	0.0
396	22	-1.751019E-04	1.274307E-05	8.669386E-06	0.0	-7.184229E-06	0.0
397	22	1.779041E-05	-1.132506E-05	-9.268455E-05	0.0	6.032242E-06	0.0
399	22	1.669746E-05	-1.472677E-05	-8.194835E-05	0.0	4.784216E-06	0.0
400	22	-1.853206E-04	1.244946E-05	8.044255E-06	0.0	-6.480500E-06	0.0
404	22	-1.946667E-04	1.232353E-05	7.550596E-06	0.0	-6.023094E-06	0.0
408	22	-2.035178E-04	1.235604E-05	7.163187E-06	0.0	-5.821466E-06	0.0
412	22	-2.122614E-04	1.254568E-05	6.859426E-06	0.0	-5.880576E-06	0.0
416	22	-2.212937E-04	1.289614E-05	6.618272E-06	0.0	-6.208305E-06	0.0
420	22	-2.310291E-04	1.342534E-05	6.419305E-06	0.0	-6.822137E-06	0.0
424	22	-2.419196E-04	1.414493E-05	6.241904E-06	0.0	-7.755722E-06	0.0
428	22	-2.544839E-04	1.507986E-05	6.064520E-06	0.0	-9.065888E-06	0.0
94	23	0.0	0.0	0.0	0.0	0.0	0.0
96	23	1.540086E-07	-2.796968E-08	7.560556E-08	0.0	2.043737E-07	0.0
98	23	5.618920E-07	-6.050635E-08	2.991392E-07	0.0	3.649740E-07	0.0
100	23	1.167637E-06	-9.802898E-08	6.385670E-07	0.0	4.911909E-07	0.0
102	23	1.929495E-06	-1.406720E-07	1.070194E-06	0.0	5.906992E-07	0.0
104	23	2.814226E-06	-1.883868E-07	1.575301E-06	0.0	6.697109E-07	0.0
106	23	3.796420E-06	-2.410209E-07	2.139746E-06	0.0	7.331170E-07	0.0
108	23	4.857040E-06	-2.983779E-07	2.753115E-06	0.0	7.846617E-07	0.0
110	23	5.981154E-06	-3.602216E-07	3.407369E-06	0.0	8.270769E-07	0.0
112	23	7.157094E-06	-4.263318E-07	4.096423E-06	0.0	8.621757E-07	0.0
114	23	8.369242E-06	-5.733366E-07	4.902413E-06	0.0	8.825063E-07	0.0
116	23	9.595711E-06	-6.394478E-07	5.637393E-06	0.0	8.909057E-07	0.0
118	23	1.083198E-05	-7.135898E-07	6.385619E-06	0.0	9.013094E-07	0.0
120	23	1.208056E-05	-7.952687E-07	7.149919E-06	0.0	9.139128E-07	0.0
122	23	1.334347E-05	-8.841802E-07	7.933133E-06	0.0	9.285889E-07	0.0
124	23	1.462303E-05	-9.801761E-07	8.738056E-06	0.0	9.449927E-07	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE

SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
126	23	1.592045E-05	-1.083183E-06	9.567177E-06	0.0	9.626436E-07	0.0
128	23	1.723629E-05	-1.193162E-06	1.042273E-05	0.0	9.810001E-07	0.0
130	23	1.857028E-05	-1.310072E-06	1.130664E-05	0.0	9.995165E-07	0.0
132	23	1.992124E-05	-1.433837E-06	1.222057E-05	0.0	1.017683E-06	0.0
134	23	2.128727E-05	-1.564301E-06	1.316602E-05	0.0	1.035040E-06	0.0
136	23	2.266571E-05	-1.701098E-06	1.414428E-05	0.0	1.051205E-06	0.0
138	23	2.405337E-05	-1.843566E-06	1.515660E-05	0.0	1.065901E-06	0.0
140	23	2.544666E-05	-1.990649E-06	1.620427E-05	0.0	1.078969E-06	0.0
142	23	2.684166E-05	-2.140775E-06	1.728864E-05	0.0	1.090320E-06	0.0
144	23	2.823427E-05	-2.291680E-06	1.841116E-05	0.0	1.099830E-06	0.0
146	23	2.962002E-05	-2.440085E-06	1.957323E-05	0.0	1.107185E-06	0.0
148	23	3.099372E-05	-2.581384E-06	2.077583E-05	0.0	1.111647E-06	0.0
150	23	3.203946E-05	-3.274208E-06	2.200203E-05	0.0	7.226573E-07	0.0
152	23	3.226261E-05	-3.397771E-06	2.269271E-05	0.0	-4.729464E-08	0.0
154	23	3.141072E-05	-3.535312E-06	2.283980E-05	0.0	-7.752233E-07	0.0
156	23	2.951531E-05	-3.681771E-06	2.247380E-05	0.0	-1.491809E-06	0.0
158	23	2.656755E-05	-3.833543E-06	2.160280E-05	0.0	-2.223790E-06	0.0
160	23	2.252296E-05	-3.988338E-06	2.021538E-05	0.0	-2.993812E-06	0.0
162	23	1.730873E-05	-4.144335E-06	1.828557E-05	0.0	-3.819813E-06	0.0
164	23	1.083006E-05	-4.300328E-06	1.577647E-05	0.0	-4.713906E-06	0.0
166	23	2.978570E-06	-4.455282E-06	1.264573E-05	0.0	-5.681115E-06	0.0
168	23	-6.355796E-06	-4.608137E-06	8.852598E-06	0.0	-6.716975E-06	0.0
170	23	-1.727039E-05	-4.757506E-06	4.365907E-06	0.0	-7.805096E-06	0.0
172	23	-2.982962E-05	-4.901129E-06	-8.230936E-07	0.0	-8.913124E-06	0.0
174	23	-4.404003E-05	-5.035039E-06	-6.687303E-06	0.0	-9.987079E-06	0.0
176	23	-5.981448E-05	-5.152362E-06	-1.314296E-05	0.0	-1.094494E-05	0.0
178	23	-7.692882E-05	-5.241450E-06	-2.002517E-05	0.0	-1.166776E-05	0.0
180	23	-9.496213E-05	-5.282556E-06	-2.705530E-05	0.0	-1.198959E-05	0.0
182	23	-1.132156E-04	-5.244102E-06	-3.379518E-05	0.0	-1.168447E-05	0.0
183	23	1.398615E-04	8.636135E-05	-8.359596E-04	0.0	3.124704E-05	0.0
184	23	-1.306335E-04	-5.075752E-06	-3.960507E-05	0.0	-1.045074E-05	0.0
185	23	1.454394E-04	5.922797E-05	-7.788485E-04	0.0	2.624631E-05	0.0
186	23	-1.456512E-04	-4.699283E-06	-4.356123E-05	0.0	-7.893868E-06	0.0
187	23	1.506720E-04	3.876508E-05	-7.268509E-04	0.0	2.382537E-05	0.0
188	23	-1.575897E-04	-2.420693E-06	-4.582289E-05	0.0	-6.281132E-06	0.0
189	23	1.560431E-04	2.420582E-05	-6.786182E-04	0.0	2.507385E-05	0.0
190	23	-1.682520E-04	-1.184580E-06	-4.637946E-05	0.0	-5.012349E-06	0.0
191	23	1.624441E-04	1.206985E-05	-6.234543E-04	0.0	3.099123E-05	0.0
192	23	-1.751265E-04	9.299690E-07	-4.430741E-05	0.0	-5.240015E-07	0.0
193	23	1.702026E-04	7.735821E-08	-5.504300E-04	0.0	4.326705E-05	0.0
194	23	-1.522950E-04	-1.889272E-05	-4.470073E-05	0.0	3.141735E-05	0.0
195	23	1.798060E-04	-1.502986E-05	-4.380760E-04	0.0	6.563285E-05	0.0
196	23	-4.573108E-05	-3.833021E-05	-3.802056E-05	0.0	7.074875E-05	0.0
197	23	1.899432E-04	-3.476517E-05	-2.753395E-04	0.0	9.951246E-05	0.0
198	23	2.001236E-04	-6.334364E-05	-2.862484E-05	0.0	1.505584E-04	0.0
286	23	1.061697E-03	-7.873874E-05	-1.802073E-05	0.0	3.715199E-04	0.0
288	23	2.229912E-03	-1.004743E-04	-8.652987E-06	0.0	3.519135E-04	0.0
290	23	3.088236E-03	-1.169593E-04	-4.217842E-07	0.0	2.065697E-04	0.0
292	23	3.418750E-03	-1.210887E-04	7.598818E-06	0.0	2.236429E-06	0.0
294	23	3.120444E-03	-1.090019E-04	1.470795E-05	0.0	-1.972982E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
296	23	2.249726E-03	-8.093452E-05	2.076884E-05	0.0	-3.504192E-04	0.0
298	23	1.114370E-03	-4.348856E-05	2.475300E-05	0.0	-3.793687E-04	0.0
300	23	1.976049E-04	-2.082376E-06	2.507106E-05	0.0	-1.820147E-04	0.0
362	23	-5.948523E-05	3.990745E-06	2.295151E-05	0.0	-2.080189E-05	0.0
363	23	1.739548E-04	-2.194649E-05	-2.592690E-04	0.0	-1.074249E-04	0.0
364	23	-5.739236E-05	1.996892E-05	1.924430E-05	0.0	1.862754E-06	0.0
365	23	1.511583E-04	-3.320801E-05	-4.194882E-04	0.0	-5.609292E-05	0.0
366	23	-5.652376E-05	-8.208564E-07	1.301342E-05	0.0	1.113083E-06	0.0
367	23	1.299130E-04	-3.854280E-05	-4.949132E-04	0.0	-2.172242E-05	0.0
368	23	-5.779862E-05	1.931080E-05	1.607799E-05	0.0	-9.462275E-06	0.0
369	23	1.106078E-04	-3.989961E-05	-5.144929E-04	0.0	4.349497E-07	0.0
370	23	-5.368429E-05	-2.314955E-05	9.022571E-06	0.0	7.637246E-07	0.0
371	23	9.341551E-05	-3.869752E-05	-4.989265E-04	0.0	1.393156E-05	0.0
372	23	-7.231266E-05	1.676653E-05	1.362685E-05	0.0	-9.712802E-06	0.0
373	23	7.906256E-05	-3.610563E-05	-4.648957E-04	0.0	2.113855E-05	0.0
375	23	6.597344E-05	-3.255553E-05	-4.185120E-04	0.0	2.468101E-05	0.0
376	23	-8.653567E-05	1.476093E-05	1.163530E-05	0.0	-9.154553E-06	0.0
377	23	5.482625E-05	-2.864026E-05	-3.679981E-04	0.0	2.546988E-05	0.0
379	23	4.545895E-05	-2.469240E-05	-3.177831E-04	0.0	2.452340E-05	0.0
380	23	-9.957385E-05	1.318725E-05	1.002127E-05	0.0	-8.187243E-06	0.0
381	23	3.769538E-05	-2.092698E-05	-2.705795E-04	0.0	2.255717E-05	0.0
383	23	3.135792E-05	-1.747849E-05	-2.279025E-04	0.0	2.006357E-05	0.0
384	23	-1.110276E-04	1.195906E-05	8.716952E-06	0.0	-7.077435E-06	0.0
385	23	2.627519E-05	-1.443041E-05	-1.904544E-04	0.0	1.737231E-05	0.0
387	23	2.228557E-05	-1.183912E-05	-1.584009E-04	0.0	1.469683E-05	0.0
388	23	-1.208212E-04	1.100619E-05	7.666702E-06	0.0	-5.995599E-06	0.0
389	23	1.923705E-05	-9.755418E-06	-1.315671E-04	0.0	1.216952E-05	0.0
391	23	1.708033E-05	-8.302623E-06	-1.105631E-04	0.0	9.977869E-06	0.0
392	23	-1.290805E-04	1.028247E-05	6.824966E-06	0.0	-5.044431E-06	0.0
393	23	1.544338E-05	-7.432601E-06	-9.269726E-05	0.0	7.936149E-06	0.0
395	23	1.429354E-05	-7.402315E-06	-7.861599E-05	0.0	6.198289E-06	0.0
396	23	-1.360484E-04	9.743330E-06	6.154400E-06	0.0	-4.280233E-06	0.0
397	23	1.342544E-05	-8.485974E-06	-6.767927E-05	0.0	4.798294E-06	0.0
399	23	1.255838E-05	-1.112016E-05	-5.916314E-05	0.0	3.789123E-06	0.0
400	23	-1.420278E-04	9.363661E-06	5.624158E-06	0.0	-3.728910E-06	0.0
404	23	-1.473454E-04	9.126020E-06	5.208394E-06	0.0	-3.397913E-06	0.0
408	23	-1.523307E-04	9.020920E-06	4.884947E-06	0.0	-3.285202E-06	0.0
412	23	-1.573078E-04	9.045821E-06	4.634198E-06	0.0	-3.386170E-06	0.0
416	23	-1.625952E-04	9.204148E-06	4.438076E-06	0.0	-3.699283E-06	0.0
420	23	-1.685147E-04	9.504689E-06	4.279173E-06	0.0	-4.231088E-06	0.0
424	23	-1.754072E-04	9.961186E-06	4.139959E-06	0.0	-5.001153E-06	0.0
428	23	-1.836559E-04	1.059207E-05	4.002087E-06	0.0	-6.047458E-06	0.0
94	24	0.0	0.0	0.0	0.0	0.0	0.0
96	24	1.064079E-07	-1.793716E-08	5.224387E-08	0.0	1.411111E-07	0.0
98	24	3.878704E-07	-3.912202E-08	2.064262E-07	0.0	2.515455E-07	0.0
100	24	8.051870E-07	-6.384289E-08	4.401521E-07	0.0	3.382451E-07	0.0
102	24	1.329881E-06	-9.219787E-08	7.372896E-07	0.0	4.068210E-07	0.0
104	24	1.939571E-06	-1.241672E-07	1.085266E-06	0.0	4.617722E-07	0.0
106	24	2.617528E-06	-1.596691E-07	1.474817E-06	0.0	5.066062E-07	0.0
108	24	3.351583E-06	-1.986015E-07	1.899344E-06	0.0	5.439804E-07	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
110	24	4.132449E-06	-2.408426E-07	2.353924E-06	0.0	5.758081E-07	0.0
112	24	4.953106E-06	-2.862902E-07	2.834996E-06	0.0	6.033305E-07	0.0
114	24	5.803703E-06	-3.903326E-07	3.401025E-06	0.0	6.213522E-07	0.0
116	24	6.669893E-06	-4.364056E-07	3.920739E-06	0.0	6.316475E-07	0.0
118	24	7.549519E-06	-4.888794E-07	4.453670E-06	0.0	6.441476E-07	0.0
120	24	8.445264E-06	-5.474567E-07	5.003142E-06	0.0	6.589147E-07	0.0
122	24	9.359661E-06	-6.119962E-07	5.571223E-06	0.0	6.757817E-07	0.0
124	24	1.029491E-05	-6.824948E-07	6.160721E-06	0.0	6.944271E-07	0.0
126	24	1.125250E-05	-7.590062E-07	6.773973E-06	0.0	7.144334E-07	0.0
128	24	1.223338E-05	-8.416287E-07	7.413118E-06	0.0	7.353386E-07	0.0
130	24	1.323770E-05	-9.304678E-07	8.080046E-06	0.0	7.566779E-07	0.0
132	24	1.426486E-05	-1.025610E-06	8.776422E-06	0.0	7.780091E-07	0.0
134	24	1.531362E-05	-1.127089E-06	9.503792E-06	0.0	7.989278E-07	0.0
136	24	1.638207E-05	-1.234781E-06	1.026354E-05	0.0	8.190840E-07	0.0
138	24	1.746774E-05	-1.348335E-06	1.105703E-05	0.0	8.382108E-07	0.0
140	24	1.856781E-05	-1.467091E-06	1.188563E-05	0.0	8.561379E-07	0.0
142	24	1.967906E-05	-1.589973E-06	1.275079E-05	0.0	8.727666E-07	0.0
144	24	2.079814E-05	-1.715332E-06	1.365412E-05	0.0	8.879957E-07	0.0
146	24	2.192131E-05	-1.840676E-06	1.459719E-05	0.0	9.016087E-07	0.0
148	24	2.304443E-05	-1.962390E-06	1.558139E-05	0.0	9.131123E-07	0.0
150	24	2.390869E-05	-2.515019E-06	1.659436E-05	0.0	6.030479E-07	0.0
152	24	2.411121E-05	-2.626974E-06	1.717814E-05	0.0	-1.701003E-08	0.0
154	24	2.344714E-05	-2.753781E-06	1.732947E-05	0.0	-6.014473E-07	0.0
156	24	2.194161E-05	-2.891283E-06	1.707416E-05	0.0	-1.177954E-06	0.0
158	24	1.958337E-05	-3.036517E-06	1.641791E-05	0.0	-1.770603E-06	0.0
160	24	1.632882E-05	-3.187521E-06	1.534888E-05	0.0	-2.399857E-06	0.0
162	24	1.210885E-05	-3.342600E-06	1.384217E-05	0.0	-3.082140E-06	0.0
164	24	6.833722E-06	-3.500363E-06	1.186272E-05	0.0	-3.828957E-06	0.0
166	24	4.004000E-07	-3.659281E-06	9.370030E-06	0.0	-4.645846E-06	0.0
168	24	-7.297502E-06	-3.817418E-06	6.324092E-06	0.0	-5.530337E-06	0.0
170	24	-1.635781E-05	-3.972005E-06	2.691968E-06	0.0	-6.469829E-06	0.0
172	24	-2.685170E-05	-4.118824E-06	-1.540828E-06	0.0	-7.438059E-06	0.0
174	24	-3.880323E-05	-4.251196E-06	-6.359382E-06	0.0	-8.390083E-06	0.0
176	24	-5.215759E-05	-4.358583E-06	-1.170106E-05	0.0	-9.256614E-06	0.0
178	24	-6.674351E-05	-4.424494E-06	-1.743450E-05	0.0	-9.936098E-06	0.0
180	24	-8.222116E-05	-4.422881E-06	-2.333138E-05	0.0	-1.028579E-05	0.0
182	24	-9.800946E-05	-4.313974E-06	-2.902590E-05	0.0	-1.011024E-05	0.0
183	24	1.158487E-04	7.286265E-05	-6.883631E-04	0.0	2.432941E-05	0.0
184	24	-1.132189E-04	-4.036926E-06	-3.397990E-05	0.0	-9.147388E-06	0.0
185	24	1.207415E-04	4.965991E-05	-6.445816E-04	0.0	1.977567E-05	0.0
186	24	-1.265132E-04	-3.500044E-06	-3.740836E-05	0.0	-7.053709E-06	0.0
187	24	1.253830E-04	3.257670E-05	-6.060207E-04	0.0	1.742833E-05	0.0
188	24	-1.373913E-04	-1.128977E-06	-3.953981E-05	0.0	-5.934166E-06	0.0
189	24	1.302638E-04	2.072845E-05	-5.708581E-04	0.0	1.832895E-05	0.0
190	24	-1.476820E-04	4.356485E-07	-4.047787E-05	0.0	-5.268069E-06	0.0
191	24	1.362105E-04	1.100528E-05	-5.299074E-04	0.0	2.344276E-05	0.0
192	24	-1.553238E-04	2.999349E-06	-3.953776E-05	0.0	-1.885507E-06	0.0
193	24	1.435328E-04	1.318961E-06	-4.732003E-04	0.0	3.941054E-05	0.0
[illegible]	[illegible]	E	E	E	[illegible]	E	[illegible]
195	24	1.526965E-04	-1.127690E-05	-3.813950E-04	0.0	5.481682E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
196	24	-4.532631E-05	-3.175189E-05	-3.364155E-05	0.0	6.183430E-05	0.0
197	24	1.624462E-04	-2.834723E-05	-2.426359E-04	0.0	8.626016E-05	0.0
198	24	1.722932E-04	-5.382520E-05	-2.529410E-05	0.0	1.343618E-04	0.0
286	24	9.580539E-04	-6.779650E-05	-1.614192E-05	0.0	3.402787E-04	0.0
288	24	2.027829E-03	-8.789179E-05	-8.000111E-06	0.0	3.220530E-04	0.0
290	24	2.813046E-03	-1.033346E-04	-6.722029E-07	0.0	1.890235E-04	0.0
292	24	3.116703E-03	-1.075739E-04	6.643777E-06	0.0	2.917089E-06	0.0
294	24	2.847570E-03	-9.702766E-05	1.320973E-05	0.0	-1.789754E-04	0.0
296	24	2.055343E-03	-7.192667E-05	1.878466E-05	0.0	-3.195400E-04	0.0
298	24	1.017753E-03	-3.826051E-05	2.234599E-05	0.0	-3.473507E-04	0.0
300	24	1.789200E-04	-9.977039E-07	2.295594E-05	0.0	-1.652365E-04	0.0
362	24	-5.151436E-05	8.023337E-06	2.016773E-05	0.0	-1.749687E-05	0.0
363	24	1.566225E-04	-1.979402E-05	-2.330368E-04	0.0	-9.517286E-05	0.0
364	24	-4.714599E-05	1.696605E-05	1.666532E-05	0.0	1.725894E-06	0.0
365	24	1.351772E-04	-3.019415E-05	-3.728040E-04	0.0	-4.778513E-05	0.0
366	24	-4.632771E-05	-6.297657E-07	1.095457E-05	0.0	1.007540E-06	0.0
367	24	1.152852E-04	-3.489808E-05	-4.349987E-04	0.0	-1.668539E-05	0.0
368	24	-4.863898E-05	1.630544E-05	1.350229E-05	0.0	-7.898198E-06	0.0
369	24	9.732251E-05	-3.586127E-05	-4.472090E-04	0.0	2.876604E-06	0.0
370	24	-4.383684E-05	-1.938856E-05	7.370756E-06	0.0	6.823146E-07	0.0
371	24	8.144071E-05	-3.447998E-05	-4.288279E-04	0.0	1.440264E-05	0.0
372	24	-6.046337E-05	1.400782E-05	1.130131E-05	0.0	-7.737331E-06	0.0
373	24	6.828300E-05	-3.188485E-05	-3.952703E-04	0.0	2.024569E-05	0.0
375	24	5.637953E-05	-2.847009E-05	-3.517279E-04	0.0	2.280295E-05	0.0
376	24	-7.156505E-05	1.219319E-05	9.522567E-06	0.0	-6.999707E-06	0.0
377	24	4.632700E-05	-2.479488E-05	-3.056347E-04	0.0	2.298231E-05	0.0
379	24	3.795067E-05	-2.115642E-05	-2.607531E-04	0.0	2.172033E-05	0.0
380	24	-8.133642E-05	1.076193E-05	8.087870E-06	0.0	-6.006429E-06	0.0
381	24	3.106605E-05	-1.773832E-05	-2.192806E-04	0.0	1.966064E-05	0.0
383	24	2.549146E-05	-1.464766E-05	-1.823515E-04	0.0	1.723443E-05	0.0
384	24	-8.956136E-05	9.634523E-06	6.933451E-06	0.0	-4.964762E-06	0.0
385	24	2.105533E-05	-1.194344E-05	-1.503985E-04	0.0	1.472118E-05	0.0
387	24	1.759936E-05	-9.659389E-06	-1.234078E-04	0.0	1.229401E-05	0.0
388	24	-9.627077E-05	8.749072E-06	6.007564E-06	0.0	-4.001584E-06	0.0
389	24	1.497846E-05	-7.823316E-06	-1.010968E-04	0.0	1.005377E-05	0.0
391	24	1.313938E-05	-6.527468E-06	-8.384146E-05	0.0	8.148349E-06	0.0
392	24	-1.016416E-04	8.058600E-06	5.268294E-06	0.0	-3.188401E-06	0.0
393	24	1.175859E-05	-5.709628E-06	-6.933547E-05	0.0	6.403740E-06	0.0
395	24	1.080582E-05	-5.575498E-06	-5.803704E-05	0.0	4.943426E-06	0.0
396	24	-1.059286E-04	7.528610E-06	4.681610E-06	0.0	-2.559809E-06	0.0
397	24	1.010603E-05	-6.343638E-06	-4.935908E-05	0.0	3.787754E-06	0.0
399	24	9.421243E-06	-8.373657E-06	-4.265750E-05	0.0	2.976107E-06	0.0
400	24	-1.094192E-04	7.134914E-06	4.219650E-06	0.0	-2.126994E-06	0.0
404	24	-1.124063E-04	6.861824E-06	3.859265E-06	0.0	-1.887545E-06	0.0
408	24	-1.151740E-04	6.700715E-06	3.580762E-06	0.0	-1.832630E-06	0.0
412	24	-1.179915E-04	6.648943E-06	3.366824E-06	0.0	-1.952407E-06	0.0
416	24	-1.211152E-04	6.709082E-06	3.201565E-06	0.0	-2.240343E-06	0.0
420	24	-1.247967E-04	6.888445E-06	3.069704E-06	0.0	-2.697058E-06	0.0
426	24	-1.292963E-04	7.198824E-06	2.959803E-06	0.0	-3.334200E-06	0.0
428	24	-1.349027E-04	7.656411E-06	2.843571E-06	0.0	-4.178804E-06	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
94	25	0.0	0.0	0.0	0.0	0.0	0.0
96	25	7.259501E-08	-1.130744E-08	3.559317E-08	0.0	9.617770E-08	0.0
98	25	2.643730E-07	-2.490274E-08	1.405390E-07	0.0	1.711574E-07	0.0
100	25	5.482635E-07	-4.097924E-08	2.993893E-07	0.0	2.299957E-07	0.0
102	25	9.051625E-07	-5.960641E-08	5.013420E-07	0.0	2.767363E-07	0.0
104	25	1.320256E-06	-8.078058E-08	7.381009E-07	0.0	3.145938E-07	0.0
106	25	1.782763E-06	-1.044639E-07	1.003727E-06	0.0	3.460515E-07	0.0
108	25	2.285125E-06	-1.306125E-07	1.294170E-06	0.0	3.729739E-07	0.0
110	25	2.821781E-06	-1.591757E-07	1.606544E-06	0.0	3.966879E-07	0.0
112	25	3.386735E-06	-1.901216E-07	1.938908E-06	0.0	4.180364E-07	0.0
114	25	3.980037E-06	-2.629685E-07	2.332543E-06	0.0	4.335256E-07	0.0
116	25	4.586629E-06	-2.948270E-07	2.696765E-06	0.0	4.442197E-07	0.0
118	25	5.207828E-06	-3.317023E-07	3.073584E-06	0.0	4.570654E-07	0.0
120	25	5.846318E-06	-3.734304E-07	3.465474E-06	0.0	4.720669E-07	0.0
122	25	6.504544E-06	-4.199777E-07	3.874833E-06	0.0	4.890678E-07	0.0
124	25	7.184707E-06	-4.714185E-07	4.304016E-06	0.0	5.078031E-07	0.0
126	25	7.888446E-06	-5.278903E-07	4.755166E-06	0.0	5.279398E-07	0.0
128	25	8.616917E-06	-5.895683E-07	5.230281E-06	0.0	5.491114E-07	0.0
130	25	9.370669E-06	-6.566453E-07	5.731169E-06	0.0	5.709472E-07	0.0
132	25	1.014961E-05	-7.293099E-07	6.259539E-06	0.0	5.930884E-07	0.0
134	25	1.095313E-05	-8.077177E-07	6.816914E-06	0.0	6.151988E-07	0.0
136	25	1.178002E-05	-8.919143E-07	7.404778E-06	0.0	6.369772E-07	0.0
138	25	1.262860E-05	-9.817766E-07	8.024578E-06	0.0	6.581814E-07	0.0
140	25	1.349681E-05	-1.076948E-06	8.677801E-06	0.0	6.786407E-07	0.0
142	25	1.438224E-05	-1.176738E-06	9.365997E-06	0.0	6.982426E-07	0.0
144	25	1.528226E-05	-1.280060E-06	1.009086E-05	0.0	7.168815E-07	0.0
146	25	1.619395E-05	-1.384900E-06	1.085410E-05	0.0	7.343796E-07	0.0
148	25	1.711394E-05	-1.488667E-06	1.165733E-05	0.0	7.503681E-07	0.0
150	25	1.783174E-05	-1.928288E-06	1.249276E-05	0.0	5.063828E-07	0.0
152	25	1.802424E-05	-2.028101E-06	1.298755E-05	0.0	1.282746E-08	0.0
154	25	1.752601E-05	-2.143022E-06	1.314255E-05	0.0	-4.511764E-07	0.0
156	25	1.635629E-05	-2.269730E-06	1.297919E-05	0.0	-9.102894E-07	0.0
158	25	1.450197E-05	-2.405892E-06	1.250105E-05	0.0	-1.385944E-06	0.0
160	25	1.192077E-05	-2.549947E-06	1.169605E-05	0.0	-1.896474E-06	0.0
162	25	8.547609E-06	-2.700476E-06	1.054054E-05	0.0	-2.456837E-06	0.0
164	25	4.298277E-06	-2.856155E-06	9.001538E-06	0.0	-3.077915E-06	0.0
166	25	-9.245425E-07	-3.015338E-06	7.040591E-06	0.0	-3.765660E-06	0.0
168	25	-7.222905E-06	-3.175735E-06	4.618638E-06	0.0	-4.519345E-06	0.0
170	25	-1.469402E-05	-3.333922E-06	1.702268E-06	0.0	-5.329720E-06	0.0
172	25	-2.341392E-05	-3.484663E-06	-1.728104E-06	0.0	-6.175895E-06	0.0
174	25	-3.342115E-05	-3.619795E-06	-5.667545E-06	0.0	-7.020882E-06	0.0
176	25	-4.468834E-05	-3.726705E-06	-1.007138E-05	0.0	-7.806539E-06	0.0
178	25	-5.708972E-05	-3.786060E-06	-1.483691E-05	0.0	-8.446465E-06	0.0
180	25	-7.035535E-05	-3.768037E-06	-1.977896E-05	0.0	-8.817988E-06	0.0
182	25	-8.400588E-05	-3.627832E-06	-2.459383E-05	0.0	-8.751784E-06	0.0
183	25	9.610452E-05	6.148296E-05	-5.652076E-04	0.0	1.878638E-05	0.0
184	25	-9.729485E-05	-3.297984E-06	-2.883005E-05	0.0	-8.019501E-06	0.0
185	25	1.003924E-04	4.164609E-05	-5.320259E-04	0.0	1.466616E-05	0.0
186	25	-1.090818E-04	-2.678105E-06	-3.182080E-05	0.0	-6.320514E-06	0.0
187	25	1.045085E-04	2.740468E-05	-5.040274E-04	0.0	1.241300E-05	0.0

III.10.4.78

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
188	25	-1.190020E-04	-3.212027E-07	-3.384144E-05	0.0	-5.590991E-06	0.0
189	25	1.089428E-04	1.779584E-05	-4.791280E-04	0.0	1.301334E-05	0.0
190	25	-1.288535E-04	1.429727E-06	-3.506510E-05	0.0	-5.376089E-06	0.0
191	25	1.144600E-04	1.004732E-05	-4.494675E-04	0.0	1.739024E-05	0.0
192	25	-1.369335E-04	4.255964E-06	-3.499407E-05	0.0	-2.861870E-06	0.0
193	25	1.213526E-04	2.253601E-06	-4.060124E-04	0.0	2.712298E-05	0.0
194	25	-1.225914E-04	-1.142304E-05	-3.467464E-05	0.0	2.227978E-05	0.0
195	25	1.300650E-04	-8.247561E-06	-3.313904E-04	0.0	4.563204E-05	0.0
196	25	-4.352140E-05	-2.637949E-05	-2.950703E-05	0.0	5.399024E-05	0.0
197	25	1.394017E-04	-2.303929E-05	-2.133202E-04	0.0	7.465498E-05	0.0
198	25	1.488797E-04	-4.580102E-05	-2.210673E-05	0.0	1.197448E-04	0.0
286	25	8.638449E-04	-5.634539E-05	-1.426062E-05	0.0	3.107653E-04	0.0
288	25	1.840281E-03	-7.678040E-05	-7.240439E-06	0.0	2.936688E-04	0.0
290	25	2.555852E-03	-9.111779E-05	-7.638600E-07	0.0	1.722410E-04	0.0
292	25	2.833469E-03	-9.534087E-05	5.862164E-06	0.0	3.339691E-06	0.0
294	25	2.591264E-03	-8.614740E-05	1.188207E-05	0.0	-1.618566E-04	0.0
296	25	1.872735E-03	-6.375321E-05	1.697330E-05	0.0	-2.904597E-04	0.0
298	25	9.273700E-04	-3.356207E-05	2.013231E-05	0.0	-3.171260E-04	0.0
300	25	1.617925E-04	-9.883797E-06	2.047213E-05	0.0	-1.497176E-04	0.0
362	25	-4.460997E-05	7.171271E-06	1.765149E-05	0.0	-1.475148E-05	0.0
363	25	1.408436E-04	-1.783439E-05	-2.090773E-04	0.0	-8.414386E-05	0.0
364	25	-3.872489E-05	1.437747E-05	1.435902E-05	0.0	1.579954E-06	0.0
365	25	1.207407E-04	-2.740165E-05	-3.307112E-04	0.0	-4.055956E-05	0.0
366	25	-3.795442E-05	-4.879208E-07	9.188031E-06	0.0	9.006353E-07	0.0
367	25	1.021844E-04	-3.152595E-05	-3.816474E-04	0.0	-1.253144E-05	0.0
368	25	-4.038707E-05	1.372191E-05	1.142666E-05	0.0	-6.633504E-06	0.0
369	25	8.553526E-05	-3.214991E-05	-3.880337E-04	0.0	4.657509E-06	0.0
370	25	-3.577363E-05	-1.620525E-05	6.012315E-06	0.0	6.008734E-07	0.0
371	25	7.092379E-05	-3.063829E-05	-3.679374E-04	0.0	1.443335E-05	0.0
372	25	-5.008309E-05	1.167422E-05	9.458005E-06	0.0	-6.200962E-06	0.0
373	25	5.891355E-05	-2.807647E-05	-3.355031E-04	0.0	1.910485E-05	0.0
375	25	4.813736E-05	-2.482266E-05	-2.951173E-04	0.0	2.085208E-05	0.0
376	25	-5.879416E-05	1.005691E-05	7.875079E-06	0.0	-5.372602E-06	0.0
377	25	3.911550E-05	-2.139952E-05	-2.534427E-04	0.0	2.056437E-05	0.0
379	25	3.166343E-05	-1.807023E-05	-2.136408E-04	0.0	1.909569E-05	0.0
380	25	-6.613183E-05	8.778065E-06	6.604150E-06	0.0	-4.403139E-06	0.0
381	25	2.559122E-05	-1.498943E-05	-1.774607E-04	0.0	1.701925E-05	0.0
383	25	2.071570E-05	-1.223996E-05	-1.457169E-04	0.0	1.470843E-05	0.0
384	25	-7.201325E-05	7.765383E-06	5.585741E-06	0.0	-3.451018E-06	0.0
385	25	1.686712E-05	-9.360374E-06	-1.186255E-04	0.0	1.239654E-05	0.0
387	25	1.389210E-05	-7.866170E-06	-9.603839E-05	0.0	1.022100E-05	0.0
388	25	-7.654021E-05	6.963044E-06	4.772070E-06	0.0	-2.608211E-06	0.0
389	25	1.165305E-05	-6.267262E-06	-7.760062E-05	0.0	8.255512E-06	0.0
391	25	1.009447E-05	-5.130110E-06	-6.351055E-05	0.0	6.614033E-06	0.0
392	25	-7.991663E-05	6.329103E-06	4.124787E-06	0.0	-1.922056E-06	0.0
393	25	8.936206E-06	-4.385020E-06	-5.180395E-05	0.0	5.135637E-06	0.0
395	25	8.150218E-06	-4.194576E-06	-4.279449E-05	0.0	3.917694E-06	0.0
396	25	-8.239417E-05	5.832901E-06	3.613012E-06	0.0	-1.411012E-06	0.0
397	25	7.586120E-06	-4.731039E-06	-3.595350E-05	0.0	2.969856E-06	0.0
399	25	7.049615E-06	-6.288145E-06	-3.071892E-05	0.0	2.320384E-06	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
400	25	-8.423775E-05	5.452964E-06	3.211673E-06	0.0	-1.075908E-06	0.0
404	25	-8.570547E-05	5.175290E-06	2.900096E-06	0.0	-9.078997E-07	0.0
408	25	-8.703654E-05	4.992025E-06	2.660822E-06	0.0	-8.941408E-07	0.0
412	25	-8.845858E-05	4.900492E-06	2.478602E-06	0.0	-1.021918E-06	0.0
416	25	-9.017029E-05	4.902551E-06	2.339518E-06	0.0	-1.281909E-06	0.0
420	25	-9.236873E-05	5.004229E-06	2.230202E-06	0.0	-1.671069E-06	0.0
424	25	-9.525097E-05	5.215591E-06	2.137124E-06	0.0	-2.195627E-06	0.0
428	25	-9.903252E-05	5.550789E-06	2.045903E-06	0.0	-2.874588E-06	0.0
94	26	0.0	0.0	0.0	0.0	0.0	0.0
96	26	4.892306E-08	-7.009383E-09	2.392721E-08	0.0	6.474016E-08	0.0
98	26	1.780070E-07	-1.561395E-08	9.446143E-08	0.0	1.150294E-07	0.0
100	26	3.687923E-07	-2.594004E-08	2.010802E-07	0.0	1.544984E-07	0.0
102	26	6.086696E-07	-3.803560E-08	3.366682E-07	0.0	1.860211E-07	0.0
104	26	8.880014E-07	-5.190519E-08	4.958453E-07	0.0	2.118646E-07	0.0
106	26	1.199992E-06	-6.753652E-08	6.748934E-07	0.0	2.337663E-07	0.0
108	26	1.540093E-06	-8.491941E-08	8.714111E-07	0.0	2.530205E-07	0.0
110	26	1.905134E-06	-1.040441E-07	1.083604E-06	0.0	2.705397E-07	0.0
112	26	2.293014E-06	-1.249186E-07	1.311128E-06	0.0	2.868937E-07	0.0
114	26	2.700330E-06	-1.753881E-07	1.582301E-06	0.0	2.998119E-07	0.0
116	26	3.121600E-06	-1.972437E-07	1.835330E-06	0.0	3.099015E-07	0.0
118	26	3.556989E-06	-2.229663E-07	2.099533E-06	0.0	3.219465E-07	0.0
120	26	4.008980E-06	-2.524786E-07	2.377067E-06	0.0	3.359349E-07	0.0
122	26	4.479825E-06	-2.858093E-07	2.670012E-06	0.0	3.517433E-07	0.0
124	26	4.971614E-06	-3.230770E-07	2.980439E-06	0.0	3.691733E-07	0.0
126	26	5.485984E-06	-3.644563E-07	3.310257E-06	0.0	3.879788E-07	0.0
128	26	6.024228E-06	-4.101606E-07	3.661302E-06	0.0	4.078882E-07	0.0
130	26	6.587176E-06	-4.604257E-07	4.035296E-06	0.0	4.286240E-07	0.0
132	26	7.175135E-06	-5.154944E-07	4.433834E-06	0.0	4.499130E-07	0.0
134	26	7.788032E-06	-5.755946E-07	4.858501E-06	0.0	4.714921E-07	0.0
136	26	8.425292E-06	-6.408807E-07	5.310802E-06	0.0	4.931181E-07	0.0
138	26	9.085943E-06	-7.113879E-07	5.792248E-06	0.0	5.145851E-07	0.0
140	26	9.768657E-06	-7.869759E-07	6.304394E-06	0.0	5.357359E-07	0.0
142	26	1.047179E-05	-8.672524E-07	6.848868E-06	0.0	5.564539E-07	0.0
144	26	1.119344E-05	-9.514651E-07	7.427426E-06	0.0	5.766285E-07	0.0
146	26	1.193144E-05	-1.038309E-06	8.041866E-06	0.0	5.960971E-07	0.0
148	26	1.268320E-05	-1.125721E-06	8.693951E-06	0.0	6.145594E-07	0.0
150	26	1.327884E-05	-1.474040E-06	9.379744E-06	0.0	4.250334E-07	0.0
152	26	1.346277E-05	-1.561550E-06	9.797949E-06	0.0	3.664805E-08	0.0
154	26	1.310225E-05	-1.663878E-06	9.952508E-06	0.0	-3.276238E-07	0.0
156	26	1.221152E-05	-1.778452E-06	9.860922E-06	0.0	-6.894534E-07	0.0
158	26	1.077629E-05	-1.903527E-06	9.525093E-06	0.0	-1.067704E-06	0.0
160	26	8.756400E-06	-2.037959E-06	8.933096E-06	0.0	-1.478645E-06	0.0
162	26	6.091428E-06	-2.180678E-06	8.062865E-06	0.0	-1.935791E-06	0.0
164	26	2.703275E-06	-2.330580E-06	6.883769E-06	0.0	-2.449366E-06	0.0
166	26	-1.498881E-06	-2.486147E-06	5.359844E-06	0.0	-3.025592E-06	0.0
168	26	-6.611731E-06	-2.645098E-06	3.453953E-06	0.0	-3.665207E-06	0.0
170	26	-1.273034E-05	-2.803861E-06	1.131909E-06	0.0	-4.361864E-06	0.0
172	26	-1.993332E-05	[illegible]	-1.628381E-06	0.0	-5.099372E-06	0.0
174	26	-2.827031E-05	-3.095399E-06	-4.830282E-06	0.0	-5.847732E-06	0.0
176	26	-3.773648E-05	-3.205956E-06	-8.443982E-06	0.0	-6.558607E-06	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE — SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
178	26	-4.824440E-05	-3.267927E-06	-1.239098E-05	0.0	-7.158912E-06	0.0
180	26	-5.958405E-05	-3.249729E-06	-1.652290E-05	0.0	-7.543555E-06	0.0
182	26	-7.136387E-05	-3.104074E-06	-2.058929E-05	0.0	-7.565996E-06	0.0
183	26	7.978543E-05	5.185591E-05	-4.626419E-04	0.0	1.437058E-05	0.0
184	26	-8.296121E-05	-2.760128E-06	-2.421316E-05	0.0	-7.027059E-06	0.0
185	26	8.353738E-05	3.491632E-05	-4.378292E-04	0.0	1.066620E-05	0.0
186	26	-9.340492E-05	-2.112880E-06	-2.682908E-05	0.0	-5.662947E-06	0.0
187	26	8.718473E-05	2.306397E-05	-4.180514E-04	0.0	8.524129E-06	0.0
188	26	-1.024356E-04	1.543426E-07	-2.874105E-05	0.0	-5.239620E-06	0.0
189	26	9.120969E-05	1.530600E-05	-4.011204E-04	0.0	8.870048E-06	0.0
190	26	-1.117822E-04	1.983304E-06	-3.016265E-05	0.0	-5.357561E-06	0.0
191	26	9.631798E-05	9.173262E-06	-3.803405E-04	0.0	1.257828E-05	0.0
192	26	-1.200304E-04	4.926286E-06	-3.073992E-05	0.0	-3.525442E-06	0.0
193	26	1.027853E-04	2.933966E-06	-3.475770E-04	0.0	2.115569E-05	0.0
194	26	-1.088088E-04	-6.930230E-06	-3.020302E-05	0.0	1.871568E-05	0.0
195	26	1.110355E-04	-5.813792E-06	-2.872820E-04	0.0	3.784428E-05	0.0
196	26	-4.081696E-05	-2.196903E-05	-2.566927E-05	0.0	4.707370E-05	0.0
197	26	1.199358E-04	-1.564473E-05	-1.870596E-04	0.0	6.448512E-05	0.0
198	26	1.290128E-04	-3.899918E-05	-1.912340E-05	0.0	1.065270E-04	0.0
286	26	7.777933E-04	-5.015722E-05	-1.244433E-05	0.0	2.828869E-04	0.0
288	26	1.665819E-03	-6.694785E-05	-6.440798E-06	0.0	2.667385E-04	0.0
290	26	2.315212E-03	-8.015099E-05	-7.566701E-07	0.0	1.562471E-04	0.0
292	26	2.567741E-03	-8.426502E-05	5.205418E-06	0.0	3.562349E-06	0.0
294	26	2.350424E-03	-7.626484E-05	1.068889E-05	0.0	-1.458629E-04	0.0
296	26	1.701069E-03	-5.634462E-05	1.531026E-05	0.0	-2.630851E-04	0.0
298	26	8.426884E-04	-2.935027E-05	1.809557E-05	0.0	-2.885873E-04	0.0
300	26	1.460409E-04	6.271545E-07	1.820778E-05	0.0	-1.353307E-04	0.0
362	26	-3.860478E-05	6.413721E-06	1.539303E-05	0.0	-1.246478E-05	0.0
363	26	1.264319E-04	-1.604715E-05	-1.871388E-04	0.0	-7.420222E-05	0.0
364	26	-3.179493E-05	1.215226E-05	1.231717E-05	0.0	1.432169E-06	0.0
365	26	1.076580E-04	-2.481471E-05	-2.926830E-04	0.0	-3.427830E-05	0.0
366	26	-3.107137E-05	-3.821783E-07	7.680842E-06	0.0	7.969508E-07	0.0
367	26	9.041502E-05	-2.840665E-05	-3.340603E-04	0.0	-9.127811E-06	0.0
368	26	-3.335354E-05	1.151627E-05	9.674961E-06	0.0	-5.572254E-06	0.0
369	26	7.504609E-05	-2.874099E-05	-3.359136E-04	0.0	5.898384E-06	0.0
370	26	-2.916635E-05	-1.351368E-05	4.896729E-06	0.0	5.230854E-07	0.0
371	26	6.166048E-05	-2.714213E-05	-3.149763E-04	0.0	1.412713E-05	0.0
372	26	-4.130983E-05	9.707491E-06	7.925212E-06	0.0	-4.971513E-06	0.0
373	26	5.074643E-05	-2.464424E-05	-2.841377E-04	0.0	1.779995E-05	0.0
375	26	4.103633E-05	-2.157071E-05	-2.476778E-04	0.0	1.889029E-05	0.0
376	26	-4.814197E-05	8.280735E-06	6.525627E-06	0.0	-4.114965E-06	0.0
377	26	3.297925E-05	-1.840592E-05	-2.097178E-04	0.0	1.825615E-05	0.0
379	26	2.638377E-05	-1.538043E-05	-1.746825E-04	0.0	1.666925E-05	0.0
380	26	-5.362755E-05	7.151913E-06	5.407242E-06	0.0	-3.201611E-06	0.0
381	26	2.105739E-05	-1.262242E-05	-1.433349E-04	0.0	1.463504E-05	0.0
383	26	1.681787E-05	-1.019358E-05	-1.162248E-04	0.0	1.247287E-05	0.0
384	26	-5.777845E-05	6.255581E-06	4.514990E-06	0.0	-2.349934E-06	0.0
385	26	1.349930E-05	-8.115514E-06	-9.339902E-05	0.0	1.037441E-05	0.0
387	26	1.095441E-05	-6.389392E-06	-7.461265E-05	0.0	8.445822E-06	0.0
388	26	-6.074083E-05	5.541782E-06	3.805033E-06	0.0	-1.624159E-06	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
389	26	9.053861E-06	-5.011550E-06	-5.946781E-05	0.0	6.738022E-06	0.0
391	26	7.741396E-06	-4.027480E-06	-4.803148E-05	0.0	5.336331E-06	0.0
392	26	-6.272859E-05	4.973185E-06	3.242481E-06	0.0	-1.053075E-06	0.0
393	26	6.775474E-06	-3.364855E-06	-3.864089E-05	0.0	4.093692E-06	0.0
395	26	6.130202E-06	-3.150489E-06	-3.150057E-05	0.0	3.085468E-06	0.0
396	26	-6.398089E-05	4.522622E-06	2.799461E-06	0.0	-6.433324E-07	0.0
397	26	5.680496E-06	-3.518545E-06	-2.614209E-05	0.0	2.313218E-06	0.0
399	26	5.258964E-06	-4.706924E-06	-2.207819E-05	0.0	1.796301E-06	0.0
400	26	-6.473620E-05	4.171053E-06	2.453510E-06	0.0	-3.886923E-07	0.0
404	26	-6.521813E-05	3.905967E-06	2.186251E-06	0.0	-2.763690E-07	0.0
408	26	-6.562905E-05	3.720170E-06	1.982283E-06	0.0	-2.915123E-07	0.0
412	26	-6.614934E-05	3.610925E-06	1.828253E-06	0.0	-4.201059E-07	0.0
416	26	-6.694069E-05	3.579410E-06	1.712052E-06	0.0	-6.515418E-07	0.0
420	26	-6.815264E-05	3.630435E-06	1.622093E-06	0.0	-9.806299E-07	0.0
424	26	-6.993247E-05	3.772406E-06	1.546645E-06	0.0	-1.409870E-06	0.0
428	26	-7.243858E-05	4.017464E-06	1.473177E-06	0.0	-1.952210E-06	0.0
94	27	0.0	0.0	0.0	0.0	0.0	0.0
96	27	3.259347E-08	-4.274856E-09	1.588801E-08	0.0	4.307489E-08	0.0
98	27	1.184954E-07	-9.650375E-09	6.274206E-08	0.0	7.642211E-08	0.0
100	27	2.452616E-07	-1.620700E-08	1.334765E-07	0.0	1.026140E-07	0.0
102	27	4.047001E-07	-2.397707E-08	2.234785E-07	0.0	1.236665E-07	0.0
104	27	5.906452E-07	-3.296857E-08	3.293187E-07	0.0	1.411594E-07	0.0
106	27	7.989124E-07	-4.318305E-08	4.487252E-07	0.0	1.562948E-07	0.0
108	27	1.026862E-06	-5.462792E-08	5.803349E-07	0.0	1.699628E-07	0.0
110	27	1.272808E-06	-6.731494E-08	7.233413E-07	0.0	1.827872E-07	0.0
112	27	1.535784E-06	-8.127148E-08	8.773828E-07	0.0	1.951527E-07	0.0
114	27	1.813986E-06	-1.158916E-07	1.062558E-06	0.0	2.056331E-07	0.0
116	27	2.104267E-06	-1.307710E-07	1.236908E-06	0.0	2.145541E-07	0.0
118	27	2.407221E-06	-1.485644E-07	1.420742E-06	0.0	2.251679E-07	0.0
120	27	2.725031E-06	-1.693076E-07	1.615677E-06	0.0	2.374658E-07	0.0
122	27	3.059688E-06	-1.930021E-07	1.824072E-06	0.0	2.513637E-07	0.0
124	27	3.413094E-06	-2.198031E-07	2.047101E-06	0.0	2.667264E-07	0.0
126	27	3.786808E-06	-2.498959E-07	2.286632E-06	0.0	2.833853E-07	0.0
128	27	4.182159E-06	-2.835027E-07	2.544307E-06	0.0	3.011531E-07	0.0
130	27	4.600150E-06	-3.208718E-07	2.821713E-06	0.0	3.198364E-07	0.0
132	27	5.041366E-06	-3.622657E-07	3.120351E-06	0.0	3.392403E-07	0.0
134	27	5.506152E-06	-4.079460E-07	3.441762E-06	0.0	3.591724E-07	0.0
136	27	5.994437E-06	-4.581289E-07	3.787443E-06	0.0	3.794489E-07	0.0
138	27	6.505833E-06	-5.129506E-07	4.158918E-06	0.0	3.999068E-07	0.0
140	27	7.039650E-06	-5.724215E-07	4.557768E-06	0.0	4.204132E-07	0.0
142	27	7.594910E-06	-6.363647E-07	4.985654E-06	0.0	4.408598E-07	0.0
144	27	8.170408E-06	-7.043272E-07	5.444357E-06	0.0	4.611382E-07	0.0
146	27	8.764640E-06	-7.754226E-07	5.935715E-06	0.0	4.810986E-07	0.0
148	27	9.375754E-06	-8.481544E-07	6.461562E-06	0.0	5.004846E-07	0.0
150	27	9.867794E-06	-1.122839E-06	7.020963E-06	0.0	3.550923E-07	0.0
152	27	1.004095E-05	-1.198337E-06	7.372285E-06	0.0	5.277629E-08	0.0
154	27	9.789491E-06	-1.287936E-06	7.521524E-06	0.0	-2.301123E-07	0.0
156	27	9.123611E-06	-1.389708E-06	7.482839E-06	0.0	-5.123757E-07	0.0
158	27	8.028703E-06	-1.502424E-06	7.256910E-06	0.0	-8.104259E-07	0.0
160	27	6.467316E-06	-1.625343E-06	6.832326E-06	0.0	-1.138555E-06	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
162	27	4.384273E-06	-1.757755E-06	6.188908E-06	0.0	-1.508874E-06	0.0
164	27	1.708185E-06	-1.898659E-06	5.298700E-06	0.0	-1.930891E-06	0.0
166	27	-1.644567E-06	-2.047406E-06	4.128611E-06	0.0	-2.410946E-06	0.0
168	27	-5.764270E-06	-2.201355E-06	2.643809E-06	0.0	-2.950950E-06	0.0
170	27	-1.074230E-05	-2.357319E-06	8.108083E-07	0.0	-3.547003E-06	0.0
172	27	-1.665756E-05	-2.509883E-06	-1.394232E-06	0.0	-4.186962E-06	0.0
174	27	-2.356744E-05	-2.650400E-06	-3.980763E-06	0.0	-4.846912E-06	0.0
176	27	-3.148483E-05	-2.765390E-06	-6.930930E-06	0.0	-5.487115E-06	0.0
178	27	-4.035399E-05	-2.834128E-06	-1.018631E-05	0.0	-6.046202E-06	0.0
180	27	-5.001554E-05	-2.824803E-06	-1.362956E-05	0.0	-6.434562E-06	0.0
182	27	-6.015335E-05	-2.669663E-06	-1.705583E-05	0.0	-6.525705E-06	0.0
183	27	6.626308E-05	4.370493E-05	-3.775533E-04	0.0	1.087987E-05	0.0
184	27	-7.025173E-05	-2.357099E-06	-2.015191E-05	0.0	-6.146021E-06	0.0
185	27	6.954058E-05	2.925534E-05	-3.592868E-04	0.0	7.569184E-06	0.0
186	27	-7.948655E-05	-1.720829E-06	-2.243964E-05	0.0	-5.063789E-06	0.0
187	27	7.276919E-05	1.941503E-05	-3.458264E-04	0.0	5.550722E-06	0.0
188	27	-8.768011E-05	4.066508E-07	-2.423731E-05	0.0	-4.877748E-06	0.0
189	27	7.641800E-05	1.318379E-05	-3.349949E-04	0.0	5.685663E-06	0.0
190	27	-9.646737E-05	2.233770E-06	-2.577808E-05	0.0	-5.235491E-06	0.0
191	27	8.113668E-05	8.369437E-06	-3.211116E-04	0.0	8.794692E-06	0.0
192	27	-1.046683E-04	5.182886E-06	-2.682212E-05	0.0	-3.937552E-06	0.0
193	27	8.718473E-05	3.404650E-06	-2.968984E-04	0.0	1.630370E-05	0.0
194	27	-9.597876E-05	-7.014131E-06	-2.613652E-05	0.0	1.569327E-05	0.0
195	27	9.496555E-05	-3.873745E-06	-2.484876E-04	0.0	3.126582E-05	0.0
196	27	-3.759179E-05	-1.833704E-05	-2.216527E-05	0.0	4.098198E-05	0.0
197	27	1.034119E-04	-1.501179E-05	-1.636209E-04	0.0	5.559184E-05	0.0
198	27	1.120633E-04	-3.322576E-05	-1.638696E-05	0.0	9.459385E-05	0.0
286	27	6.991718E-04	-4.306353E-05	-1.074179E-05	0.0	2.566732E-04	0.0
288	27	1.503903E-03	-5.825798E-05	-5.649944E-06	0.0	2.413422E-04	0.0
290	27	2.090833E-03	-7.032897E-05	-6.941753E-07	0.0	1.411191E-04	0.0
292	27	2.319422E-03	-7.426801E-05	4.639069E-06	0.0	3.632964E-06	0.0
294	27	2.125043E-03	-6.732090E-05	9.605415E-06	0.0	-1.309846E-04	0.0
296	27	1.540312E-03	-4.965611E-05	1.377879E-05	0.0	-2.374398E-04	0.0
298	27	7.635923E-04	-2.559296E-05	1.622297E-05	0.0	-2.617568E-04	0.0
300	27	1.315710E-04	1.196288E-06	1.614966E-05	0.0	-1.220215E-04	0.0
362	27	-3.337400E-05	5.736031E-06	1.337587E-05	0.0	-1.055818E-05	0.0
363	27	1.132816E-04	-1.442274E-05	-1.670904E-04	0.0	-6.526067E-05	0.0
364	27	-2.609330E-05	1.024580E-05	1.052034E-05	0.0	1.287305E-06	0.0
365	27	9.581243E-05	-2.242549E-05	-2.583933E-04	0.0	-2.883634E-05	0.0
366	27	-2.541607E-05	-3.035467E-07	6.398119E-06	0.0	6.991838E-07	0.0
367	27	7.985014E-05	-2.553164E-05	-2.916961E-04	0.0	-6.365191E-06	0.0
368	27	-2.746185E-05	9.641049E-06	8.176643E-06	0.0	-4.672706E-06	0.0
369	27	6.571865E-05	-2.562194E-05	-2.900932E-04	0.0	6.702386E-06	0.0
370	27	-2.375567E-05	-1.124403E-05	3.979111E-06	0.0	4.510305E-07	0.0
371	27	5.350630E-05	-2.397326E-05	-2.689953E-04	0.0	1.357361E-05	0.0
372	27	-3.398316E-05	8.054316E-06	6.631754E-06	0.0	-3.980259E-06	0.0
373	27	4.363086E-05	-2.156381E-05	-2.400700E-04	0.0	1.640360E-05	0.0
375	27	3.492052E-05	-1.868351E-05	-2.063801E-04	0.0	1.697046E-05	0.0
376	27	-3.932959E-05	6.805698E-06	5.402786E-06	0.0	[illegible]	0.0
377	27	2.776984E-05	-1.577754E-05	-1.731444E-04	0.0	1.609075E-05	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
379	27	2.195034E-05	-1.304565E-05	-1.425149E-04	0.0	1.445590E-05	0.0
380	27	-4.340208E-05	5.816693E-06	4.425708E-06	0.0	-2.300754E-06	0.0
381	27	1.730252E-05	-1.059201E-05	-1.155263E-04	0.0	1.250710E-05	0.0
383	27	1.363628E-05	-8.460125E-06	-9.251338E-05	0.0	1.051415E-05	0.0
384	27	-4.627736E-05	5.034405E-06	3.649875E-06	0.0	-1.552559E-06	0.0
385	27	1.079124E-05	-6.657610E-06	-7.339440E-05	0.0	8.631650E-06	0.0
387	27	8.627433E-06	-5.175242E-06	-5.785922E-05	0.0	6.938943E-06	0.0
388	27	-4.812625E-05	4.408260E-06	3.035309E-06	0.0	-9.365744E-07	0.0
389	27	7.024231E-06	-3.998801E-06	-4.549007E-05	0.0	5.468181E-06	0.0
391	27	5.925787E-06	-3.157311E-06	-3.626030E-05	0.0	4.281023E-06	0.0
392	27	-4.916084E-05	3.907149E-06	2.550442E-06	0.0	-4.676152E-07	0.0
393	27	5.124916E-06	-2.579256E-06	-2.877026E-05	0.0	3.244526E-06	0.0
395	27	4.597739E-06	-2.362200E-06	-2.314382E-05	0.0	2.415848E-06	0.0
396	27	-4.960185E-05	3.507045E-06	2.170242E-06	0.0	-1.439419E-07	0.0
397	27	4.239380E-06	-2.609358E-06	-1.897155E-05	0.0	1.790680E-06	0.0
399	27	3.910901E-06	-3.511817E-06	-1.563780E-05	0.0	1.381427E-06	0.0
400	27	-4.965994E-05	3.191680E-06	1.874684E-06	0.0	4.524216E-08	0.0
404	27	-4.952593E-05	2.948061E-06	1.647512E-06	0.0	1.147872E-07	0.0
408	27	-4.936755E-05	2.771367E-06	1.475215E-06	0.0	8.028309E-08	0.0
412	27	-4.933000E-05	2.658197E-06	1.346173E-06	0.0	-4.418889E-08	0.0
416	27	-4.953955E-05	2.609099E-06	1.249934E-06	0.0	-2.477205E-07	0.0
420	27	-5.010945E-05	2.627764E-06	1.176551E-06	0.0	-5.240541E-07	0.0
424	27	-5.114799E-05	2.721034E-06	1.115974E-06	0.0	-8.732159E-07	0.0
428	27	-5.276954E-05	2.899107E-06	1.057432E-06	0.0	-1.303636E-06	0.0
94	28	0.0	0.0	0.0	0.0	0.0	0.0
96	28	2.147426E-08	-2.564667E-09	1.042665E-08	0.0	2.834032E-08	0.0
98	28	7.801708E-08	-5.880679E-09	4.120363E-08	0.0	5.021190E-08	0.0
100	28	1.613277E-07	-9.997862E-09	8.760969E-08	0.0	6.741357E-08	0.0
102	28	2.661688E-07	-1.493757E-08	1.467027E-07	0.0	8.134180E-08	0.0
104	28	3.886615E-07	-2.070654E-08	2.163337E-07	0.0	9.308468E-08	0.0
106	28	5.262938E-07	-2.731875E-08	2.951526E-07	0.0	1.034654E-07	0.0
108	28	6.776055E-07	-3.478342E-08	3.824278E-07	0.0	1.130912E-07	0.0
110	28	8.417886E-07	-4.312359E-08	4.778122E-07	0.0	1.223859E-07	0.0
112	28	1.018524E-06	-5.237350E-08	5.812608E-07	0.0	1.316099E-07	0.0
114	28	1.206970E-06	-7.589193E-08	7.066388E-07	0.0	1.399006E-07	0.0
116	28	1.405447E-06	-8.594424E-08	8.258118E-07	0.0	1.474178E-07	0.0
118	28	1.614711E-06	-9.818916E-08	9.527495E-07	0.0	1.563479E-07	0.0
120	28	1.836617E-06	-1.126324E-07	1.088945E-06	0.0	1.666926E-07	0.0
122	28	2.072865E-06	-1.293486E-07	1.235847E-06	0.0	1.784036E-07	0.0
124	28	2.325130E-06	-1.484730E-07	1.394947E-06	0.0	1.913986E-07	0.0
126	28	2.594829E-06	-1.701833E-07	1.567664E-06	0.0	2.055732E-07	0.0
128	28	2.883261E-06	-1.946924E-07	1.755439E-06	0.0	2.208089E-07	0.0
130	28	3.191499E-06	-2.222404E-07	1.959697E-06	0.0	2.369820E-07	0.0
132	28	3.520293E-06	-2.530863E-07	2.181811E-06	0.0	2.539649E-07	0.0
134	28	3.870271E-06	-2.874974E-07	2.423238E-06	0.0	2.716272E-07	0.0
136	28	4.241735E-06	-3.257172E-07	2.685413E-06	0.0	2.898407E-07	0.0
138	28	4.634739E-06	-3.679388E-07	2.969824E-06	0.0	3.084867E-07	0.0
140	28	5.049100E-06	-4.142694E-07	3.278026E-06	0.0	3.274625E-07	0.0
142	28	5.484391E-06	-4.646814E-07	3.611660E-06	0.0	3.466771E-07	0.0
144	28	5.939992E-06	-5.189403E-07	3.972494E-06	0.0	3.660339E-07	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
146	28	6.414988E-06	-5.764784E-07	4.362348E-06	0.0	3.853994E-07	0.0
148	28	6.908163E-06	-6.362475E-07	4.783073E-06	0.0	4.045536E-07	0.0
150	28	7.311719E-06	-8.516671E-07	5.235860E-06	0.0	2.944026E-07	0.0
152	28	7.471084E-06	-9.158104E-07	5.528511E-06	0.0	6.159274E-08	0.0
154	28	7.302750E-06	-9.930200E-07	5.668172E-06	0.0	-1.557248E-07	0.0
156	28	6.813792E-06	-1.081969E-06	5.666213E-06	0.0	-3.736581E-07	0.0
158	28	5.989956E-06	-1.181690E-06	5.522509E-06	0.0	-6.063207E-07	0.0
160	28	4.797029E-06	-1.291975E-06	5.226464E-06	0.0	-8.661381E-07	0.0
162	28	3.185466E-06	-1.412399E-06	4.760004E-06	0.0	-1.163858E-06	0.0
164	28	1.090991E-06	-1.542483E-06	4.098076E-06	0.0	-1.508226E-06	0.0
166	28	-1.562255E-06	-1.681318E-06	3.210757E-06	0.0	-1.905543E-06	0.0
168	28	-4.857306E-06	-1.827219E-06	2.065997E-06	0.0	-2.358605E-06	0.0
170	28	-8.880465E-06	-1.977206E-06	6.317918E-07	0.0	-2.865512E-06	0.0
172	28	-1.370886E-05	-2.126311E-06	-1.116238E-06	0.0	-3.417549E-06	0.0
174	28	-1.940446E-05	-2.266418E-06	-3.191806E-06	0.0	-3.996041E-06	0.0
176	28	-2.599350E-05	-2.384669E-06	-5.586379E-06	0.0	-4.568744E-06	0.0
178	28	-3.344570E-05	-2.461079E-06	-8.257880E-06	0.0	-5.084589E-06	0.0
180	28	-4.164402E-05	-2.464762E-06	-1.111500E-05	0.0	-5.467647E-06	0.0
182	28	-5.033665E-05	-2.349046E-06	-1.399149E-05	0.0	-5.609187E-06	0.0
183	28	5.501740E-05	3.670836E-05	-3.071141E-04	0.0	8.139638E-06	0.0
184	28	-5.910019E-05	-2.043610E-06	-1.662894E-05	0.0	-5.358258E-06	0.0
185	28	5.787425E-05	2.448437E-05	-2.939226E-04	0.0	5.198448E-06	0.0
186	28	-6.723848E-05	-1.443627E-06	-1.862446E-05	0.0	-4.511464E-06	0.0
187	28	6.072773E-05	1.633816E-05	-2.852513E-04	0.0	3.312778E-06	0.0
188	28	-7.463714E-05	5.130397E-07	-2.029911E-05	0.0	-4.505931E-06	0.0
189	28	6.402936E-05	1.136469E-05	-2.790124E-04	0.0	3.276947E-06	0.0
190	28	-8.282191E-05	2.280706E-06	-2.189357E-05	0.0	-5.030023E-06	0.0
191	28	6.837546E-05	7.623717E-06	-2.704116E-04	0.0	5.854414E-06	0.0
192	28	-9.080497E-05	5.153349E-06	-2.325370E-05	0.0	-4.148477E-06	0.0
193	28	7.400989E-05	3.703250E-06	-2.529758E-04	0.0	1.238346E-05	0.0
194	28	-8.415787E-05	-5.538474E-06	-2.247446E-05	0.0	1.313111E-05	0.0
195	28	8.131593E-05	-2.341601E-06	-2.143862E-04	0.0	2.572061E-05	0.0
196	28	-3.410464E-05	-1.533212E-05	-1.900241E-05	0.0	3.561133E-05	0.0
197	28	8.929365E-05	-1.201062E-05	-1.427213E-04	0.0	4.781429E-05	0.0
198	28	9.749844E-05	-2.830880E-05	-1.391284E-05	0.0	8.380965E-05	0.0
286	28	6.271454E-04	-3.690605E-05	-9.177816E-06	0.0	2.320542E-04	0.0
288	28	1.353558E-03	-5.057268E-05	-4.897018E-06	0.0	2.174558E-04	0.0
290	28	1.881717E-03	-6.153279E-05	-6.049446E-07	0.0	1.268662E-04	0.0
292	28	2.087590E-03	-6.525064E-05	4.138529E-06	0.0	3.589174E-06	0.0
294	28	1.914343E-03	-5.923450E-05	8.611904E-06	0.0	-1.171640E-04	0.0
296	28	1.389882E-03	-4.362522E-05	1.236262E-05	0.0	-2.134551E-04	0.0
298	28	6.897158E-04	-2.224799E-05	1.449871E-05	0.0	-2.365602E-04	0.0
300	28	1.182586E-04	1.625876E-06	1.427935E-05	0.0	-1.097013E-04	0.0
362	28	-2.880178E-05	5.124956E-06	1.157781E-05	0.0	-8.963650E-06	0.0
363	28	1.012647E-04	-1.294554E-05	-1.487598E-04	0.0	-5.721886E-05	0.0
364	28	-2.139527E-05	8.614075E-06	8.943951E-06	0.0	1.148039E-06	0.0
365	28	8.507230E-05	-2.021831E-05	-2.274671E-04	0.0	-2.413076E-05	0.0
366	28	-2.076419E-05	-2.450525E-07	5.307268E-06	0.0	6.085764E-07	0.0
367	28	7.035455E-05	-2.288278E-05	-2.539761E-04	0.0	-4.146335E-06	0.0
368	28	-2.255524E-05	8.048600E-06	6.887859E-06	0.0	-3.906852E-06	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
369	28	5.741471E-05	-2.277076E-05	-2.498105E-04	0.0	7.154633E-06	0.0
370	28	-1.932071E-05	-9.331524E-06	3.222617E-06	0.0	3.855620E-07	0.0
371	28	4.632075E-05	-2.110490E-05	-2.290784E-04	0.0	1.284156E-05	0.0
372	28	-2.788779E-05	6.665168E-06	5.533176E-06	0.0	-3.178332E-06	0.0
373	28	3.742502E-05	-1.880375E-05	-2.022694E-04	0.0	1.496716E-05	0.0
375	28	2.964781E-05	-1.612517E-05	-1.719098E-04	0.0	1.512524E-05	0.0
376	28	-3.205682E-05	5.580143E-06	4.461735E-06	0.0	-2.380474E-06	0.0
377	28	2.331285E-05	-1.347478E-05	-1.425607E-04	0.0	1.408341E-05	0.0
379	28	1.822335E-05	-1.102356E-05	-1.159616E-04	0.0	1.245557E-05	0.0
380	28	-3.505268E-05	4.724237E-06	3.614510E-06	0.0	-1.627926E-06	0.0
381	28	1.418919E-05	-8.854184E-06	-9.287152E-05	0.0	1.062289E-05	0.0
383	28	1.103640E-05	-6.994687E-06	-7.345440E-05	0.0	8.810208E-06	0.0
384	28	-3.699391E-05	4.044702E-06	2.945224E-06	0.0	-9.809810E-07	0.0
385	28	8.611626E-06	-5.441880E-06	-5.753450E-05	0.0	7.139645E-06	0.0
387	28	6.783085E-06	-4.177815E-06	-4.476238E-05	0.0	5.667940E-06	0.0
388	28	-3.806154E-05	3.501919E-06	2.417642E-06	0.0	-4.652864E-07	0.0
389	28	5.439217E-06	-3.181905E-06	-3.471832E-05	0.0	4.412141E-06	0.0
391	28	4.525715E-06	-2.470036E-06	-2.731205E-05	0.0	3.414714E-06	0.0
392	28	-3.845782E-05	3.066618E-06	2.003364E-06	0.0	-8.538308E-08	0.0
393	28	3.865684E-06	-1.973870E-06	-2.137212E-05	0.0	2.556707E-06	0.0
395	28	3.437230E-06	-1.767364E-06	-1.696422E-05	0.0	1.880471E-06	0.0
396	28	-3.838191E-05	2.717595E-06	1.680032E-06	0.0	1.661842E-07	0.0
397	28	3.152893E-06	-1.928875E-06	-1.373495E-05	0.0	1.377680E-06	0.0
399	28	2.898148E-06	-2.610592E-06	-1.133371E-05	0.0	1.055450E-06	0.0
400	28	-3.801672E-05	2.439926E-06	1.429894E-06	0.0	3.028744E-07	0.0
404	28	-3.752290E-05	2.223597E-06	1.238647E-06	0.0	3.402947E-07	0.0
408	28	-3.703775E-05	2.062518E-06	1.094505E-06	0.0	2.937620E-07	0.0
412	28	-3.667681E-05	1.953846E-06	9.874284E-07	0.0	1.767386E-07	0.0
416	28	-3.653746E-05	1.897586E-06	9.084636E-07	0.0	-2.714238E-10	0.0
420	28	-3.670424E-05	1.896433E-06	8.491588E-07	0.0	-2.306962E-07	0.0
424	28	-3.725539E-05	1.955813E-06	8.010053E-07	0.0	-5.130303E-07	0.0
428	28	-3.827170E-05	2.084110E-06	7.548782E-07	0.0	-8.524090E-07	0.0
94	29	0.0	0.0	0.0	0.0	0.0	0.0
96	29	1.400092E-08	-1.513381E-09	6.767944E-09	0.0	1.845057E-08	0.0
98	29	5.083947E-08	-3.534287E-09	2.677421E-08	0.0	3.264863E-08	0.0
100	29	1.050303E-07	-6.092662E-09	5.690231E-08	0.0	4.383689E-08	0.0
102	29	1.732788E-07	-9.202328E-09	9.530606E-08	0.0	5.297118E-08	0.0
104	29	2.531857E-07	-1.287138E-08	1.406622E-07	0.0	6.079284E-08	0.0
106	29	3.432856E-07	-1.710995E-08	1.921932E-07	0.0	6.786036E-08	0.0
108	29	4.428205E-07	-2.193534E-08	2.495381E-07	0.0	7.458476E-08	0.0
110	29	5.514806E-07	-2.737080E-08	3.126012E-07	0.0	8.125329E-08	0.0
112	29	6.692852E-07	-3.345042E-08	3.814916E-07	0.0	8.804267E-08	0.0
114	29	7.959407E-07	-4.928096E-08	4.657047E-07	0.0	9.445438E-08	0.0
116	29	9.306480E-07	-5.602180E-08	5.465437E-07	0.0	1.005594E-07	0.0
118	29	1.074178E-06	-6.437784E-08	6.335536E-07	0.0	1.078021E-07	0.0
120	29	1.228060E-06	-7.437023E-08	7.279343E-07	0.0	1.162070E-07	0.0
122	29	1.393702E-06	-8.607492E-08	8.308521E-07	0.0	1.257500E-07	0.0
124	29	1.572542E-06	-9.961491E-08	9.435373E-07	0.0	1.363899E-07	0.0
126	29	1.765828E-06	-1.151526E-07	1.067175E-06	0.0	1.480706E-07	0.0
128	29	1.974764E-06	-1.328804E-07	1.203000E-06	0.0	1.607266E-07	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
130	29	2.200420E-06	-1.530175E-07	1.352265E-06	0.0	1.742887E-07	0.0
132	29	2.443614E-06	-1.758047E-07	1.516190E-06	0.0	1.886829E-07	0.0
134	29	2.705141E-06	-2.014968E-07	1.696110E-06	0.0	2.036299E-07	0.0
136	29	2.985544E-06	-2.303400E-07	1.893367E-06	0.0	2.196496E-07	0.0
138	29	3.285186E-06	-2.625523E-07	2.109360E-06	0.0	2.360644E-07	0.0
140	29	3.604253E-06	-2.982964E-07	2.345573E-06	0.0	2.530030E-07	0.0
142	29	3.942739E-06	-3.376410E-07	2.603580E-06	0.0	2.703969E-07	0.0
144	29	4.300487E-06	-3.805050E-07	2.885087E-06	0.0	2.881680E-07	0.0
146	29	4.677067E-06	-4.265554E-07	3.191853E-06	0.0	3.062038E-07	0.0
148	29	5.071793E-06	-4.750880E-07	3.525694E-06	0.0	3.243193E-07	0.0
150	29	5.399984E-06	-6.430419E-07	3.869168E-06	0.0	2.418820E-07	0.0
152	29	5.543184E-06	-6.967659E-07	4.130646E-06	0.0	6.443548E-08	0.0
154	29	5.436033E-06	-7.623256E-07	4.257714E-06	0.0	-1.007561E-07	0.0
156	29	5.083266E-06	-8.387719E-07	4.279462E-06	0.0	-2.673268E-07	0.0
158	29	4.471508E-06	-9.256734E-07	4.195294E-06	0.0	-4.472757E-07	0.0
160	29	3.570095E-06	-1.022940E-06	3.995630E-06	0.0	-6.512933E-07	0.0
162	29	2.335270E-06	-1.130506E-06	3.664617E-06	0.0	-8.888218E-07	0.0
164	29	7.100267E-07	-1.248206E-06	3.180194E-06	0.0	-1.167813E-06	0.0
166	29	-1.373465E-06	-1.375477E-06	2.515768E-06	0.0	-1.494387E-06	0.0
168	29	-3.990414E-06	-1.511048E-06	1.642396E-06	0.0	-1.871950E-06	0.0
170	29	-7.221001E-06	-1.652446E-06	5.301522E-07	0.0	-2.300188E-06	0.0
172	29	-1.113883E-05	-1.795331E-06	-8.448817E-07	0.0	-2.773218E-06	0.0
174	29	-1.580776E-05	-1.932385E-06	-2.499105E-06	0.0	-3.276809E-06	0.0
176	29	-2.126342E-05	-2.051777E-06	-4.430988E-06	0.0	-3.785193E-06	0.0
178	29	-2.749541E-05	-2.134841E-06	-6.611505E-06	0.0	-4.256298E-06	0.0
180	29	-3.442142E-05	-2.152423E-06	-8.970804E-06	0.0	-4.626257E-06	0.0
182	29	-4.184405E-05	-2.060064E-06	-1.137531E-05	0.0	-4.802092E-06	0.0
183	29	4.565090E-05	3.091859E-05	-2.490161E-04	0.0	6.007214E-06	0.0
184	29	-4.941902E-05	-1.790288E-06	-1.361326E-05	0.0	-4.653033E-06	0.0
185	29	4.813516E-05	2.046276E-05	-2.397155E-04	0.0	3.409236E-06	0.0
186	29	-5.656143E-05	-1.241850E-06	-1.534662E-05	0.0	-4.000907E-06	0.0
187	29	5.065250E-05	1.374087E-05	-2.346119E-04	0.0	1.661905E-06	0.0
188	29	-6.320576E-05	5.280381E-07	-1.689050E-05	0.0	-4.129136E-06	0.0
189	29	5.363343E-05	9.900152E-06	-2.317604E-04	0.0	1.491854E-06	0.0
190	29	-7.076070E-05	2.196978E-06	-1.848489E-05	0.0	-4.761840E-06	0.0
191	29	5.762363E-05	6.929139E-06	-2.271334E-04	0.0	3.603231E-06	0.0
192	29	-7.839741E-05	4.934381E-06	-2.004014E-05	0.0	-4.202308E-06	0.0
193	29	6.285186E-05	3.861273E-06	-2.150106E-04	0.0	9.242244E-06	0.0
194	29	-7.338497E-05	-4.400286E-06	-1.921068E-05	0.0	1.096385E-05	0.0
195	29	6.968154E-05	-1.147386E-06	-1.844917E-04	0.0	2.106467E-05	0.0
196	29	-3.055227E-05	-1.283874E-05	-1.618073E-05	0.0	3.088325E-05	0.0
197	29	7.718123E-05	-9.538445E-06	-1.241462E-04	0.0	4.102716E-05	0.0
198	29	8.492447E-05	-2.411621E-05	-1.170712E-05	0.0	7.408178E-05	0.0
286	29	5.612180E-04	-3.157121E-05	-7.766890E-06	0.0	2.090378E-04	0.0
288	29	1.214374E-03	-4.378901E-05	-4.200715E-06	0.0	1.951188E-04	0.0
290	29	1.687580E-03	-5.367708E-05	-5.074313E-07	0.0	1.135293E-04	0.0
292	29	1.872073E-03	-5.714415E-05	3.688872E-06	0.0	3.462276E-06	0.0
294	29	1.718224E-03	-5.194996E-05	7.697785E-06	0.0	-1.043857E-04	0.0
296	29	1.249700E-03	-3.820757E-05	1.105408E-05	0.0	-1.811343E-04	0.0
298	29	6.209547E-04	-1.928245E-05	1.291481E-05	0.0	-2.130048E-04	0.0

VESSEL SUBJECTED TO I.P. & JET LOAD & LOCA LOADS & SSE SUBCASE 1

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
300	29	1.060306E-04	1.933521E-06	1.258531E-05	0.0	-9.832764E-05	0.0
362	29	-2.480413E-05	4.571873E-06	9.982293E-06	0.0	-7.627586E-06	0.0
363	29	9.030012E-05	-1.160437E-05	-1.320436E-04	0.0	-5.000680E-05	0.0
364	29	-1.752563E-05	7.221586E-06	7.568212E-06	0.0	1.016476E-06	0.0
365	29	7.534889E-05	-1.818406E-05	-1.996442E-04	0.0	-2.007934E-05	0.0
366	29	-1.694032E-05	-2.014458E-07	4.382717E-06	0.0	5.258960E-07	0.0
367	29	6.183260E-05	-2.044952E-05	-2.204762E-04	0.0	-2.388999E-06	0.0
368	29	-1.848620E-05	6.700109E-06	5.779988E-06	0.0	-3.255225E-06	0.0
369	29	5.003274E-05	-2.017319E-05	-2.144846E-04	0.0	7.328718E-06	0.0
370	29	-1.568874E-05	-7.724075E-06	2.599469E-06	0.0	3.270605E-07	0.0
371	29	3.999777E-05	-1.851795E-05	-1.945103E-04	0.0	1.199059E-05	0.0
372	29	-2.283393E-05	5.500534E-06	4.599960E-06	0.0	-2.529824E-06	0.0
373	29	3.201999E-05	-1.634016E-05	-1.699224E-04	0.0	1.353454E-05	0.0
375	29	2.510774E-05	-1.386716E-05	-1.427822E-04	0.0	1.338176E-05	0.0
376	29	-2.607111E-05	4.563482E-06	3.672340E-06	0.0	-1.793227E-06	0.0
377	29	1.953074E-05	-1.146546E-05	-1.170438E-04	0.0	1.224555E-05	0.0
379	29	1.509334E-05	-9.279433E-06	-9.409065E-05	0.0	1.066618E-05	0.0
380	29	-2.825052E-05	3.826608E-06	2.943078E-06	0.0	-1.129152E-06	0.0
381	29	1.160996E-05	-7.372767E-06	-7.445422E-05	0.0	8.969483E-06	0.0
383	29	8.913464E-06	-5.760550E-06	-5.816581E-05	0.0	7.340140E-06	0.0
384	29	-2.951517E-05	3.242830E-06	2.370153E-06	0.0	-5.775282E-07	0.0
385	29	6.858651E-06	-4.431067E-06	-4.498479E-05	0.0	5.872261E-06	0.0
387	29	5.322642E-06	-3.360645E-06	-3.454305E-05	0.0	4.603893E-06	0.0
388	29	-3.004601E-05	2.777057E-06	1.920917E-06	0.0	-1.512937E-07	0.0
389	29	4.203100E-06	-2.524161E-06	-2.643235E-05	0.0	3.540265E-06	0.0
391	29	3.448127E-06	-1.927732E-06	-2.052223E-05	0.0	2.708611E-06	0.0
392	29	-3.003047E-05	2.403486E-06	1.569970E-06	0.0	1.523265E-07	0.0
393	29	2.907426E-06	-1.507724E-06	-1.583768E-05	0.0	2.003510E-06	0.0
395	29	2.561043E-06	-1.319303E-06	-1.240365E-05	0.0	1.455490E-06	0.0
396	29	-2.964481E-05	2.103457E-06	1.297451E-06	0.0	3.444335E-07	0.0
397	29	2.336430E-06	-1.421109E-06	-9.918542E-06	0.0	1.053709E-06	0.0
399	29	2.139811E-06	-1.933345E-06	-8.089689E-06	0.0	8.013839E-07	0.0
400	29	-2.904555E-05	1.863791E-06	1.087709E-06	0.0	4.397472E-07	0.0
404	29	-2.836621E-05	1.675548E-06	9.282313E-07	0.0	4.537062E-07	0.0
408	29	-2.771785E-05	1.533136E-06	8.087973E-07	0.0	4.007354E-07	0.0
412	29	-2.719123E-05	1.433720E-06	7.207879E-07	0.0	2.932200E-07	0.0
416	29	-2.686055E-05	1.376868E-06	6.565969E-07	0.0	1.408362E-07	0.0
420	29	-2.678788E-05	1.364428E-06	6.091096E-07	0.0	-5.003348E-08	0.0
424	29	-2.702863E-05	1.400584E-06	5.712061E-07	0.0	-2.770390E-07	0.0
428	29	-2.763837E-05	1.492086E-06	5.352576E-07	0.0	-5.429870E-07	0.0

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 100   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE STRESSES SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
101	6517.	3911.	0.	6517.	
102	5872.	5229.	0.	5872.	
103	5295.	6477.	0.	6477.	
104	4792.	7595.	0.	7595.	
105	4363.	8563.	0.	8563.	
106	3987.	9416.	0.	9416.	
107	3661.	10155.	0.	10155.	
108	3375.	10783.	0.	10783.	
109	3124.	11312.	0.	11312.	
110	2901.	11753.	0.	11753.	
111	2700.	12118.	0.	12118.	
112	2520.	12419.	0.	12419.	
113	2355.	12669.	0.	12669.	
114	2202.	12877.	0.	12877.	
115	2060.	13050.	0.	13050.	
116	1927.	13197.	0.	13197.	
117	1800.	13322.	0.	13322.	
118	1680.	13428.	0.	13428.	
119	1564.	13517.	0.	13517.	
120	1454.	13590.	0.	13590.	
121	1347.	13643.	0.	13643.	
122	1241.	13843.	0.	13843.	
123	1146.	14042.	0.	14042.	
124	1049.	14085.	0.	14085.	
125	952.	14132.	0.	14132.	
126	856.	14177.	0.	14177.	
127	763.	14215.	0.	14215.	
128	671.	14236.	0.	14235.	
129	580.	14231.	0.	14231.	
130	490.	14190.	0.	14190.	
131	402.	14101.	0.	14101.	
132	314.	13952.	0.	13952.	
133	228.	13730.	0.	13730.	
134	144.	13423.	0.	13423.	
135	60.	13017.	0.	13017.	
136	-23.	12503.	0.	12526.	
137	-106.	11870.	0.	11976.	
138	-188.	11112.	0.	11300.	

IV 10.4.89

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 100   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	SIG(S)	MEMBRANE STRESSES SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
139	-272.	10226.	0.	10498.	
140	-358.	9242.	0.	9600.	
141	-442.	8141.	0.	8583.	
142	-528.	6915.	0.	7443.	
143	-616.	5617.	0.	6233.	
144	-705.	4287.	0.	4992.	
145	-796.	2978.	0.	3774.	
146	-888.	1760.	0.	2648.	
147	-980.	719.	0.	1700.	
148	-1073.	-39.	0.	1073.	
149	-1163.	-388.	0.	1163.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 100 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (OUTSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
101	4100.	3025.	0.	4100.	
102	6406.	5237.	0.	6406.	
103	6272.	6551.	0.	6551.	
104	5380.	7454.	0.	7454.	
105	5700.	8524.	0.	8524.	
106	5709.	9359.	0.	9359.	
107	5506.	10000.	0.	10000.	
108	5162.	10487.	0.	10487.	
109	4738.	10854.	0.	10854.	
110	4273.	11131.	0.	11131.	
111	3803.	11341.	0.	11341.	
112	3352.	11506.	0.	11506.	
113	2935.	11643.	0.	11643.	
114	2563.	11762.	0.	11762.	
115	2243.	11875.	0.	11875.	
116	1981.	11987.	0.	11987.	
117	1776.	12101.	0.	12101.	
118	1632.	12221.	0.	12221.	
119	1545.	12345.	0.	12345.	
120	1516.	12472.	0.	12472.	
121	1540.	12598.	0.	12598.	
122	950.	12690.	0.	12690.	
123	337.	12775.	0.	12775.	
124	384.	12907.	0.	12907.	
125	501.	13066.	0.	13066.	
126	683.	13241.	0.	13241.	
127	928.	13425.	0.	13425.	
128	1231.	13607.	0.	13607.	
129	1588.	13777.	0.	13777.	
130	1993.	13920.	0.	13920.	
131	2437.	14022.	0.	14022.	
132	2908.	14068.	0.	14068.	
133	3390.	14038.	0.	14038.	
134	3860.	13914.	0.	13914.	
135	4291.	13675.	0.	13675.	
136	4647.	13300.	0.	13300.	
137	4886.	12767.	0.	12767.	
138	4956.	12054.	0.	12054.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 100   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (OUTSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
139	4797.	11144.	0.	11144.	
140	4581.	10108.	0.	10108.	
141	3674.	8769.	0.	8769.	
142	2351.	7178.	0.	7178.	
143	493.	5365.	0.	5365.	
144	-1994.	3344.	0.	5338.	
145	-5207.	1144.	0.	6351.	
146	-9238.	-1191.	0.	9238.	
147	-14171.	-3594.	0.	14171.	
148	-20075.	-5978.	0.	20075.	*
149	-27000.	-8227.	0.	27000.	*

P D M STEEL CO.   NASTRAN OUTPUT DATA PROCESSOR - NODP01   PAGE 224.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 100   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (INSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
101	8935.	4797.	0.	8935.	
102	5338.	5222.	0.	5338.	
103	4318.	6402.	0.	6402.	
104	4203.	7737.	0.	7737.	
105	3025.	8601.	0.	8601.	
106	2264.	9473.	0.	9473.	
107	1816.	10309.	0.	10309.	
108	1588.	11079.	0.	11079.	
109	1511.	11770.	0.	11770.	
110	1528.	12375.	0.	12375.	
111	1596.	12895.	0.	12895.	
112	1688.	13332.	0.	13332.	
113	1775.	13695.	0.	13695.	
114	1841.	13991.	0.	13991.	
115	1876.	14226.	0.	14226.	
116	1873.	14408.	0.	14408.	
117	1823.	14543.	0.	14543.	
118	1729.	14636.	0.	14636.	
119	1584.	14690.	0.	14690.	
120	1393.	14707.	0.	14707.	
121	1154.	14688.	0.	14688.	
122	1532.	14996.	0.	14996.	
123	1956.	15310.	0.	15310.	
124	1713.	15263.	0.	15263.	
125	1403.	15198.	0.	15198.	
126	1030.	15113.	0.	15113.	
127	599.	15004.	0.	15004.	
128	111.	14864.	0.	14864.	
129	-428.	14685.	0.	15113.	
130	-1013.	14459.	0.	15473.	
131	-1634.	14179.	0.	15813.	
132	-2279.	13836.	0.	16115.	
133	-2933.	13422.	0.	16355.	
134	-3572.	12931.	0.	16503.	
135	-4171.	12360.	0.	16530.	
136	-4693.	11706.	0.	16399.	
137	-5098.	10973.	0.	16071.	
138	-5333.	10170.	0.	15502.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 100 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (INSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
139	-5340.	9309.	0.	14650.	
140	-5297.	8376.	0.	13673.	
141	-4557.	7514.	0.	12071.	
142	-3407.	6653.	0.	10060.	
143	-1725.	5869.	0.	7594.	
144	584.	5229.	0.	5229.	
145	3615.	4812.	0.	4812.	
146	7462.	4711.	0.	7462.	
147	12210.	5033.	0.	12210.	
148	17930.	5901.	0.	17930.	
149	24674.	7452.	0.	24674.	*

P D M STEEL CO.   NASTRAN OUTPUT DATA PROCESSOR - NODP01   PAGE 226.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 200   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE STRESSES SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
201	4875.	2407.	0.	4875.	
202	4021.	1687.	0.	4021.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 200 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (OUTSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
201	-47898.	-15781.	0.	47898.	**
202	-24562.	-7907.	0.	24562.	*

IV.10.4.96

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 200 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (INSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
201	57648.	20595.	0.	57648.	**
202	32604.	11280.	0.	32604.	**

P D M STEEL CO.   NASTRAN OUTPUT DATA PROCESSOR - NODP01   PAGE 229.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 300   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE STRESSES SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
301	4561.	2163.	0.	4561.	

P O M STEEL CO.   NASTRAN OUTPUT DATA PROCESSOR - NODP01   PAGE 230.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 300   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (OUTSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
301	-19089.	-5143.	0.	19089.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 300 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (INSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
301	28211.	9469.	0.	28211.	*

P D M STEEL CO. NASTRAN OUTPUT DATA PROCESSOR - NODP01 PAGE 232.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 400 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE STRESSES SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
401	-7648. ✓	2498.	0.	10146.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 400 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (OUTSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
401	-22690. ✓	-4300.	0.	22690.	*

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 400   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (INSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
401	7394.	9297.	0.	9297.	

P D M STEEL CO.   NASTRAN OUTPUT DATA PROCESSOR - NODPOI   PAGE 235.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 401   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE STRESSES SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
402	-6637.	8650.	0.	15287.	
403	-5453.	14438.	0.	19891.	*
404	-4222.	19937.	0.	24159.	*
405	-3049.	25206.	0.	28256.	*
406	-1968.	30545.	0.	32514.	**
407	-1021.	36253.	0.	37274.	**
408	-293.	42341.	0.	42634.	**

PROJECTING THIS STRESS TO THE EXTREMITIES OF THE 2" ANNULAR PLATE, USING A LINEAR EXTRAPOLATION, WILL GET A MAXIMUM HOOP STRESS OF 45.4 ksi > Sy @ 340° F = 33.26 ksi, BUT LESS THAN 1½ Sy = 49.89 ksi. THE LENGTH OF "OVERSTRESSED" AREA IS FROM THE CENTER OF ELEMENT 406 TO THE OUTSIDE END OF THE PLATE, OR A LENGTH OF 207.0 - 201.9 = 5.1" ACCORDING TO REFERENCE 2, P NE-3213.10 A STRESSED REGION CAN EXCEED $1.1 S_M$ BUT LESS THAN $1.5 S_M$ IF THE DISTANCE OF "OVER-STRESS" IS LESS THAN $0.5\sqrt{Rt} = 10.05" > 5.1"$

∴ ABOVE STRESS OK w/ $S_M = S_Y$.

P D M STEEL CO. NASTRAN OUTPUT DATA PROCESSOR - NODP01 PAGE 236.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 401 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (OUTSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
402	-16294.	5741.	0.	22035.	*
403	-11338.	14285.	0.	25622.	*
404	-6685.	22214.	0.	28899.	*
405	-3221.	29186.	0.	32407.	**
406	-351.	35921.	0.	36273.	**
407	2094.	42793.	0.	42793.	**
408	3997.	50078.	0.	50078.	**

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 401 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (INSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
402	3020.	11559.	0.	11559.	
403	432.	14590.	0.	14590.	
404	-1759.	17660.	0.	19419.	*
405	-2878.	21226.	0.	24104.	*
406	-3585.	25170.	0.	28755.	*
407	-4136.	29713.	0.	33850.	**
408	-4583.	34604.	0.	39188.	**

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 500 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT	MEMBRANE STRESSES			STRESS	
NO.	SIG(S)	SIG(θ)	TAU(S-θ)	INTENSITY	CHECK
501	3511.	10819.	0.	10819.	
502	4706.	17350.	0.	17350.	
503	5681.	23608.	0.	23608.	*
504	6276.	27135.	0.	27135.	*
505	6421.	26857.	0.	26857.	*
506	6162.	22600.	0.	22600.	*
507	5677.	15192.	0.	15192.	
508	5237.	6643.	0.	6643.	

P D M STEEL CO. NASTRAN OUTPUT DATA PROCESSOR - NOOP01 PAGE 239.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 500 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (OUTSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
501	-52589.	-10618.	0.	52589.	**
502	17427.	11232.	0.	17427.	
503	61357.	25001.	0.	61357.	***
504	79598.	30514.	0.	79598.	***
505	82991.	31041.	0.	82991.	***
506	62505.	23552.	0.	62505.	***
507	22677.	9380.	0.	22676.	*
508	-47043.	-14913.	0.	47043.	**

IV.10.4.108

P O M STEEL CO. NASTRAN OUTPUT DATA PROCESSOR - NODP01 PAGE 240.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 500 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (INSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
501	59612.	32256.	0.	59612.	***
502	-8016.	23469.	0.	31484.	**
503	-49995.	22215.	0.	72210.	***
504	-67045.	23755.	0.	90800.	***
505	-70149.	22673.	0.	92821.	***
506	-50181.	21649.	0.	71829.	***
507	-11323.	21005.	0.	32327.	**
508	57518.	28198.	0.	57518.	**

III.10.4.109

P D M STEEL CO.   NASTRAN OUTPUT DATA PROCESSOR - NODP01   PAGE 241.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 600   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE STRESSES SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
601	-67.	-16525.	0.	16525.	
602	-95.	-14122.	0.	14122.	
603	41.	-12052.	0.	12093.	
604	307.	-10246.	0.	10552.	
605	665.	-8685.	0.	9350.	
606	1109.	-7288.	0.	8397.	
607	1637.	-5985.	0.	7621.	
608	2230.	-4784.	0.	7015.	
609	2884.	-3660.	0.	6544.	
610	3591.	-2587.	0.	6179.	
611	4351.	-1541.	0.	5892.	
612	5158.	-495.	0.	5653.	
613	6009.	579.	0.	6009.	
614	6876.	1683.	0.	6876.	
615	7772.	2887.	0.	7772.	
616	8711.	4267.	0.	8711.	
617	9651.	5859.	0.	9651.	
618	10569.	7741.	0.	10569.	
619	11426.	10014.	0.	11426.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 600 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (OUTSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
601	4831.	-6865.	0.	11696.	
602	4603.	-4776.	0.	9379.	
603	4522.	-2986.	0.	7508.	
604	4552.	-1427.	0.	5979.	
605	4541.	-223.	0.	4764.	
606	4802.	1111.	0.	4802.	
607	4980.	2228.	0.	4980.	
608	5156.	3245.	0.	5156.	
609	5302.	4178.	0.	5302.	
610	5382.	5034.	0.	5382.	
611	5358.	5818.	0.	5818.	
612	5180.	6528.	0.	6528.	
613	4784.	7156.	0.	7156.	
614	4330.	7644.	0.	7644.	
615	3050.	8081.	0.	8081.	
616	1434.	8355.	0.	8355.	
617	-896.	8435.	0.	9332.	
618	-4174.	8260.	0.	12434.	
619	-8699.	7747.	0.	16446.	

P D M STEEL CO. NASTRAN OUTPUT DATA PROCESSOR - NODP01 PAGE 243.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 600 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (INSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
601	-4964.	-26185.	0.	26185.	*
602	-4793.	-23468.	0.	23468.	*
603	-4441.	-21118.	0.	21118.	*
604	-3939.	-19064.	0.	19064.	
605	-3211.	-17147.	0.	17147.	
606	-2585.	-15687.	0.	15687.	
607	-1707.	-14197.	0.	14197.	
608	-695.	-12814.	0.	12814.	
609	466.	-11498.	0.	11964.	
610	1801.	-10208.	0.	12010.	
611	3343.	-8899.	0.	12243.	
612	5136.	-7518.	0.	12654.	
613	7233.	-5999.	0.	13232.	
614	9422.	-4277.	0.	13699.	
615	12494.	-2308.	0.	14801.	
616	15987.	180.	0.	15987.	
617	20199.	3283.	0.	20199.	*
618	25311.	7223.	0.	25311.	*
619	31551.	12282.	0.	31551.	**

P D M STEEL CO.   NASTRAN OUTPUT DATA PROCESSOR - NODP01   PAGE 244.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 700   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE STRESSES SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
701	2349.	4771.	0.	4771.	
702	2539.	6352.	0.	6352.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 700 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (OUTSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
701	-44387.	-8989.	0.	44387.	**
702	-67315.	-15616.	0.	67315.	***

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 700   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (INSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
701	49085.	18531.	0.	49085.	**
702	72393.	28320.	0.	72393.	***

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 800 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE STRESSES SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
801	235.	3257.	0.	3257.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 800 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (OUTSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
801	1610.	4918.	0.	4918.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 800 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (INSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
801	-1140.	1597.	0.	2737.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 801   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE STRESSES SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
802	73.	916.	0.	916.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 801   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (OUTSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
802	315.	1774.	0.	1774.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 801 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (INSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
802	-170.	58.	0.	228.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 900   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE STRESSES SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
901	6223.	14598.	0.	14598.	
902	6221.	14138.	0.	14138.	
903	6211.	13671.	0.	13671.	
904	6200.	13196.	0.	13196.	
905	6181.	12703.	0.	12703.	
906	6157.	12184.	0.	12184.	
907	6129.	11632.	0.	11632.	
908	6088.	11037.	0.	11037.	
909	6044.	10397.	0.	10397.	
910	5985.	9715.	0.	9715.	
911	5913.	9001.	0.	9001.	
912	5827.	8274.	0.	8274.	
913	5723.	7568.	0.	7568.	
914	5598.	6929.	0.	6929.	
915	5447.	6417.	0.	6417.	
916	5010.	5905.	0.	5905.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1 AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 900 THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (OUTSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
901	7307.	16811.	0.	16811.	
902	7251.	16221.	0.	16221.	
903	7349.	15676.	0.	15676.	
904	7558.	15157.	0.	15157.	
905	7818.	14640.	0.	14640.	
906	8080.	14099.	0.	14099.	
907	8289.	13507.	0.	13507.	
908	8379.	12839.	0.	12839.	
909	8298.	12074.	0.	12074.	
910	7970.	11195.	0.	11195.	
911	7329.	10193.	0.	10193.	
912	6306.	9067.	0.	9067.	
913	4829.	7834.	0.	7834.	
914	2836.	6525.	0.	6525.	
915	271.	5193.	0.	5193.	
916	-12593.	889.	0.	13482.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF SEAL SUPPORT AREA FOR JET LOADING

LOAD CASE 1   AXISYMMETRIC COSINE
VESSEL SUBJECTED TO I.P. + JET LOAD + LOCA LOADS + SSE

BODY NO. = 900   THETA = 0.0 DEG.

DESIGN STRESS INTENSITIES PM = 19300. PL = 28950. PL+PB = 57900.

ELEMENT NO.	MEMBRANE + BENDING STRESSES (INSIDE) SIG(S)	SIG(θ)	TAU(S-θ)	STRESS INTENSITY	CHECK
901	5140.	12384.	0.	12384.	
902	5191.	12055.	0.	12055.	
903	5073.	11666.	0.	11666.	
904	4842.	11234.	0.	11234.	
905	4544.	10766.	0.	10766.	
906	4234.	10270.	0.	10270.	
907	3969.	9756.	0.	9756.	
908	3797.	9234.	0.	9234.	
909	3789.	8719.	0.	8719.	
910	3999.	8234.	0.	8234.	
911	4497.	7809.	0.	7809.	
912	5349.	7482.	0.	7482.	
913	6616.	7302.	0.	7302.	
914	8360.	7332.	0.	8360.	
915	10624.	7641.	0.	10624.	
916	22613.	10921.	0.	22613.	*

PITTSBURGH-DES MOINES STEEL COMPANY

#8108250495

B & R FILE NUMBER

213-00-0268

FINAL STRESS REPORT

SECTION IV

SUBSECTION 9

REV. A – 5-22-73

REV. B – 10-23-73

DESIGN OF

DRYWELL HEAD, FLANGES, LIFTING LUGS, AND SUPPORT FEET

GDZ "A"
5-3-79

THIS SUBSECTION REVIEWED BY: J. F. [signature]

TITLE: PROJECT ENGINEER

[illegible] [illegible]

Introduction:

The following pages contain the design for the Drywell head, including mating flanges, lifting lugs, and support feet, with the applicable design drawing labeled Figure IV.9.1.

Three loadings were examined, i.e., internal pressure, external pressure, and jet loads. The other combinations specified in the Design Specification (Reference 1) were then judged inconsequential.

Conclusion:

The conclusion reached upon examining the enclosed design calculations is that the geometry pictured in Figure IV.9.1 is adequate for the design conditions specified in Reference 1.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL.				FINAL STRESS REPORT	SECTION: V
					SUBSEC: 9
PREPARED BY / DATE JFS/11-6-72					ARTICLE:
CHECKED BY / DATE:					PAGE: 22
REVISION NUMBER:					

List of References:

1. Burns and Roe, Inc., Bidding Documents and Plans and Specifications, Specification 2808-213 Primary Containment Vessel Contract No. 213, for WPPSS, Hanford No. 2.

2. ASME, Boiler and Pressure Vessel Code, Section III, "Nuclear Power Plant Components", 1971, including 1972 Summer Addenda, New York

3. AISC, Specification For the Design, Fabrication and Erection of Structural Steel For Buildings, "Manual of Steel Construction", Seventh Edition, New York, 1970

4. ASME, Boiler and Pressure Vessel Code, Section VIII, "Pressure Vessels", Division 1, 1971, including 1972 Summer Addenda, New York.

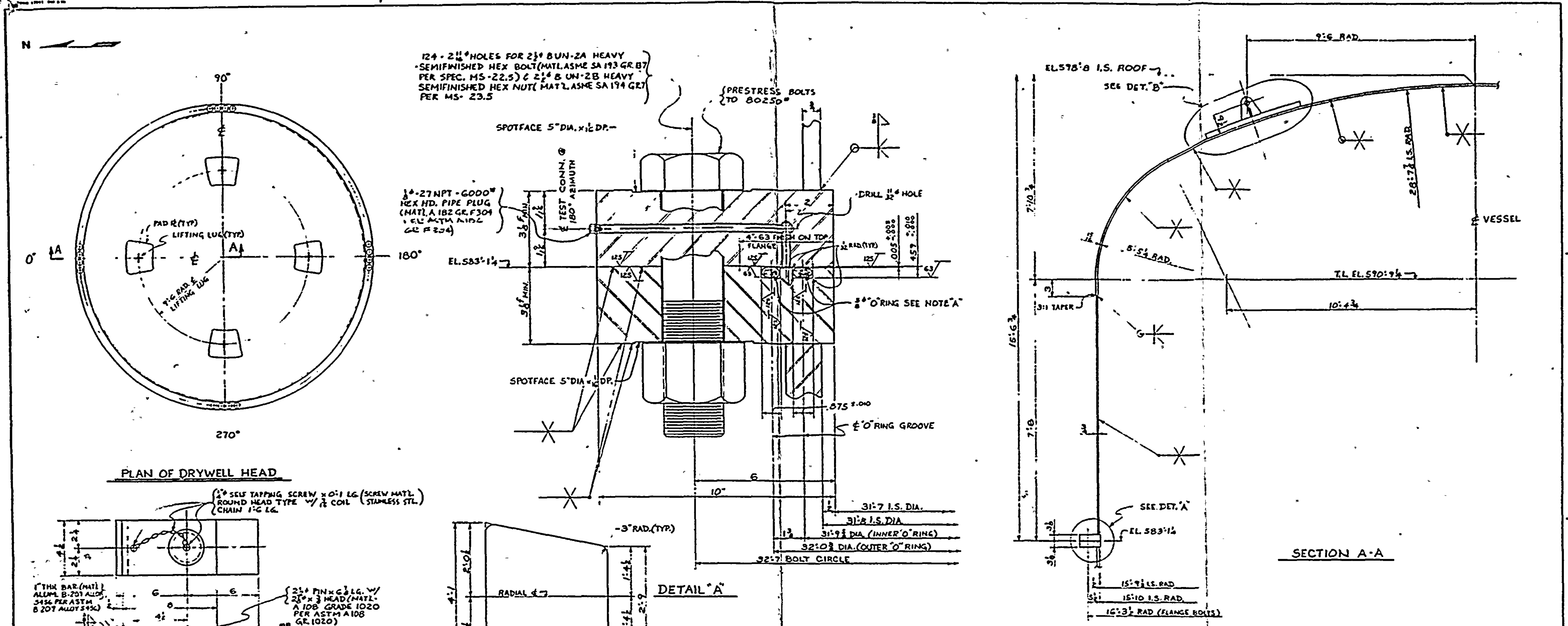
5. Roark, Raymond J., "Formulas For Stress and Strain", Fourth Edition, McGraw-Hill Book Company, New York, 1965

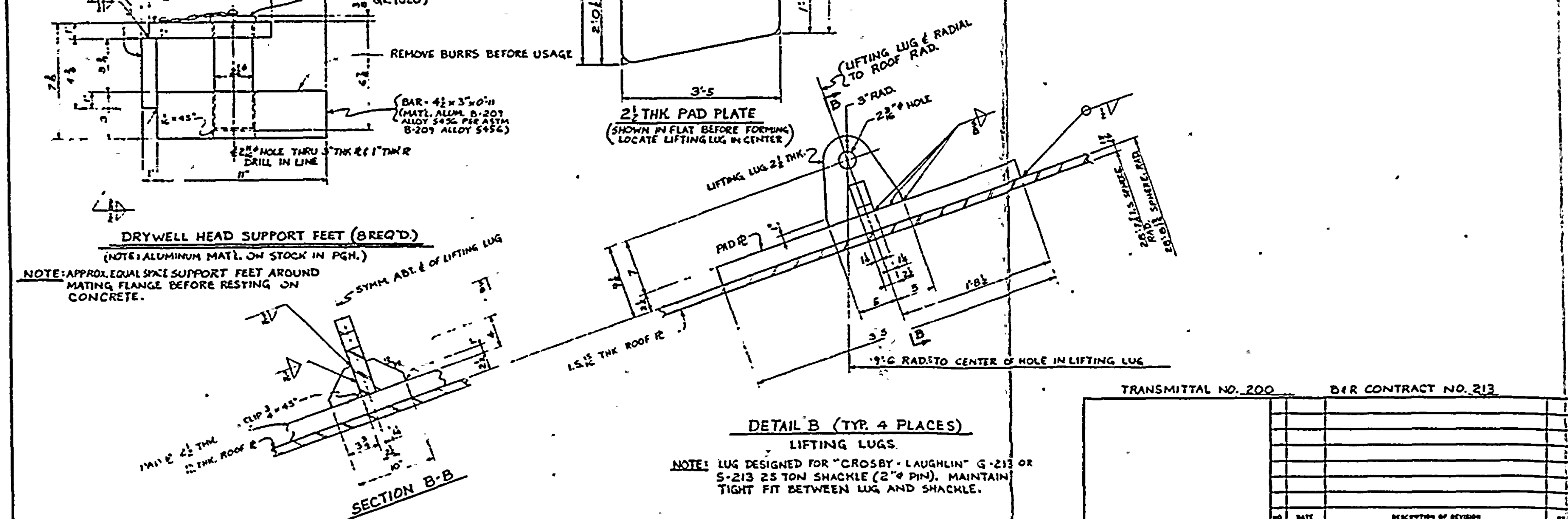
6. ASCE, Transactions, "Paper No. 3269--Wind Forces on Structures", New York, Vol. 126, 1961.

7. Wichman, K. R., et al, Welding Research Council Bulletin No. 107, "Local Stresses in Spherical and Cylindrical Shells Due to External Loadings", August 1965.

8. Bijlaard, P. P., Welding Research Council Bulletin No. 50, "Additional Data on Stresses in Cylindrical Shells Under Local Loading", May 1959.

9. Blodgett, Omer W., "Design of Welded Structures", The James F. Lincoln Arc Welding Foundation, Cleveland, Ohio, 1966.





NOTES:

1. NOTE "A"
   1/8" "O" RING MAT'L SILICONE 60 DUROMETER
   a) LAY 1/8" STOCK CORD IN GROVE OF FLANGE
   b) CUT 1/8" STOCK CORD WITHOUT STRETCHING. CUT ENDS ON 45° MITER, STRAIGHT & TRUE.
   c) CLEAN ENDS WITH SUITABLE SOLVENT SUCH AS TOLUENE OR ACETONE, WIPE DRY WITH CLEAN CLOTH OR PAPER TOWEL.
   d) APPLY G.E. SILICONE ADHESIVE RTV-60 COMPOUND WITH G.E. RTV-9811 CATALYST TO CUT EDGES. JOIN, ALLOW TO CURE FOR 24 HOURS AT AMBIENT TEMP. BEFORE HANDLING.
   e) TRIM EXCESS WITH A SHARP BLADE.
2. MATERIAL UNLESS OTHERWISE NOTED SHALL BE AS FOLLOWS: ASME SA 516 GR. 70 PER MS 7.22
3. MACHINED SURFACES TO BE COATED WITH RUST VETO 342.
4. GASKET MATERIAL: LIFE = 12 MONTH SUBJECTED TO INTEGRATED DOSE OF 2.6 x 10^7 RADS. SUBMIT TO B&R RESULTS OF TEST PERFORMED BY AN APPROVED TESTING LABORATORY IN ACCORDANCE WITH ASTM D-1081 DEMONSTRATING SATISFACTORY PERFORMANCE OF THE SILICONE "O" RINGS. (TEMP. = 340°F)

TRANSMITTAL NO. 200   B&R CONTRACT NO. 213

NO	DATE	DESCRIPTION OF REVISION	BY

PITTSBURGH-DES MOINES STEEL CO.
ENGINEERS-FABRICATORS-CONTRACTORS

WPPSS PRIMARY CONTAINMENT VESSEL
HANFORD NO.2, RICHLAND, WASHINGTON
DRYWELL HEAD, FLANGES, LIFTING LUGS & SUPPORT FEET

FIGURE IV 9.1
DESIGNED
DRAWN F. Schaal
CHECKED RAM 12-29-72
DESIGN FILE No.
CONTRACT No. 12764
DRAWING No. D-9
DATE

PREPARED BY / DATE: RAM/12-27-72				
CHECKED BY / DATE: BJW / 1-9-73				
REVISION NUMBER:				

FLANGE DESIGN:

THE FLANGES CONNECTING THE TOP HEAD TO THE DRYWELL OF THE CONTAINMENT VESSEL WILL BE DESIGNED USING PDM'S FLAT-FACE FLANGE PROGRAM FLA2 (SEE APPENDIX V, ARTICLE 2 OF THIS FINAL STRESS REPORT.)

THE FOLLOWING PAGE CONTAINS THE FLANGE DESIGN FOR THE TOP HEAD, INCLUDING SPECIFIED INPUT AND DESIRED OUTPUT. AS SHOWN, ALL COMPUTED STRESSES ARE WITHIN THEIR ALLOWABLE LIMITS, AND THE FLANGE SPECIFIED IS ADEQUATE.

1972 ASME SECTION III, APPENDIX XI, BOLTED FLANGE DESIGN
XI-3300--CLASS FF FLANGES WITH METAL-TO-METAL CONTACT OUTSIDE BOLT CIRCLE
SELF-ENERGIZING TYPE GASKETS WILL BE ASSUMED
FOLLOWING FLANGE WILL BE VALID FOR INTERNAL PRESSURE ONLY

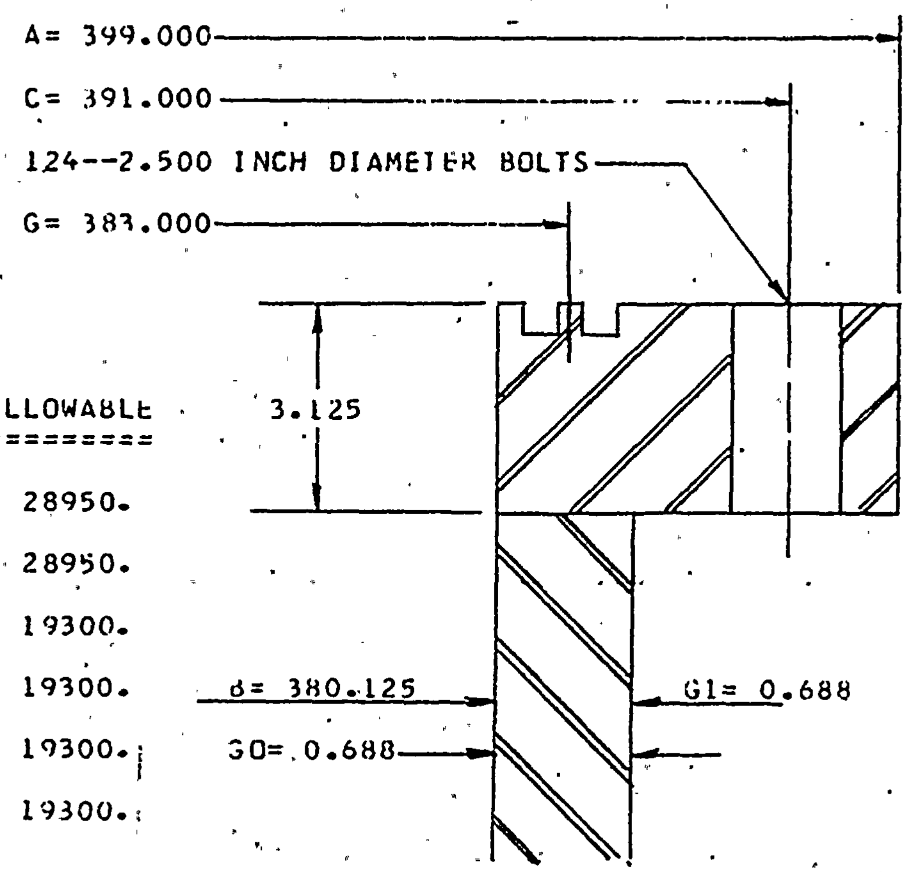
FLAT FACE FLANGE--INTEGRAL TYPE
HANFORD NO. 2 CONTAINMENT VESSEL
PDM CONTRACT NO. 12764

LISTING OF INPUT

DESIGN PRESSURE	45.00	SPACER THICKNESS	0.0
DESIGN TEMPERATURE	340.	NO. OF THREADED ENDS/BOLT	1
BOLT PRESTRESS	22000.	BOLT HOLE DIAMETER	2.6875
BOLT ALLOWABLE STRESS	27500.	FLANGE FACTOR C1	1.0000
BOLT ROOT AREA	3.720	FLANGE FACTOR C2	1.0000
FLANGE ALLOWABLE STRESS	19300.	FLANGE FACTOR C3	1.0000
FLANGE MODULUS OF ELASTICITY	27900000.	FLANGE FACTOR C4	0.8500
BOLT MODULUS OF ELASTICITY	29900000.	FLANGE FACTOR C5	0.0
NOZZLE ALLOWABLE STRESS	19300.		

AXIAL SEPERATION= .01435

ACTUAL BOLT PRESTRESS= 21573.



STRESS COMPUTATIONS

STRESS TYPE	STRESS1	STRESS2	ALLOWABLE
SH	16766.	-4303.	28950.
SHS	7795.	1474.	28950.
SR	19060.	-19060.	19300.
SRS	605.	-835.	19300.
ST	2947.	1806.	19300.
SH+SR/2 OR SH+ST/2	17913.		19300.

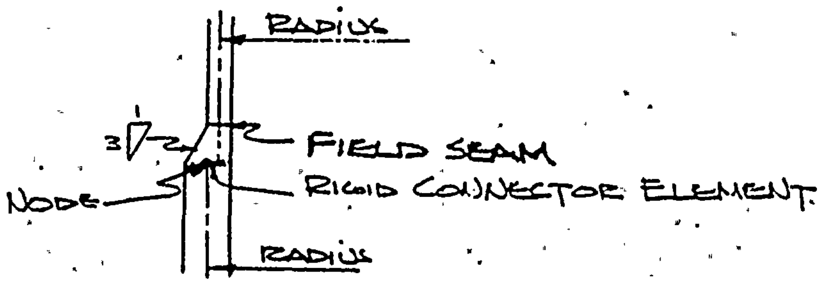
PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO: 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV
					SUBSEC: 9
PREPARED BY / DATE: RAM/12-27-72					ARTICLE: 2
CHECKED BY / DATE: BJW / 1-9-73					PAGE: 1
REVISION NUMBER:					

INTERNAL PRESSURE:

THE FOLLOWING PAGE CONTAINS THE GEOMETRIC MODEL USED FOR THE DESIGN OF THE TOP HEAD WHEN SUBJECTED TO INTERNAL PRESSURE OF 45 PSI. PDM'S AXISYMMETRIC SHELL COMPUTER PROGRAM AX2 (SEE APPENDIX V, ARTICLE 1 OF THIS FINAL STRESS REPORT) WAS USED FOR THE ANALYSIS, AND THE RESULTS FOLLOW THE MODEL.

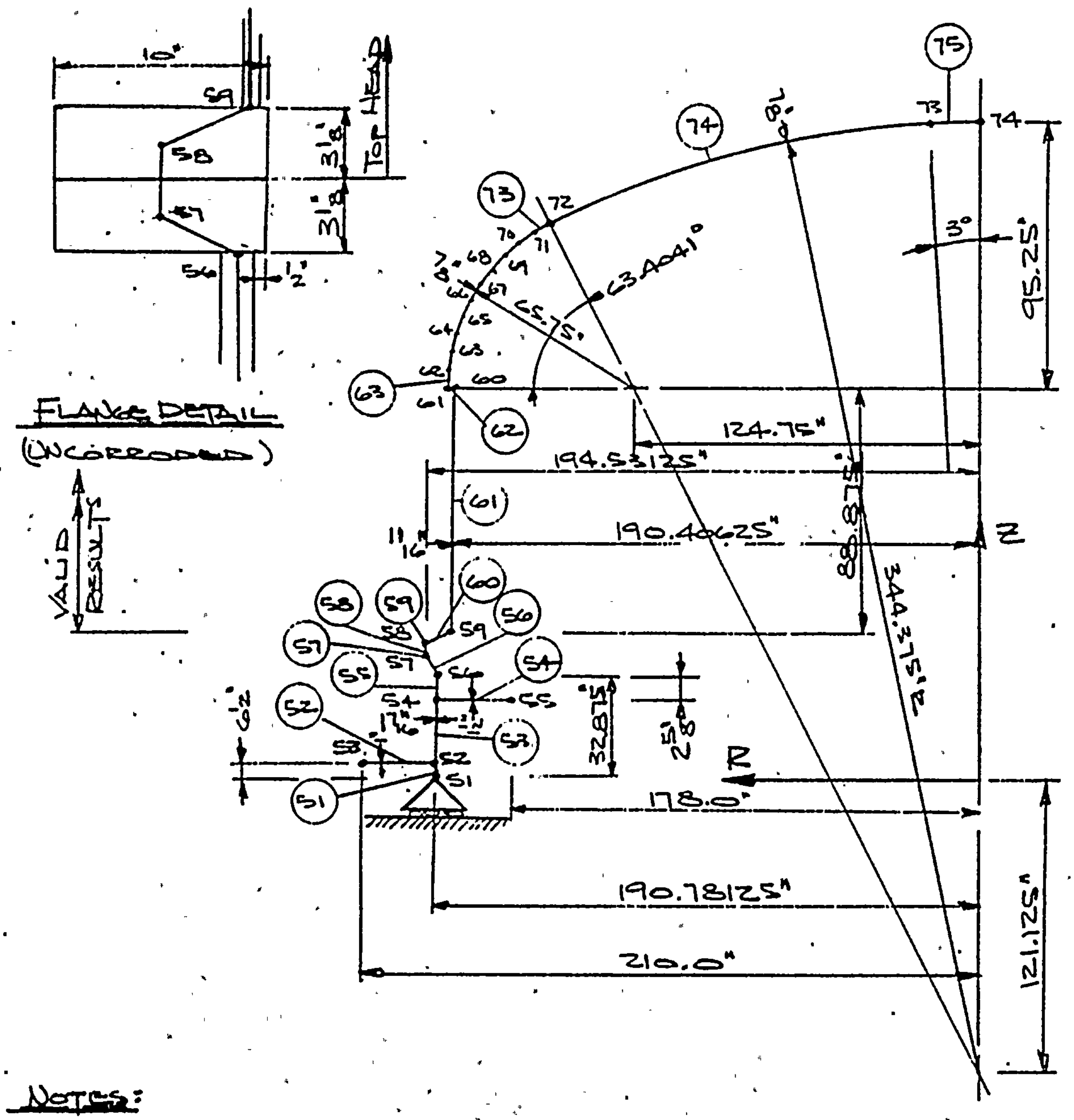
A FEW WORDS SHOULD BE SAID ABOUT THE SHELL MODEL. THE TORUS SECTION OF THE HEAD IS APPROXIMATED IN THE MODEL WITH A SERIES OF SPHERICAL SEGMENTS. PDM HAS HAD GOOD RESULTS USING THIS APPROXIMATION, AND THE RESULTS ARE VALID

ALSO, THE CONNECTION BETWEEN PLATES OF DIFFERENT THICKNESSES IS ACCOMPLISHED USING AX2'S RIGID CONNECTOR ELEMENT IN THE FOLLOWING WAY:



IN THIS WAY, DISCONTINUITY STRESSES, IF ANY, AT THE PLATE WELD SEAMS WILL CONSERVATIVELY BE GIVEN.

PREPARED BY / DATE: RAM / 12-20-72				
CHECKED BY / DATE: BJW / 1-9-73				
REVISION NUMBER:				



Notes:

1. Bodies 56, 58, 60, and 62 are rigid connectors
2. Bodies 57 and 59 are circumferential ring stiffeners representing the mating flanges
3. Body numbers are circled.
4. Thicknesses shown are in the corroded condition.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

NUMBER OF NODES = 24   NUMBER OF BODIES = 25

NODE NO.	COORDINATE R	COORDINATE Z	OBLIQUE AXIS ANGLE	FIXITY CODE
51	0.190781E 03	0.0	0.0	10
52	0.190781E 03	0.650000E 01	0.0	0
53	0.210000E 03	0.650000E 01	0.0	0
54	0.190781E 03	0.302500E 02	0.0	0
55	0.178000E 03	0.302500E 02	0.0	0
56	0.190781E 03	0.328750E 02	0.0	0
57	0.194531E 03	0.344375E 02	0.0	0
58	0.194531E 03	0.375625E 02	0.0	0
59	0.190406E 03	0.391250E 02	0.0	0
60	0.190406E 03	0.128000E 03	0.0	0
61	0.190500E 03	0.128000E 03	0.0	0
62	0.190168E 03	0.134603E 03	0.0	0
63	0.189174E 03	0.141140E 03	0.0	0
64	0.187528E 03	0.147544E 03	0.0	0
65	0.185248E 03	0.153750E 03	0.0	0
66	0.182356E 03	0.159696E 03	0.0	0
67	0.178882E 03	0.165321E 03	0.0	0
68	0.174860E 03	0.170569E 03	0.0	0
69	0.170331E 03	0.175386E 03	0.0	0
70	0.165342E 03	0.179724E 03	0.0	0
71	0.159942E 03	0.183539E 03	0.0	0
72	0.154186E 03	0.186793E 03	0.0	0
73	0.180232E 02	0.222778E 03	0.0	0
74	0.0	0.223250E 03	0.0	0

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

NODE NO.	ELASTIC FOUNDATION CONSTANTS R-DIR.	Z-DIR.	ROTATION
51	0.0	0.0	0.0
52	0.0	0.0	0.0
53	0.0	0.0	0.0
54	0.0	0.0	0.0
55	0.0	0.0	0.0
56	0.0	0.0	0.0
57	0.0	0.0	0.0
58	0.0	0.0	0.0
59	0.0	0.0	0.0
60	0.0	0.0	0.0
61	0.0	0.0	0.0
62	0.0	0.0	0.0
63	0.0	0.0	0.0
64	0.0	0.0	0.0
65	0.0	0.0	0.0
66	0.0	0.0	0.0
67	0.0	0.0	0.0
68	0.0	0.0	0.0
69	0.0	0.0	0.0
70	0.0	0.0	0.0
71	0.0	0.0	0.0
72	0.0	0.0	0.0
73	0.0	0.0	0.0
74	0.0	0.0	0.0

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

NODE NO.	PRESCRIBED DISPLACEMENTS R-DIR.	Z-DIR.	ROTATION
51	0.0	0.0	0.0
52	0.0	0.0	0.0
53	0.0	0.0	0.0
54	0.0	0.0	0.0
55	0.0	0.0	0.0
56	0.0	0.0	0.0
57	0.0	0.0	0.0
58	0.0	0.0	0.0
59	0.0	0.0	0.0
60	0.0	0.0	0.0
61	0.0	0.0	0.0
62	0.0	0.0	0.0
63	0.0	0.0	0.0
64	0.0	0.0	0.0
65	0.0	0.0	0.0
66	0.0	0.0	0.0
67	0.0	0.0	0.0
68	0.0	0.0	0.0
69	0.0	0.0	0.0
70	0.0	0.0	0.0
71	0.0	0.0	0.0
72	0.0	0.0	0.0
73	0.0	0.0	0.0
74	0.0	0.0	0.0

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

BODY NO. 51 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 52 AND 51 THICKNESS = 0.143750E 01

RADIUS = 0.190781E 03 LENGTH = 0.650000E 01

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 52 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 52 AND 53 THICKNESS = 0.100000E 01

INSIDE RADIUS =0.190781E 03 OUTSIDE RADIUS = 0.210000E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 53 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 54 AND 52 THICKNESS = 0.143750E 01

RADIUS = 0.190781E 03 LENGTH = 0.237500E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 54 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 55 AND 54 THICKNESS = 0.150000E 01

INSIDE RADIUS =0.178000E 03 OUTSIDE RADIUS = 0.190781E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

BODY NO. 55 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 56 AND 54 THICKNESS = 0.143750E 01

RADIUS = 0.190781E 03 LENGTH = 0.262500E 01

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 56 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 57 AND 56

BODY NO., 57 -- BODY TYPE 8, CIRCUMFERENTIAL RING

REFERENCE NODE IS 57 RADIUS = 0.194531E 03

CROSS SECTION AREA = 0.310547E 02 MOMENT OF INERTIA = 0.252724E 02

E = 0.279000E 08

BODY NO. 58 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 58 AND 57

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

BODY NO., 59 -- BODY TYPE 8, CIRCUMFERENTIAL RING

REFERENCE NODE IS 58 . RADIUS = 0.194531E 03

CROSS SECTION AREA = 0.310547E 02 MOMENT OF INERTIA = 0.252724E 02

E = 0.279000E 08

BODY NO. 60 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 59 AND 58

BODY NO. 61 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 60 AND 59 THICKNESS = 0.687500E 00

RADIUS = 0.190406E 03 LENGTH = 0.888750E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 62 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 61 AND 60

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

BODY NO. 63 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE
EDGE NODES ARE 62 AND 61
THICKNESS = 0.875000E 00 RADIUS = 0.190603E 03
ANGLE PHI-A = 0.861241E 02 ANGLE PHI-B = 0.881117E 02
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 64 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE
EDGE NODES ARE 63 AND 62
THICKNESS = 0.875000E 00 RADIUS = 0.191879E 03
ANGLE PHI-A = 0.803666E 02 ANGLE PHI-B = 0.823410E 02
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 65 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE
EDGE NODES ARE 64 AND 63
THICKNESS = 0.875000E 00 RADIUS = 0.194497E 03
ANGLE PHI-A = 0.746160E 02 ANGLE PHI-B = 0.765638E 02
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 66 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE
EDGE NODES ARE 65 AND 64
THICKNESS = 0.875000E 00 RADIUS = 0.198598E 03
ANGLE PHI-A = 0.688720E 02 ANGLE PHI-B = 0.707796E 02
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

BODY NO. 67 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 66 AND 65

THICKNESS = 0.875000E 00 RADIUS = 0.204418E 03

ANGLE PHI-A = 0.631352E 02 ANGLE PHI-B = 0.649885E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 68 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 67 AND 66

THICKNESS = 0.875000E 00 RADIUS = 0.212321E 03

ANGLE PHI-A = 0.574057E 02 ANGLE PHI-B = 0.591900E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 69 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 68 AND 67

THICKNESS = 0.875000E 00 RADIUS = 0.222864E 03

ANGLE PHI-A = 0.516840E 02 ANGLE PHI-B = 0.533838E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 70 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 69 AND 68

THICKNESS = 0.875000E 00 RADIUS = 0.235907E 03

ANGLE PHI-A = 0.459703E 02 ANGLE PHI-B = 0.475694E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

BODY NO. 71 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 70 AND 69

THICKNESS = 0.875000E 00 RADIUS = 0.255817E 03

ANGLE PHI-A = 0.402653E 02 ANGLE PHI-B = 0.417462E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 72 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 71 AND 70

THICKNESS = 0.875000E 00 RADIUS = 0.281880E 03

ANGLE PHI-A = 0.345698E 02 ANGLE PHI-B = 0.359138E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 73 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 72 AND 71

THICKNESS = 0.875000E 00 RADIUS = 0.319196E 03

ANGLE PHI-A = 0.288845E 02 ANGLE PHI-B = 0.300713E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 74 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 73 AND 72

THICKNESS = 0.875000E 00 RADIUS = 0.344269E 03

ANGLE PHI-A = 0.300095E 01 ANGLE PHI-B = 0.265065E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

BODY NO. 75 -- BODY TYPE 7, SHALLOW SPHERICAL CAP

EDGE NODES ARE 74 AND 73 THICKNESS = 0.875000E 00

RADIUS = 0.344375E 03 MERIDIAN ANGLE = 0.300000E 01

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

```
HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY LOADS

BODY NO.  51  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.450000E 02) +  ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0            + ( 0.0          )*Z/H)
      + ( 0.0             + ( 0.0          )*Z/H)*X
      + ( 0.0             + ( 0.0          )*Z/H)*X*X
BODY NO.  52  BODY TYPE   3  X = RADIUS
     PN = ( 0.0          ) +  ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0            + ( 0.0          )*Z/H)
      + ( 0.0             + ( 0.0          )*Z/H)*X
      + ( 0.0             + ( 0.0          )*Z/H)*X*X
BODY NO.  53  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.450000E 02) +  ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0            + ( 0.0          )*Z/H)
      + ( 0.0             + ( 0.0          )*Z/H)*X
      + ( 0.0             + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY LOADS

```
BODY NO.  54  BODY TYPE   3  X = RADIUS
    PN = ( 0.0           ) + ( 0.0           )*X
    PPHI = ( 0.0         ) + ( 0.0           )*X
    T = ( 0.0            + ( 0.0           )*Z/H)
     + ( 0.0             + ( 0.0           )*Z/H)*X
     + ( 0.0             + ( 0.0           )*Z/H)*X*X
BODY NO.  55  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
    PN = ( 0.4500000 02) + ( 0.0           )*X
    PPHI = ( 0.0         ) + ( 0.0           )*X
    T = ( 0.0            + ( 0.0           )*Z/H)
     + ( 0.0             + ( 0.0           )*Z/H)*X
     + ( 0.0             + ( 0.0           )*Z/H)*X*X
BODY NO.  57  BODY TYPE   8
    FREE THERMAL RADIAL DEFLECTION = 0.0
    FREE THERMAL TWIST = 0.0
```

```
HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE
BODY LOADS

BODY NO.  59  BODY TYPE   8
     FREE THERMAL RADIAL DEFLECTION = 0.0
     FREE THERMAL TWIST = 0.0

BODY NO.  61  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.450000E 02) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  63  BODY TYPE   4  X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

```
  HANFORD NO. 2 CONTAINMENT VESSEL
  ANALYSIS OF TOP HEAD OF DRYWELL
  VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE
  BODY LOADS

BODY NO.  64  BODY TYPE   4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  65  BODY TYPE   4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  66  BODY TYPE   4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY LOADS

```
BODY NO.  67  BODY TYPE   4  X = MERIDIAN ANGLE
    PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
      + ( 0.0          )*COS(X)*COS(X)
    PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( 0.0          + ( 0.0          )*Z/H)*X
     + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  68  BODY TYPE   4  X = MERIDIAN ANGLE
    PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
      + ( 0.0          )*COS(X)*COS(X)
    PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( 0.0          + ( 0.0          )*Z/H)*X
     + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  69  BODY TYPE   4  X = MERIDIAN ANGLE
    PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
      + ( 0.0          )*COS(X)*COS(X)
    PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( 0.0          + ( 0.0          )*Z/H)*X
     + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

```
HANFURD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY LOADS

BODY NO.  70  BODY TYPE   4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0            )*COS(X)
       + ( 0.0           )*COS(X)*COS(X)
     PPHI = ( 0.0           )*SIN(X) + ( 0.0           )*SIN(X)*COS(X)
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0           + ( 0.0           )*Z/H)*X
      + ( 0.0           + ( 0.0           )*Z/H)*X*X
BODY NO.  71  BODY TYPE   4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0            )*COS(X)
       + ( 0.0           )*COS(X)*COS(X)
     PPHI = ( 0.0           )*SIN(X) + ( 0.0           )*SIN(X)*COS(X)
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0           + ( 0.0           )*Z/H)*X
      + ( 0.0           + ( 0.0           )*Z/H)*X*X
BODY NO.  72  BODY TYPE   4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0            )*COS(X)
       + ( 0.0           )*COS(X)*COS(X)
     PPHI = ( 0.0           )*SIN(X) + ( 0.0           )*SIN(X)*COS(X)
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0           + ( 0.0           )*Z/H)*X
      + ( 0.0           + ( 0.0           )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY LOADS

```
BODY NO.  73  BODY TYPE   4  X = MERIDIAN ANGLE
    PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
     + ( 0.0          )*COS(X)*COS(X)
    PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( 0.0          + ( 0.0          )*Z/H)*X
     + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  74  BODY TYPE   4  X = MERIDIAN ANGLE
    PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
     + ( 0.0          )*COS(X)*COS(X)
    PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( 0.0          + ( 0.0          )*Z/H)*X
     + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  75  BODY TYPE   7  X = MERIDIAN ANGLE
    PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
     + ( 0.0          )*COS(X)*COS(X)
    PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
    T = ( 0.0          + ( 0.0          )*Z/H)
     + ( 0.0          + ( 0.0          )*Z/H)*X
     + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF TOP HEAD OF DRYWELL

VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE
CIRCUMFERENTIAL LINE LOADS

LOAD = 45*3'8"/10

NODE	R-DIR.	Z-DIR.	MOMENT
51	0.0	0.0	0.0
52	0.0	0.0	0.0
53	0.0	0.0	0.0
54	0.0	0.0	0.0
55	0.0	0.0	0.0
56	0.0	0.0	0.0
57	0.140625E 03	0.0	0.0
58	0.140625E 03	0.0	0.0
59	0.0	0.0	0.0
60	0.0	0.0	0.0
61	0.0	0.0	0.0
62	0.0	0.0	0.0
63	0.0	0.0	0.0
64	0.0	0.0	0.0
65	0.0	0.0	0.0
66	0.0	0.0	0.0
67	0.0	0.0	0.0
68	0.0	0.0	0.0
69	0.0	0.0	0.0
70	0.0	0.0	0.0
71	0.0	0.0	0.0
72	0.0	0.0	0.0
73	0.0	0.0	0.0

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

NODE NO.	NODE DISPLACEMENTS R OR R' DIR.	Z OR Z' DIR.	ROTATION	OBLIQUE AXIS ANGLE
51	0.210973E-01	0.0	-0.272789E-03	0.0
52	0.194751E-01	0.425019E-03	-0.179319E-03	0.0
53	0.188448E-01	0.381219E-02	-0.173526E-03	0.0
54	0.112845E-01	0.214604E-02	0.244802E-03	0.0
55	0.114962E-01	0.530272E-02	0.249406E-03	0.0
56	0.128554E-01	0.235204E-02	0.981448E-03	0.0
57	0.143889E-01	-0.132839E-02	0.981448E-03	0.0
58	0.174560E-01	-0.132839E-02	0.981448E-03	0.0
59	0.189895E-01	0.272008E-02	0.981448E-03	0.0
60	0.132351E-01	0.118206E-01	-0.626919E-02	0.0
61	0.132346E-01	0.124083E-01	-0.626919E-02	0.0
62	-0.215398E-01	0.118157E-01	-0.401342E-02	0.0
63	-0.400415E-01	0.104581E-01	-0.173685E-02	0.0
64	-0.472797E-01	0.102098E-01	-0.604155E-03	0.0
65	-0.508656E-01	0.106187E-01	-0.510380E-03	0.0
66	-0.560295E-01	0.999079E-02	-0.104161E-02	0.0
67	-0.648656E-01	0.667750E-02	-0.173706E-02	0.0
68	-0.762486E-01	0.506882E-03	-0.198373E-02	0.0
69	-0.855738E-01	-0.513715E-02	-0.940387E-03	0.0
70	-0.856764E-01	-0.142230E-02	0.215417E-02	0.0
71	-0.706387E-01	0.243806E-01	0.702088E-02	0.0
72	-0.428485E-01	0.785743E-01	0.108071E-01	0.0
73	0.399278E-02	0.252472E 00	-0.286194E-05	0.0

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

NODE NO.	REACTION LOADS R OR R' DIR.	Z OR Z' DIR.	MOMENT	OBLIQUE AXIS ANGLE
51	0.0	-0.428456E 04	0.0	0.0

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 51

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4285.	5379.	-331.	-99.	104.
2	4285.	5393.	-296.	-89.	98.
3	4285.	5407.	-264.	-79.	92.
4	4285.	5422.	-233.	-70.	87.
5	4285.	5438.	-204.	-61.	81.
6	4285.	5455.	-178.	-53.	75.
7	4285.	5472.	-153.	-46.	70.
8	4285.	5490.	-130.	-39.	64.
9	4285.	5508.	-109.	-33.	59.
10	4285.	5527.	-90.	-27.	53.
11	4285.	5545.	-73.	-22.	48.
12	4285.	5564.	-57.	-17.	42.
13	4285.	5584.	-44.	-13.	37.
14	4285.	5603.	-32.	-10.	31.
15	4285.	5623.	-22.	-7.	26.
16	4285.	5642.	-14.	-4.	21.
17	4285.	5662.	-8.	-2.	16.
18	4285.	5681.	-4.	-1.	10.
19	4285.	5701.	-1.	-0.	5.
20	4285.	5720.	-0.	-0.	-0.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 51

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.1948E-01	-0.4250E-03	-0.1793E-03
2	0.1954E-01	-0.4023E-03	-0.1935E-03
3	0.1961E-01	-0.3795E-03	-0.2061E-03
4	0.1968E-01	-0.3568E-03	-0.2172E-03
5	0.1976E-01	-0.3342E-03	-0.2271E-03
6	0.1983E-01	-0.3116E-03	-0.2357E-03
7	0.1992E-01	-0.2890E-03	-0.2432E-03
8	0.2000E-01	-0.2665E-03	-0.2495E-03
9	0.2009E-01	-0.2440E-03	-0.2549E-03
10	0.2018E-01	-0.2216E-03	-0.2594E-03
11	0.2026E-01	-0.1992E-03	-0.2630E-03
12	0.2036E-01	-0.1769E-03	-0.2660E-03
13	0.2045E-01	-0.1546E-03	-0.2682E-03
14	0.2054E-01	-0.1323E-03	-0.2699E-03
15	0.2063E-01	-0.1102E-03	-0.2711E-03
16	0.2072E-01	-0.8803E-04	-0.2720E-03
17	0.2082E-01	-0.6595E-04	-0.2725E-03
18	0.2091E-01	-0.4391E-04	-0.2727E-03
19	0.2100E-01	-0.2193E-04	-0.2728E-03
20	0.2110E-01	0.4191E-08	-0.2728E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 51

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	2981.	3742.	2020.	3454.	3941.	4030.
2	2981.	3752.	2120.	3494.	3841.	4010.
3	2981.	3762.	2215.	3532.	3746.	3991.
4	2981.	3772.	2304.	3569.	3657.	3975.
5	2981.	3783.	2387.	3605.	3574.	3961.
6	2981.	3795.	2465.	3640.	3497.	3950.
7	2981.	3807.	2537.	3674.	3425.	3940.
8	2981.	3819.	2603.	3706.	3358.	3932.
9	2981.	3832.	2664.	3737.	3297.	3927.
10	2981.	3845.	2720.	3766.	3242.	3923.
11	2981.	3858.	2770.	3794.	3191.	3921.
12	2981.	3871.	2814.	3821.	3147.	3921.
13	2981.	3884.	2853.	3846.	3108.	3922.
14	2981.	3898.	2887.	3870.	3074.	3926.
15	2981.	3911.	2916.	3892.	3045.	3931.
16	2981.	3925.	2939.	3913.	3022.	3937.
17	2981.	3939.	2957.	3932.	3004.	3945.
18	2981.	3952.	2970.	3949.	2991.	3955.
19	2981.	3966.	2978.	3965.	2983.	3967.
20	2981.	3979.	2981.	3979.	2981.	3979.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 51 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	3746.		3454.		4030.	
2	3755.		3494.		4010.	
3	3765.		3532.		3991.	
4	3775.		3569.		3975.	
5	3786.		3605.		3961.	
6	3797.		3640.		3950.	
7	3809.		3674.		3940.	
8	3821.		3706.		3932.	
9	3833.		3737.		3927.	
10	3846.		3766.		3923.	
11	3859.		3794.		3921.	
12	3872.		3821.		3921.	
13	3885.		3846.		3922.	
14	3898.		3870.		3926.	
15	3912.		3892.		3931.	
16	3925.		3913.		3937.	
17	3939.		3932.		3945.	
18	3952.		3949.		3955.	
19	3966.		3965.		3967.	
20	3979.		3979.		3979.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 52

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-265.	2769.	0.	-2.	0.
2	-249.	2753.	0.	-2.	0.
3	-233.	2737.	0.	-2.	0.
4	-218.	2721.	0.	-2.	0.
5	-203.	2706.	0.	-2.	0.
6	-188.	2691.	0.	-2.	0.
7	-173.	2677.	0.	-2.	0.
8	-158.	2662.	0.	-2.	0.
9	-144.	2648.	0.	-2.	0.
10	-130.	2634.	0.	-2.	0.
11	-116.	2620.	0.	-2.	0.
12	-102.	2606.	0.	-2.	0.
13	-89.	2593.	0.	-2.	0.
14	-76.	2579.	0.	-2.	0.
15	-62.	2566.	0.	-2.	0.
16	-50.	2553.	0.	-2.	0.
17	-37.	2541.	0.	-2.	0.
18	-24.	2528.	0.	-2.	0.
19	-12.	2516.	0.	-2.	0.
20	0.	2504.	0.	-2.	0.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 52

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.4250E-03	0.1948E-01	-0.1793E-03
2	0.6062E-03	0.1944E-01	-0.1790E-03
3	0.7871E-03	0.1940E-01	-0.1786E-03
4	0.9675E-03	0.1936E-01	-0.1783E-03
5	0.1148E-02	0.1932E-01	-0.1779E-03
6	0.1327E-02	0.1929E-01	-0.1776E-03
7	0.1507E-02	0.1925E-01	-0.1773E-03
8	0.1686E-02	0.1921E-01	-0.1769E-03
9	0.1865E-02	0.1918E-01	-0.1766E-03
10	0.2043E-02	0.1915E-01	-0.1763E-03
11	0.2222E-02	0.1911E-01	-0.1760E-03
12	0.2399E-02	0.1908E-01	-0.1757E-03
13	0.2577E-02	0.1905E-01	-0.1754E-03
14	0.2754E-02	0.1902E-01	-0.1751E-03
15	0.2931E-02	0.1899E-01	-0.1748E-03
16	0.3108E-02	0.1896E-01	-0.1746E-03
17	0.3284E-02	0.1893E-01	-0.1743E-03
18	0.3461E-02	0.1890E-01	-0.1740E-03
19	0.3637E-02	0.1887E-01	-0.1738E-03
20	0.3812E-02	0.1884E-01	-0.1735E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 52

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-265.	2769.	-264.	2756.	-266.	2781.
2	-249.	2753.	-248.	2740.	-250.	2765.
3	-233.	2737.	-232.	2724.	-234.	2750.
4	-218.	2721.	-217.	2709.	-219.	2734.
5	-203.	2706.	-202.	2694.	-203.	2719.
6	-188.	2691.	-187.	2679.	-188.	2704.
7	-173.	2677.	-172.	2664.	-174.	2689.
8	-158.	2662.	-158.	2650.	-159.	2674.
9	-144.	2648.	-143.	2635.	-145.	2660.
10	-130.	2634.	-129.	2621.	-130.	2646.
11	-116.	2620.	-115.	2608.	-116.	2632.
12	-102.	2606.	-102.	2594.	-103.	2618.
13	-89.	2593.	-88.	2581.	-89.	2605.
14	-76.	2579.	-75.	2567.	-76.	2591.
15	-62.	2566.	-62.	2554.	-63.	2578.
16	-50.	2553.	-49.	2542.	-50.	2565.
17	-37.	2541.	-37.	2529.	-37.	2552.
18	-24.	2528.	-24.	2517.	-25.	2540.
19	-12.	2516.	-12.	2504.	-12.	2527.
20	0.	2504.	0.	2492.	0.	2515.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 52 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	TLT213	SI	TLT213	SI	TLT213
1	3033.		3019.		3047.	
2	3002.		2988.		3015.	
3	2970.		2956.		2984.	
4	2939.		2926.		2953.	
5	2909.		2895.		2922.	
6	2879.		2866.		2892.	
7	2849.		2836.		2862.	
8	2820.		2807.		2833.	
9	2792.		2779.		2804.	
10	2763.		2751.		2776.	
11	2736.		2723.		2748.	
12	2708.		2696.		2721.	
13	2681.		2669.		2694.	
14	2655.		2643.		2667.	
15	2629.		2617.		2641.	
16	2603.		2591.		2615.	
17	2578.		2566.		2589.	
18	2553.		2541.		2564.	
19	2528.		2516.		2540.	
20	2504.		2492.		2515.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 53

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4285.	3658.	-1889.	-567.	336.
2	4285.	3631.	-1490.	-447.	303.
3	4285.	3669.	-1131.	-339.	271.
4	4285.	3757.	-812.	-244.	239.
5	4285.	3879.	-533.	-160.	208.
6	4285.	4025.	-293.	-88.	177.
7	4285.	4184.	-89.	-27.	148.
8	4285.	4346.	78.	23.	120.
9	4285.	4506.	210.	63.	92.
10	4285.	4656.	309.	93.	66.
11	4285.	4793.	376.	113.	41.
12	4285.	4914.	412.	124.	16.
13	4285.	5017.	417.	125.	-7.
14	4285.	5103.	394.	118.	-30.
15	4285.	5171.	342.	103.	-53.
16	4285.	5225.	262.	79.	-75.
17	4285.	5267.	154.	46.	-97.
18	4285.	5303.	19.	6.	-119.
19	4285.	5338.	-142.	-43.	-140.
20	4285.	5379.	-331.	-99.	-161.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 53

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.1128E-01	-0.2146E-02	0.2448E-03
2	0.1116E-01	-0.2047E-02	-0.3286E-04
3	0.1134E-01	-0.1947E-02	-0.2481E-03
4	0.1176E-01	-0.1848E-02	-0.4076E-03
5	0.1234E-01	-0.1750E-02	-0.5178E-03
6	0.1303E-01	-0.1654E-02	-0.5853E-03
7	0.1379E-01	-0.1559E-02	-0.6162E-03
8	0.1456E-01	-0.1465E-02	-0.6167E-03
9	0.1532E-01	-0.1373E-02	-0.5925E-03
10	0.1603E-01	-0.1282E-02	-0.5493E-03
11	0.1669E-01	-0.1193E-02	-0.4925E-03
12	0.1726E-01	-0.1105E-02	-0.4272E-03
13	0.1775E-01	-0.1017E-02	-0.3585E-03
14	0.1816E-01	-0.9313E-03	-0.2913E-03
15	0.1848E-01	-0.8458E-03	-0.2303E-03
16	0.1874E-01	-0.7609E-03	-0.1803E-03
17	0.1894E-01	-0.6764E-03	-0.1456E-03
18	0.1911E-01	-0.5923E-03	-0.1310E-03
19	0.1928E-01	-0.5085E-03	-0.1407E-03
20	0.1948E-01	-0.4250E-03	-0.1793E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 53

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	2981.	2544.	-2504.	899.	8465.	4190.
2	2981.	2526.	-1344.	1229.	7306.	3824.
3	2981.	2553.	-303.	1568.	6264.	3538.
4	2981.	2613.	622.	1906.	5339.	3321.
5	2981.	2699.	1433.	2234.	4529.	3163.
6	2981.	2800.	2131.	2545.	3830.	3055.
7	2981.	2910.	2721.	2833.	3240.	2988.
8	2981.	3024.	3206.	3091.	2755.	2956.
9	2981.	3134.	3591.	3317.	2370.	2951.
10	2981.	3239.	3878.	3508.	2083.	2970.
11	2981.	3334.	4072.	3662.	1889.	3007.
12	2981.	3419.	4176.	3777.	1785.	3060.
13	2981.	3490.	4193.	3854.	1769.	3127.
14	2981.	3550.	4124.	3893.	1837.	3207.
15	2981.	3597.	3973.	3895.	1988.	3300.
16	2981.	3635.	3740.	3863.	2221.	3407.
17	2981.	3664.	3428.	3798.	2533.	3530.
18	2981.	3689.	3037.	3706.	2924.	3672.
19	2981.	3713.	2567.	3589.	3394.	3837.
20	2981.	3742.	2021.	3454.	3940.	4030.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 53 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE TLT2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE TLT2T3	INSIDE SURFACE SI	INSIDE SURFACE TLT2T3
1	3062.		3403.		8465.	
2	3047.		2573.		7306.	
3	3034.		1870.		6264.	
4	3022.		1906.		5339.	
5	3012.		2234.		4529.	
6	3003.		2545.		3830.	
7	2997.		2833.		3240.	
8	3029.		3206.		2956.	
9	3138.		3591.		2951.	
10	3241.		3878.		2970.	
11	3335.		4072.		3007.	
12	3419.		4176.		3060.	
13	3490.		4193.		3127.	
14	3550.		4124.		3207.	
15	3598.		3973.		3300.	
16	3637.		3863.		3407.	
17	3668.		3798.		3530.	
18	3694.		3706.		3672.	
19	3721.		3589.		3837.	
20	3752.		3454.		4030.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 54

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-0.	2703.	-0.	11.	0.
2	10.	2693.	0.	11.	0.
3	20.	2683.	0.	11.	0.
4	30.	2673.	0.	11.	0.
5	40.	2663.	0.	11.	0.
6	50.	2653.	0.	11.	0.
7	59.	2644.	0.	11.	0.
8	69.	2634.	0.	11.	0.
9	78.	2625.	0.	11.	0.
10	87.	2615.	0.	11.	0.
11	97.	2606.	0.	11.	0.
12	106.	2597.	0.	11.	0.
13	115.	2588.	0.	11.	0.
14	124.	2579.	0.	10.	0.
15	132.	2570.	1.	10.	0.
16	141.	2562.	1.	10.	0.
17	150.	2553.	1.	10.	0.
18	158.	2545.	1.	10.	0.
19	167.	2536.	1.	10.	0.
20	175.	2528.	1.	10.	0.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 54

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.5303E-02	0.1150E-01	0.2494E-03
2	0.5135E-02	0.1148E-01	0.2491E-03
3	0.4968E-02	0.1147E-01	0.2488E-03
4	0.4800E-02	0.1146E-01	0.2486E-03
5	0.4633E-02	0.1145E-01	0.2483E-03
6	0.4466E-02	0.1143E-01	0.2480E-03
7	0.4299E-02	0.1142E-01	0.2478E-03
8	0.4133E-02	0.1141E-01	0.2475E-03
9	0.3966E-02	0.1140E-01	0.2473E-03
10	0.3800E-02	0.1139E-01	0.2470E-03
11	0.3634E-02	0.1138E-01	0.2468E-03
12	0.3468E-02	0.1137E-01	0.2466E-03
13	0.3302E-02	0.1135E-01	0.2463E-03
14	0.3137E-02	0.1134E-01	0.2461E-03
15	0.2971E-02	0.1133E-01	0.2459E-03
16	0.2806E-02	0.1132E-01	0.2456E-03
17	0.2641E-02	0.1131E-01	0.2454E-03
18	0.2476E-02	0.1130E-01	0.2452E-03
19	0.2311E-02	0.1129E-01	0.2450E-03
20	0.2146E-02	0.1128E-01	0.2448E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.9.2.37

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 54

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-0.	1802.	-0.	1831.	0.	1773.
2	7.	1795.	7.	1824.	7.	1766.
3	13.	1788.	14.	1818.	13.	1759.
4	20.	1782.	20.	1811.	20.	1753.
5	27.	1775.	27.	1804.	26.	1746.
6	33.	1769.	34.	1798.	33.	1740.
7	40.	1762.	40.	1791.	39.	1734.
8	46.	1756.	47.	1785.	45.	1728.
9	52.	1750.	53.	1778.	51.	1721.
10	58.	1744.	59.	1772.	57.	1715.
11	64.	1738.	65.	1766.	63.	1709.
12	70.	1731.	72.	1760.	69.	1703.
13	76.	1725.	78.	1754.	75.	1697.
14	82.	1720.	84.	1747.	81.	1692.
15	88.	1714.	90.	1742.	87.	1686.
16	94.	1708.	96.	1736.	93.	1680.
17	100.	1702.	101.	1730.	98.	1674.
18	105.	1696.	107.	1724.	104.	1669.
19	111.	1691.	113.	1718.	109.	1663.
20	117.	1685.	119.	1713.	115.	1658.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 54 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	1802.		1831.		1773.	
2	1795.		1824.		1766.	
3	1788.		1818.		1759.	
4	1782.		1811.		1753.	
5	1775.		1804.		1746.	
6	1769.		1798.		1740.	
7	1762.		1791.		1734.	
8	1756.		1785.		1728.	
9	1750.		1778.		1721.	
10	1744.		1772.		1715.	
11	1738.		1766.		1709.	
12	1731.		1760.		1703.	
13	1725.		1754.		1697.	
14	1720.		1747.		1692.	
15	1714.		1742.		1686.	
16	1708.		1736.		1680.	
17	1702.		1730.		1674.	
18	1696.		1724.		1669.	
19	1691.		1718.		1663.	
20	1685.		1713.		1658.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 55

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4284.	3987.	-2399.	-720.	226.
2	4284.	3960.	-2368.	-710.	223.
3	4284.	3933.	-2337.	-701.	220.
4	4284.	3908.	-2308.	-692.	216.
5	4284.	3884.	-2277.	-683.	213.
6	4284.	3861.	-2248.	-674.	210.
7	4284.	3839.	-2219.	-666.	206.
8	4284.	3818.	-2191.	-657.	203.
9	4284.	3799.	-2163.	-649.	199.
10	4284.	3780.	-2136.	-641.	196.
11	4284.	3764.	-2109.	-633.	192.
12	4284.	3748.	-2083.	-625.	189.
13	4284.	3733.	-2057.	-617.	185.
14	4284.	3719.	-2032.	-609.	182.
15	4284.	3706.	-2007.	-602.	178.
16	4284.	3694.	-1983.	-595.	175.
17	4284.	3683.	-1959.	-588.	171.
18	4284.	3674.	-1935.	-581.	168.
19	4284.	3665.	-1912.	-574.	164.
20	4284.	3658.	-1890.	-567.	160.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 55

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.1286E-01	-0.2352E-02	0.9814E-03
2	0.1272E-01	-0.2341E-02	0.9383E-03
3	0.1260E-01	-0.2331E-02	0.8953E-03
4	0.1248E-01	-0.2320E-02	0.8530E-03
5	0.1236E-01	-0.2309E-02	0.8113E-03
6	0.1225E-01	-0.2299E-02	0.7700E-03
7	0.1215E-01	-0.2288E-02	0.7294E-03
8	0.1205E-01	-0.2277E-02	0.6893E-03
9	0.1196E-01	-0.2266E-02	0.6496E-03
10	0.1187E-01	-0.2255E-02	0.6105E-03
11	0.1179E-01	-0.2244E-02	0.5719E-03
12	0.1171E-01	-0.2234E-02	0.5337E-03
13	0.1164E-01	-0.2223E-02	0.4960E-03
14	0.1158E-01	-0.2212E-02	0.4588E-03
15	0.1151E-01	-0.2201E-02	0.4220E-03
16	0.1146E-01	-0.2190E-02	0.3857E-03
17	0.1141E-01	-0.2179E-02	0.3499E-03
18	0.1136E-01	-0.2168E-02	0.3142E-03
19	0.1132E-01	-0.2157E-02	0.2800E-03
20	0.1129E-01	-0.2146E-02	0.2448E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 55

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	2980.	2774.	-3986.	684.	9946.	4863.
2	2980.	2755.	-3895.	692.	9855.	4818.
3	2980.	2736.	-3806.	700.	9766.	4772.
4	2980.	2719.	-3721.	709.	9681.	4728.
5	2980.	2702.	-3632.	718.	9593.	4686.
6	2980.	2686.	-3549.	727.	9509.	4644.
7	2980.	2671.	-3464.	738.	9424.	4604.
8	2980.	2656.	-3382.	748.	9343.	4565.
9	2980.	2643.	-3301.	758.	9262.	4527.
10	2980.	2630.	-3221.	769.	9182.	4490.
11	2980.	2618.	-3143.	781.	9104.	4456.
12	2980.	2607.	-3068.	793.	9028.	4422.
13	2980.	2597.	-2993.	805.	8953.	4388.
14	2980.	2587.	-2920.	817.	8881.	4357.
15	2980.	2578.	-2847.	830.	8808.	4326.
16	2980.	2570.	-2777.	843.	8734.	4297.
17	2980.	2562.	-2707.	856.	8667.	4268.
18	2980.	2556.	-2639.	870.	8600.	4241.
19	2980.	2549.	-2572.	884.	8532.	4215.
20	2980.	2545.	-2507.	899.	8467.	4191.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 55 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	3017.		4670.		9946.	
2	3016.		4587.		9855.	
3	3015.		4506.		9766.	
4	3014.		4430.		9681.	
5	3013.		4350.		9593.	
6	3012.		4276.		9509.	
7	3011.		4201.		9424.	
8	3010.		4130.		9343.	
9	3009.		4060.		9262.	
10	3008.		3990.		9182.	
11	3007.		3925.		9104.	
12	3006.		3861.		9028.	
13	3005.		3797.		8953.	
14	3004.		3737.		8881.	
15	3003.		3678.		8808.	
16	3002.		3620.		8738.	
17	3002.		3563.		8667.	
18	3001.		3509.		8600.	
19	3000.		3456.		8532.	
20	2999.		3406.		8467.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 61

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4292.	2621.	-68.	-20.	14.7.
2	4292.	5430.	332.	100.	36.
3	4292.	7437.	364.	109.	-14.
4	4292.	8508.	256.	77.	-27.
5	4292.	8900.	135.	41.	-23.
6	4292.	8927.	49.	15.	-14.
7	4292.	8815.	2.	1.	-6.
8	4292.	8692.	-16.	-5.	-2.
9	4292.	8608.	-20.	-6.	-0.
10	4292.	8576.	-18.	-6.	0.
11	4292.	8593.	-16.	-5.	1.
12	4292.	8650.	-10.	-3.	2.
13	4292.	8732.	6.	2.	5.
14	4292.	8794.	40.	12.	10.
15	4292.	8745.	99.	30.	15.
16	4292.	8428.	176.	53.	16.
17	4292.	7648.	232.	70.	4.
18	4292.	6275.	177.	53.	-34.
19	4292.	4492.	-146.	-44.	-112.
20	4292.	3201.	-934.	-280.	-230.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 61

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.1324E-01	-0.1182E-01	-0.6269E-02
2	0.4112E-01	-0.1107E-01	-0.5282E-02
3	0.6104E-01	-0.1050E-01	-0.3211E-02
4	0.7167E-01	-0.1004E-01	-0.1437E-02
5	0.7557E-01	-0.9636E-02	-0.3449E-03
6	0.7583E-01	-0.9243E-02	0.1523E-03
7	0.7472E-01	-0.8845E-02	0.2783E-03
8	0.7350E-01	-0.8439E-02	0.2287E-03
9	0.7267E-01	-0.8025E-02	0.1232E-03
10	0.7235E-01	-0.7606E-02	0.1433E-04
11	0.7251E-01	-0.7187E-02	-0.8251E-04
12	0.7309E-01	-0.6771E-02	-0.1571E-03
13	0.7390E-01	-0.6360E-02	-0.1751E-03
14	0.7451E-01	-0.5955E-02	-0.5703E-04
15	0.7402E-01	-0.5551E-02	0.3229E-03
16	0.7088E-01	-0.5134E-02	0.1095E-02
17	0.6313E-01	-0.4679E-02	0.2270E-02
18	0.4951E-01	-0.4145E-02	0.3506E-02
19	0.3181E-01	-0.3493E-02	0.3763E-02
20	0.1899E-01	-0.2720E-02	0.9814E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 61

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	6243.	3812.	5381.	3554.	7105.	4071.
2	6243.	7898.	10462.	9164.	2024.	6632.
3	6243.	10817.	10862.	12203.	1625.	9432.
4	6243.	12375.	9495.	13350.	2992.	11399.
5	6243.	12946.	7957.	13450.	4529.	12432.
6	6243.	12984.	6860.	13169.	5627.	12799.
7	6243.	12822.	6269.	12830.	6217.	12814.
8	6243.	12642.	6038.	12581.	6449.	12704.
9	6243.	12521.	5991.	12445.	6495.	12596.
10	6243.	12474.	6009.	12404.	6477.	12544.
11	6243.	12498.	6044.	12438.	6443.	12558.
12	6243.	12582.	6119.	12545.	6368.	12620.
13	6243.	12701.	6316.	12723.	6170.	12679.
14	6243.	12791.	6751.	12944.	5736.	12639.
15.	6243.	12719.	7501.	13097.	4985.	12342.
16	6243.	12258.	8477.	12928.	4010.	11588.
17	6243.	11124.	9190.	12008.	3296.	10240.
18	6243.	9128.	8488.	9801.	3999.	8454.
19	6243.	6534.	4386.	5977.	8101.	7091.
20	6243.	4656.	-5610.	1099.	18097.	8212.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 61 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	6276.		5381.		7105.	
2	7899.		10462.		6632.	
3	10817.		12203.		9432.	
4	12375.		13350.		11399.	
5	12947.		13460.		12432.	
6	12984.		13169.		12799.	
7	12822.		12830.		12814.	
8	12642.		12581.		12704.	
9	12521.		12445.		12596.	
10	12474.		12404.		12544.	
11	12498.		12438.		12558.	
12	12582.		12545.		12620.	
13	12701.		12723.		12679.	
14	12792.		12944.		12639.	
15	12720.		13097.		12342.	
16	12259.		12928.		11588.	
17	11124.		12008.		10240.	
18	9128.		9801.		8454.	
19	6543.		5977.		8101.	
20	6324.		6710.		18097.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 63

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4302.	-1475.	-841.	-255.	133.
2	4301.	-1291.	-797.	-241.	123.
3	4300.	-1101.	-756.	-229.	113.
4	4299.	-903.	-718.	-218.	103.
5	4298.	-699.	-684.	-208.	94.
6	4298.	-489.	-653.	-198.	85.
7	4297.	-273.	-625.	-190.	76.
8	4296.	-52.	-600.	-182.	68.
9	4296.	175.	-578.	-175.	60.
10	4295.	407.	-558.	-170.	53.
11	4295.	644.	-541.	-164.	46.
12	4294.	886.	-526.	-160.	40.
13	4294.	1133.	-513.	-156.	34.
14	4294.	1384.	-502.	-153.	28.
15	4294.	1640.	-493.	-150.	23.
16	4293.	1900.	-486.	-148.	19.
17	4293.	2164.	-480.	-146.	15.
18	4293.	2433.	-476.	-144.	11.
19	4293.	2706.	-472.	-143.	8.
20	4293.	2984.	-470.	-143.	5.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 63

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.2069E-01	-0.1324E-01	-0.4013E-02
2	-0.1929E-01	-0.1314E-01	-0.4180E-02
3	-0.1783E-01	-0.1304E-01	-0.4337E-02
4	-0.1632E-01	-0.1294E-01	-0.4487E-02
5	-0.1475E-01	-0.1285E-01	-0.4629E-02
6	-0.1314E-01	-0.1276E-01	-0.4765E-02
7	-0.1148E-01	-0.1268E-01	-0.4895E-02
8	-0.9777E-02	-0.1259E-01	-0.5019E-02
9	-0.8032E-02	-0.1252E-01	-0.5139E-02
10	-0.6246E-02	-0.1244E-01	-0.5254E-02
11	-0.4419E-02	-0.1238E-01	-0.5365E-02
12	-0.2556E-02	-0.1231E-01	-0.5474E-02
13	-0.6542E-03	-0.1225E-01	-0.5579E-02
14	0.1283E-02	-0.1220E-01	-0.5682E-02
15	0.3256E-02	-0.1215E-01	-0.5783E-02
16	0.5264E-02	-0.1210E-01	-0.5882E-02
17	0.7307E-02	-0.1206E-01	-0.5980E-02
18	0.9382E-02	-0.1202E-01	-0.6077E-02
19	0.1149E-01	-0.1199E-01	-0.6173E-02
20	0.1364E-01	-0.1197E-01	-0.6269E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 63

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	4916.	-1685.	-1677.	-3681.	11510.	310.
2	4915.	-1476.	-1330.	-3367.	11160.	415.
3	4914.	-1258.	-1010.	-3053.	10838.	537.
4	4913.	-1032.	-717.	-2739.	10543.	675.
5	4912.	-799.	-449.	-2426.	10274.	827.
6	4911.	-559.	-207.	-2113.	10029.	994.
7	4911.	-312.	12.	-1800.	9809.	1175.
8	4910.	-59.	209.	-1488.	9611.	1369.
9	4909.	200.	383.	-1175.	9436.	1575.
10	4909.	465.	538.	-864.	9280.	1794.
11	4908.	736.	673.	-552.	9144.	2024.
12	4908.	1012.	789.	-240.	9026.	2265.
13	4908.	1294.	889.	73.	8926.	2516.
14	4907.	1582.	974.	385.	8841.	2778.
15	4907.	1874.	1044.	699.	8770.	3048.
16	4907.	2171.	1100.	1014.	8713.	3328.
17	4906.	2474.	1145.	1331.	8668.	3617.
18	4906.	2781.	1180.	1649.	8633.	3913.
19	4906.	3093.	1205.	1969.	8607.	4217.
20	4906.	3410.	1222.	2292.	8590.	4528.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 63 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	6612.		3681.		11510.	
2	6400.		3367.		11160.	
3	6179.		3053.		10838.	
4	5952.		2739.		10543.	
5	5717.		2426.		10274.	
6	5475.		2113.		10029.	
7	5227.		1812.		9809.	
8	4972.		1696.		9611.	
9	4914.		1559.		9436.	
10	4912.		1401.		9280.	
11	4911.		1224.		9144.	
12	4910.		1029.		9026.	
13	4909.		889.		8926.	
14	4908.		974.		8841.	
15	4908.		1044.		8770.	
16	4907.		1100.		8713.	
17	4907.		1331.		8668.	
18	4906.		1649.		8633.	
19	4906.		1969.		8607.	
20	4906.		2292.		8590.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 64

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4337.	-3866.	-611.	-186.	95.
2	4335.	-3784.	-581.	-177.	80.
3	4332.	-3696.	-556.	-169.	65.
4	4330.	-3604.	-535.	-163.	51.
5	4327.	-3507.	-520.	-159.	37.
6	4325.	-3406.	-510.	-156.	22.
7	4323.	-3299.	-504.	-154.	9.
8	4320.	-3189.	-503.	-154.	-5.
9	4318.	-3074.	-507.	-155.	-19.
10	4316.	-2954.	-516.	-158.	-32.
11	4314.	-2830.	-529.	-162.	-45.
12	4313.	-2701.	-547.	-168.	-58.
13	4311.	-2568.	-569.	-174.	-70.
14	4309.	-2429.	-596.	-183.	-83.
15	4308.	-2285.	-627.	-192.	-95.
16	4306.	-2135.	-662.	-202.	-107.
17	4305.	-1980.	-701.	-214.	-119.
18	4303.	-1818.	-744.	-227.	-130.
19	4302.	-1650.	-791.	-241.	-141.
20	4301.	-1475.	-841.	-257.	-151.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 64

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.3773E-01	-0.1701E-01	-0.1737E-02
2	-0.3713E-01	-0.1687E-01	-0.1858E-02
3	-0.3649E-01	-0.1672E-01	-0.1973E-02
4	-0.3582E-01	-0.1658E-01	-0.2084E-02
5	-0.3510E-01	-0.1644E-01	-0.2191E-02
6	-0.3435E-01	-0.1630E-01	-0.2295E-02
7	-0.3356E-01	-0.1616E-01	-0.2398E-02
8	-0.3274E-01	-0.1602E-01	-0.2500E-02
9	-0.3188E-01	-0.1589E-01	-0.2602E-02
10	-0.3099E-01	-0.1576E-01	-0.2706E-02
11	-0.3006E-01	-0.1563E-01	-0.2812E-02
12	-0.2909E-01	-0.1550E-01	-0.2921E-02
13	-0.2808E-01	-0.1538E-01	-0.3035E-02
14	-0.2703E-01	-0.1526E-01	-0.3153E-02
15	-0.2594E-01	-0.1514E-01	-0.3277E-02
16	-0.2481E-01	-0.1502E-01	-0.3407E-02
17	-0.2363E-01	-0.1491E-01	-0.3546E-02
18	-0.2239E-01	-0.1479E-01	-0.3692E-02
19	-0.2111E-01	-0.1469E-01	-0.3848E-02
20	-0.1977E-01	-0.1458E-01	-0.4013E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 64

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	4957.	-4418.	165.	-5874.	9749.	-2962.
2	4954.	-4324.	401.	-5710.	9507.	-2939.
3	4951.	-4224.	597.	-5551.	9305.	-2897.
4	4948.	-4119.	753.	-5399.	9143.	-2839.
5	4945.	-4008.	871.	-5253.	9020.	-2763.
6	4943.	-3892.	949.	-5114.	8936.	-2671.
7	4940.	-3771.	990.	-4980.	8890.	-2561.
8	4938.	-3644.	993.	-4853.	8882.	-2436.
9	4935.	-3513.	959.	-4731.	8912.	-2294.
10	4933.	-3376.	888.	-4616.	8978.	-2136.
11	4931.	-3234.	782.	-4506.	9080.	-1963.
12	4929.	-3087.	640.	-4402.	9217.	-1773.
13	4927.	-2934.	464.	-4302.	9389.	-1567.
14	4925.	-2776.	254.	-4206.	9596.	-1345.
15	4923.	-2611.	10.	-4115.	9835.	-1108.
16	4921.	-2441.	-265.	-4027.	10109.	-854.
17	4920.	-2263.	-573.	-3942.	10412.	-584.
18	4918.	-2078.	-912.	-3859.	10748.	-297.
19	4917.	-1886.	-1280.	-3778.	11114.	7.
20	4915.	-1685.	-1679.	-3698.	11509.	327.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 64 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	9380.		6040.		12710.	
2	9282.		6111.		12445.	
3	9178.		6149.		12202.	
4	9069.		6153.		11982.	
5	8954.		6124.		11783.	
6	8835.		6063.		11607.	
7	8711.		5970.		11452.	
8	8582.		5845.		11318.	
9	8448.		5690.		11206.	
10	8310.		5504.		11114.	
11	8166.		5288.		11042.	
12	8018.		5042.		10990.	
13	7864.		4766.		10956.	
14	7705.		4460.		10941.	
15	7540.		4125.		10943.	
16	7368.		4027.		10961.	
17	7191.		3942.		10996.	
18	7006.		3859.		11044.	
19	6814.		3778.		11114.	
20	6614.		3698.		11509.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL.
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 65

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4409.	-4832.	-306.	-93.	106.
2	4405.	-4800.	-272.	-83.	89.
3	4400.	-4765.	-244.	-75.	73.
4	4396.	-4728.	-221.	-68.	56.
5	4391.	-4690.	-204.	-63.	40.
6	4387.	-4649.	-193.	-60.	24.
7	4382.	-4607.	-187.	-58.	8.
8	4378.	-4564.	-187.	-58.	-8.
9	4374.	-4518.	-193.	-60.	-24.
10	4370.	-4471.	-204.	-63.	-40.
11	4366.	-4423.	-220.	-68.	-56.
12	4362.	-4372.	-242.	-75.	-71.
13	4358.	-4320.	-270.	-83.	-87.
14	4355.	-4265.	-303.	-93.	-103.
15	4351.	-4207.	-341.	-105.	-118.
16	4347.	-4147.	-385.	-118.	-133.
17	4344.	-4083.	-434.	-133.	-148.
18	4341.	-4015.	-488.	-149.	-163.
19	4337.	-3944.	-547.	-167.	-178.
20	4334.	-3867.	-612.	-187.	-193.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 65

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	-0.4288E-01	-0.2239E-01	-0.6041E-03
2	-0.4269E-01	-0.2223E-01	-0.6627E-03
3	-0.4249E-01	-0.2207E-01	-0.7148E-03
4	-0.4228E-01	-0.2191E-01	-0.7619E-03
5	-0.4204E-01	-0.2175E-01	-0.8049E-03
6	-0.4179E-01	-0.2159E-01	-0.8450E-03
7	-0.4153E-01	-0.2143E-01	-0.8834E-03
8	-0.4125E-01	-0.2128E-01	-0.9213E-03
9	-0.4097E-01	-0.2112E-01	-0.9597E-03
10	-0.4066E-01	-0.2097E-01	-0.9998E-03
11	-0.4034E-01	-0.2081E-01	-0.1043E-02
12	-0.4001E-01	-0.2066E-01	-0.1090E-02
13	-0.3966E-01	-0.2051E-01	-0.1141E-02
14	-0.3929E-01	-0.2036E-01	-0.1199E-02
15	-0.3890E-01	-0.2021E-01	-0.1265E-02
16	-0.3849E-01	-0.2006E-01	-0.1338E-02
17	-0.3804E-01	-0.1991E-01	-0.1421E-02
18	-0.3757E-01	-0.1976E-01	-0.1514E-02
19	-0.3706E-01	-0.1962E-01	-0.1619E-02
20	-0.3652E-01	-0.1947E-01	-0.1737E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 65

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	5039.	-5522.	2643.	-6252.	7436.	-4793.
2	5034.	-5485.	2904.	-6136.	7164.	-4835.
3	5029.	-5446.	3120.	-6031.	6937.	-4861.
4	5023.	-5404.	3291.	-5936.	6755.	-4871.
5	5018.	-5360.	3419.	-5853.	6618.	-4866.
6	5013.	-5313.	3502.	-5781.	6525.	-4846.
7	5008.	-5265.	3541.	-5720.	6476.	-4810.
8	5004.	-5216.	3536.	-5671.	6471.	-4760.
9	4999.	-5164.	3488.	-5633.	6510.	-4695.
10	4994.	-5110.	3397.	-5606.	6592.	-4615.
11	4990.	-5055.	3262.	-5590.	6717.	-4520.
12	4985.	-4997.	3085.	-5585.	6886.	-4410.
13	4981.	-4937.	2865.	-5590.	7097.	-4284.
14	4977.	-4874.	2603.	-5605.	7350.	-4143.
15	4973.	-4808.	2299.	-5630.	7646.	-3987.
16	4968.	-4739.	1954.	-5664.	7983.	-3814.
17	4965.	-4666.	1567.	-5708.	8362.	-3625.
18	4961.	-4589.	1139.	-5759.	8783.	-3419.
19	4957.	-4507.	670.	-5818.	9244.	-3196.
20	4953.	-4419.	161.	-5883.	9746.	-2956.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 65 . DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	10568.		8894.		12229.	
2	10524.		9039.		11999.	
3	10477.		9150.		11798.	
4	10429.		9228.		11627.	
5	10379.		9272.		11484.	
6	10327.		9283.		11371.	
7	10274.		9261.		11287.	
8	10219.		9207.		11231.	
9	10163.		9121.		11205.	
10	10105.		9002.		11207.	
11	10046.		8852.		11237.	
12	9985.		8669.		11295.	
13	9922.		8455.		11381.	
14	9857.		8208.		11494.	
15	9789.		7929.		11633.	
16	9718.		7618.		11798.	
17	9644.		7274.		11988.	
18	9566.		6897.		12202.	
19	9483.		6487.		12440.	
20	9395.		6044.		12701.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 66

STRESS RESULTANTS

STATION	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4522.	-5347.	-94.	-30.	128.
2	4515.	-5318.	-52.	-17.	111.
3	4508.	-5288.	-16.	-7.	94.
4	4502.	-5259.	13.	2.	77.
5	4495.	-5230.	37.	10.	60.
6	4489.	-5201.	55.	15.	43.
7	4482.	-5173.	67.	19.	26.
8	4476.	-5145.	73.	21.	9.
9	4470.	-5118.	73.	21.	-8.
10	4463.	-5092.	68.	19.	-24.
11	4457.	-5066.	56.	16.	-41.
12	4451.	-5041.	39.	11.	-58.
13	4445.	-5017.	16.	4.	-74.
14	4440.	-4992.	-13.	-5.	-91.
15	4434.	-4968.	-47.	-15.	-108.
16	4428.	-4943.	-87.	-27.	-124.
17	4423.	-4918.	-133.	-41.	-141.
18	4417.	-4891.	-185.	-57.	-157.
19	4412.	-4863.	-242.	-74.	-173.
20	4406.	-4833.	-305.	-93.	-190.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 66

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.4362E-01	-0.2824E-01	-0.5109E-03
2	-0.4349E-01	-0.2808E-01	-0.5255E-03
3	-0.4335E-01	-0.2791E-01	-0.5323E-03
4	-0.4321E-01	-0.2775E-01	-0.5324E-03
5	-0.4308E-01	-0.2759E-01	-0.5270E-03
6	-0.4294E-01	-0.2743E-01	-0.5175E-03
7	-0.4281E-01	-0.2727E-01	-0.5048E-03
8	-0.4269E-01	-0.2710E-01	-0.4904E-03
9	-0.4256E-01	-0.2694E-01	-0.4753E-03
10	-0.4245E-01	-0.2678E-01	-0.4607E-03
11	-0.4234E-01	-0.2662E-01	-0.4479E-03
12	-0.4223E-01	-0.2647E-01	-0.4380E-03
13	-0.4213E-01	-0.2631E-01	-0.4322E-03
14	-0.4202E-01	-0.2615E-01	-0.4316E-03
15	-0.4192E-01	-0.2599E-01	-0.4375E-03
16	-0.4181E-01	-0.2583E-01	-0.4510E-03
17	-0.4170E-01	-0.2567E-01	-0.4732E-03
18	-0.4157E-01	-0.2552E-01	-0.5054E-03
19	-0.4144E-01	-0.2536E-01	-0.5487E-03
20	-0.4128E-01	-0.2521E-01	-0.6042E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 66.

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	5168.	-6110.	4433.	-6343.	5903.	-5878.
2	5160.	-6077.	4752.	-6212.	5568.	-5942.
3	5152.	-6044.	5024.	-6095.	5281.	-5993.
4	5145.	-6010.	5250.	-5991.	5040.	-6029.
5	5137.	-5977.	5429.	-5902.	4846.	-6052.
6	5130.	-5944.	5562.	-5826.	4698.	-6061.
7	5123.	-5912.	5648.	-5765.	4597.	-6058.
8	5115.	-5880.	5689.	-5719.	4542.	-6041.
9	5108.	-5849.	5684.	-5687.	4532.	-6011.
10	5101.	-5819.	5633.	-5670.	4569.	-5969.
11	5094.	-5790.	5536.	-5668.	4652.	-5913.
12	5087.	-5762.	5395.	-5679.	4780.	-5844.
13	5081.	-5734.	5208.	-5705.	4953.	-5762.
14	5074.	-5706.	4975.	-5745.	5172.	-5667.
15	5067.	-5678.	4698.	-5798.	5436.	-5557.
16	5061.	-5649.	4376.	-5865.	5745.	-5434.
17	5054.	-5620.	4009.	-5944.	6099.	-5297.
18	5048.	-5590.	3598.	-6036.	6498.	-5144.
19	5042.	-5558.	3142.	-6140.	6941.	-4976.
20	5036.	-5523.	2642.	-6254.	7429.	-4792.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 66 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	11288.		10776.		11781.	
2	11245.		10964.		11511.	
3	11201.		11119.		11274.	
4	11158.		11241.		11069.	
5	11116.		11331.		10898.	
6	11075.		11388.		10760.	
7	11035.		11414.		10654.	
8	10995.		11408.		10583.	
9	10957.		11371.		10544.	
10	10921.		11303.		10538.	
11	10885.		11204.		10565.	
12	10851.		11074.		10624.	
13	10817.		10913.		10715.	
14	10784.		10720.		10839.	
15	10752.		10496.		10994.	
16	10719.		10241.		11180.	
17	10686.		9954.		11396.	
18	10652.		9634.		11642.	
19	10617.		9282.		11918.	
20	10580.		8896.		12222.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 67

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4682.	-6096.	1.	-4.	154.
2	4672.	-6044.	52.	12.	136.
3	4663.	-5992.	96.	25.	118.
4	4653.	-5941.	134.	36.	100.
5	4644.	-5891.	165.	46.	82.
6	4635.	-5843.	190.	54.	64.
7	4626.	-5796.	209.	59.	46.
8	4618.	-5751.	222.	64.	29.
9	4609.	-5708.	229.	66.	11.
10	4600.	-5668.	230.	66.	-6.
11	4592.	-5629.	224.	65.	-24.
12	4584.	-5592.	213.	61.	-41.
13	4575.	-5557.	195.	56.	-59.
14	4567.	-5524.	172.	49.	-76.
15	4559.	-5493.	142.	41.	-93.
16	4551.	-5462.	107.	30.	-110.
17	4543.	-5433.	66.	18.	-127.
18	4536.	-5404.	18.	4.	-144.
19	4528.	-5376.	-35.	-12.	-161.
20	4520.	-5347.	-94.	-30.	-178.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 67

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.4547E-01	-0.3423E-01	-0.1042E-02
2	-0.4516E-01	-0.3406E-01	-0.1036E-02
3	-0.4486E-01	-0.3389E-01	-0.1020E-02
4	-0.4457E-01	-0.3372E-01	-0.9968E-03
5	-0.4428E-01	-0.3356E-01	-0.9660E-03
6	-0.4401E-01	-0.3339E-01	-0.9296E-03
7	-0.4375E-01	-0.3323E-01	-0.8886E-03
8	-0.4350E-01	-0.3306E-01	-0.8444E-03
9	-0.4327E-01	-0.3290E-01	-0.7982E-03
10	-0.4306E-01	-0.3273E-01	-0.7512E-03
11	-0.4286E-01	-0.3257E-01	-0.7048E-03
12	-0.4268E-01	-0.3241E-01	-0.6600E-03
13	-0.4251E-01	-0.3225E-01	-0.6183E-03
14	-0.4236E-01	-0.3209E-01	-0.5807E-03
15	-0.4222E-01	-0.3193E-01	-0.5485E-03
16	-0.4209E-01	-0.3176E-01	-0.5229E-03
17	-0.4196E-01	-0.3161E-01	-0.5052E-03
18	-0.4184E-01	-0.3145E-01	-0.4964E-03
19	-0.4173E-01	-0.3129E-01	-0.4979E-03
20	-0.4161E-01	-0.3113E-01	-0.5108E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.9.2.65

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 67

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	5350.	-6967.	5362.	-6995.	5339.	-6939.
2	5340.	-6907.	5746.	-6817.	4933.	-6998.
3	5329.	-6848.	6080.	-6653.	4577.	-7043.
4	5318.	-6789.	6366.	-6505.	4271.	-7074.
5	5308.	-6733.	6602.	-6373.	4014.	-7092.
6	5297.	-6677.	6790.	-6257.	3805.	-7097.
7	5287.	-6624.	6929.	-6158.	3646.	-7090.
8	5277.	-6573.	7020.	-6075.	3535.	-7071.
9	5267.	-6524.	7063.	-6009.	3472.	-7039.
10	5258.	-6477.	7058.	-5959.	3457.	-6996.
11	5248.	-6433.	7006.	-5926.	3490.	-6940.
12	5238.	-6391.	6907.	-5910.	3570.	-6873.
13	5229.	-6351.	6760.	-5910.	3698.	-6793.
14	5220.	-6313.	6566.	-5926.	3873.	-6701.
15	5210.	-6277.	6326.	-5958.	4095.	-6596.
16	5201.	-6243.	6039.	-6006.	4363.	-6479.
17	5192.	-6209.	5706.	-6069.	4679.	-6349.
18	5183.	-6176.	5327.	-6147.	5040.	-6205.
19	5175.	-6144.	4901.	-6240.	5448.	-6048.
20	5166.	-6111.	4429.	-6346.	5903.	-5876.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 67 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	12331.		12357.		12278.	
2	12257.		12562.		11931.	
3	12184.		12733.		11620.	
4	12113.		12871.		11345.	
5	12044.		12975.		11106.	
6	11977.		13047.		10903.	
7	11913.		13087.		10736.	
8	11851.		13095.		10606.	
9	11791.		13072.		10511.	
10	11735.		13017.		10453.	
11	11681.		12932.		10430.	
12	11630.		12816.		10443.	
13	11582.		12670.		10491.	
14	11536.		12492.		10574.	
15	11493.		12284.		10691.	
16	11451.		12046.		10843.	
17	11411.		11775.		11028.	
18	11372.		11474.		11246.	
19	11333.		11141.		11496.	
20	11295.		10776.		11779.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 68

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4902.	-7382.	-38.	-20.	188.
2	4889.	-7299.	24.	-1.	168.
3	4876.	-7217.	79.	16.	149.
4	4863.	-7136.	127.	30.	129.
5	4851.	-7056.	168.	43.	110.
6	4838.	-6977.	203.	53.	90.
7	4826.	-6901.	231.	62.	71.
8	4814.	-6826.	252.	69.	52.
9	4802.	-6753.	267.	73.	33.
10	4790.	-6683.	275.	76.	14.
11	4779.	-6616.	276.	77.	-5.
12	4767.	-6550.	271.	75.	-23.
13	4756.	-6487.	259.	72.	-42.
14	4745.	-6426.	242.	67.	-60.
15	4734.	-6367.	217.	60.	-78.
16	4723.	-6311.	187.	51.	-97.
17	4712.	-6255.	150.	40.	-115.
18	4702.	-6202.	107.	27.	-133.
19	4691.	-6149.	57.	13.	-151.
20	4681.	-6096.	2.	-4.	-169.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 68

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.5105E-01	-0.4057E-01	-0.1737E-02
2	-0.5051E-01	-0.4038E-01	-0.1738E-02
3	-0.4997E-01	-0.4020E-01	-0.1727E-02
4	-0.4944E-01	-0.4002E-01	-0.1705E-02
5	-0.4892E-01	-0.3984E-01	-0.1675E-02
6	-0.4841E-01	-0.3966E-01	-0.1636E-02
7	-0.4791E-01	-0.3948E-01	-0.1592E-02
8	-0.4743E-01	-0.3931E-01	-0.1542E-02
9	-0.4696E-01	-0.3913E-01	-0.1489E-02
10	-0.4652E-01	-0.3896E-01	-0.1433E-02
11	-0.4609E-01	-0.3878E-01	-0.1377E-02
12	-0.4569E-01	-0.3861E-01	-0.1321E-02
13	-0.4530E-01	-0.3844E-01	-0.1266E-02
14	-0.4493E-01	-0.3827E-01	-0.1215E-02
15	-0.4458E-01	-0.3811E-01	-0.1168E-02
16	-0.4425E-01	-0.3794E-01	-0.1126E-02
17	-0.4392E-01	-0.3777E-01	-0.1092E-02
18	-0.4361E-01	-0.3761E-01	-0.1065E-02
19	-0.4331E-01	-0.3744E-01	-0.1048E-02
20	-0.4300E-01	-0.3728E-01	-0.1042E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 68

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	5602.	-8436.	5301.	-8590.	5903.	-8282.
2	5587.	-8342.	5772.	-8350.	5403.	-8334.
3	5572.	-8248.	6189.	-8126.	4956.	-8370.
4	5558.	-8155.	6552.	-7919.	4564.	-8392.
5	5544.	-8064.	6862.	-7729.	4225.	-8399.
6	5529.	-7974.	7119.	-7556.	3940.	-8392.
7	5515.	-7886.	7323.	-7401.	3707.	-8372.
8	5502.	-7801.	7476.	-7264.	3527.	-8338.
9	5488.	-7718.	7577.	-7145.	3399.	-8292.
10	5475.	-7638.	7626.	-7044.	3323.	-8232.
11	5461.	-7561.	7624.	-6961.	3299.	-8161.
12	5448.	-7486.	7572.	-6895.	3325.	-8076.
13	5435.	-7414.	7469.	-6848.	3402.	-7979.
14	5423.	-7344.	7316.	-6819.	3530.	-7870.
15	5410.	-7277.	7113.	-6807.	3707.	-7747.
16	5398.	-7212.	6861.	-6812.	3934.	-7612.
17	5385.	-7149.	6559.	-6835.	4211.	-7463.
18	5373.	-7088.	6209.	-6874.	4537.	-7302.
19	5361.	-7027.	5810.	-6929.	4913.	-7126.
20	5350.	-6967.	5363.	-6999.	5337.	-6936.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 68 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	14057.		13891.		14185.	
2	13944.		14122.		13736.	
3	13832.		14315.		13326.	
4	13722.		14471.		12955.	
5	13614.		14591.		12624.	
6	13508.		14675.		12332.	
7	13405.		14725.		12079.	
8	13304.		14740.		11865.	
9	13207.		14721.		11691.	
10	13113.		14670.		11556.	
11	13022.		14585.		11459.	
12	12934.		14467.		11401.	
13	12850.		14317.		11381.	
14	12769.		14135.		11399.	
15	12691.		13920.		11454.	
16	12615.		13673.		11546.	
17	12542.		13394.		11675.	
18	12471.		13083.		11839.	
19	12401.		12739.		12038.	
20	12332.		12362.		12272.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 69

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	5205.	-9083.	-273.	-93.	236.
2	5187.	-8989.	-195.	-70.	214.
3	5170.	-8894.	-124.	-48.	192.
4	5152.	-8798.	-61.	-30.	171.
5	5135.	-8701.	-5.	-13.	149.
6	5118.	-8605.	43.	2.	128.
7	5101.	-8509.	84.	14.	107.
8	5085.	-8415.	117.	24.	86.
9	5069.	-8321.	143.	32.	65.
10	5053.	-8229.	162.	38.	44.
11	5037.	-8138.	173.	42.	23.
12	5021.	-8048.	178.	43.	3.
13	5005.	-7961.	175.	43.	-18.
14	4990.	-7874.	165.	40.	-38.
15	4975.	-7790.	149.	35.	-58.
16	4960.	-7706.	125.	28.	-78.
17	4946.	-7624.	94.	19.	-97.
18	4931.	-7542.	57.	8.	-117.
19	4917.	-7462.	13.	-5.	-137.
20	4903.	-7381.	-38.	-20.	-156.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 69

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.5951E-01	-0.4767E-01	-0.1984E-02
2	-0.5888E-01	-0.4747E-01	-0.2031E-02
3	-0.5824E-01	-0.4726E-01	-0.2062E-02
4	-0.5760E-01	-0.4706E-01	-0.2080E-02
5	-0.5694E-01	-0.4686E-01	-0.2086E-02
6	-0.5629E-01	-0.4666E-01	-0.2081E-02
7	-0.5564E-01	-0.4646E-01	-0.2067E-02
8	-0.5500E-01	-0.4627E-01	-0.2046E-02
9	-0.5436E-01	-0.4608E-01	-0.2019E-02
10	-0.5373E-01	-0.4588E-01	-0.1987E-02
11	-0.5312E-01	-0.4569E-01	-0.1952E-02
12	-0.5252E-01	-0.4551E-01	-0.1915E-02
13	-0.5193E-01	-0.4532E-01	-0.1879E-02
14	-0.5135E-01	-0.4513E-01	-0.1843E-02
15	-0.5079E-01	-0.4495E-01	-0.1811E-02
16	-0.5023E-01	-0.4477E-01	-0.1782E-02
17	-0.4969E-01	-0.4458E-01	-0.1759E-02
18	-0.4915E-01	-0.4440E-01	-0.1743E-02
19	-0.4861E-01	-0.4423E-01	-0.1735E-02
20	-0.4808E-01	-0.4405E-01	-0.1737E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.9.2.73

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 69

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	5949.	-10381.	3809.	-11109.	8082.	-9653.
2	5929.	-10273.	4403.	-10819.	7454.	-9728.
3	5908.	-10164.	4938.	-10544.	6879.	-9785.
4	5888.	-10055.	5413.	-10286.	6364.	-9823.
5	5869.	-9944.	5830.	-10045.	5908.	-9844.
6	5849.	-9834.	6187.	-9822.	5511.	-9847.
7	5830.	-9725.	6487.	-9616.	5173.	-9834.
8	5811.	-9617.	6729.	-9428.	4893.	-9806.
9	5793.	-9510.	6915.	-9258.	4671.	-9761.
10	5774.	-9404.	7043.	-9107.	4506.	-9701.
11	5756.	-9300.	7115.	-8974.	4397.	-9626.
12	5738.	-9198.	7132.	-8860.	4345.	-9536.
13	5721.	-9098.	7093.	-8764.	4348.	-9431.
14	5703.	-8999.	6999.	-8687.	4407.	-9311.
15	5686.	-8902.	6850.	-8628.	4521.	-9177.
16	5669.	-8807.	6648.	-8587.	4690.	-9027.
17	5652.	-8713.	6392.	-8563.	4913.	-8862.
18	5636.	-8620.	6082.	-8557.	5189.	-8682.
19	5619.	-8528.	5719.	-8569.	5519.	-8487.
20	5603.	-8436.	5304.	-8596.	5902.	-8275.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 69 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	16357.		14918.		17742.	
2	16225.		15222.		17182.	
3	16091.		15482.		16663.	
4	15957.		15700.		16186.	
5	15824.		15875.		15751.	
6	15692.		16009.		15359.	
7	15561.		16103.		15008.	
8	15432.		16157.		14699.	
9	15304.		16173.		14432.	
10	15179.		16150.		14207.	
11	15057.		16090.		14023.	
12	14936.		15992.		13881.	
13	14818.		15857.		13780.	
14	14703.		15686.		13719.	
15	14590.		15478.		13698.	
16	14479.		15235.		13717.	
17	14370.		14955.		13775.	
18	14263.		14639.		13872.	
19	14157.		14288.		14006.	
20	14052.		13900.		14178.	

IV.9.2.75

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 70

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	5612.	-10582.	-744.	-229.	286.
2	5588.	-10523.	-647.	-201.	263.
3	5565.	-10459.	-559.	-175.	240.
4	5542.	-10392.	-480.	-152.	217.
5	5520.	-10321.	-408.	-131.	194.
6	5497.	-10247.	-344.	-112.	171.
7	5475.	-10171.	-288.	-96.	148.
8	5453.	-10093.	-241.	-82.	125.
9	5432.	-10014.	-201.	-70.	102.
10	5410.	-9934.	-169.	-61.	80.
11	5389.	-9852.	-145.	-54.	58.
12	5368.	-9770.	-129.	-49.	35.
13	5347.	-9686.	-120.	-47.	13.
14	5327.	-9603.	-119.	-47.	-9.
15	5306.	-9518.	-126.	-49.	-31.
16	5286.	-9433.	-140.	-53.	-52.
17	5267.	-9347.	-162.	-60.	-74.
18	5247.	-9260.	-191.	-69.	-95.
19	5228.	-9172.	-228.	-80.	-117.
20	5209.	-9083.	-272.	-94.	-138.

IV.9.2.76

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 70

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.6510E-01	-0.5579E-01	-0.9404E-03
2	-0.6483E-01	-0.5557E-01	-0.1081E-02
3	-0.6451E-01	-0.5535E-01	-0.1203E-02
4	-0.6415E-01	-0.5513E-01	-0.1308E-02
5	-0.6376E-01	-0.5491E-01	-0.1398E-02
6	-0.6334E-01	-0.5470E-01	-0.1473E-02
7	-0.6290E-01	-0.5448E-01	-0.1537E-02
8	-0.6243E-01	-0.5427E-01	-0.1590E-02
9	-0.6195E-01	-0.5406E-01	-0.1634E-02
10	-0.6146E-01	-0.5385E-01	-0.1671E-02
11	-0.6095E-01	-0.5364E-01	-0.1702E-02
12	-0.6043E-01	-0.5343E-01	-0.1729E-02
13	-0.5990E-01	-0.5322E-01	-0.1753E-02
14	-0.5937E-01	-0.5302E-01	-0.1777E-02
15	-0.5882E-01	-0.5281E-01	-0.1801E-02
16	-0.5827E-01	-0.5261E-01	-0.1827E-02
17	-0.5770E-01	-0.5241E-01	-0.1857E-02
18	-0.5713E-01	-0.5221E-01	-0.1892E-02
19	-0.5654E-01	-0.5201E-01	-0.1933E-02
20	-0.5594E-01	-0.5182E-01	-0.1983E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO.. 70

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	6413.	-12094.	585.	-13889.	12242.	-10298.
2	6387.	-12026.	1313.	-13602.	11461.	-10450.
3	6360.	-11953.	1976.	-13328.	10744.	-10578.
4	6334.	-11876.	2576.	-13068.	10092.	-10684.
5	6308.	-11795.	3113.	-12823.	9504.	-10768.
6	6283.	-11711.	3586.	-12592.	8979.	-10830.
7	6257.	-11624.	3998.	-12377.	8517.	-10871.
8	6232.	-11535.	4346.	-12179.	8118.	-10892.
9	6207.	-11445.	4634.	-11996.	7781.	-10893.
10	6183.	-11353.	4859.	-11831.	7507.	-10874.
11	6159.	-11259.	5024.	-11682.	7294.	-10837.
12	6135.	-11165.	5127.	-11551.	7142.	-10780.
13	6111.	-11070.	5171.	-11436.	7051.	-10704.
14	6088.	-10974.	5155.	-11339.	7020.	-10609.
15	6064.	-10878.	5079.	-11260.	7050.	-10496.
16	6042.	-10781.	4944.	-11197.	7139.	-10364.
17	6019.	-10682.	4750.	-11151.	7288.	-10214.
18	5997.	-10583.	4498.	-11122.	7495.	-10044.
19	5974.	-10482.	4188.	-11110.	7761.	-9855.
20	5953.	-10380.	3821.	-11113.	8085.	-9647.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 70 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	18544.		14474.		22540.	*
2	18444.		14915.		21911.	*
3	18340.		15304.		21323.	*
4	18232.		15644.		20776.	*
5	18121.		15935.		20271.	*
6	18007.		16179.		19809.	*
7	17892.		16375.		19388.	*
8	17775.		16525.		19010.	
9	17657.		16630.		18674.	
10	17539.		16690.		18381.	
11	17420.		16706.		18130.	
12	17301.		16678.		17922.	
13	17181.		16608.		17755.	
14	17062.		16494.		17630.	
15	16943.		16338.		17546.	
16	16823.		16141.		17503.	
17	16704.		15901.		17501.	
18	16584.		15620.		17539.	
19	16464.		15298.		17616.	
20	16342.		14934.		17732.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.9.2.79

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 71

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	6115.	-10816.	-1336.	-385.	303.
2	6088.	-10856.	-1233.	-356.	280.
3	6060.	-10888.	-1138.	-330.	257.
4	6033.	-10912.	-1051.	-305.	235.
5	6006.	-10929.	-972.	-283.	212.
6	5979.	-10940.	-901.	-263.	189.
7	5952.	-10945.	-839.	-246.	167.
8	5925.	-10944.	-784.	-230.	144.
9	5898.	-10938.	-737.	-217.	121.
10	5871.	-10927.	-698.	-207.	99.
11	5845.	-10911.	-666.	-198.	76.
12	5819.	-10891.	-643.	-192.	53.
13	5793.	-10867.	-628.	-188.	31.
14	5767.	-10838.	-621.	-187.	8.
15	5741.	-10806.	-621.	-188.	-15.
16	5716.	-10769.	-629.	-192.	-37.
17	5691.	-10729.	-645.	-197.	-59.
18	5666.	-10684.	-669.	-205.	-82.
19	5641.	-10635.	-701.	-216.	-104.
20	5616.	-10581.	-740.	-229.	-126.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 71

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.5646E-01	-0.6446E-01	0.2154E-02
2	-0.5726E-01	-0.6425E-01	0.1892E-02
3	-0.5796E-01	-0.6404E-01	0.1651E-02
4	-0.5858E-01	-0.6382E-01	0.1427E-02
5	-0.5913E-01	-0.6361E-01	0.1221E-02
6	-0.5961E-01	-0.6340E-01	0.1030E-02
7	-0.6002E-01	-0.6319E-01	0.8532E-03
8	-0.6038E-01	-0.6297E-01	0.6881E-03
9	-0.6068E-01	-0.6276E-01	0.5334E-03
10	-0.6092E-01	-0.6255E-01	0.3875E-03
11	-0.6112E-01	-0.6233E-01	0.2488E-03
12	-0.6127E-01	-0.6212E-01	0.1157E-03
13	-0.6137E-01	-0.6191E-01	-0.1338E-04
14	-0.6142E-01	-0.6169E-01	-0.1401E-03
15	-0.6144E-01	-0.6148E-01	-0.2661E-03
16	-0.6141E-01	-0.6127E-01	-0.3930E-03
17	-0.6133E-01	-0.6106E-01	-0.5222E-03
18	-0.6121E-01	-0.6085E-01	-0.6555E-03
19	-0.6104E-01	-0.6064E-01	-0.7943E-03
20	-0.6082E-01	-0.6043E-01	-0.9403E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 71

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	6989.	-12361.	-3479.	-15380.	17457.	-9342.
2	6957.	-12407.	-2705.	-15199.	16620.	-9615.
3	6926.	-12443.	-1993.	-15027.	15845.	-9860.
4	6895.	-12471.	-1343.	-14863.	15133.	-10079.
5	6864.	-12491.	-756.	-14709.	14484.	-10273.
6	6833.	-12503.	-232.	-14565.	13897.	-10441.
7	6802.	-12508.	231.	-14432.	13373.	-10584.
8	6771.	-12507.	630.	-14311.	12912.	-10703.
9	6741.	-12500.	968.	-14202.	12513.	-10798.
10	6710.	-12487.	1244.	-14106.	12177.	-10869.
11	6680.	-12470.	1457.	-14023.	11903.	-10916.
12	6650.	-12447.	1609.	-13953.	11691.	-10941.
13	6620.	-12419.	1699.	-13896.	11542.	-10942.
14	6591.	-12387.	1727.	-13853.	11454.	-10920.
15	6562.	-12350.	1694.	-13824.	11429.	-10875.
16	6533.	-12308.	1600.	-13809.	11465.	-10807.
17	6504.	-12262.	1445.	-13807.	11562.	-10716.
18	6475.	-12210.	1229.	-13819.	11721.	-10601.
19	6447.	-12154.	953.	-13845.	11940.	-10464.
20	6418.	-12093.	616.	-13884.	12221.	-10302.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 71 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	19388.	*	15380.		26799.	*
2	19397.	*	15199.		26234.	*
3	19398.	*	15027.		25705.	*
4	19389.	*	14863.		25212.	*
5	19374.	*	14709.		24756.	*
6	19351.	*	14565.		24338.	*
7	19322.	*	14663.		23957.	*
8	19287.		14942.		23615.	*
9	19247.		15171.		23311.	*
10	19202.		15350.		23046.	*
11	19152.		15480.		22819.	*
12	19098.		15562.		22632.	*
13	19040.		15595.		22484.	*
14	18978.		15581.		22374.	*
15	18911.		15519.		22304.	*
16	18841.		15409.		22272.	*
17	18767.		15252.		22278.	*
18	18688.		15049.		22322.	*
19	18606.		14798.		22404.	*
20	18519.		14500.		22523.	*

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 72.

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	6666.	-8782.	-1591.	-421.	223.
2	6638.	-8961.	-1514.	-401.	204.
3	6610.	-9131.	-1445.	-382.	185.
4	6582.	-9292.	-1382.	-366.	166.
5	6553.	-9443.	-1326.	-352.	146.
6	6525.	-9587.	-1277.	-339.	127.
7	6496.	-9722.	-1235.	-329.	107.
8	6467.	-9850.	-1199.	-320.	87.
9	6438.	-9969.	-1171.	-314.	67.
10	6409.	-10082.	-1150.	-309.	47.
11	6380.	-10187.	-1135.	-307.	27.
12	6351.	-10286.	-1128.	-307.	6.
13	6322.	-10377.	-1128.	-308.	-14.
14	6294.	-10461.	-1136.	-312.	-35.
15	6265.	-10538.	-1150.	-319.	-56.
16	6236.	-10608.	-1172.	-327.	-77.
17	6207.	-10671.	-1201.	-338.	-98.
18	6178.	-10726.	-1237.	-351.	-119.
19	6149.	-10774.	-1281.	-366.	-140.
20	6120.	-10814.	-1331.	-383.	-161.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 72

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.2001E-01	-0.7200E-01	0.7021E-02
2	-0.2249E-01	-0.7184E-01	0.6702E-02
3	-0.2486E-01	-0.7168E-01	0.6398E-02
4	-0.2712E-01	-0.7151E-01	0.6107E-02
5	-0.2929E-01	-0.7134E-01	0.5829E-02
6	-0.3136E-01	-0.7117E-01	0.5561E-02
7	-0.3334E-01	-0.7100E-01	0.5303E-02
8	-0.3523E-01	-0.7082E-01	0.5053E-02
9	-0.3703E-01	-0.7064E-01	0.4810E-02
10	-0.3875E-01	-0.7046E-01	0.4571E-02
11	-0.4039E-01	-0.7028E-01	0.4337E-02
12	-0.4195E-01	-0.7009E-01	0.4105E-02
13	-0.4342E-01	-0.6990E-01	0.3873E-02
14	-0.4481E-01	-0.6972E-01	0.3641E-02
15	-0.4613E-01	-0.6953E-01	0.3407E-02
16	-0.4736E-01	-0.6933E-01	0.3170E-02
17	-0.4850E-01	-0.6914E-01	0.2927E-02
18	-0.4956E-01	-0.6895E-01	0.2678E-02
19	-0.5053E-01	-0.6875E-01	0.2421E-02
20	-0.5141E-01	-0.6855E-01	0.2154E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 72

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	7618.	-10037.	-4848.	-13335.	20084.	-6738.
2	7586.	-10242.	-4282.	-13382.	19455.	-7101.
3	7554.	-10436.	-3769.	-13433.	18878.	-7438.
4	7522.	-10619.	-3309.	-13488.	18353.	-7750.
5	7489.	-10792.	-2903.	-13548.	17881.	-8037.
6	7457.	-10956.	-2550.	-13613.	17463.	-8299.
7	7424.	-11111.	-2251.	-13685.	17099.	-8536.
8	7391.	-11257.	-2007.	-13764.	16789.	-8749.
9	7358.	-11394.	-1818.	-13851.	16534.	-8937.
10	7325.	-11522.	-1685.	-13945.	16334.	-9100.
11	7292.	-11643.	-1606.	-14047.	16190.	-9239.
12	7259.	-11755.	-1584.	-14157.	16102.	-9353.
13	7226.	-11859.	-1618.	-14277.	16069.	-9442.
14	7193.	-11956.	-1708.	-14405.	16093.	-9507.
15	7159.	-12044.	-1854.	-14541.	16173.	-9546.
16	7126.	-12124.	-2057.	-14687.	16310.	-9560.
17	7093.	-12196.	-2317.	-14842.	16504.	-9549.
18	7060.	-12259.	-2634.	-15006.	16755.	-9512.
19	7028.	-12313.	-3008.	-15179.	17063.	-9448.
20	6995.	-12359.	-3439.	-15360.	17428.	-9358.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.9.2.86

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 72 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	17674.		13335.		26823.	*
2	17844.		13382.		26556.	*
3	18003.		13433.		26316.	*
4	18152.		13488.		26103.	*
5	18290.		13548.		25918.	*
6	18419.		13613.		25762.	*
7	18539.		13685.		25635.	*
8	18651.		13764.		25538.	*
9	18753.		13851.		25471.	*
10	18848.		13945.		25435.	*
11	18935.		14047.		25429.	*
12	19014.		14157.		25454.	*
13	19085.		14277.		25511.	*
14	19149.		14405.		25599.	*
15	19205.		14541.		25719.	*
16	19253.		14687.		25870.	*
17	19293.		14842.		26053.	*
18	19325.	*	15006.		26266.	*
19	19349.	*	15179.		26511.	*
20	19365.	*	15360.		26786.	*

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 73

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	7165.	-4635.	-638.	-96.	-9.
2	7141.	-4897.	-642.	-99.	-22.
3	7118.	-5155.	-651.	-103.	-35.
4	7093.	-5409.	-665.	-108.	-49.
5	7069.	-5659.	-684.	-115.	-63.
6	7044.	-5905.	-707.	-124.	-77.
7	7018.	-6146.	-735.	-134.	-91.
8	6993.	-6383.	-769.	-145.	-106.
9	6967.	-6615.	-807.	-159.	-121.
10	6940.	-6842.	-850.	-173.	-136.
11	6914.	-7064.	-899.	-190.	-152.
12	6887.	-7281.	-953.	-208.	-167.
13	6860.	-7492.	-1013.	-228.	-183.
14	6832.	-7697.	-1078.	-249.	-199.
15	6805.	-7896.	-1149.	-273.	-215.
16	6777.	-8088.	-1225.	-298.	-232.
17	6748.	-8274.	-1307.	-325.	-249.
18	6720.	-8452.	-1395.	-354.	-266.
19	6692.	-8622.	-1488.	-384.	-283.
20	6663.	-8783.	-1587.	-417.	-300.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 73

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.4810E-01	-0.7547E-01	0.1081E-01
2	0.4428E-01	-0.7540E-01	0.1067E-01
3	0.4051E-01	-0.7532E-01	0.1053E-01
4	0.3678E-01	-0.7524E-01	0.1039E-01
5	0.3311E-01	-0.7515E-01	0.1025E-01
6	0.2949E-01	-0.7506E-01	0.1010E-01
7	0.2592E-01	-0.7497E-01	0.9950E-02
8	0.2241E-01	-0.7487E-01	0.9792E-02
9	0.1895E-01	-0.7476E-01	0.9626E-02
10	0.1555E-01	-0.7465E-01	0.9452E-02
11	0.1222E-01	-0.7454E-01	0.9269E-02
12	0.8945E-02	-0.7442E-01	0.9075E-02
13	0.5745E-02	-0.7430E-01	0.8870E-02
14	0.2619E-02	-0.7417E-01	0.8653E-02
15	-0.4284E-03	-0.7404E-01	0.8422E-02
16	-0.3392E-02	-0.7391E-01	0.8176E-02
17	-0.6268E-02	-0.7378E-01	0.7914E-02
18	-0.9049E-02	-0.7363E-01	0.7635E-02
19	-0.1173E-01	-0.7349E-01	0.7338E-02
20	-0.1430E-01	-0.7334E-01	0.7021E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 73

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8189.	-5297.	3189.	-6048.	13188.	-4546.
2	8162.	-5597.	3127.	-6369.	13196.	-4824.
3	8134.	-5892.	3029.	-6697.	13240.	-5086.
4	8107.	-6182.	2894.	-7031.	13320.	-5333.
5	8078.	-6468.	2721.	-7372.	13436.	-5564.
6	8050.	-6748.	2509.	-7719.	13591.	-5778.
7	8021.	-7024.	2259.	-8074.	13783.	-5975.
8	7992.	-7295.	1969.	-8435.	14014.	-6154.
9	7962.	-7560.	1638.	-8803.	14285.	-6316.
10	7932.	-7819.	1267.	-9179.	14597.	-6460.
11	7901.	-8073.	854.	-9561.	14949.	-6585.
12	7871.	-8321.	399.	-9951.	15342.	-6691.
13	7840.	-8562.	-99.	-10348.	15778.	-6777.
14	7808.	-8797.	-640.	-10751.	16257.	-6842.
15	7777.	-9024.	-1225.	-11161.	16778.	-6887.
16	7745.	-9244.	-1855.	-11578.	17344.	-6910.
17	7713.	-9456.	-2529.	-12001.	17954.	-6910.
18	7680.	-9659.	-3249.	-12431.	18609.	-6887.
19	7648.	-9853.	-4014.	-12866.	19309.	-6841.
20	7615.	-10038.	-4826.	-13306.	20055.	-6769.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.9.2.90

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 73 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	13486.		9237.		17734.	
2	13759.		9496.		18020.	
3	14027.		9726.		18326.	
4	14290.		9925.		18653.	
5	14548.		10092.		19000.	
6	14800.		10228.		19368.	*
7	15048.		10332.		19758.	*
8	15290.		10404.		20169.	*
9	15527.		10442.		20602.	*
10	15758.		10446.		21057.	*
11	15983.		10415.		21534.	*
12	16202.		10350.		22033.	*
13	16414.		10348.		22555.	*
14	16620.		10751.		23099.	*
15	16818.		11161.		23665.	*
16	17009.		11578.		24254.	*
17	17192.		12001.		24864.	*
18	17366.		12431.		25496.	*
19	17531.		12866.		26150.	*
20	17687.		13306.		26825.	*

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 74

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	7754.	7734.	-2.	-1.	0.
2	7749.	7741.	-0.	-0.	0.
3	7748.	7745.	0.	-0.	0.
4	7748.	7747.	1.	0.	0.
5	7748.	7746.	2.	1.	0.
6	7747.	7743.	2.	1.	0.
7	7746.	7734.	3.	1.	-0.
8	7744.	7722.	1.	1.	-0.
9	7742.	7710.	-4.	-1.	-1.
10	7739.	7709.	-15.	-5.	-2.
11	7737.	7741.	-30.	-11.	-2.
12	7741.	7836.	-45.	-18.	-2.
13	7753.	8020.	-43.	-19.	2.
14	7777.	8276.	2.	-7.	11.
15	7813.	8493.	130.	35.	25.
16	7849.	8384.	368.	119.	41.
17	7856.	7444.	687.	238.	47.
18	7784.	5036.	929.	345.	17.
19	7568.	770.	707.	310.	-85.
20	7159.	-4637.	-638.	-94.	-294.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.9.2.92

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 74

STATION	NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.2523E 00	-0.9230E-02	-0.2872E-05
2	0.2521E 00	-0.1304E-01	-0.5612E-05
3	0.2518E 00	-0.1684E-01	-0.4627E-05
4	0.2514E 00	-0.2064E-01	-0.1632E-05
5	0.2510E 00	-0.2443E-01	0.3723E-05
6	0.2503E 00	-0.2821E-01	0.1211E-04
7	0.2495E 00	-0.3197E-01	0.2263E-04
8	0.2486E 00	-0.3571E-01	0.3045E-04
9	0.2476E 00	-0.3943E-01	0.2414E-04
10	0.2466E 00	-0.4313E-01	-0.1532E-04
11	0.2461E 00	-0.4681E-01	-0.1103E-03
12	0.2464E 00	-0.5050E-01	-0.2714E-03
13	0.2480E 00	-0.5421E-01	-0.4656E-03
14	0.2508E 00	-0.5799E-01	-0.5667E-03
15	0.2531E 00	-0.6185E-01	-0.3054E-03
16	0.2507E 00	-0.6570E-01	0.7369E-03
17	0.2361E 00	-0.6934E-01	0.2997E-02
18	0.1996E 00	-0.7231E-01	0.6532E-02
19	0.1348E 00	-0.7391E-01	0.1025E-01
20	0.5106E-01	-0.7350E-01	0.1081E-01

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 74

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8862.	8839.	8850.	8834.	8874.	8845.
2	8856.	8847.	8855.	8844.	8858.	8850.
3	8855.	8851.	8858.	8851.	8852.	8852.
4	8854.	8854.	8861.	8855.	8847.	8852.
5	8854.	8853.	8867.	8858.	8842.	8848.
6	8854.	8849.	8872.	8857.	8835.	8841.
7	8853.	8839.	8873.	8850.	8833.	8829.
8	8851.	8825.	8858.	8833.	8843.	8818.
9	8848.	8811.	8814.	8805.	8881.	8817.
10	8844.	8810.	8729.	8773.	8959.	8847.
11	8843.	8847.	8607.	8762.	9078.	8932.
12	8846.	8956.	8496.	8819.	9197.	9093.
13	8860.	9165.	8521.	9013.	9199.	9318.
14	8888.	9459.	8908.	9407.	8869.	9511.
15	8929.	9706.	9949.	9983.	7910.	9430.
16	8970.	9581.	11850.	10511.	6090.	8652.
17	8979.	8507.	14365.	10375.	3593.	6640.
18	8896.	5755.	16178.	8457.	1615.	3054.
19	8649.	880.	14186.	3308.	3111.	-1548.
20	8181.	-5299.	3181.	-6034.	13182.	-4564.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.9.2.94

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 74 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	8862.		8850.		8874.	
2	8856.		8855.		8858.	
3	8855.		8858.		8852.	
4	8854.		8861.		8852.	
5	8854.		8867.		8848.	
6	8854.		8872.		8841.	
7	8853.		8873.		8833.	
8	8851.		8858.		8843.	
9	8848.		8814.		8881.	
10	8844.		8773.		8959.	
11	8847.		8762.		9078.	
12	8956.		8819.		9197.	
13	9165.		9013.		9318.	
14	9459.		9407.		9511.	
15	9707.		9983.		9430.	
16	9582.		11850.		8652.	
17	8980.		14365.		6640.	
18	8897.		16178.		3054.	
19	8654.		14186.		4659.	
20	13511.		9215.		17746.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 75

ELEM	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	7744.	7744.	0.	0.	0.0
2	7744.	7744.	0.	0.	-0.
3	7744.	7744.	0.	0.	-0.
4	7744.	7744.	0.	0.	-0.
5	7744.	7743.	0.	0.	-0.
6	7744.	7743.	0.	0.	-0.
7	7744.	7743.	0.	0.	-0.
8	7743.	7743.	0.	0.	-0.
9	7743.	7743.	0.	0.	-0.
10	7743.	7743.	-0.	0.	-0.
11	7743.	7743.	-0.	0.	-0.
12	7743.	7743.	-0.	0.	-0.
13	7743.	7743.	-0.	-0.	-0.
14	7743.	7743.	-0.	-0.	-0.
15	7743.	7743.	-1.	-0.	-0.
16	7743.	7743.	-1.	-0.	-0.
17	7743.	7743.	-1.	-0.	-0.
18	7743.	7743.	-1.	-0.	-0.
19	7743.	7743.	-1.	-1.	-0.
20	7743.	7744.	-2.	-1.	-0.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 75

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.2527E 00	0.0	0.0
2	0.2527E 00	-0.4856E-03	0.1755E-06
3	0.2527E 00	-0.9712E-03	0.3456E-06
4	0.2527E 00	-0.1457E-02	0.5052E-06
5	0.2527E 00	-0.1942E-02	0.6489E-06
6	0.2527E 00	-0.2428E-02	0.7712E-06
7	0.2527E 00	-0.2914E-02	0.8669E-06
8	0.2527E 00	-0.3399E-02	0.9304E-06
9	0.2527E 00	-0.3885E-02	0.9563E-06
10	0.2527E 00	-0.4371E-02	0.9390E-06
11	0.2527E 00	-0.4856E-02	0.8730E-06
12	0.2527E 00	-0.5342E-02	0.7526E-06
13	0.2527E 00	-0.5827E-02	0.5720E-06
14	0.2527E 00	-0.6313E-02	0.3256E-06
15	0.2527E 00	-0.6799E-02	0.7642E-08
16	0.2527E 00	-0.7284E-02	-0.3877E-06
17	0.2527E 00	-0.7770E-02	-0.8660E-06
18	0.2527E 00	-0.8255E-02	-0.1433E-05
19	0.2527E 00	-0.8741E-02	-0.2094E-05
20	0.2527E 00	-0.9227E-02	-0.2855E-05

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 75

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8850.	8850.	8853.	8853.	8847.	8847.
2	8850.	8850.	8853.	8853.	8847.	8847.
3	8850.	8850.	8853.	8853.	8847.	8847.
4	8850.	8850.	8853.	8853.	8847.	8847.
5	8850.	8850.	8852.	8853.	8847.	8847.
6	8850.	8850.	8852.	8852.	8848.	8847.
7	8850.	8850.	8851.	8852.	8848.	8847.
8	8850.	8850.	8851.	8852.	8848.	8847.
9	8850.	8850.	8850.	8851.	8849.	8848.
10	8850.	8849.	8850.	8851.	8850.	8848.
11	8850.	8849.	8849.	8850.	8851.	8849.
12	8850.	8849.	8848.	8850.	8851.	8849.
13	8850.	8849.	8847.	8849.	8852.	8850.
14	8850.	8849.	8846.	8848.	8853.	8850.
15	8850.	8849.	8845.	8848.	8855.	8851.
16	8850.	8849.	8843.	8847.	8856.	8852.
17	8850.	8849.	8842.	8846.	8857.	8852.
18	8850.	8850.	8841.	8846.	8859.	8853.
19	8850.	8850.	8839.	8845.	8860.	8854.
20	8850.	8850.	8837.	8844.	8862.	8855.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF TOP HEAD OF DRYWELL
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE

BODY NO. 75 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	8850.		8853.		8847.	
2	8850.		8853.		8847.	
3	8850.		8853.		8847.	
4	8850.		8853.		8847.	
5	8850.		8853.		8847.	
6	8850.		8852.		8848.	
7	8850.		8852.		8848.	
8	8850.		8852.		8848.	
9	8850.		8851.		8849.	
10	8850.		8851.		8850.	
11	8850.		8850.		8851.	
12	8850.		8850.		8851.	
13	8850.		8849.		8852.	
14	8850.		8848.		8853.	
15	8850.		8848.		8855.	
16	8850.		8847.		8856.	
17	8850.		8846.		8857.	
18	8850.		8846.		8859.	
19	8850.		8845.		8860.	
20	8850.		8844.		8862.	

As seen from the previously enclosed computer output, all stresses are less than their corresponding allowables, with one exception. The "top" of body 71 and the "bottom" of body 72 are stressed up to 19398 psi at the mid-surface, with an allowable of 19300. psi. The length of overstressed area is approximately:

$$L = {}^{7}19\,(2\pi)(255.817)(41.7462 - 40.2653)/360 + {}^{3}19\,(2\pi)(281.880)(35.9138 - 34.5698)/360$$

$$L = 3.5\text{ in.}$$

From Reference 2, the stress level can be allowed up to $1.1 S_M$ for a distance of $2.5\sqrt{Rt}$, if another "overstressed" area is not encountered within $2.5\sqrt{Rt}$ along the meridian. For the knuckle,

$$L_{ALL} = 2.5\sqrt{Rt} = 2.5((65.75)(.875))^{1/2} = 18.96\text{ in.}$$

The knuckle therefore is within code allowables for membrane criteria.

For extreme fiber stresses, the maximum occurs in body 73 on the inside fibers (see page IV.9.2.90), and is 26825 psi. Since this is a membrane + bending stress, the allowable from Reference 2 is $1.5 S_M$ = 28950. psi. Therefore, the head is within code allowables for membrane + bending criteria. (It should be noted that at the connection to the sphere and cylinder, the stress allowables are $1.5 S_M$ and $3 S_M$ for membrane and membrane + bending respectively — gross structural discontinuity.)

JET LOADING:

FROM REFERENCE 1, PAGE 13A-26, THE TOP HEAD IS SUBJECTED TO A JET LOAD OF 33 KIPS OVER 26 IN². THE ANALYSIS WILL BE MADE ASSUMING THAT THE JET LOAD ACTS AS A RIGID PLUG, PER WRC BULLETIN NO. 107 (REFERENCE 7)

A. CYLINDER:

FOLLOWING THE FORMAT GIVEN ON PAGE 10 OF REFERENCE 7, WITH THE JET LOAD BEING A RADIAL LOAD, THEN

$$\text{FIG. 3C} - \frac{N\phi}{P/R_M} \doteq 60.$$

$$\text{FIG. 4C} - \frac{N_x}{P/R_M} \doteq 60.$$

FOR $T = 0.6875\text{ IN}$

$r_o = (26/\pi)^{1/2} = 2.877\text{ IN}$

$R_M = 190.0625 + .6875/2 = 190.40625\text{ IN}$

$\gamma = 276.95$

$\beta = 0.0132$

AND:

$$\sigma_\phi = \left(\frac{N\phi}{P/R_M}\right) * \frac{P}{R_M T} = \frac{(33.0)(60.0)}{(190.40625)(.6875)} = 15.13\text{ ksi}$$

$\sigma_x = \sigma_\phi = 15.13\text{ ksi}$

B. SPHERE + KNUCKLE (ASSUME KNUCKLE IS SPHERE W/ RAD = R_p)

EXAMINING PAGE 6 OF REFERENCE 7, THEN.

$$\text{FIG. SR-2} - \frac{N_x T}{P} \doteq 0.25; \quad \frac{N_y T}{P} \doteq 0.125 - \text{SPHERE}$$

$$\doteq 0.22 \qquad \doteq 0.10 - \text{KNUCKLE}$$

FOR SPHERE: $T = 0.875\text{ IN.}$, $r_o = 2.877\text{ IN}$, $R_M = 344.375\text{ IN}$, $U = 0.1657$

KNUCKLE: $T = 0.875\text{ IN}$, $r_o = 2.877\text{ IN}$, $R_p = 190.5\text{ IN}$, $U = 0.2228$

AND:

$$\sigma_X^{SPHERE} = \left(\frac{N_X T}{P}\right) * \frac{P}{T^2} = 10.78\ ksi \qquad \sigma_X^{KNUCKLE} = 9.48\ ksi$$

$$\sigma_Y^{SPHERE} = \left(\frac{N_Y T}{P}\right) * \frac{P}{T^2} = 5.39\ ksi \qquad \sigma_Y^{KNUCKLE} = 4.31\ ksi$$

FROM REFERENCE L, PAGE 13A-26, THE PRIMARY STRESSES IN THE SHELL RESULTING FROM JET LOADINGS PLUS INTERNAL PRESSURE ARE LIMITED TO THE YIELD OF THE MATERIAL AT 340°F, OR $F_Y = 33{,}260$ psi. FROM PAGE IV.9.2.45, THE CYLINDER STRESSES ARE:

$$\sigma_{HOOP}^{MAX} = 12984\ psi$$

$$\sigma_{LONG}^{MAX} = 6243\ psi$$

ADDING TO THESE THE STRESSES FROM THE PREVIOUS PAGE, WILL GET A HOOP STRESS OF 28.1 ksi < 33.26 ksi ∴ OK
(THE Q-PHI STRESS HAS BEEN IGNORED SINCE IT IS SMALL)
FROM PAGE IV.9.2.93, THE SPHERE STRESSES ARE:

$$\sigma_{HOOP}^{MAX} = -5299\ psi$$

$$\sigma_{LONG}^{MAX} = 8181\ psi$$

ASSUMING THAT THE Q-PHI STRESSES ARE IGNORED, AS ABOVE, AND THAT THE MAXIMUM STRESS INTENSITY IS THE SUM OF THE ABSOLUTE VALUES OF ALL STRESSES, THEN:

$$S.I. = 5.3 + 8.2 + 10.8 + 5.4 = 29.7\ ksi < 33.26\ ksi \quad \therefore OK$$

FROM PAGE IV.9.2.82, THE MAX. KNUCKLE MEMBRANE STRESS INTENSITY IS 19,398 psi, OR CONSERVATIVELY, THE MAX. S.I. IS:

$$S.I. = 9.5 + 4.3 + 19.4 = 33.2\ ksi < 33.26\ ksi \quad \therefore OK$$

EXTERNAL PRESSURE:

FROM REFERENCE 1, PAGE 3A-22, THE CAVITY OUTSIDE THE TOP HEAD IS FLOODED TO ELEV. 606'-10½" (REF. 1, DWG. 5799), CAUSING A HYDOSTATIC EXTERNAL PRESSURE ON THE CYLINDER AND TOROSPHERICAL HEAD.

A. CYLINDER:
USING REFERENCE 2, PARAGRAPH NE-3133.3,

$L = 88\frac{7}{8}" + \frac{1}{3}(95.25) + 3\frac{1}{8} + 12.88"^{*} = 136.62"$

$D_o = 2(190 + \frac{3}{4}) = 381.5"$

$t = 0.6875"$

$L/D_o = 0.358$

$D_o/t = 554.91$

$B = 4800.$ psi

$P_{ALL} = \frac{4B}{3D_o/t} = 11.533 * 1.2 = 13.8$ psi FOR FLOODED CONDITION W/ ½SSE E.Q.

WITH THE BOTTOM EDGE OF THE CYLINDER AT ELEVATION 583'-1¼" + 3⅛" = 583'-4⅜", THE HYDROSTATIC HEAD IS 606'-10½ − 583'-4⅜ = 282.125". FROM REFERENCE 1, FIGURE 4, THE "g" FACTOR AT THE OUTER WATER SEAL PLATE IS 0.34, OR THE MAXIMUM EXTERNAL PRESSURE ON THE CYLINDER IS:

$P = (62.4)(282.125)(1.34)/1728 = 13.7$ psi $< P_{ALL}$

THERFORE, THE CYLINDER IS O.K. UNDER EXTERNAL PRESSURE.

B. TOROSPHERICAL HEAD:
USING REFERENCE 2, PARAGRAPH 3133.4,

$R = 343.875$

$t = 0.875$

*FROM PAGE IV-10.3.2 OF THIS FINAL STRESS REPORT

$R/t = 393.0$

$R/100t = 3.93$

$B = 4400$

$P_{ALL} = \frac{B}{R/t} = 11.196 \times 1.2 = 13.4 \text{ psi}$

THE CYLINDER IS 88.875" LONG, OR THE PRESSURE AT THE BOTTOM OF THE TORUS SECTION IS:

$P = (62.4)(282.125 - 88.875)(1.34)/1728 = 9.4 \text{ psi}$

THEREFORE, THE TORISPHERICAL HEAD IS ADEQUATE.

OTHER DESIGN LOADINGS:

REFERENCE 1 STIPULATES CERTAIN LOADS AND LOADING COMBINATIONS WHICH MUST BE USED IN THE TOP HEAD DESIGN. BELOW ARE LISTED THESE LOADINGS, AND JUDGEMENT AS TO WHETHER THEY ARE DESIGN-GOVERNING OR NOT.

1. PROOF LOAD TEST PRESSURE:
   DURING TEST, THE VESSEL IS SUBJECTED TO A TEST PRESSURE OF 51.8 psi. IF IT CAN BE ASSUMED THAT STRESS IS DIRECTLY PROPORTIONAL TO INTERNAL PRESSURE, AND THE SHELL IS STRESSED TO 1.1 SM UNDER 45 psi, THEN, THE SHELL STRESS AT TEST IS CALCULATED AS:

   $$\sigma_{TEST} = \frac{(51.8)(1.1)(19300)}{45.0} = 24.4 \text{ ksi}$$

   FROM PARAGRAPH NE-6222 OF REFERENCE 2, THE ALLOWABLE STRESS IS 0.9Fy AT TEST TEMPERATURE, OR σ_{ALL} = 34.2 ksi. THIS CONDITION SHOULD THEREFORE PROVE INCONSEQUENTIAL.

2. DEAD LOAD:
   ANY STRESSES CAUSED BY DEAD LOAD WILL BE INCONSEQUENTIAL.

3. LATERAL WIND AND EARTHQUAKE:
   THESE LOADS WILL BE INCONSEQUENTIAL.

4. LOCA 2 psi VACUUM:
   THE HEAD WAS DESIGNED FOR AT LEAST 9 psi EXTERNAL PRESSURE. THIS LOADING SHOULD THEREFORE PROVE INCONSEQUENTIAL.

THE HEAD PICTURED IN FIGURE III.9.1 SHOULD THEREFORE SATISFY THE DESIGN SPECIFICATION (REFERENCE 1).

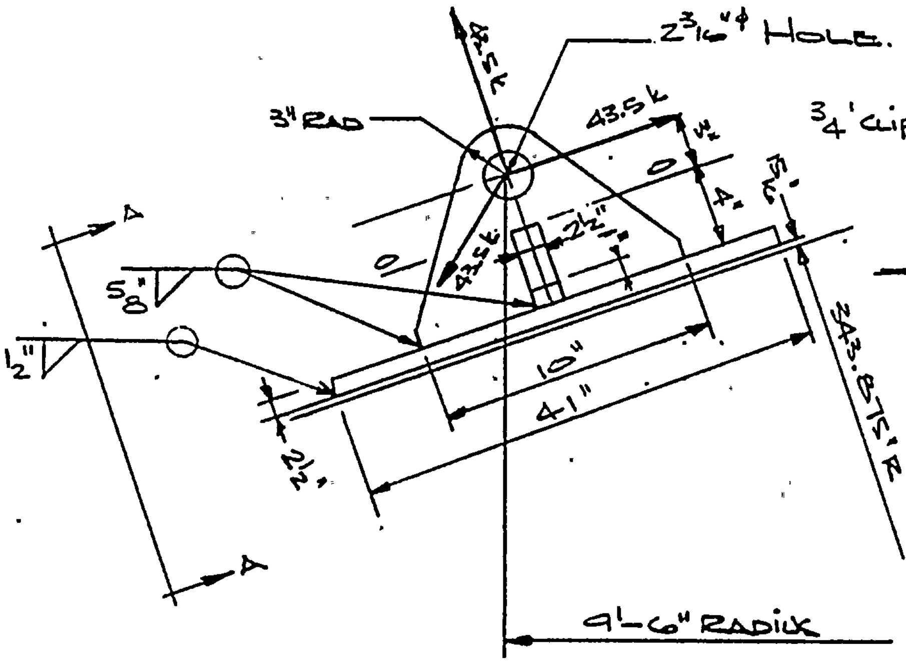
PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 9
PREPARED BY / DATE: RAM / 12-26-72					ARTICLE: 3
CHECKED BY / DATE: BJW / 1-9-73					PAGE: 1
REVISION NUMBER:					

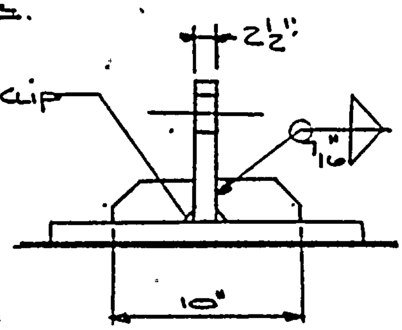
LIFTING LUGS:

FOUR LIFTING LUGS WILL BE DESIGNED TO CARRY THE TOP HEAD. THE DESIGN WILL BE BASED ON TWO LUGS CARRYING THE ENTIRE DEAD WEIGHT IN ANY OF THREE DIRECTIONS, ACTING SIMULTANEOUSLY. FROM SECTION I, SUBSECTION 3 OF THIS FINAL STRESS REPORT, THE TOP HEAD WEIGHT IS

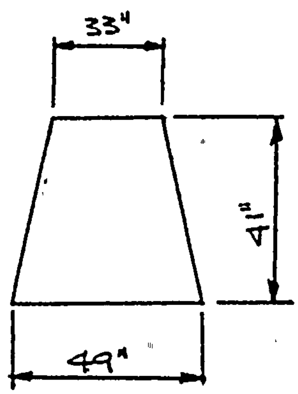
$$W_T = 23.1 + 23.8 + 26.9 + \frac{25.7}{2} = 86.7 \text{ kips}$$

OR, EACH LUG MUST CARRY 43½ kips. THE LUGS ALSO WILL BE DESIGNED FOR A "CROSBY - LAUGHLIN" G-213 OR S-213 25 TON SHACKLE. (2"φ PIN)





VIEW A-A



PAD PLATE

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 9
PREPARED BY / DATE: RAM/12-26-72	RAM/10-23-73				ARTICLE: 3
CHECKED BY / DATE: BSW / 1-9-73	DCL/10-23-73				PAGE: 2
REVISION NUMBER:	B				

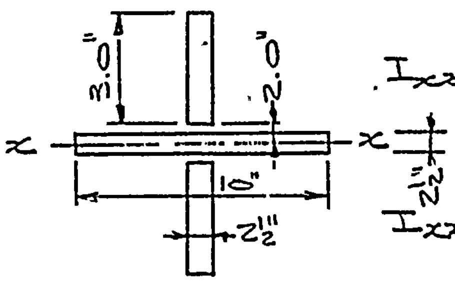
CHECK SHEAR AT $2\frac{3}{16}$"φ HOLE:

ASSUME SA516-GR70 MATERIAL, $2\frac{1}{2}$" THICK
USE AISC ALLOWABLE FOR SHEAR (REFERENCE 3)
OF $0.4 F_Y = 15.2$ ksi. CONSERVATIVELY, THE SHEAR
LENGTH IS $2\frac{1}{2} * (3 - 1\frac{3}{32}) = 4.766$", OR,

$$\tau_V = \frac{P}{A} = \frac{43.5}{(4.766)(2.)} = 4.6 \text{ ksi} < 15.2 \text{ ksi} \quad \therefore \underline{OK}$$

CHECK BENDING IN LUG:

BELOW IS PICTURED THE SMALLEST BENDING
SECTION FOR THE LUG AT ITS BASE:



$$I_{xx} = \frac{(2)(2\frac{1}{2})(3.0)^3}{12} + (2)(2\frac{1}{2})(3) * (3.5)^2 + \frac{(10)(2\frac{1}{2})^3}{12}$$

$$I_{xx} = 208.02 \text{ IN}^4$$

$$\tau_B = \frac{My}{I} = \frac{[(43.5)(7)](5)}{208.02} = 7.32 \text{ ksi} < 0.6 F_Y \quad \therefore \underline{OK}$$

AT SECTION 0-0, W/ $\ell = 8$", $\tau_B = \frac{(43.5)(3)(6.0)}{(8.0)(2.5)^2} = 15.7$ ksi $< .75 F_Y \therefore \underline{OK}$

CHECK SHEAR AT LUG BASE:
AREA $= 10 * 2\frac{1}{2} + (2)(3.0)(2\frac{1}{2}) = 40.0 \text{ IN}^2$

$$\tau_V = \frac{P}{A} = \frac{43.5}{(2)(3)(2\frac{1}{2})} = 2.90 \text{ ksi} < 0.4 F_Y \quad \therefore \underline{OK}$$

CHECK STRESSES IN PAD PLATE:

ASSUME A 41"φ PAD PLATE TO APPROXIMATE
THE TRAPAZOIDAL SHAPE. USE ROARK (REFERENCE 5)
CASES 7 AND 10 TO ANALYZE THE PLATE,
ASSUMING AN EFFECTIVE CIRCULAR LOAD OF
RADIUS GIVEN BY:

$$r_{EFF} = \left(\frac{AREA}{\pi}\right)^{1/2} = \left(\frac{(10)(2\frac{1}{2}) + (2)(2\frac{1}{2})(3.0)}{\pi}\right)^{1/2}$$

$r_{EFF} = 3.568$ IN

FROM ROARK CASE 5, W/ $a = 20\frac{1}{2}$ IN, $r_o = 3.568$ IN,
$M = 43.5 * 9\frac{1}{2} = 413.25$ IN-kips, AND $t = 2\frac{1}{2}''$,

$$k = \frac{0.49\,a^2}{(r_o + 0.70a)^2}$$

$$S_R = \frac{3M}{4\pi t^2 r_o}\left[1 + \left(\frac{m+1}{m}\right)\log\frac{2(a - r_o)}{ka}\right]$$

$S_R = 9.86$ ksi AT $r = r_o$

FROM ROARK CASE 2, W/ $a = 20\frac{1}{2}$ IN, $r_o = 3.568$ IN
$W = 43.5$ kips, AND $t = 2\frac{1}{2}''$,

$$S_R = \frac{3W}{2\pi m t^2}\left[(m+1)\log\frac{a}{r_o} - (m-1)\frac{r_o^2}{4a^2} + m\right]$$

$S_R = 10.86$ ksi AT $r = 0.0$

OR, TOTAL STRESS IN PLATE IS

$\sigma_{TOT} = 10.86 + (9.86)(1.4142) = 24.80$ ksi
WHICH IS LESS THAN $0.75F_y = 28.5$ ksi $\therefore$ OK

CHECK STRESSES IN 7/8" CORRODED SHELL:

THE ANALYSIS WILL BE BASED ON WRC BULLETIN No. 107 (REFERENCE 7), ASSUMING A HOLLOW SQUARE ATTACHMENT ON A SPHERICAL SHELL.
THE MOMENT WILL BE BASED ON AN ARM TO THE INSIDE OF THE SHELL, OR,

$$M = (43.5)\left[3 + 4 + 2\frac{1}{2} + \frac{7}{8}\right] = 451.3125 \text{ IN kips}$$

THE MAXIMUM VALUES FROM CURVES SP-6 OR SP-9 AND SM-6 OR SM-9 WILL BE USED.

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764	PDM	FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				SUBSEC: 9
PREPARED BY / DATE: RAM/12-27-72				ARTICLE: 3
CHECKED BY / DATE: BJW / 1-9-73				PAGE: 4
REVISION NUMBER:				

1. Applied Loads*

- Radial Load, P = 43.5
- Shear Load, V_1 = 43.5
- Shear Load, V_2 = 43.5
- Overturning Moment, M_1 = 451.3125
- Overturning Moment, M_2 = 451.3125
- Torsional Moment, M_T = 0.0

2. Geometry

- Vessel Thickness, T = 0.875
- Vessel Mean Radius, R_m = 344.375
- Nozzle Thickness, t = 0.50
- Nozzle Mean Radius, r_m = 0.0
- Nozzle Outside Radius, r_o = 0.0

3. Geometric Parameters

- $\gamma = \frac{R_m}{T}$ = $\frac{41}{.875}$ = 46.86
- $\rho = \frac{T}{t}$ = 1.75
- $U = \frac{c_o}{\sqrt{R_m T}}$ ($\sqrt{R_m T}$ .875) = 1.350

FROM REFERENCE 7, PAGE 7:

41" × 41"

4. Stress Concentration Factors

due to:
- membrane load, K_n = 1.0
- bending load, K_b = 1.0

NOTE: Enter all force values in accordance with sign convention

From Fig.	Read curves for	Compute absolute values of stress and enter result**	Au	AL	Bu	BL	Cu	CL	Du	DL
SP-1 to 10	$\frac{N_x T}{P}$ = .022	$K_n\left(\frac{N_x T}{P}\right)\cdot\frac{P}{T^2}$ = 1.25	-	-	-	-	-	-	-	-
↓	$\frac{M_x}{P}$ = .018	$K_b\left(\frac{M_x}{P}\right)\cdot\frac{6P}{T^2}$ = 6.14	-	+	-	+	-	+	-	+
SM-1 to 10	$\frac{N_x T\sqrt{R_mT}}{M_1}$ = .022	$K_n\left(\frac{N_x T\sqrt{R_mT}}{M_1}\right)\cdot\frac{M_1}{T^2\sqrt{R_mT}}$ = .975					-	-	+	+
	$\frac{M_x\sqrt{R_mT}}{M_1}$ = .025	$K_b\left(\frac{M_x\sqrt{R_mT}}{M_1}\right)\cdot\frac{6M_1}{T^2\sqrt{R_mT}}$ = 5.09						+	+	-
	$\frac{N_x T\sqrt{R_mT}}{M_2}$ =	$K_n\left(\frac{N_x T\sqrt{R_mT}}{M_2}\right)\cdot\frac{M_2}{T^2\sqrt{R_mT}}$ =	-	-	+	+				
↓	$\frac{M_x\sqrt{R_mT}}{M_2}$ =	$K_b\left(\frac{M_x\sqrt{R_mT}}{M_2}\right)\cdot\frac{6M_2}{T^2\sqrt{R_mT}}$ =	-	+	+	-				
Add algebraically for summation of σ_x =			15.23 = BENDING + MEMB.				2.09 = MEMBRANE			
SP-1 to 10	$\frac{N_y T}{P}$ = .185	$K_n\left(\frac{N_y T}{P}\right)\cdot\frac{P}{T^2}$ = 10.51	-	-	-	-	-	-	-	-
↓	$\frac{M_y}{P}$ = .017	$K_b\left(\frac{M_y}{P}\right)\cdot\frac{6P}{T^2}$ = 5.80	-	+	-	+	-	+	-	+
SM-1 to 10	$\frac{N_y T\sqrt{R_mT}}{M_1}$ = .208	$K_n\left(\frac{N_y T\sqrt{R_mT}}{M_1}\right)\cdot\frac{M_1}{T^2\sqrt{R_mT}}$ = 9.06					-	-	+	+
	$\frac{M_y\sqrt{R_mT}}{M_1}$ = .029	$K_b\left(\frac{M_y\sqrt{R_mT}}{M_1}\right)\cdot\frac{6M_1}{T^2\sqrt{R_mT}}$ = 5.91					-	+	+	-
	$\frac{N_y T\sqrt{R_mT}}{M_2}$ =	$K_n\left(\frac{N_y T\sqrt{R_mT}}{M_2}\right)\cdot\frac{M_2}{T^2\sqrt{R_mT}}$ =	-	-	+	+				
↓	$\frac{M_y\sqrt{R_mT}}{M_2}$ =	$K_b\left(\frac{M_y\sqrt{R_mT}}{M_2}\right)\cdot\frac{6M_2}{T^2\sqrt{R_mT}}$ =	-	+	+	-				
Add algebraically for summation of σ_y =			29.28 = BENDING + MEMB				17.57 = MEMBRANE			
Shear stress due to load, V_1		$\tau_1 = \frac{V_1}{4 c_1 T}$ = .61					-	-	+	+
Shear stress due to load V_2		$\tau_2 = \frac{V_2}{\pi c_2 T}$ =	+	+	-	-				
Shear stress due to torsion, M_T		$\tau_1 = \tau_2 = \frac{M_T}{2\pi r_o^2 T}$ = 0.0	+	+	+	+	+	+	+	+
Add algebraically for summation of τ =										

COMBINED STRESS INTENSITY, S

When $\tau \neq 0$ & σ_y have like signs: $S = \frac{1}{2}\left[\sigma_x + \sigma_y + \sqrt{(\sigma_x - \sigma_y)^2 + 4\tau^2}\right]$

When $\tau = 0$, S = largest of σ_x, σ_y or $|\sigma_x - \sigma_y|$

When σ_x & σ_y have unlike signs: $S = \sqrt{(\sigma_x - \sigma_y)^2 + 4\tau^2}$

S.I. = 29.30 — MEMB. + BENDING < 1.5 SM BUT ≤

S.I. = 17.59 — MEMB. < 1.0 SM

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV
					SUBSEC: 9
PREPARED BY / DATE: RAM/12-27-72	RAM/10-23-73				ARTICLE: 3
CHECKED BY / DATE: BLW / 1-9-73	DLL/10-23-73				PAGE: 5
REVISION NUMBER:	B				

CHECK WELDING:

FOR THE WELD OF THE LUG TO PAD PLATE, $M = 43.5 \times 7 = 304.5$ IN kips, AND V AND T = 43.5 kips. THE MOMENT OF INERTIA OF THE WELD, CONSIDERING IT AS A LINE, IS:

$$I_{xx} = \frac{(3.0)^3(4)}{12} + (4)(3.0)(3.5)^2 + (2)(2\tfrac{1}{2})(5)^2 + 2\left(\frac{2\tfrac{1}{2}}{12}\right)^3 + (2)(10)\left(\frac{2\tfrac{1}{2}}{2}\right)^2$$

$$= 314.85 \text{ IN}^3$$

AND $S_{XX} = \frac{I}{y} = \frac{314.85}{5} = 62.97 \text{ IN}^2$

THE TOTAL LENGTH OF WELD IS:

$$L = 2 \times 10 + 4 \times 2.5 + 4 \times 3.0 = 42.0 \text{ IN}$$

$$\therefore f_B = \frac{304.5}{62.97} = 4.84 \text{ K/IN}.$$

$$f_{V_X} = \frac{43.5}{42.0} = 1.04 \text{ K/IN} = f_{V_Y}$$

$$f_T = \sigma_V = 1.04 \text{ K/IN}.$$

AND

$$f_{TOT} = \left[(\sigma_B + \sigma_T + \sigma_{V_X})^2 + \sigma_{V_Y}^2\right]^{\frac{1}{2}} = 7.00 \text{ K/IN}$$

OR

$$\sigma_{TOT} = \frac{f_{TOT}}{\text{THROAT}} = \frac{7.00}{(.625)(.7071)} = 15.84 \text{ ksi} \le 21 \text{ ksi}$$

FOR E-70 ELECTRODE
$\therefore$ OK

FOR WELD TO SHELL, $M = 43.5 \times 9\tfrac{1}{2} = 413.25$ IN kips AND $T = V = 43.5$ kips

$$S_{XX} \doteq bd + \frac{d^2}{3} = (41)(33) + \frac{33^2}{2} = 1897.5 \text{ IN}^2 \; ; \; L \doteq 66 + 82$$

THEREFORE,

$$f_B = \frac{413.25}{1897.5}$$

$$f_V = f_T = \frac{43.5}{148.0}$$

AND IT IS OBVIOUS THAT THE 1/2" FILLET WELD WILL WORK

PITTSBURGH - DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL	CONTRACT NO. 12764		PDM	FINAL STRESS REPORT	SECTION: IV
PREPARED BY / DATE: RAM/12-28-72					SUBSEC: 9
CHECKED BY / DATE: EJW / 1-9-73					ARTICLE: 4
REVISION NUMBER:					PAGE: 1

FLANGE SUPPORT FEET:

SUPPORT FEET WILL BE DESIGNED TO CARRY THE TOP HEAD WHEN IT IS REMOVED FROM THE CONTAINMENT VESSEL. THE GEOMETRY WILL BE AS FOLLOWS:

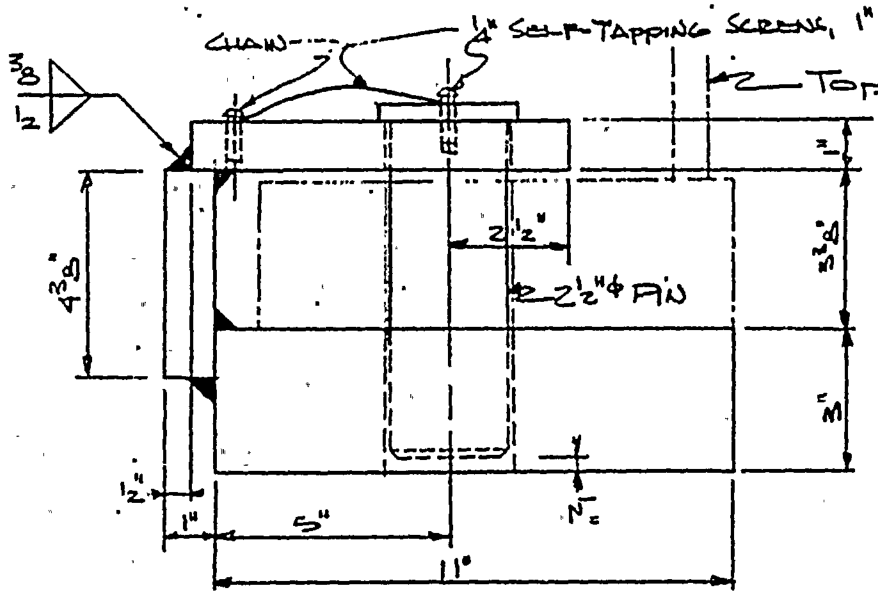


PLATE MATERIAL OF ASTM B-209 ALLOY 5456. ALL PLATE MAT'L 4½" WIDE.

ASSUME BEARING ALLOWABLE OF CONCRETE ON WHICH SUPPORT FEET REST IS 1500 psi. FOR TOTAL HEAD WEIGHT OF 86.7 kips (PAGE IV.9.3.1), AND FOUR SUPPORT FEET, THE ACTUAL BEARING STRESS IS:

$$\sigma_B = \frac{86.7}{(4)(11)(4.5)} = 438\ \text{psi} < 1500\ \text{psi} \quad \therefore \underline{OK}$$

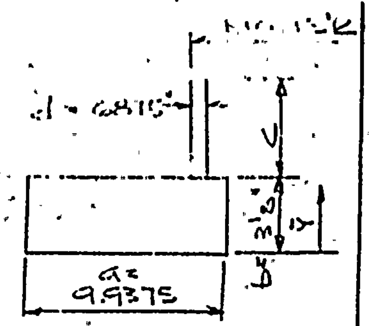
TO EXAMINE THE STRESSES IN THE FLANGE CAUSED BY RESTING ON FOUR SUPPORTS, WE WILL CONSIDER SINGLE SPANS WHICH ARE FIXED TO BOTH SLOPE AND ROLL AT THEIR ENDS. (SEE ROARK - REFERENCE 5 - PAGE 169)

$W = (86.7)/[(2\pi)(190.4625)] = 72.470\ \#/in$

$\theta = 90° = \pi/2$ RADIANS

$R = 194.53125\ in$

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 9
PREPARED BY / DATE: KAM/12-28-72					ARTICLE: 4
CHECKED BY / DATE: EJW / 1-9-73					PAGE: 2
REVISION NUMBER:					



$c = \frac{1.10}{2}\sqrt{D_o t} = 8.91$

$\bar{y} = \frac{(9\frac{15}{16})(3\frac{1}{8})^2/2 + (8.91)(.6875)(7.58)}{(9\frac{15}{16})(3\frac{1}{8}) + (8.91)(\frac{11}{16})}$

$\bar{y} = 2.554$ IN

FROM REFERENCE 5, PAGE 198, CASE 18,

$$K_1 = ab^3\left[\frac{1}{3} - .21\frac{b}{a}\left(1 - \frac{b^4}{12a^4}\right)\right] = 81.08$$
$$K_2 = cd^3\left[\frac{1}{3} - .105\frac{d}{c}\left(1 - \frac{d^4}{192c^4}\right)\right] = 0.94$$
$$K = 82.02$$

$$I = \frac{(9.9375)(3\frac{1}{8})^3}{12} + (9.9375)(3\frac{1}{8})(.9915)^2 + \frac{(.6875)(8.91)^3}{12} + (8.91)(.6875)(5.026)^2 = 251.06 \text{ IN}^4$$

$$G = \frac{E}{2(1+\nu)} = 10.73 \times 10^6 \text{ psi} \quad w/ \; E = 27.9 \times 10^6 \text{ psi}$$

$$GK\left[T_o\theta + M_o - \frac{wR^2\theta^2}{2} + wR^2\right] + EI\left[T_o\theta - M_o - \frac{wR^2\theta^2}{2} + 3wR^2 - wR^2\theta\right] = 0.0 \quad (1)$$

$$M_o - T_o - wR^2 + \frac{wR^2\theta}{2} = 0.0 \quad (2)$$

SOLVING (2) FOR M_o,

$$M_o = T_o + wR^2 - \frac{wR^2\theta}{2}$$

AND SUBSTITUTING INTO (1), GET:

$T_o = 65.96$ IN kips $= T_{MAX}$

$M_o = 654.50$ IN kips $= M_{MAX}$

ALSO,

$V_o = \frac{1}{2}wR\theta = 11.07$ kips

THEREFORE, THE STRESSES ARE:

$$\sigma_N = \frac{My}{I} = \frac{(654.50)(9.481)}{(251.06)} = 24.72 \text{ ksi}$$

$$\tau_T \doteq \frac{T(3a + 1.8b)}{8a^2b^2} = \frac{(65.96)[(3)(9.9375) + (1.8)(3\frac{1}{8})]}{(8)(9.9375)^2(3.125)^2} = 303 \text{ psi}$$

$$\tau_V = \frac{V}{A} = \frac{11.07}{(9.9375)(3.125) + (8.91)(.6875)} = 298 \text{ psi}$$

PITTSBURGH - DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
PREPARED BY / DATE: RAM/12-29-72					SUBSEC: 9
CHECKED BY / DATE: BIW / 1-9-73					ARTICLE: 4
REVISION NUMBER:					PAGE: 3

AS SEEN, ALL STRESSES ARE WITHIN ACCEPTABLE ALLOWABLE LIMITS. HOWEVER, FOR CONSERVATISM, EIGHT SUPPORT WILL BE USED.

PITTSBURGH-DES MOINES STEEL COMPANY

VENDOR/CONTRACTOR PRINT FILE NUMBER		
DATE REC'D AUG 5 1974		
BURNS AND ROE, INC. OFFICE COPY		
DESIGN REVIEW		

SECT.	ACTION	INITIAL	DATE
M			
E			
S			
A			

ENGINEERING REVIEW

DATE	INITIAL	ACTION

8108250495

FINAL STRESS REPORT

BR FILE NUMBER 213 00 1545

CONTRACT

SECTION IV

WASHINGTON PUBLIC POWER SUPPLY SYS.
Hanford No. 2
W. O. 2808

SUBSECTION 2

BURNS AND ROE, INC.
ORADELL, N.J.-HEMPSTEAD, N.Y.-LOS ANGELES, CAL.

REVISION A

REVIEWED AS CHECKED BELOW

- [x] APPROVED FOR FABRICATION .... A
- [ ] NOT APPROVED .... NA
- [ ] APPROVED AS NOTED FOR FABRICATION ..... AN
- [ ] RELEASED AS PRELIMINARY INFORMATION ..... P

SUBJECT TO ALL CONTRACTUAL PROVISIONS

THIS REVIEW DOES NOT IMPLY ACCEPTANCE OF ANY MATERIAL OR EQUIPMENT NOT FULFILLING ALL SPECIFICATION REQUIREMENTS.

PROCESSED BY [signature] DATE 9-20-74

DESIGN AND ANALYSIS

OF CONE SHELL SECTION

EL. 500'-8¼" TO EL. 573'-3¼"

THIS SECTION REVIEWED BY [signature]

TITLE PROJECT ENGINEER

PREPARED BY/ DATE: JFS/11-6-72
CHECKED BY/ DATE:
REVISION NUMBER:

REVISION PAGE

Rev.	Page / Dwg.	Description	Page / Dwg.	Description	Page / Dwg.	Description
A Art. 1	5-9	Revised	26- 36.1	Revised		
Art. 3	1-10	Added				

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS: HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV SUBSEC: 2 ARTICLE: PAGE: 1
PREPARED BY / DATE: JKS/7-10-73					
CHECKED BY / DATE: DCL/8-22-73					
REVISION NUMBER:					

INTRODUCTION:

THE FOLLOWING PAGES CONTAIN THE DESIGN FOR THE DRYWELL CONE SHELL. THIS INCLUDES ALL SHELL COURSES STARTING FROM EL. 500'-8¼ AND GOING UP TO EL. 573'-3¼ (SEE FIGURE II.8.3). THE DESIGN OF THE WELDING RINGS, THE CIRCUMFERENTIAL RINGS AT ELEVATIONS 572'-9¼ AND 558'-0 AND THE PAD PLATES FOR THE UPPER WALKWAY IS ALSO INCLUDED. THE DESIGNS FOR THE UPPER AND LOWER PIPE WHIP SUPPORTS AND FOR ALL BEAM SEATS IN THE DRYWELL AREA ARE NOT INCLUDED IN THIS SUBSECTION.

CONCLUSION:

THE CONCLUSION REACHED BY THIS REPORT IS THAT THE DRYWELL CONE AS PRESENTED IS ADEQUATE FOR ALL DESIGN PROVISIONS. THIS IS ALSO TRUE FOR THE RING STIFFENERS AT ELEVATIONS 572'-9¼ AND 558'-0, THE WELDING RINGS AT ELEVATION 572'-3 AND BELOW AND FOR THE UPPER WALKWAY PAD PLATES.

List of References:

1. Burns and Roe, Inc., Bidding Documents and Plans and Specifications, Specification 2808-213 Primary Containment Vessel Contract No. 213, for WPPSS, Hanford No. 2.

2. ASME, Boiler and Pressure Vessel Code, Section III, "Nuclear Power Plant Components", 1971, including 1972 Summer Addenda, New York

3. AISC, Specification For the Design, Fabrication and Erection of Structural Steel For Buildings, "Manual of Steel Construction", Seventh Edition, New York, 1970

4. ASME, Boiler and Pressure Vessel Code, Section VIII, "Pressure Vessels", Division 1, 1971, including 1972 Summer Addenda, New York.

5. Roark, Raymond J., "Formulas For Stress and Strain", Fourth Edition, McGraw-Hill Book Company, New York, 1965

6. ASCE, Transactions, "Paper No. 3269--Wind Forces on Structures", New York, Vol. 126, 1961.

7. Wichman, K. R., et. al., Welding Research Council Bulletin No. 107, "Local Stresses in Spherical and Cylindrical Shells Due to External Loadings", Third Printing, April 1972.

8. Bijlaard, P. P., Welding Research Council Bulletin No. 50, "Additional Data on Stresses in Cylindrical Shells Under Local Loading", May 1959.

9. Blodgett, Omer W., "Design of Welded Structures", The James F. Lincoln Arc Welding Foundation, Cleveland, Ohio, 1966.

10. Logcher, R. D. et. al., ICES STRUDL - II Engineering User's Manual, Volume 1, Frame Analysis, Department of Civil Engineering, M. I. T., Cambridge, Mass. R68-91, Novmeber 1968.

11. Logcher, R. D., et. al., ICES STRUDL - II Engineering User's Manual Volume 2, Second Edition, Additional Design and Analysis Facilities, Department of Civil Engineering Research Report R70-77, Massachusetts Institute of Technology, Cambridge, Massachusetts, June 1971.

List of References: (Cont'd)

12. McDonnell-ECI STRUDL Improvements User's Manual, McDonnell Douglas Automation Company, St. Louis, Missouri, 1972.

13. Winter, George, et. al., "Design of Concrete Structures", Seventh Edition, McGraw-Hill Book Company, New York, 1964.

14. Bijlaard, P. P., "Stresses From Radial Loads and External Moments in Cylindrical Pressure Vessels", supplement to The Welding Journal, December 1955, p. 608-S to 617-S, 1955.

15. Gaylord, G. H. Jr., and Gaylord, G. N., "Design of Steel Structures", McGraw-Hill Book Company, New York, 1957.

16. The NASTRAN User's Manual, Caleb W. McCormick, Editor NASA SP-222(01), Washington, D.C., June 1972.

17. Timoshenko, S., "Strength of Materials", Part I, Third Edition, D. Van Nostran Co., Inc. Princeton, New Jersey, 1955

18. Timoshenko, S., "Strength of Materials", Part II, Third Edition, D. Van Nostran Co., Inc. Princeton, New Jersey, 1956

19. Bruhn, E. F., "Analysis and Design of Flight Vehicle Structures", Tri-State Offset Co., Cincinnati, Ohio, 1965.

20. Salmon, C. G. and Johnson, J. E., "Steel Structures Design and Behavior", Intex Educational Publishers, Scranton, Pennsylvania, 1972.

21. Brownell, L. E. and Young, E. H., "Process Equipment Design", John Wiley and Sons, Inc., New York, New York, 1959.

22. Shanley, F. R., "Basic Structures", John Wiley and Sons, Inc., New York, New York, 1945.

23. Merritt, F. S., "Standard Handbook For Civil Engineers", McGraw-Hill Book Company, New York, 1968.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV SUBSEC: 2 ARTICLE: 1 PAGE: 1
PREPARED BY / DATE: JKS/1-30-73					
CHECKED BY / DATE: DCL/8-22-73					
REVISION NUMBER:					

LOADING COMBINATIONS

THE FOLLOWING LOADING COMBINATIONS WILL BE EXAMINED FOR THE DESIGN OF THE CONE SECTION OF THE DRYWELL.

1. TENSION DESIGN = 45 PSI + ½ SSE E.Q. SHEAR
2. HOOP COMPRESSION DESIGN = -4 PSI
3. LONGITUDINAL COMPRESSION DESIGN = WELDING PAD L.L. + VESSEL D.L. + PLATFORM L.L. + FILLER MAT'L D.L. + REFUELLING BELLOWS LOCA LOAD + SSE EQ ACTING VERTICALLY (g-FACTOR = 1.45) AND HORIZONTALLY + (-2) psi + FILLER MATERIAL -2 PSI PRESSURE LOAD + PIPE RUPTURE LOAD

THESE COMBINATIONS CORRESPOND TO VARIATIONS OF THE INCIDENT CONDITION APPEARING ON PAGE 13A-20 OF REFERENCE 1.

THE OTHER LOADING CONDITIONS WILL NOW BE DISCUSSED AND DETERMINED AS INCONSEQUENTIAL WHEN COMPARED WITH THE ABOVE:

A. PROOF LOAD TEST CONDITION. (SPECIFICATION PARA. 3.4.1.1)

B. FINAL PROOF LOAD TEST CONDITION (SPECIFICATION 3.4.1.2)

C. NORMAL OPERATING CONDITION (SPECIFICATION 3.4.1.3)

SEE PAGES II: 8.1.12. FOR EXPLANATIONS OF A, B + C.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV
PREPARED BY / DATE: DCL/8-23-73					SUBSEC: 2
CHECKED BY / DATE: JM/10-4-73					ARTICLE: 1
REVISION NUMBER:					PAGE: 2

D. REFUELING CONDITION: (SPEC. PARA. 3.4.1.4) THIS IS A COMPRESSIVE CONDITION WHICH CONSISTS OF THE FOLLOWING: **

1. D.L. OF VESSEL AND APPURTENANCES ***
2. PLATFORM LOADS
3. FILLER MAT'L D.L.
4. 1/2 SSE E.Q. (VERTICALLY & HORIZONTALLY)
5. WELDING PAD L.L.
6. WATER LOAD OF 23-6 ON WATER SEAL
7. REFUELING BELLOWS LOAD
8. EXTERNAL PRESSURE OF 2 PSI - FILLER MAT'L

EXAMINING COMBINATIONS 1 AND 2 FROM THE PREVIOUS PAGE, IT IS SEEN THAT THEY CONTROL OVER THE ABOVE LOADS.

FOR LONGITUDINAL COMPRESSION, CALCULATE THE LOADS SPECIFIED BY ITEMS 6 AND 7 ABOVE:

THE TOTAL LOAD FOR ITEMS 6 AND 7 IS 696.6K (SEE II.8.1.3)

THE SUM OF ITEMS 1,2,3,5,6,7 AND 8, WHEN MULTIPLIED BY A VERTICAL g-FACTOR OF 1.23,* IS 17,066.9 K

THIS IS LESS THAN THAT USED IN DESIGN COMBINATION 3 (SEE PAGE II.2.1.5).

*** ITEM 1 IS FROM FIGURE I.3.1
** ITEMS 2,3,5,7 ARE FROM P. II.8.1.136-137.
* THIS OPERATES ONLY ON ITEMS 1,3,5,6 & 7

E. INCIDENT CONDITION: VARIATIONS OF THIS CONDITION LEAD TO THE LOAD COMBINATIONS USED FOR FINAL ANALYSIS (SPEC. 3.4.1.5)

F. FLOODED CONDITION: (SPEC. 3.4.1.8). THIS IS BOTH A LONGITUDINAL COMPRESSION AND HOOP TENSION CONDITION. THE HOOP TENSION IS CAUSED BY FLOODING TO EL. 581-10½. THE PRESSURE AND STRESSES AT THE BOTTOM OF EACH CONICAL SHELL COURSE ARE:

CIRCUMFERENTIAL TENSION STRESSES.

1. CONE #1 T = 13/16 - 1/16 = .75

$$(581\text{-}10\tfrac{1}{2} - 564\text{-}10) * 12 * \frac{62.428}{1728} * 1.20 = 8.866 \text{ PSI}$$

$$\sigma_\theta = \frac{8.866 * 266.837}{.75(.96101)} = 3282.35 \text{ PSI}$$

2. CONE #2 T = 1 - 1/16 = .9375

$$(581\text{-}10\tfrac{1}{2} - 555\text{-}5\tfrac{1}{16}) * 12 * \frac{62.428}{1728} * 1.20 = 13.762 \text{ PSI}$$

$$\sigma_\theta = \frac{13.762 * 299.426}{.9375\,(.96101)} = 4573.77 \text{ PSI}$$

3. CONE #3 T = 1 - 1/16 = .9375

$$(581\text{-}10\tfrac{1}{2} - 546\text{-}6) * 12 * \frac{62.428}{1728} * 1.20 = 18.403 \text{ PSI}$$

$$\sigma_\theta = \frac{18.403 * 330.232}{.9375\,(.96101)} = 6745.41 \text{ PSI}$$

* ALL RADII FROM FIGURE II.8.3, MEAN RADII ARE USED

4. CONE # 4 $T = 1\frac{1}{2} - \frac{1}{16} = 1.4375$

$(581\text{-}10\frac{1}{2} - 537\text{-}6\frac{15}{16}) * 12 * \frac{62.428}{1728} * 1.20 = 23.045$ PSI

$\sigma_\theta = \frac{23.045 * 361.295}{1.4375\,(.96101)} = 6027.02$ PSI

5. CONE # 5 $T = 1\frac{3}{8} - \frac{1}{16} = 1.3125$

$(581\text{-}10\frac{1}{2} - 528\text{-}7\frac{7}{8}) * 12 * \frac{62.428}{1728} * 1.20 = 27.686$ PSI

$\sigma_\theta = \frac{27.686 * 392.034}{1.3125\,(.96101)} = 8605.12$ PSI

6. CONE # 6 $T = 1\frac{7}{16} - \frac{1}{16} = 1.375$

$(581\text{-}10\frac{1}{2} - 519\text{-}8\frac{13}{16}) * 12 * \frac{62.428}{1728} * 1.20 = 32.328$ PSI

$\sigma_\theta = \frac{32.328 * 422.870}{1.375\,(.96101)}$ 10345.59 PSI

7. CONE # 7 $T = 1\frac{1}{2} - \frac{1}{16} = 1.4375$

$(581\text{-}10\frac{1}{2} - 510\text{-}2\frac{9}{16}) * 12 * \frac{62.428}{1728} * 1.20 = 37.281$ PSI

$\sigma_\theta = \frac{37.281 * 455.774}{1.4375\,(.96101)} = 12299.89$ PSI

8. CONE # 8 $T = 1\frac{5}{16} - \frac{1}{16} = 1.25$

$(581\text{-}10\frac{1}{2} - 500\text{-}8\frac{3}{4}) * 12 * \frac{62.428}{1728} * 1.20 = 42.236$ PSI

$\sigma_\theta = \frac{42.236 * 486.566}{1.25\,(.96101)} = 17177.82$ PSI

THE LONGITUDINAL COMPRESSIVE STRESS WILL BE CAUSED BY: *

1. DEAD LOAD = 2870.7 K

* FOLLOWING LOADS ARE CALCULATED ON PAGE II.8.1.136-138

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV
					SUBSEC: 2
PREPARED BY / DATE: DCL/8-23-73	TAW 5-8-74				ARTICLE: 1
CHECKED BY / DATE: JM/10-4-73	ACL/6-26-74				PAGE: 5
REVISION NUMBER:	A				

2. PLATFORM L.L. = 76.20K

3. FILLER MAT'L D.L. = 87.1K

4. WELDING PAD L.L. = 3000K

5. WATER LOAD ON SEAL = 220.2 + 529.5 K ***

6. EXTERNAL PRESSURE OF FILLER = $\pi(487.916^2 - 190^2) \times 2$ ** = 1269 K

7. BELLOWS LOADS = 97.5K *

MULTIPLYING 1, 3 THRU 5 AND 7 BY A 1.35 FACTOR, A TOTAL AXIAL COMPRESSIVE LOAD OF 18,175.8K IS OBTAINED

FROM REFERENCE 1, FIGURE 8., THE MAXIMUM OVERTURNING MOMENTS AT THE BOTTOM OF THE NINE CONES ARE:

25×10^3 FT-K, 40×10^3 FT-K, 55×10^3 FT-K, 78×10^3 FT-K, 103×10^3 FT-K, 135×10^3 FT-K, 160×10^3 FT-K, 190×10^3 FT-K, RESPECTIVELY. THE COMPRESSIVE STRESS IN EACH CONE IS AS FOLLOWS:

*** SEE CALCULATIONS ON PAGE. II.6.1.7

* ASSUME PLANT SHUTDOWN LOAD OF 75 #/IN ON I.S.

** R = 237.315 + (6877.25 − 6008.25) TAN 16.0514 = 487.916

PITTSBURGH - DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV SUBSEC: 2 ARTICLE: 1 PAGE: 6
PREPARED BY / DATE: DCL / 8-23-73	TAH / 5-8-74				
CHECKED BY / DATE: JM / 12-4-73	ACL / 6-26-74				
REVISION NUMBER:	A				

1. CONE #1

$\sigma_A = 18{,}176.8 / \pi * 2 * .96101 * 266.837 * .75$

$\sigma_A = 15.0411$ KSI

$\sigma_B = 25 \times 10^3 \times 12 / \pi * 266.837^2 * .96101 * .75$

$\sigma_B = 1.861$ KSI

$\sigma_{T_C} = 16.902$ KSI

2. CONE #2

$\sigma_A = 18{,}175.8 / \pi * 2 * .96101 * 299.428 * .9375$

$\sigma_A = 10.723$ KSI

$\sigma_B = 40 \times 10^3 \times 12 / \pi * .96101 * 299.428^2 * .9375$

$\sigma_B = 1.892$ KSI

$\sigma_{T_C} = 12.615$ KSI

3. CONE #3

$\sigma_A = 18{,}175.8 / \pi * 2 * .96101 * 330.232 * .9375$

$\sigma_A = 9.723$ KSI

$\sigma_B = 55 \times 10^3 \times 12 / \pi * .96101 * 330.232^2 * .9375$

$\sigma_B = 2.138$ KSI

$\sigma_{T_C} = 11.861$ KSI

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV
PREPARED BY / DATE: DCL/8-23-73	JAW 5-8-74				SUBSEC: 2
CHECKED BY / DATE: JM/10-4-73	ACL/6-26-74				ARTICLE: 1
REVISION NUMBER:	A				PAGE: 7

4. CONE #4

$\sigma_A = 18{,}175.8 / 2 * \pi * .96101 * 1.4375 * 361.295$

$\sigma_A = 5.796$ KSI

$\sigma_B = 78 \times 10^3 \times 12 / \pi * 361.295^2 * .96101 * 1.4375$

$\sigma_B = 1.652$ KSI

$\sigma_{TC} = 7.448$ KSI

5. CONE #5

$\sigma_A = 18{,}175.8 / 2 * \pi * .96101 * 1.3125 * 392.034$

$\sigma_A = 5.850$ KSI

$\sigma_B = 103 \times 10^3 \times 12 / \pi * 392.034^2 * .96101 * 1.3125$

$\sigma_B = 2.030$ KSI

$\sigma_{TC} = 7.88$ KSI

6. CONE #6

$\sigma_A = 18{,}175.8 / 2 * \pi * .96101 * 1.375 * 422.870$

$\sigma_A = 5.177$ KSI

$\sigma_B = 135 \times 10^3 \times 12 / \pi * 422.834^2 * .96101 * 1.375$

$\sigma_B = 2.183$ KSI

$\sigma_{TC} = 7.360$ KSI

7. CONE # 7

σ_A = 18,175.8/2 * π * 455.774 * .96101 * 1.4375

σ_A = 4.594 KSI

σ_B = 160 x 10³ x 12/π * 455.774² * .96101 * 1.4375

σ_B = 2.130 KSI

σ_{Tc} = 6.724 KSI

8. CONE # 8

σ_A = 18,175.8/2 * π * 488.566 * .96101 * 1.25

σ_A = 4.929 KSI

σ_B = 190 x 10³ x 12/π * 488.566² * .96101 * 1.25

σ_B = 2.531 KSI

σ_{Tc} = 7.461 KSI

TOTALING THE LONGITUDINAL COMPRESSIVE STRESS AND ADDING IT TO THE HOOP TENSILE STRESS WILL RESULT IN A STRESS INTENSITY WHICH MUST BE LESS THAN F_y AT 212°F = 34.5 KSI.

1. CONE #1 : S.I. = 20.184 KSI < 34.5 KSI
2. CONE #2 : S.I. = 17.189 KSI < 34.5 KSI
3. CONE #3 : S.I. = 18.606 KSI < 34.5 KSI

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV SUBSEC: 2
PREPARED BY / DATE: DCL/8-23-73	TAW 5-8-74				ARTICLE: 1
CHECKED BY / DATE: JM/10-4-73	ACL/7-1-74				PAGE: 9
REVISION NUMBER:	A				

4. CONE #4 : S.I. = 13.475 KSI < 34.5 KSI.

5. CONE #5 : S.I. = 16.485 KSI < 34.5 KSI.

6. CONE #6 : S.I. = 17.706 KSI < 34.5 KSI.

7. CONE #7 : S.I. = 19.024 KSI < 34.5 KSI

8. CONE #8 : S.I. = 24.638 KSI < 34.5 KSI.

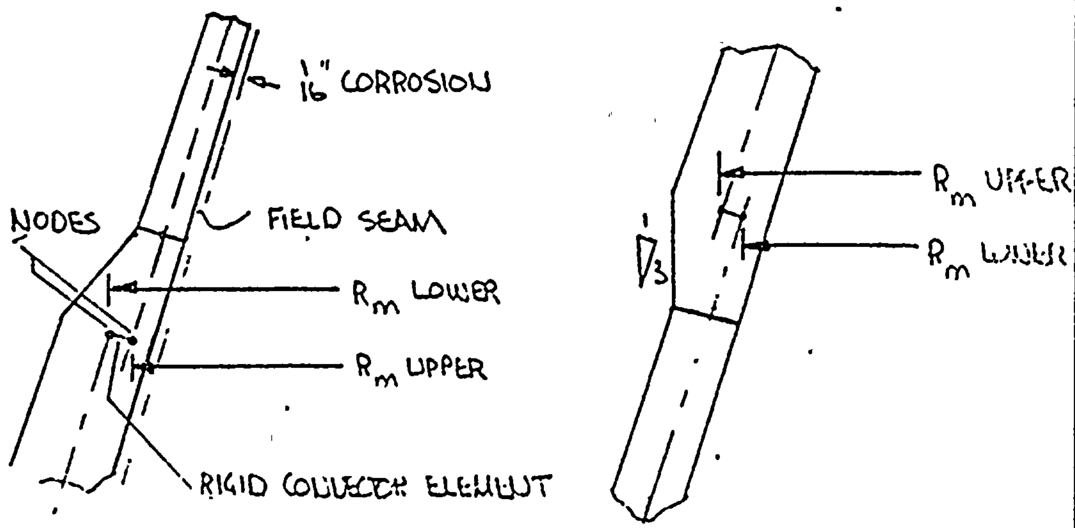
THE DESIGN SATISFIES THE FLOODED CONDITION REQUIREMENTS.

AXISYMMETRIC SHELL ANALYSIS

THE FOLLOWING PAGES CONTAIN THE AXISYMMETRIC SHELL ANALYSIS OF THE DRYWELL CONE USING PDM'S AXISYMMETRIC SHELL PROGRAM AX2 (SEE IV. 2. 2. OF THIS FINAL STRESS REPORT). THE TOP CONE (AT 29.9514°) AND THE BOTTOM 3 INCH PLATE HAVE BEEN INCLUDED SO THAT EDGE DISCONTINUITIES WILL NOT AFFECT THE ANALYSIS.

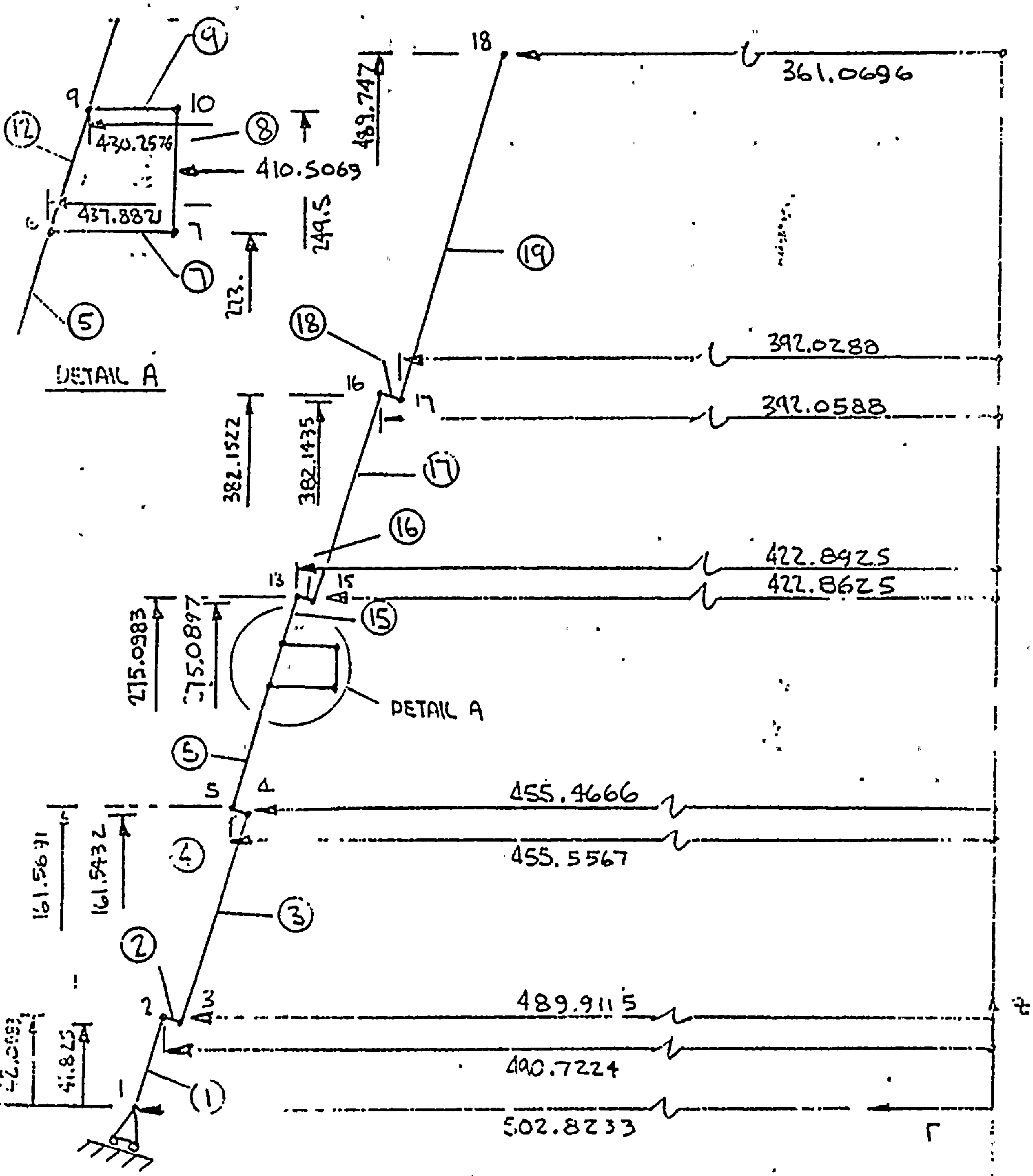
LOADINGS ON THE AX2 MODEL ARE A 45 PSI INTERNAL PRESSURE LOAD (REFERENCE 1 PARA. 3.4.1.5 f) AND THE RESULTANT END CAP LOAD.

THE CONNECTION BETWEEN PLATES OF A DIFFERENT THICKNESS IS ACCOMPLISHED BY USING AX2'S RIGID CONNECTOR ELEMENT IN THE FOLLOWING WAY:



PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 2
PREPARED BY / DATE: DKL/8-24-73					ARTICLE: 1
CHECKED BY / DATE: JM / 10-5-73					PAGE: 11
REVISION NUMBER:					

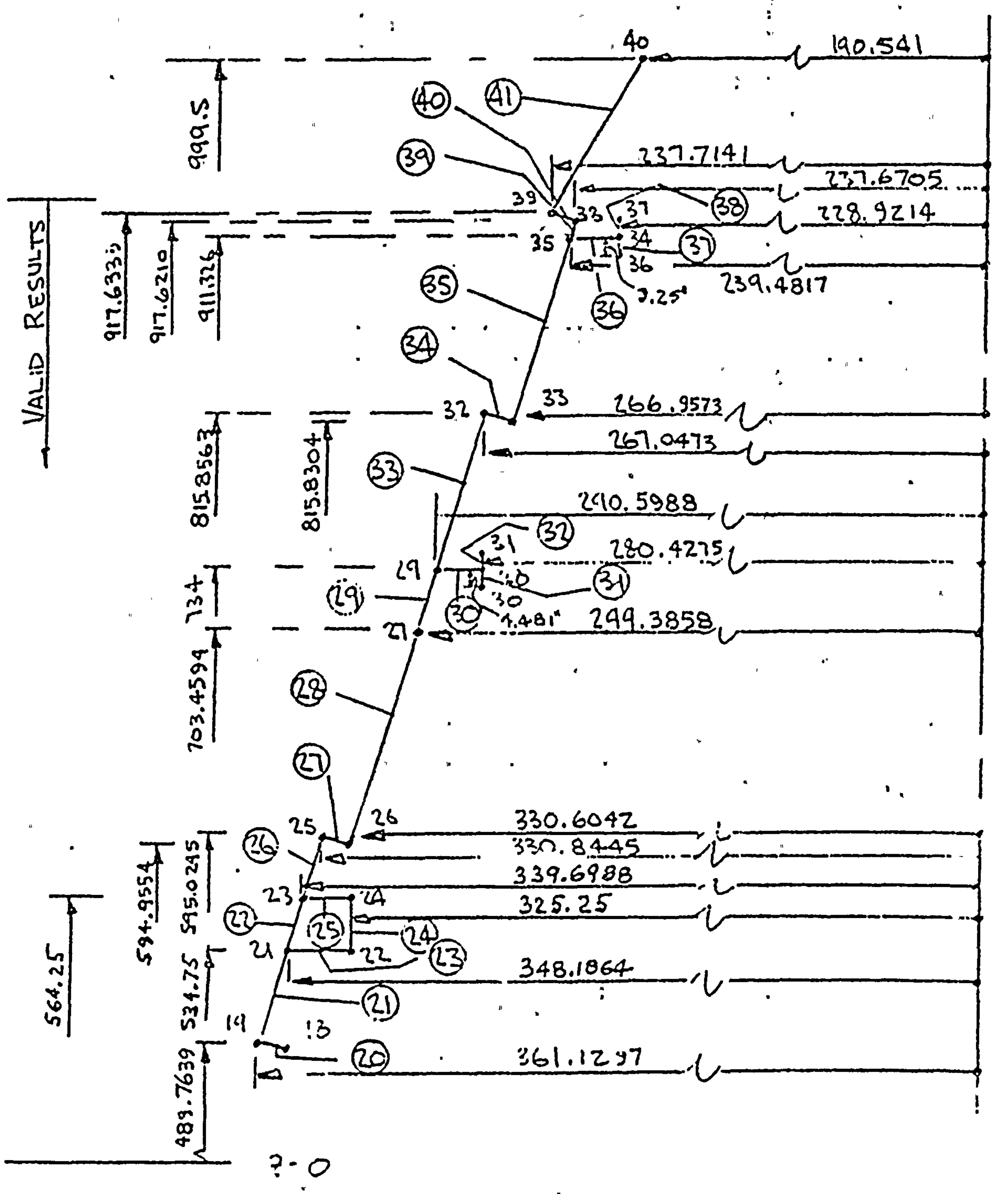
AX2 AXISYMMETRIC MODEL OF CONE SHELL



NOTE: BODY NUMBERS ARE CIRCLED

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764	FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL			SUBSEC: 2
PREPARED BY / DATE: DCL / 8-24-73			ARTICLE: 1
CHECKED BY / DATE: JM / 10-5-73			PAGE: 12
REVISION NUMBER:			

AX2 AXISYMMETRIC MODEL OF CONE SHELL



SHELL TENSION DESIGN

THE PRECEDING MODEL AND COMPUTER ANALYSIS (IV.2.2.) GIVES TENSILE STRESSES IN THE SHELL DUE TO INTERNAL PRESSURE AND END CAP LOADS. FROM REFERENCE 1, FIGURE 6 THE FOLLOWING SHEARS EXIST AT THE BOTTOM OF EACH CONICAL COURSE.

$$\sigma_v = V/\pi R t \ *$$

CONE #1	SHEAR = 2×10^3 K	σ_v = 3.181 KSI
" #2	SHEAR = 1.9×10^3 K	σ_v = 2.154 KSI
" #3	SHEAR = 1.9×10^3 K	σ_v = 1.953 KSI
" #4	SHEAR = 1.9×10^3 K	σ_v = 1.164 KSI
" #5	SHEAR = 1.9×10^3 K	σ_v = 1.175 KSI
" #6	SHEAR = 1.8×10^3 K	σ_v = .985 KSI
" #7	SHEAR = 1.75×10^3 K	σ_v = .850 KSI
" #8	SHEAR = 1.75×10^3 K	σ_v = .912 KSI

THE Q-PHI STRESSES ARE IGNORED IN THE PRINTOUT (THIS IS JUSTIFIABLE BECAUSE THEY ARE SMALL). THE TENSILE STRESSES ARE: (IN KSI).

CONE #1 S_x = 16.643 S_y = 8.194 (SEE P. IV.2.2.117)

CONE #2 S_x = 14.982 S_y = 7.461 (SEE P. IV.2.2.97)

* R AND t ARE FROM P. IV.2.1.3,4

CONE #3	S_x = 16.941	S_y = 8.133	(SEE P. IV.2.2.93)
CONE #4	S_x = 13.180	S_y = 5.377	(SEE P. IV.2.2.89)
CONE #5	S_x = 13.837	S_y = 6.926	(SEE P. IV.2.2.65)
CONE #6	S_x = 14.503	S_y = 7.057	(SEE P. IV.2.2.61)
CONE #7	S_x = 16.160	S_y = 7.408	(SEE P. IV.2.2.37)
CONE #8	S_x = 18.644	S_y = 9.006	(SEE P. IV.2.2.33)

LONGITUDINAL TENSION STRESSES DUE TO EARTHQUAKE ARE ADDITIVE TO SY. THE EARTHQUAKE STRESSES ARE THE σ_B'S ON PAGES IV.2.1.6,7,8.

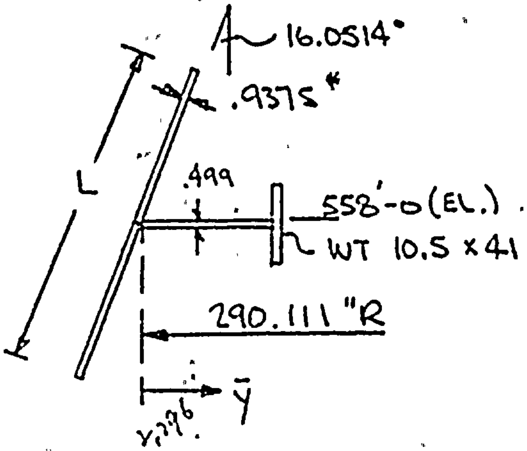
THE STRESS INTENSITIES ARE EQUAL TO THE MAXIMUM PRINCIPLE STRESS.

CONE 1	S_x = 16.643	S_y = 10.055	S.I. = 17.93
CONE 2	S_x = 14.982	S_y = 9.353	S.I. = 15.71
CONE 3	S_x = 16.941	S_y = 10.271	S.I. = 17.47
CONE 4	S_x = 13.180	S_y = 7.029	S.I. = 13.39
CONE 5	S_x = 13.837	S_y = 8.956	S.I. = 14.11
CONE 6	S_x = 14.503	S_y = 9.240	S.I. = 14.68
CONE 7	S_x = 16.160	S_y = 9.538	S.I. = 16.27
CONE 8	S_x = 18.644	S_y = 11.537	S.I. = 18.76

STRESS INTENSITIES ARE ALL LESS THAN 1.0 SM (19.3 KSI). THEREFORE THE SHELL IS ADEQUATE.

CIRCUMFERENTIAL RING STIFFENER AT ELEVATION 558'-0 *

THIS STIFFENER WILL BE SHOWN TO QUALIFY AS A STIFFENING RING UNDER PARA. NE-3133.5 OF REFERENCE 2 ASSUMING CIRCUMFERENTIAL STIFFENERS AT ELEVATIONS 572'-9¼ AND 542'-7¼.



$D_o = 2 * 291.087/\cos 16.0514 = 605.791$

$L_s = \frac{1}{2}[(6873.25 - 6695.751) + (6695.751 - 6511.25)]$

$L_s = 1.81$

$T = .9375$

$L = 1.10\sqrt{D_o T} = 26.214$

FROM REFERENCE 3, P. 1-84, $A_o = 12.1\ IN^2$, $I_o = 116$

$A_s = 12.1 + 26.214(.9375) = 36.676$

$$\bar{y} = \frac{-(24.576 * .488) + (12.1 * 7.95)}{36.676}$$

$\bar{y} = 2.296$

$$I^{**} = (26.214)(.9375)(2.784)^2 + 116 + 12.1(5.654)^2 + \frac{(.9375)(26.214)\left[(.9375)^2(\sin^2 73.9486°) + (26.214)^2(\cos^2 73.9486°)\right]}{12}$$

$I = 802.5\ IN^4$

** REF. 3 P. 6-25 CONTAINS EQ. FOR LAST TERM

* CORRODED THICKNESS

PREPARED BY / DATE: DCL/8-27-73				
CHECKED BY / DATE: JM /10-9-73				
REVISION NUMBER:				

$$B = \frac{3}{4}\left[\frac{P D_o}{T + A_s/L_s}\right] = 1594 \text{ FOR 4 PSI}$$

FROM FIGURE VIII-1100-2 OF REFERENCE 2, A = .00011

$$I_s = \frac{D_o^2 L_s (T + A_s/L_s) A}{10.9} = 764.3 \text{ IN}^4 < I_{SUPPLIED}$$

∴ USE ABOVE STIFFENER

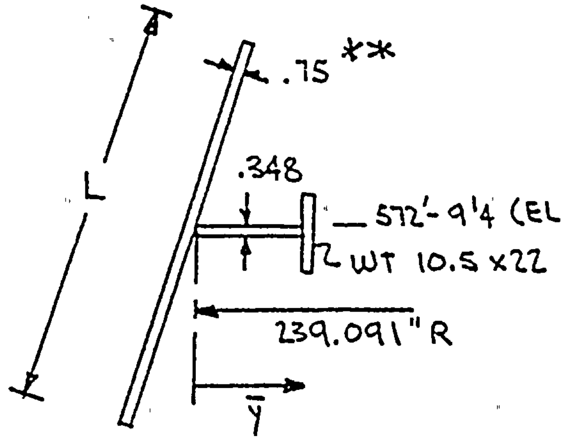
CHECK SHELL STRESSES AT DISCONTINUITIES:

IT CAN BE SEEN FROM PAGES IV.2.2.38, 54, 58, 70, 74, 90, 98, 114, 118, 134, 138 THAT STRESS INTENSITIES DO NOT EXCEED 1.5 Sm FOR MEMBRANE OR 3.0 Sm FOR MEMBRANE + BENDING AT THE DISCONTINUITIES. THE PROGRAM IS NOT VALID FOR BODY 41 WHICH IS ANALYZED ON P. IV.10.3.48. HOWEVER, THE PROGRAM DOES GIVE A CHECK ON THE DISCONTINUITY STRESSES AT NODE 39.

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 2
PREPARED BY / DATE: DCL / 8-27-73					ARTICLE: 1
CHECKED BY / DATE: JM / 10-9-73					PAGE: 17
REVISION NUMBER:					

CIRCUMFERENTIAL RING STIFFENER AT ELEVATION 572'-9¼

THIS STIFFENER WILL BE SHOWN TO QUALIFY AS A STIFFENING RING UNDER PARA. NE-3133.5, OF REFERENCE 2 ASSUMING CIRCUMFERENTIAL STIFFENERS AT ELEVATIONS 582'-0 3/8 * AND 558'-0.



$D_o = 2 * 239.872 / \cos 16.0514 = 499.206$

$L_s = \frac{1}{2}[(6984.375 - 6873.076) + (6873.076 - 6695.751)]$

$L_s = 144.312$

$T = .75$

$L = 1.10\sqrt{D_o T} = 21.284$

16.0514° FROM REFERENCE 3, P. 1-84, $A_o = 6.48 \text{ IN}^2$, $I_o = 70.9 \text{ IN}^4$

$A_s = 6.48 + 21.28 * .75 = 22.44 \text{ IN}^2$

$\bar{y} = \frac{-(15.963 * .390) + (6.48 * 7.36)}{22.418}$

$\bar{y} = 1.850$

$I^{***} = (15.963)(2.24)^2 + 70.9 + 6.48(5.51)^2 + (.75)(21.28)\frac{[(.75)^2(\sin^2 73.9486°) + (21.28)^2(\cos^2 73.9486°)]}{12}$

$I = 394.5 \text{ IN}^4$

*** LAST TERM FROM P. 6-25 REF. 3
** CORRODED THICKNESS
* SEE P. IV.10.3.2

PITTSBURGH - DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV SUBSEC: 2 ARTICLE: 1 PAGE: 18
PREPARED BY / DATE: DKL / 8-27-73					
CHECKED BY / DATE: JM / 10-9-73					
REVISION NUMBER:					

$$B = \tfrac{3}{4}\left[\frac{P D_o}{T + A_s/L_s}\right] = 1653.9 \text{ FOR } 4 \text{ PSI}$$

FROM FIGURE VII-1100-2 OF REFERENCE 2, A = .00012

$$I_s = \frac{D_o^2 L_s (T + A_s/L_s) A}{10.9} = 358.5 \text{ IN}^4 < I_{SUPPLIED}$$

∴ USE ABOVE STIFFENER

EXTERNAL PRESSURE

ACCORDING TO PARA. 3.4.1.5 OF REFERENCE 1, THE VESSEL IS SUBJECTED TO 4 PSI EXTERNAL PRESSURE. THE FOLLOWING DESIGN IS BASED ON PARA. NE-3133.3&7 OF REFERENCE 2:

FOR CONE #1 : T (CORRODED) = .75

572'-9¼ = 6873.25 558' = 6696.

$L = (6873.25 - .174) - (6696 - .250) = 177.326$

$D_o = [237.315 + (6879.25 - 6695.75) \text{TAN } 16.0514 + .9755] 2$

$D_o = 582.173$

$L/D_o = .3046$ $D_o/T = 776.231$

FROM FIGURE VII-1100-2 OF REF. 2, B=3500

$P_a = \frac{4B}{3 D_o/T} = 6.012 \text{ PSI} > 4 \text{ PSI}$, OK

FOR CONES #2 + #3 : T (CORRODED) = .9375

$L = (6696 - .25) - 6511.25^* = 184.5$

$D_o = 2(237.315 + (6879.25 - 6511.25) \text{TAN } 16.0514 + 1.4958)$

$D_o = 689.381$

$L/D_1 = .2676$ $D_o/T = 735.340$ $B = 4400$

* ℄ OF UPPER PIPE WHIP SUPPORT (ELEVATION)

$P_a = \frac{4B}{3D_o/T} = 7.978$ PSI > 4 PSI , OK

FOR CONES #4, #5 + 6 : MINIMUM T (CORRODED) = 1.3125

L = 6511.25 − 6198* = 313.25

D_o = 2(237.315 + (6879.25 − 6198) TAN 16.0514 + 1.4958)

D_o = 869.635

L/D_o = .3602 D_o/T = 662.579 B = 3500

$P_a = \frac{4B}{3D_o/T} = 7.043$ PSI > 4 PSI OK

FOR CONES #7 + #8 : MINIMUM T (CORRODED) = 1.25

L = 6198 − 5839.875** = 358.125

D_o = 2(237.315 + (6879.25 − 6008.25***) TAN 16.0514 + 1.301)

D_o = 978.434

L/D_o = .3660 D_o/T = 782.747 B = 2700

$P_a = \frac{4B}{3D_o/T} = 4.600$ PSI > 4 PSI OK

*** BOTTOM ELEV. OF CONE #8
** WALKWAY ELEV. (℄ OF 4" PLATE)
* ELEV. OF ℄ OF LOWER P.W.S.

LONGITUDINAL COMPRESSION

THE DRYWELL CONE LONGITUDINAL COMPRESSION ANALYSIS WILL BE BASED ON THE LOAD COMBINATION SPECIFIED AS INCIDENT CONDITION APPEARING IN PARA. 3.4.1.6 OF REFERENCE 1. THE TWO CONDITIONS WHICH WILL BE USED FOR THIS ANALYSIS ARE SSE EARTHQUAKE AND THE NEGATIVE 2 PSIG INTERNAL PRESSURE AT 135°F. THE FOLLOWING LOADS ARE TAKEN FROM FIGURE I.3.1.

PENETRATIONS ⟶ 769.2 K ✓

SEISMIC SHEAR LUGS ⟶ 159.3 K ✓

CATWALKS ⟶ 79.8 K * ✓

BEAM SEATS ⟶ 290.7 K ✓

ALL THE ABOVE LOADS ARE TOTAL LOADS FOR THE VESSEL.

FOR CONE #1 DEAD LOAD CALCULATIONS, USE 10% OF THE TOTAL PENETRATION LOAD, 0% CATWALK, 50% OF THE SHEAR LUGS AND 0% OF THE BEAM SEATS.

FOR CONE #2 D.L. CALCS., USE 10% OF PENETRATION LOAD, 0% CATWALK, 50% SHEAR LUGS, AND 0% BEAM SEATS.

* INCLUDED IN PLATFORM LOADS

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 2
PREPARED BY / DATE: JKS / 7-3-73					ARTICLE: 1
CHECKED BY / DATE: DCL / 8-27-73					PAGE: 22
REVISION NUMBER:					

FOR CONE #3 D.L. CALCS., USE 10% OF PENETRATION LOAD, 0% CATWALK, 50% SHEAR LUGS AND 20% BEAM SEATS.

FOR CONE #4 D.L. CALCS., USE 15% OF PENETRATION LOAD, 0% CATWALK, 50% SHEAR LUGS AND 50% BEAM SEATS.

FOR CONE #5 D.L. CALCS., USE 50% OF PENETRATION LOADS, 0% CATWALK, 50% OF THE SHEAR LUGS AND BEAM SEATS.

FOR CONE #6 D.L. CALCS., USE 50% OF PENETRATION LOADS, 0% CATWALK, 50% OF THE SHEAR LUGS AND BEAM SEATS.

FOR CONE #7 D. L. CALCS., USE 100% OF PENETRATION LOADS, 0% CATWALK, 50% OF THE SHEAR LUGS AND 75% OF THE BEAM SEATS.

FOR CONE #8 D. L. CALCS., USE 100% OF PENETRATION LOADS, 0% CATWALK, 50% OF THE SHEAR LUGS AND 75% OF THE BEAM SEATS.

THE WELDING PAD LIVE LOADS ARE ALL MULTIPLIED BY A FACTOR OF 3000/4522.4* = .6634.

THE SSE/2 CONDITION IS NOT CONSIDERED BECAUSE WHILE SSE LOADS ARE SUBSTANTIALLY GREATER THAN SSE/2 LOADS, THE ALLOWABLE IS ONLY 1.2 TIMES GREATER.

* PDM TELECON W/ BURNS & ROE DATED 11-15-72

1. CODE #1

A. WELDING PAD LIVE LOADS (SEE P. II.8.1.136)

W.L. = (1500)(2π)/12 * [189.75 + 213.7 + 240.7 + 257.3]

W.L.A = 708.0K * .6634 = 469.7 K

B. PLATFORM LIVE LOADS — DRAWING 5800 OF REFERENCE 1 GIVES THE PLATFORM LIVE LOADS TRANSMITTED TO THE SHELL:

P.L. = 0

C. VESSEL DEAD LOAD (FROM FIGURE I.3.1) = 382.2 K

D. FILLER MATL. D.L. = 87.1 K (SEE P. II.8.1.137)

E. REFUELING BELLOWS = 249.9 K (SEE P. II.8.1.137)

F. PIPE RUPTURE = 561. K (SEE P. II.8.1.138)

G. THE NEGATIVE 2 PSI INTERNAL PRESSURE ADDS A LONGITUDINAL COMPRESSIVE LOAD OF $P * \pi R^2$ =

$2 * \pi (266.45^{*})^2/1000 = 446.1$ K

H. THE MAXIMUM BENDING MOMENT IS: 20 * 10³ FT-K FROM REF. 1, FIGURE 9 = 240 * 10³ IN-K

I. THE FILLER MAT'L ALSO ADDS A 2 PSIG EXTERNAL PRESSURE LOAD OVER AN AREA OF $\pi(266.45^2 - 190^2)2$ = 219.3 K

P_{max} = 469.7 * 1.45 + 382.2 * 1.45 + 87.1 * 1.45 + 249.9 * 1.45 + 561 + 446.1 + 219.3 = 2950 K

(446.1 + 219.3: pressure)

* I.S. RADIUS

σ_A = 2950/π * 2 * 266.45 * .96101 * .75 = 2.445 KSI

σ_B = 240 * 10^3/π $(266.45)^2$ .75 * .96101 = 1.493 KSI

σ_{TOTAL} = 3.938 KSI

COMPARE σ_{TOTAL} WITH $\sigma_{ALLOWABLE}$ FROM REF. 2 PARA.
NE-3133.6 :

R/100T = 266.45 /75 * .96101 = 3.70

σ_{ALL} = 4.8 * 1.2* = 5.76 KSI > 3.94 KSI OK

2. CONE #2

A. W.L. = (1500)(2π)/12 [189.75 + 213.7 + 240.7 + 257.3 + 279.3 + 290.5] = 1155.5K

$W.L._A$ = 1155.5 * .6634 = 766.6 K

B. P.L. = 0

C. V.D.L. = 483.3 K

D., E. AND F. ARE SAME AS IN "1"

G. 2 * π $(298.940)^2$/1000 = 561.5 K

H. MAXIMUM MOMENT IS : 47 * 10^3 FT-K = 564 * 10^3 IN-K

I. 2π $(298.140^2 - 140^2)$/1000 = 334.7K

P_{TOTAL} = (766.6 + 483.3 + 87.1 + 249.9) 1.45 + 561 + 561.5 + 334.7 = 3758 K

* PARA. NE 3131(c)

$\sigma_A = 3758/\pi * 2 * 298.94 * .96101 * .9375 = 2.221$ KSI

$\sigma_B = 564 * 10^3/\pi (298.94)^2 * .9375 * .96101 = 2.230$ KSI

$\sigma_{TOTAL} = 4.451$ KSI

R/100T = 3.32

$\sigma_{ALL} = 5250 * 1.2 = 6300$ PSI > 4451 PSI OK

3. CODE #3

A. W.L. = (1500)(2π)/12 [189.75 + 213.7 + 240.7 + 257.3 + 279.3 + 290.5 + 307.0 + 323.6]

$W.L._A = 1095.1$ K

B. P.L. = 150 K

C. V.D.L. = 617.5 K

D., E. & F ARE THE SAME AS IN PREVIOUS CASES

G. $2\pi (329.744)^2/1000 = 683.2$ K

H. MAXIMUM MOMENT : $74 * 10^3$ FT-K = 888×10^3 IN-K

I. $2\pi(329.744^2 - 190^2)/1000 = 456.4$ K

$P_{TOTAL} = (1095.1 + 617.5 + 87.1 + 249.9)\,1.45 + 150 + 561 + 683.2 + 456.4 = 4822.5$ K

$\sigma_A = 4822.5/2\pi (329.744) * .9375 * .96101 = 2.584$ KSI

$\sigma_B = 888 * 10^3/\pi (329.744)^2 * .9375 * .96101 = 2.885$ KSI

$\sigma_T = 5.469$ KSI

$R/100T = 3.660$

$\sigma_{ALL} = 4800 * 1.2 = 5760$ PSI > 5469 PSI OK

4. CONE #4

A. W.L. = (1500)(2π)/12 [189.75 + 213.7 + 240.7 + 257.3 + 279.3 + 290.5 + 307.0 + 323.6 + 334.5]

$W.L._A = 1269.4$ K

B. P.L. = 3613. K

C. V.D.L. = 1081.7 K

D., E. & F. ARE THE SAME AS IN PREVIOUS.

G. $2\pi(360.547)^2/1000 = 816.8$ K

H. MAXIMUM MOMENT: $100 * 10^3$ FT-K = $1200 * 10^3$ IN-K

I. $2\pi(360.547^2 - 190^2) = 590.$ K

$P_{TOTAL} = (1269.4 + 1081.7 + 87.1 + 249.9)\,1.45 + 3613 + 561 + 816.8 + 590 = 9478.5$ K.

$\sigma_A = 9478.5/2\pi(361.295)\,1.4375 * .96101 = 3.022$ KSI

$\sigma_B = 1200 * 10^3/\pi(361.295)^2\,1.4375 * .96101 = 2.118$ KSI

$\sigma_T = 5.14$ KSI

$R/100T = 361.295/100(1.4375).96101 = 2.615$

$\sigma_{ALL} = 7000 * 1.2 = 8400$ PSI > 5.140 PSI OK

5. CODE #5

A. W.L. = (1500)(27)/12 [189.75 + 213.7 + 240.7 + 257.3 + 279.3 + 290.5 + 307. + 323.6 + 334.5 + 362.7 + 373.4 + 388.3]

$W.L._A = 1855.3$ K

B. P.L. = 3613. K

C. V.D.L. = 1467 K

D., E. & F. ARE THE SAME AS IN PREVIOUS CASES

G. $2 * \pi (391.351)^2/1000 = 962.3$ K

H. MAXIMUM MOMENT: $130 * 10^3$ FT-K = $1560 * 10^3$ IN-K

I. $2 * \pi (391.351^2 - 190^2)/1000 = 735.5$ K

$P_{TOTAL} = (1855.3 + 1467 + 87.1 + 249.9)\, 1.45 + 3613. + 561 + 962.3 + 735.5 = 11,177.8$ K

$\sigma_A = 11,177.8 / 2\pi (392.034)\, 1.3125 * .96101 = 3.597$ KSI

$\sigma_B = 1560 * 10^3 / \pi (392.034)^2\, 1.3125 * .96101 = 2.562$ KSI

$\sigma_T = 6.159$ KSI

$R/100T = 392.034/100(1.3125)\, .96101 = 3.108$

$\sigma_{ALL} = 1.2 * 5600 = 6720$ PSI > 6159 PSI ∴ OK

PITTSBURGH - DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
					SUBSEC: 2
PREPARED BY / DATE: DCL / 8-28-73	TAW 5-8-74				ARTICLE: 1
CHECKED BY / DATE: JM / 10-10-73	ACL / 6-21-74				PAGE: 28
REVISION NUMBER:	A				

6. CODE #6

A. W.L. = (1500)(2π)/12 [189.75 + 213.7 + 240.7 + 257.3 + 279.3 + 290.5 + 307 + 323.6 + 334.5 + 362.7 + 373.4 + 388.3 + 406.6 + 419.1]

$W.L._A = 2285.5$ K

B. P.L. = 4903 K

C. V.D.L. = 1599 K

D., E. & F. ARE THE SAME AS IN PREVIOUS CASES

G. $2 * \pi (422.155)^2/1000 = 1119.8$ K

H. MAXIMUM MOMENT: $158 * 10^3$ FT-K = $1896 * 10^3$ IN-K

I. $2 * \pi (422.155^2 - 190^2)/1000 = 892.9$ K

$P_{TOTAL} = (2285.5 + 1599 + 87.1 + 249.9)\ 1.45 + 561 + 4903. + 1119.8 + 892.9 = 13,597.9$ K

$\sigma_A = 13,597.9/2\pi(422.870)\ 1.375 * .96101 = 3.873$ KSI

$\sigma_B = 1896 * 10^3/\pi(422.870)^2\ 1.375 * .96101 = 2.554$ KSI

$\sigma_T = 6.427$ KSI

R/100T = 422.870/100 * 1.375 * .96101 = 3.20

$\sigma_{ALL} = 5400 * 1.2 = 6480 > 6427.$

7. CONE #7

CONE #7 EXTENDS FROM EL. 519'-8 13/16 TO EL. 510'-2 9/16 AND CONTAINS THE LOWER PIPE WHIP SUPPORT (SEE FIGURE II.8.1). SINCE THE 72 VERTICAL TEE's (WT 8x18) EXTEND UP TO THE BOTTOM PLATE OF THE LOWER PIPE WHIP SUPPORT, PART OF CONE #7 WILL NOT BE REINFORCED BY VERTICAL STIFFENERS. THE CRITICAL POINTS FOR BOTH THE REINFORCED AND UNREINFORCED SECTIONS OF THE SHELL WILL BE CHECKED FOR LONGITUDINAL BUCKLING.

a. UNREINFORCED AT EL. 515'-4 (TOP OF VERTICAL TEE's)

$R_{I.S.}$ = 237.315 + (TAN 16.0514)(6879.25 - 6184) = 437.350

R_m = 437.350 + 1.4375/2 COS 16.0514 = 438.098

A. W.L. = (1500)(2π)/12 [189.75 + 213.7 + 240.7 + 257.3 + 279.3 + 290.5 + 307 + 323.6 + 334.5 + 362.7 + 373.4 + 388.3 + 406.6 + 419.1]

$W.L._A$ = 2285.5 K

B. P.L. = 4903 K

C. V.D.L. (ASSUME THE SAME AS AT EL. 514'-6 AS SHOWN ON FIGURE I.3.1) = 2399.9 K

D., E. & F. ARE THE SAME AS IN PREVIOUS CASES

G. $2 * \pi (437.35)^2/1000 = 1201.8$ K

H. MOMENT AT EL. 515'-4 = $173 * 10^3$ FT-K = $2076 * 10^3$ IN-K

I. $2 * \pi (437.35^2 - 190^2)/1000 = 975$ K

$P_{TOTAL} = (2285.5 + 2399.9 + 87.1 + 249.9)1.45$

$+ 561 + 4903 + 1201.8 + 975 = 14923$ K

$\sigma_A = 14923/2\pi(438.098)1.4375 * .96101$

$\sigma_A = 3.924$ KSI

$\sigma_B = 2076 * 10^3/\pi(438.098)^2\ 1.4375 * .96101$

$\sigma_B = 2.492$ KSI

$\sigma_T = 6.416$ KSI

$R/100T = 438.098/100 * 1.4375 * .96101 = 3.171$

$\sigma_{ALL} = 5500 * 1.2 = 6600$ PSI > 6416 PSI OK

b. REINFORCED AT EL. 510'-2 9/16

A. W.L. = (1500)(2π)/12 [189.75 + 213.7 + ... + 419.1 + 442.4]

$W.L._A = 2516$ K

B. P.L. = 7420K

C. V.D.L. = 2465.7 K

D., E. & F. ARE THE SAME AS IN PREVIOUS CASES

G. $2*\pi(455.026)^2/1000 = 1300.9$ K

H. MAXIMUM MOMENT = $187*10^3$ FT-K = $2244*10^3$ IN-K

I. $2*\pi(455.026^2 - 190^2) = 1074.1$ K

$P_{TOTAL} = (2516 + 2465.7 + 87.1 + 249.9)1.45 + 561 + 7720.$
$+ 1300.9 + 1074.1 = 18,368.1$ K

TAKING THE 72 STRUCTURAL T'S INTO ACCOUNT, TOTAL SECTION PROPERTIES WILL BE CALCULATED.

FROM REF. 3, P. 1-86, WT 8x18 SECTIONAL PROPERTIES ARE: $A = 5.3$ IN^2, $I = 30.8$ IN^4

$A_s = 2\pi R_m t + 72*A$ $\quad R_m = 455.774$

$I_s = \pi R_m^3 t + A d^2$

FOR T's, $d^2 = 2((r)(\cos 0°))^2 + 4*[(r*\cos 5°)^2$
$+ (r*\cos 10°)^2 + (r*\cos 15°)^2 + \ldots + (r*\cos 80°)^2$
$+ (r*\cos 85°)^2] + (r*\cos 90°)^2 * 2$

$R_{15} = 455.026$ $\quad r = 455.026 - (.0625 + 7.93 - 1.89)/.96101$

$r = 448.676$

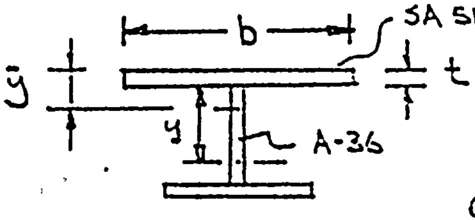
$d^2 = 7,247,166$ IN^2

$t = 1.4375$, $A_s = 4498$ IN^2, $I_s = 465.98 * 10^6$ IN^4

$\sigma_T = My/I_s + P/A_s$ $y = 0.5,$ RADIUS = 456.522

$\sigma_T = 2.199/.96101 + 4.083/.96101 = 6.537$ KSI

THE SHELL-"T" COMBINED VERTICAL STIFFENER WILL BE ANALYZED USING THE AISC. MANUAL (REFERENCE 3) AS A FORMAT.



b IS EQUAL TO THE SMALLER OF $2t * 95/\sqrt{F_y}$ (REF. 3, P. 5-25) OR $2\pi R_m/72$. F_y (135°F) = 36.81 KSI (REF. 2)

$y = .0625 + 7.93 - 1.89 = 6.10$

$C_c = \sqrt{\frac{2\pi^2 E}{F_y}} = 128.68$ w/ $E = 27.9 * 10^6$ psi & $F_y = 33.26$ KSI AT 340°F, BOTH FROM REFERENCE 2.

FROM DWG. D-15, THE ELEVATION OF THE TOP OF THE JET DEFLECTOR PLATE IS 499'-9". ASSUME A PINNED-PINNED COLUMN LENGTH TO RUN FROM EL. 515'-4 TO EL. 499'-9" OR A TOTAL COLUMN LENGTH OF 187." /.96101 = 194.59 IN.

THE EFFECTIVE COLUMN SECTION PROPERTIES ARE:

$t = 1.4375$ $b = 39.774$ $A = 62.475$

$\bar{y} = [(1.4375)^2\, 39.774/2 + 5.3\,(6.10 + 1.4375)]/62.475$

$\bar{y} = 1.297$

$I = 30.8 + 39.774\,(1.4375)^3/12 + 57.175\,(.57825)^2 + 5.3\,(6.241)^2$

$I = 266.19 \text{ IN}^4$

$r = \sqrt{I/A} = 2.06"$ $\Rightarrow$ $\frac{Kl}{r} = (1)194.59"/2.06"$

$= 94.46$

FROM REFERENCE 3 EQ. 1.5-1 W/$F_Y = \frac{33.26}{38.}$* $* 36. = 31.51$ KSI

$F_a = 12.2$ KSI > 6.537 KSI. $\therefore$ OK.

8. CONE #8

A. W.L. = (1500)(2π)/12[189.75 + 213.7 + 246.7 + 257.3 + 279.3 + 290.5 + 307 + 323.6 + 334.5 + 362.7 + 373.4 + 388.3 + 406.6 + 419.1 + 442.4 + 456.4 + 472.9]

$W.L._A = 3000K$

B. P.L. = 7720K

C. V.D.L. = 2638.6 K

D., E., F. ARE THE SAME AS IN PREVIOUS CASES

G. $2 * \pi (487.916)^2/1000 = 1495.8K$

H. MAXIMUM MOMENT = $222 * 10^3$ FT-K = $2664 * 10^3$ IN-K

I. $2 * \pi (487.916^2 - 190^2)/1000 = 1268.9$ K

$P_{TOTAL} = (3000 + 2638.6 + 87.1 + 249.9)1.45 + 561 + 7720 + 1495.8 + 1268.9 = 19710.3$ K

THE 72 STRUCTURAL T's ARE TREATED AS IN CONE #7 (REINFORCED).

* RATIO OF SA 516 GR. 70 YIELD @TEMP TO NORMAL YIELD.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 2
PREPARED BY / DATE: DCL / 8-28-73	TAK / 5-9-74				ARTICLE: 1
CHECKED BY / DATE: JM / 10-12-73	ACL / 6-27-74				PAGE: 34
REVISION NUMBER:					

$A_s = 2\pi R_m t + 72*A \qquad R_m = 488.566$

$I_s = \pi R_m^3 t + Ad^2$

FOR T's, $d^2 = 2((r)(\cos 0^\circ))^2 + 4[(r*\cos 5.0^\circ)^2 + (r*\cos 10^\circ)^2 + (r*\cos 15^\circ)^2 + \dots + (r*\cos 80^\circ)^2 + (r*\cos 85.0^\circ)^2] + (r*\cos 90^\circ)^2*2$

$R_{is} = 487.916 \qquad r = 487.916 - (.0625 + 7.93 - 1.89)/.96101$

$r = 481.566$

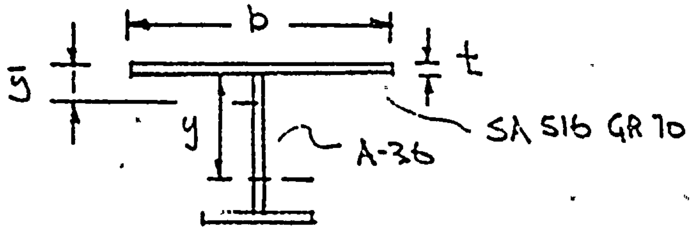
$d^2 = 8,348,609 \text{ IN}^4$

$t = 1.25$, $A_s = 4219 \text{ IN}^2$, $I_s = 502.210 * 10^6 \text{ IN}^4$

$\sigma_T = My/I_s + P/A_s \qquad y = \text{O.S. RADIUS} = 489.16$

$\sigma_T = 2.595/.96101 + 4.672/.96101 = 7.562 \text{ KSI}$

THE SHELL "T" COMBINED VERTICAL STIFFENER WILL BE ANALYZED AS BEFORE.



$b = \text{MIN}(2t*95/\sqrt{F_y} = 39.145,\ 2\pi(488.566)/72 = 42.635)$

$\therefore b = 39.145$, $t = 1.25$ (CORRODED), $A = 54.231 \text{ IN}^2$

$$\bar{y} = [\,(1.25)^2\, 39.145/2 + 5.3(6.10 + 1.25)\,]/54.231$$

$$\bar{y} = 1.282$$

$$I = 30.8 + 39.145\,(1.25)^3/12 + 48.931\,(.657)^2 + 5.3\,(6.068)^2$$

$I = 253.442$ $\quad L = 194.59$ IN $\quad K = 1$

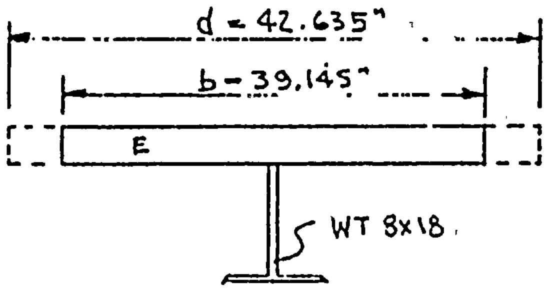
$$r = \sqrt{\frac{253.442}{54.231}} = 2.162 \qquad Kl/r = 90.00$$

FROM REFERENCE 3 . EQ. 1.5-1 $\quad W/F_Y = 31.51$ KSI

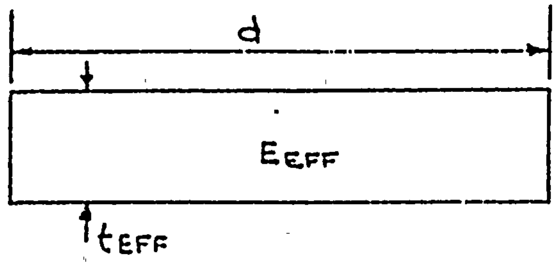
$F_a = 12.62$ KSI > 7.562 KSI , OK

EFFECTIVE SHELL ANALYSIS :

AN ANALYSIS OF THE SHELL AND TEES IN CONE 8 AS A CYLINDER IN AXIAL COMPRESSION WITH AN EFFECTIVE THICKNESS AND ELASTIC MODULUS WILL BE DONE. THIS SHOULD FURTHER ESTABLISH THAT THE STIFFENED SHELL IN CONES 7 & 8 IS SATISFACTORY IN BUCKLING. THE EFFECTIVE THICKNESS AND ELASTIC MODULUS CAN BE FOUND BY EQUATING THE AXIAL AND BENDING STIFFNESSES OF THE STIFFENED SHELL TO THOSE OF AN UNSTIFFENED SHELL WITH EFFECTIVE THICKNESS, t_{EFF}, AND EFFECTIVE ELASTIC MODULUS, E_{EFF}.



SHELL PANEL WITH STIFFENER



EFFECTIVE SHELL PANEL

FOR FIGURES ON PREVIOUS PAGE,

b = WIDTH OF SHELL EFFECTIVE IN BENDING

d = DISTANCE BETWEEN STIFFENERS

I = MOMENT OF INERTIA OF STIFFENER AND d WIDTH OF SHELL = 253.44 IN^4

A = COMPRESSIVE AREA ASSOCIATED WITH ONE STIFFENER.

A = 42.635" * 1.25" + 5.30 □" = 58.59 □"

ASSUME,

$$AE = t_{EFF} * d * E_{EFF}$$

AND

$$EI = E_{EFF} * \frac{d\,(t_{EFF})^3}{12}$$

FROM THESE TWO EQUATIONS, THE FOLLOWING EQUATIONS ARE DERIVED:

$$t_{EFF} = \sqrt{\frac{12 * I}{A}} = 7.2" \qquad E_{EFF} = \sqrt{\frac{A^3}{12 * I * d^2}}\,E = .191\,E$$

THE COMPRESSIVE STRESS ON THE EFFECTIVE THICKNESS IS,

$$7.562 * \frac{1.25"}{7.20"} = 1.31 \text{ KSI}$$

FROM NE 3133.6 OF REF. 2 W/ R_M = 488.57"

$$R_M / 100\,t_{EFF} = .68$$

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 2
PREPARED BY / DATE: DCL/3-12-74	TAW 5-8-74				ARTICLE: 1
CHECKED BY / DATE: TAW/4-1-74	ACL/7-1-74				PAGE: 36.1
REVISION NUMBER:	A				

FROM FIG. VII-1100-2 OF REF. 2 THE ALLOWABLE COMPRESSIVE STRESS, 1.2 * B FOR INTEGRAL AND CONTINUOUS REGIONS IN THE VESSEL, IS

$$1.2 * 13{,}600 = 16{,}320 \text{ PSI.}$$

AS THE CRITICAL BUCKLING STRESS IS DIRECTLY RELATED TO E, THE ALLOWABLE COMPRESSIVE STRESS IS

$$16.32 \text{ KSI} * \frac{E_{EFF}}{E} = 3.12 \text{ KSI}$$

$$\sigma_{EFF} = 1.31 \text{ KSI} < 3.12 \text{ KSI}, \text{ OK.}$$

THE TEES ARE BROKEN AT SEVERAL PENETRATIONS AND BEAM SEATS BETWEEN EL. 515'-4" AND EL. 499'-9". THE MIN. INSERT PL THICKNESS AT WHICH A GAP IN THE TEES OCCURS IS 2" AT EL. 509'-1 5/8". THIS CORRESPONDS WITH A R_M = 459.8" MIDDLE RADIUS. ASSUME A CORRODED THICKNESS.

$$R_M/100\,t = 459.8/100 * 1.9375" = 2.37"$$

FROM FIG. VII-1100-2, REF. 2,

$$B = 7{,}500 \text{ PSI}$$

$$1.2 * B = 9000 \text{ PSI}$$

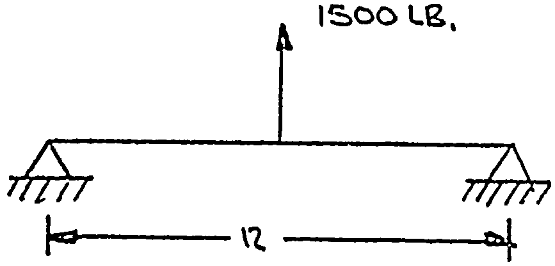
THE COMPRESSIVE AXIAL STRESS IS:

$$7.562 * \frac{1.25"}{1.9375"} = 4.88 \text{ KSI} < 9.00 \text{ KSI}, \text{ O.K.}$$

DESIGN OF WELDING RINGS

1. PAD PLATE DESIGN

FROM PARA. 3.1.8 OF REFERENCE 1, THE WELDING RINGS MUST BE ABLE TO WITHSTAND A LOAD OF 1500 LB/FT IN ANY DIRECTION. ASSUME THAT THE 12" WIDE PLATE CARRIES THE LOAD WITH ONE WAY ACTION.



ASSUME A 12" ARC LENGTH OF PLATE SO THAT THE TOTAL LOAD IS 1500 LB.

$M = 1500 * 12/4 = 4500$ IN-LB

$S = bd^2/6 = 12(t)^2/6$

$f_{all} = .75(38) = 28.5$ KSI

$t^2 = 4500/2(28{,}500) = .0789$

$t = .281$ IN

USE $t = .5$ IN (FROM REF. 1, PARA. 3.1.8)

2. EFFECT OF PAD PLATE LOADS ON SHELL

ASSUME A 12" x 24" (24" MINIMUM ARC LENGTH FROM PARA. 3.1.8, REF. 1) x ½" PLATE. FOR THE ANALYSIS USE REFERENCE 7, PAGE 9 (RECTANGULAR ATTACHMENT SUBJECT TO RADIAL LOAD). TO BE SURE THAT THE CRITICAL CASE IS ANALYZED, BOTH THE SMALLEST RADIUS AND THICKNESS WILL BE USED.

USE T (CORRODED) = .75

USE $R_m = 237.315 + (6879.25 - 6863.234^{*}) \tan 16.0514 + .375/\cos 16.0514$

$R_m = 242.313 \qquad R_{m_T} = 252.144$

$\beta_1 = 12/252.144 = .04759 \qquad \beta_2 = 6/252.144 = .02380$

$\beta_1/\beta_2 = 2$

$\beta_{N\phi} = \left[1 - \frac{1}{3}(2-1)(1-.91)\right]\sqrt{.04759 * .02380} = .03364$

$\beta_{Nx} = \left[1 - \frac{1}{3}(1-1.63)\right] .03365 = .04128$

$\beta_{M\phi} = \left[1 - \frac{1}{3}(1-.76)\right] .03365 = .04217$

$\beta_{Mx} = \left[1 - \frac{1}{3}(1-1.20)\right] .03365 = .03589$

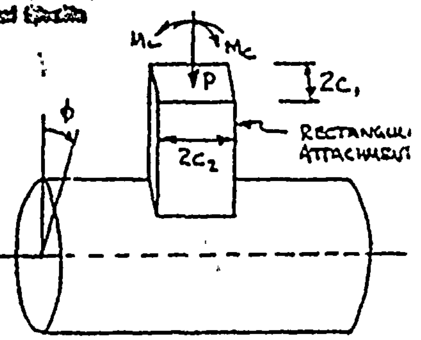
P = 1500 LBS/FT * 2FT = 3000 LBS

$\gamma = 252.144/.75 = 336.192$

* ℄ ELEV. OF RING AT EL. 572'-5, SEE DESIGN DRAWING D-8

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764	PDM	FINAL STRESS REPORT	SECTION: I
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				SUBSEC: 2
PREPARED BY / DATE: DCL / 8-28-73				ARTICLE: 1
CHECKED BY / DATE: JM / 10-15-73				PAGE: 39
REVISION NUMBER				

Table 5—Computation Sheet for Local Stresses in Cylindrical Shells *



1. Applied Loads*

Radial load,	P = 3000 lb. = 3K	
Circ. Moment,	Mc = —— in. lb.	
Long. Moments,	ML = —— in. lb.	
Torsion Moment,	MT = —— in. lb.	
Shear Load,	Vc = —— lb.	
Shear Load,	VL = —— lb.	

2. Geometry

Vessel thickness,	T = .75 in.	
Attachment radius,	ro = —— in.	
Vessel radius,	Rm = 252.144 in.	

3. Geometric Parameters

$\gamma = \frac{R_m}{T} = 336.192$

Stress Concentration due to:
a) membrane load, Kn = ——
b) bending load, Kb = ——

*NOTE: Enter all force values in accordance with sign convention

CYLINDRICAL SHELL

From Fig.	Read curves for	Compute absolute values of stress and enter result	Au	AL	Bu	BL	Cu	CL	Du	DL
3C	$\frac{N\phi}{P/R_m}$ .52	$K_n\left(\frac{N\phi}{P/R_m}\right)\cdot\frac{P}{R_mT}$ =	-.825	-	-	-		-	-	-
1C	$\frac{M\phi}{P}$ .12	$K_b\left(\frac{M\phi}{P}\right)\cdot\frac{6P}{T^2}$ =	-3.34	+	-	+	-	+	-	+
3A	$\frac{N\phi}{M_c/R_m^2\beta}$	$K_n\left(\frac{N\phi}{M_c/R_m^2\beta}\right)\cdot\frac{M_c}{R_m^2\beta T}$					-	-	+	+
1A	$\frac{M\phi}{M_c/R_m\beta}$	$K_b\left(\frac{M\phi}{M_c/R_m\beta}\right)\cdot\frac{6M_c}{R_m\beta T^2}$					-	+	+	-
3B	$\frac{N\phi}{M_L/R_m^2\beta}$	$K_n\left(\frac{N\phi}{M_L/R_m^2\beta}\right)\cdot\frac{M_L}{R_m^2\beta T}$	-	-	+	+				
1B or 1B-1	$\frac{M\phi}{M_L/R_m\beta}$	$K_b\left(\frac{M\phi}{M_L/R_m\beta}\right)\cdot\frac{6M_L}{R_m\beta T^2}$	-	+	+	-				
Add algebraically for summation of φ stresses, σφ =			4.67							
4C	$\frac{N_x}{P/R_m}$ .58	$K_n\left(\frac{N_x}{P/R_m}\right)\cdot\frac{P}{R_mT}$ =	-.920	-	-	-	-	-	-	-
2C	$\frac{M_x}{P}$ .085	$K_b\left(\frac{M_x}{P}\right)\cdot\frac{6P}{T^2}$ =	-2.72	+	-	+	-	+	-	+
4A	$\frac{N_x}{M_c/R_m^2\beta}$	$K_n\left(\frac{N_x}{M_c/R_m^2\beta}\right)\cdot\frac{M_c}{R_m^2\beta T}$					-	-	+	+
2A	$\frac{M_x}{M_c/R_m\beta}$	$K_b\left(\frac{M_x}{M_c/R_m\beta}\right)\cdot\frac{6M_c}{R_m\beta T^2}$					-	+	+	-
4B	$\frac{N_x}{M_L/R_m^2\beta}$	$K_n\left(\frac{N_x}{M_L/R_m^2\beta}\right)\cdot\frac{M_L}{R_m^2\beta T}$	-	-	+	+				
2B or 2B-1	$\frac{M_x}{M_L/R_m\beta}$	$K_b\left(\frac{M_x}{M_L/R_m\beta}\right)\cdot\frac{6M_L}{R_m\beta T^2}$	-	+	+	-				
Add algebraically for summation of X stresses, σx =			3.64							
Shear stress due to Torsion, MT		$\tau_{x\phi} = \tau_{\phi x} = \frac{M_T}{2\pi r_o^2 T}$	+	+	+	+	+	+	+	+
Shear stress due to load, Vc		$\tau_{x\phi} = \frac{V_c}{\pi r_o T}$	+	+	-	-				
Shear stress due to load, VL		$\tau_{x\phi} = \frac{V_L}{\pi r_o T}$					-	-	+	+
Add Algebraically for summation of shear stresses, τ =										

SEE P. IV, 2.1.40 FOR E.Q. SHEAR AND S.I. (MEMBRANE)

* FROM WRC 107, P 10

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: III
					SUBSEC: 2
PREPARED BY / DATE: DCL/8-28-73					ARTICLE: 1
CHECKED BY / DATE: JM/10-15-73					PAGE: 40
REVISION NUMBER:					

V(EQ SHEAR, P. 13A-56 REF.1) = .2 * 10^3 K

$\therefore \tau_{EQ} = .2*10^3/\pi(252.144).96101(.75) = .350$ KSI

FROM P. IV. 2. 1. , AX2 BODY 35, STATIONS 3-6 :
MAXIMUM STRESSES ARE

MEMBRANE : $\sigma_\theta = \sigma_\phi =$ 16.254 KSI   16.254 + .825 = 17.079

$\sigma_\phi = \sigma_x =$ 7.683 KSI   7.683 + .920 = 8.603

BENDING : $\sigma_\theta = \sigma_\phi =$ 16.901 KSI   16.901 + 4.67 = 21.571

$\sigma_\phi = \sigma_x =$ 11.351 KSI   11.351 + 3.64 = 14.991

$$P.S. = \frac{\sigma_\phi + \sigma_x}{2} \pm \sqrt{\left(\frac{\sigma_\phi - \sigma_x}{2}\right)^2 + \tau_{EQ}^2}$$

MEMBRANE

$\sigma_1 =$ 17.093 KSI

$\sigma_2 =$ 8.589 KSI

S.I. = 17.093 KSI < 1.5 S_m = 28.950 KSI , OK

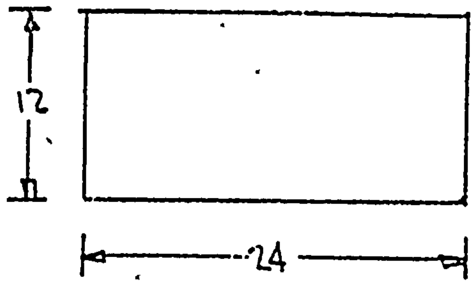
BENDING

$\sigma_1 =$ 21.590 KSI

$\sigma_2 =$ 14.972 KSI

S.I. = 21.590 KSI < 3 S_m = 57.900 KSI , OK

3. WELD DESIGN



WELD SHOWN AS A LINE

$L_w = 2(12) + 2(24) = 72$ IN

a. ASSUME 3K LOAD NORMAL TO SHELL ACTING AT PLATE EDGE

$f_T = 3K / 12\text{ IN} = 0.25\text{ K/IN}$

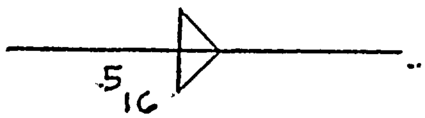
REQ'D THROAT $= 0.25^{K/IN} / 21.0\text{ KSI} = .012\text{ IN}$

b. ASSUME 3K LOAD IN PLANE OF SHELL

$f_V = 3K/12\text{ IN} = .25\text{ K/IN}$

REQ'D THROAT $= .25^{K/IN} / .4 F_y = \dfrac{.25^{K/IN}}{15.2\text{ KSI}} = .0164\text{ IN}$

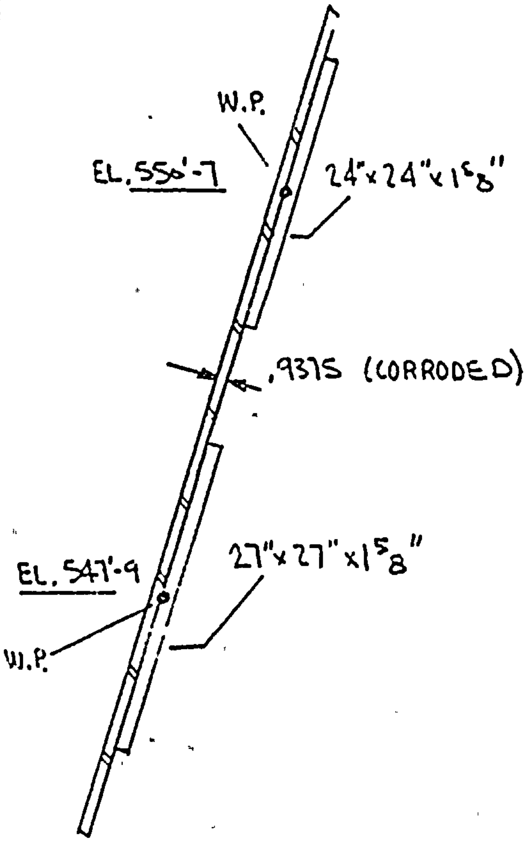
USE AISC MIN WELD:



$t = .7071\,(.3125) = .221 > .0164$

O.K.

DESIGN OF UPPER CATWALK PADS



FROM DRAWING S800:

THE MAXIMUM LOADS AT ELEV. 550'-7 ARE P1, P11.

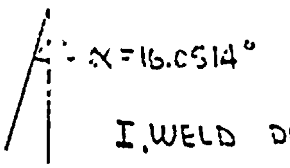
	SSE/2	SSE
P_v	33 K	37K
P_r	-32K	-36K
P_t	± 2K	± 4K

THESE LOADS ARE TRANSFORMED TO THE PLANE OF THE SHELL AS FOLLOWS:

$$P_{v_T} = P_v \cos\alpha - P_r \sin\alpha$$

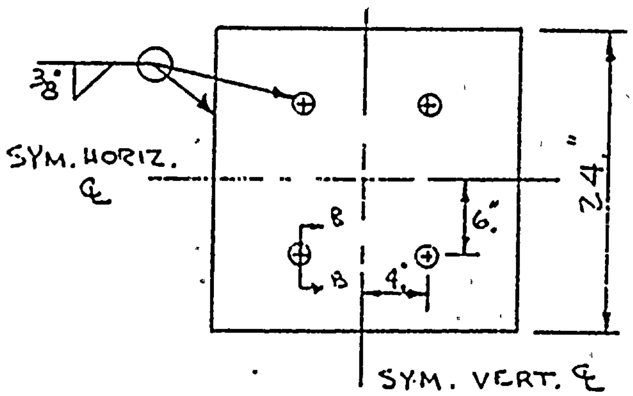
$$P_{r_T} = P_r \cos\alpha + P_v \sin\alpha$$

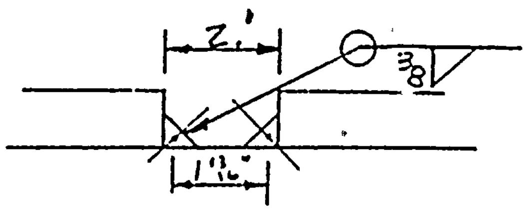
	SSE/2	SSE
P_{v_T}	22.365K	25.603K
P_{r_T}	-39.877K	-44.821K
P_{t_T}	± 2 K	± 4K



I. WELD DESIGN:

A. WELD DESIGN FOR UPPER LUG





SECTION B-B

CIRCULAR FILLET WELDS ARE DESIGNED TO CARRY THE LOADS ON THE PAD PLATE INDEPENDENTLY OF THE CIRCUMFERENTIAL WELD. AN AISC MIN. 3/8" FILLET WELD HAS BEEN ASSUMED

LENGTH OF WELD = $1\frac{13}{16}" * \pi = 5.694"$

TOTAL WELD LENGTH = $4 * 5.694" = 22.776"$

FOR SSE/2 :

$f_T = 39.877/22.776" = 1.751$ k/in

$f_V = \sqrt{(22.865/22.776)^2 + (2/22.776)^2} = 1.008$ k/in

IF f_T AND f_V ARE TAKEN AS THEIR COMPONENTS NORMAL AND TANGENTIAL TO THE 45° THROAT, IT IS SEEN THAT SHEAR GOVERNS. THE THROAT REQ'D IS $f'_V/.4F_Y$.

$f'_V = \sin 45° \, 1.751 + \cos 45° \, 1.008 = 1.951$ k/in

REQ'D THROAT = 1.951 k/in / .4 * 38 ksi = .128 IN.

FOR SSE

$f_T = 44.827/22.776 = 1.968$ k/in

$f_V = \sqrt{(25.603/22.776)^2 + (4/22.776)^2} = 1.138$ k/in

USING THE SAME PROCEDURE AS IN SSE/2

$f'_V = \sin 45° \, 1.968 + \cos 45° \, 1.138 = 2.196$ k/in

REQ'D THROAT = $2.196/.9 * 33.26/\sqrt{3} = .127$ IN < .128 IN

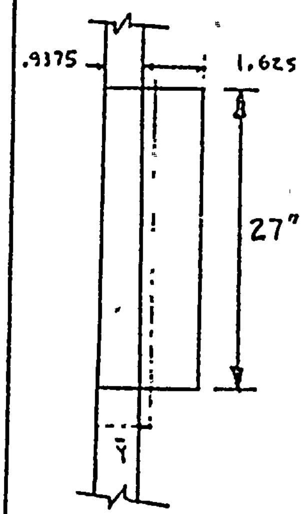
3/8" FILLET W/ THROAT = .265" > .128" IS O.K.

ALSO USE 3/8" FILLET ABOUT CIRCUMFERENCE OF PAD R.

THE MAXIMUM LOADS AT ELEV. 543'-5 ARE PI, PII

	SSE/2	SSE
P_V	-22 K	-29 K
P_r	32 K	36 K
P_L	± 9 K	± 18 K
P_{V_T}	-12.794 K	-17.915 K
P_{r_T}	36.835 K	42.615 K
P_{L_T}	± 9 K	± 18 K

B. WELD DESIGN FOR LOWER LUG: TOTAL WELD LENGTH = 27 × 4 = 108 IN



$$\bar{Y} = \frac{.9375 + 1.625}{2}$$

$$\bar{Y} = 1.2813"$$

$$I = \frac{(2.5625)^3(27)}{12} = 37.859 \text{ IN}^4$$

$$Q = 27" \times .9375" \times .8126" = 20.569 \text{ IN}^3$$

$$V = 36.835/2 = 18.418 \text{ K.}$$

$$f_1 = \frac{(18.418)(20.569)}{(37.859)(2)} = 5.003 \text{ K/IN}$$

$f_2 = 12.294/108 = .114\ ^{k}/_{IN}$

$f_3 = 9/108 = .083\ ^{k}/_{IN}$

* $f_v' = \sqrt{(5.003+.114)^2 + (.083)^2} = 5.118\ ^{k}/_{IN}$

REQ'D THROAT (SSE/2) = 5.118/15.2 = .337 IN

REQ'D THROAT (SSE) = 5.956/17.282 = .345 IN

USE A $\frac{1}{2}$" FILLET > AISC MIN $\frac{3}{8}$" FILLET

THROAT = .354" > .345" REQ'D , ∴ O.K.

* ASSUME ALL LOADS CARRIED IN SHEAR (CONS.)

II. EFFECT OF WALKWAY LOADS ON SHELL:

A. FOR UPPER LUG AT ELEV. 550'-7

SSE/2 LOADS:

$P_{V_T} = 22.865$ K $P_{r_T} = 39.877$ K $P_{t_T} = 2$ K

SSE LOADS:

$P_{V_T} = 25.603$ K $P_{r_T} = 44.827$ K $P_{t_T} = 4$ K

R_m (AT ELEV. 550'-7) = 237.315 + (6879.25 − 6607) TAN 16.0514 + .9375/2 (COS 16.0514) = 316.134

$R_{m_T} = 328.160$

DIMENSIONS OF THE UPPER LUG ARE 24" x 24"

$\beta = C/R_m = .03648$ T = .9375 (CORRODED)

$\gamma = R_m/T = 350.871$

FROM REF. 1, P. 13A-56 V(SSE/2) = $2*10^3$ K

$\tau_{EQ} = 2*10^3/\pi (212.816)^* .9375 = 2.171$ KSI

$\tau_{x\phi} = 22.865/4(12).9375 = .508$ KSI

$\tau_{TOTAL} = 2.171 + .508 = 2.679$ KSI

FOR HOOP STRESSES TAKE THE RADIUS AT THE BOTTOM OF THE LUG: R = 316.134 + 12 x SIN 16.0514 = 319.452

$\sigma_{\phi_p} = 45 \times 319.452/(.9375 \times .96101) = 15.956$ KSI

$\sigma_{x_p} = 7.978$ KSI, $\sigma_{\phi_T} = 22.936$, $\sigma_{x_T} = 15.478$

* RAD. AT TOP OF THE LUG IN THE HORIZONTAL PLANE

BENDING :

$\sigma_{\phi_P} = 15.956$ $\sigma_{\phi_T} = 15.956 + 41.01 = 56.966$ KSI

$\sigma_{x_P} = 7.978$ $\sigma_{x_T} = 7.978 + 29.28 = 37.258$ KSI

$$P.S. = \frac{\sigma_\phi + \sigma_x}{2} \pm \sqrt{\left(\frac{\sigma_\phi - \sigma_x}{2}\right)^2 + \tau^2}$$

MEMBRANE :

$\sigma_1 = 23.799$ KSI

$\sigma_2 = 14.615$ KSI

S.I. = 23.799 KSI < $1.5 S_m$ = 28.95 KSI , OK

BENDING :

$\sigma_1 = 57.324$ KSI

$\sigma_2 = 36.900$ KSI

S.I. = 57.324 KSI < $3 S_m$ = 57.9 KSI , OK

SSE LOADS (MEMBRANE ONLY);

$\sigma_{\phi_T} = 15.956 + 7.85 = 23.806$ KSI

$\sigma_{x_T} = 7.978 + 8.43 = 16.408$ KSI

$V_{EQ} = 3.3 \times 10^3$ K

$\tau_{EQ} = 3.3 \times 10^3 / \pi (312.816) .9375 = 3.582$ KSI

$\tau_{x\phi} = 25.603 / 48 (.9375) = .569$ KSI

$\tau_{TOTAL} = 3.582 + .569 = 4.151$ KSI

$\sigma_1 = 25.667$ KSI < (1.5)(33.26) = 49.89 KSI

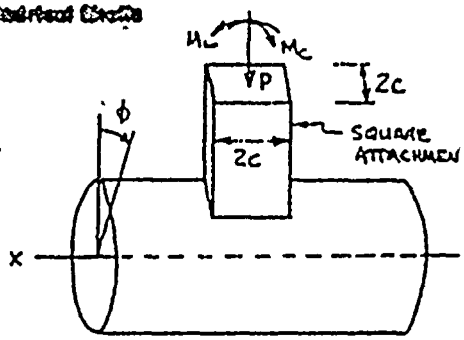
PREPARED BY / DATE: JKS/8-6-73

CHECKED BY / DATE: DCL/8-29-73

REVISION NUMBER:

SSE/2 LOADS FOR UPPER LUG

Table 6—Computation Sheet for Local Stresses in Cylindrical Shells *



CYLINDRICAL SHELL

1. Applied Loads*

- Radial load, P = 39.317 lb. (K)
- Circ. Moment, M_C = ——— in. lb.
- Long. Moment, M_L = ——— in. lb.
- Torsion Moment, M_T = ——— in. lb.
- Shear Load, V_C = ——— lb. (K)
- Shear Load, V_L = 22.250 lb. (K)

2. Geometry

- Vessel thickness, T = .9375 in.
- Attachment radius, r_o = ——— in.
- Vessel radius, R_m = ——— in. 328.96

3. Geometric Parameters

$\gamma = \frac{R_m}{T} = 350.891$

$\beta = \frac{c}{R_m} = .03648$

Stress Concentration due to:

a) membrane load, K_n = ———

b) bending load, K_b = ———

*NOTE: Enter all force values in accordance with sign convention

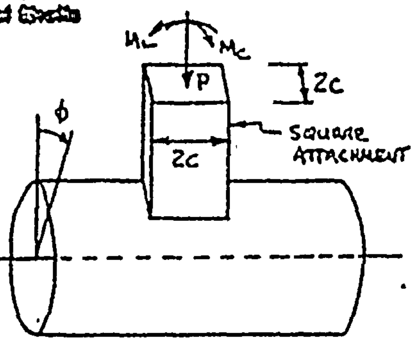
From Fig.	Read curves for	Compute absolute values of stress and enter result→	STRESSES – If load is opposite that shown, reverse signs shown							
			A_u	A_L	B_u	B_L	C_u	C_L	D_u	D_L
3C	$\frac{N\phi}{P/R_m}$ = .54	$K_n \left(\frac{N\phi}{P/R_m}\right) \cdot \frac{P}{R_m T}$ =	-6.98	-	+	-	+	-	-	-
1C	$\frac{M\phi}{P}$ = .125	$K_b \left(\frac{M\phi}{P}\right) \cdot \frac{6P}{T^2}$ =	34.03	+	-	+	-	+	+	+
3A	$\frac{N\phi}{M_c/R_m^2\beta}$ =	$K_n \left(\frac{N\phi}{M_c/R_m^2\beta}\right) \cdot \frac{M_c}{R_m^2\beta T}$ =					-	-	+	+
1A	$\frac{M\phi}{M_c/R_m\beta}$ =	$K_b \left(\frac{M\phi}{M_c/R_m\beta}\right) \cdot \frac{6M_c}{R_m\beta T^2}$ =					-	+	+	
3B	$\frac{N\phi}{M_L/R_m^2\beta}$ =	$K_n \left(\frac{N\phi}{M_L/R_m^2\beta}\right) \cdot \frac{M_L}{R_m^2\beta T}$ =	-	+	+	+				
1B or 1B-1	$\frac{M\phi}{M_L/R_m\beta}$ =	$K_b \left(\frac{M\phi}{M_L/R_m\beta}\right) \cdot \frac{6M_L}{R_m\beta T^2}$ =	-	+	+	-				
Add algebraically for summation of ϕ stresses, σ_ϕ =			41.01							
4C	$\frac{N_x}{P/R_m}$ = .58	$K_n \left(\frac{N_x}{P/R_m}\right) \cdot \frac{P}{R_m T}$ =	7.50	-	-	-	+	-	-	-
2C	$\frac{M_x}{P}$ = .08	$K_b \left(\frac{M_x}{P}\right) \cdot \frac{6P}{T^2}$ =	21.78	+	-	+	-	+		+
4A	$\frac{N_x}{M_c/R_m^2\beta}$ =	$K_n \left(\frac{N_x}{M_c/R_m^2\beta}\right) \cdot \frac{M_c}{R_m^2\beta T}$ =					-	+	+	+
2A	$\frac{M_x}{M_c/R_m\beta}$ =	$K_b \left(\frac{M_x}{M_c/R_m\beta}\right) \cdot \frac{6M_c}{R_m\beta T^2}$ =					-	+	+	+
4B	$\frac{N_x}{M_L/R_m^2\beta}$ =	$K_n \left(\frac{N_x}{M_L/R_m^2\beta}\right) \cdot \frac{M_L}{R_m^2\beta T}$ =	-	-	+	+				
2B or 2B-1	$\frac{M_x}{M_L/R_m\beta}$ =	$K_b \left(\frac{M_x}{M_L/R_m\beta}\right) \cdot \frac{6M_L}{R_m\beta T^2}$ =	-	+	+	-				
Add algebraically for summation of x stresses, σ_x =			29.28							
Shear stress due to Torsion, M_T		$\tau_{x\phi} = \tau_{\phi x} = \frac{M_T}{2\pi r_o^2 T}$ =	+	+	+	+	+	+	+	+
Shear stress due to load, V_c		$\tau_{x\phi} = \frac{V_c}{4cT}$ =	+	-	-	-				
Shear stress due to load, V_L		$\tau_{x\phi} = \frac{V_L}{4cT}$ =						-	+	+
Add algebraically for summation of shear stresses, τ =										

* FROM REF. 7, P. 10

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764	FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL			SUBSEC: 2
PREPARED BY / DATE: JKS/8-6-73			ARTICLE: 1
CHECKED BY / DATE: DCL/8-29-73			PAGE: 49
REVISION NUMBER:			

SSE LOADS FOR UPPER LUG

Table 5—Computation Sheet for Local Stresses in Cylindrical Shells *



CYLINDRICAL SHELL

1. Applied Loads*
   - Radial load, P = 44.327 lb. (K)
   - Circ. Moment, Mc = —— in. lb.
   - Long. Moment, ML = —— in. lb.
   - Torsion Moment, MT = —— in. lb.
   - Shear Load, Vc = —— lb. (K)
   - Shear Load, VL = —— lb. 25.603 K
2. Geometry
   - Vessel thickness, T = .9375 in.
   - Attachment radius, ro = —— in.
   - Vessel radius, Rm = —— in. 323.46
3. Geometric Parameters
   - $\gamma = \frac{R_m}{T} = 350.891$
   - $\beta = \frac{c}{R_m} = .03648$
   - Stress Concentration due to:
     - a) membrane load, Kn = ——
     - b) bending load, Kb = ——

*NOTE: Enter all force values in accordance with sign convention

From Fig.	Read curves for	Compute absolute values of stress and enter result	Au	AL	Bu	BL	Cu	CL	Du	DL
3C	$\frac{N\phi}{P/R_m}$ = .54	$K_n\left(\frac{N\phi}{P/R_m}\right)\cdot\frac{P}{R_mT}$ =	-7.85	-	-	-	-	-	-	-
1C	$\frac{M\phi}{P}$ =	$K_b\left(\frac{M\phi}{P}\right)\cdot\frac{6P}{T^2}$ =	-	-	-	-	-	-	-	-
3A	$\frac{N\phi}{M_c/R_m^2\beta}$ =	$K_n\left(\frac{N\phi}{M_c/R_m^2\beta}\right)\cdot\frac{M_c}{R_m^2\beta T}$ =					-	-	-	-
1A	$\frac{M\phi}{M_c/R_m\beta}$ =	$K_b\left(\frac{M\phi}{M_c/R_m\beta}\right)\cdot\frac{6M_c}{R_m\beta T^2}$ =					-	-	-	-
3B	$\frac{N\phi}{M_L/R_m^2\beta}$ =	$K_n\left(\frac{N\phi}{M_L/R_m^2\beta}\right)\cdot\frac{M_L}{R_m^2\beta T}$ =	-	-	-	-				
1B or 1B-1	$\frac{M\phi}{M_L/R_m\beta}$ =	$K_b\left(\frac{M\phi}{M_L/R_m\beta}\right)\cdot\frac{6M_L}{R_m\beta T^2}$ =	-	-	-	-				
Add algebraically for summation of ϕ stresses, σϕ =										
4C	$\frac{N_x}{P/R_m}$ = .58	$K_n\left(\frac{N_x}{P/R_m}\right)\cdot\frac{P}{R_mT}$ =	-8.43	-	-	-	-	-	-	-
2C	$\frac{M_x}{P}$ =	$K_b\left(\frac{M_x}{P}\right)\cdot\frac{6P}{T^2}$ =	-	-	-	-	-	-	-	-
4A	$\frac{N_x}{M_c/R_m^2\beta}$ =	$K_n\left(\frac{N_x}{M_c/R_m^2\beta}\right)\cdot\frac{M_c}{R_m^2\beta T}$ =					-	-	-	-
2A	$\frac{M_x}{M_c/R_m\beta}$ =	$K_b\left(\frac{M_x}{M_c/R_m\beta}\right)\cdot\frac{6M_c}{R_m\beta T^2}$ =					-	-	-	-
4B	$\frac{N_x}{M_L/R_m^2\beta}$ =	$K_n\left(\frac{N_x}{M_L/R_m^2\beta}\right)\cdot\frac{M_L}{R_m^2\beta T}$ =	-	-	-	-				
2B or 2B-1	$\frac{M_x}{M_L/R_m\beta}$ =	$K_b\left(\frac{M_x}{M_L/R_m\beta}\right)\cdot\frac{6M_L}{R_m\beta T^2}$ =	-	-	-	-				
Add algebraically for summation of x stresses, σx =										
Shear stress due to Torsion, MT		$\tau_{x\phi} = \tau_{\phi x} = \frac{M_T}{2A'}$ =	-	-	-	-	-	-	-	-
Shear stress due to load, Vc		$\tau_{x\phi} = \frac{V_c}{4cT}$ =	-	-	-	-				
Shear stress due to load, VL		$\tau_{x\phi} = \frac{V_L}{4cT}$ =					-	-	-	-
Add algebraically for summation of shear stresses, τ =										

* FROM REF. 7, P. 10

B. FOR LOWER LUG AT ELEV. 547'-9

R_m (AT 547'-9) = 237.315 + (6879.25 − 6573) TAN 16.0514 + .9375/2 (COS 16.0514) = 325.916

R_{m_T} = 339.139

DIMENSIONS OF THE LOWER LUG ARE 27" × 27"

β = .03981 γ = 361.748 T = .9375

V(SSE/2) = 2 × 10³ K , USE THE HORIZONTAL RADIUS AT THE TOP OF THE LUG TO BE CONSERVATIVE.

R = 325.916 − SIN 16.0514 × 13.5 = 322.183

τ_{EQ} = 2 × 10³/π(322.183).9375 = 2.108 KSI

$\tau_{x\phi}$ = 12.294/(.9375)54 = .243 KSI

τ_{TOTAL} = 2.108 + .243 = 2.351 KSI

FOR HOOP STRESSES TAKE THE RADIUS AT THE BOTTOM OF THE LUG: R = 325.916 + SIN 16.0514 × 13.5 = 329.649

σ_{ϕ_p} = 45 × 329.649/(.9375 × .96101) = 16.465 KSI

σ_{x_p} = 8.233 KSI

MEMBRANE STRESSES:

σ_ϕ = 16.465 + 6.26 = 22.725 KSI

σ_x = 8.233 + 7.18 = 15.413 KSI

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 2
PREPARED BY / DATE: DCL / 8-29-73					ARTICLE: 1
CHECKED BY / DATE: JM / 10-19-73					PAGE: 51
REVISION NUMBER:					

$\sigma_1 = 23.416$ KSI < 28.950 KSI

$\sigma_2 = 14.722$ KSI < 28.950 KSI

BENDING STRESSES:

$\sigma_\phi = 16.465 + 36.44 = 57.905$ KSI

$\sigma_x = 8.233 + 24.78 = 33.013$ KSI

$\sigma_1 = 53.179$ KSI < 57.90 KSI

$\sigma_2 = 32.739$ KSI < 57.90 KSI

SSE LOADS (MEMBRANE ONLY)

$\sigma_\phi = 16.465 + 7.24 = 23.705$ KSI

$\sigma_x = 8.233 + 8.31 = 16.543$ KSI

$\tau_{EQ} = 3.3 \times 10^3 / \pi (322.123)\, .9375 = 3.478$ KSI

$\tau_{x\phi} = 18.00 / .9375(54) = .356$ KSI

$\tau_{TOTAL} = 3.478 + .356 = 3.834$ KSI

$\sigma_1 = 25.370$ KSI $< (1.5)(33.26) = 49.89$ KSI

$\sigma_2 = 14.878$ KSI < 49.89 KSI

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764		FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				SUBSEC: 2
PREPARED BY / DATE: DCL / 8-29-73				ARTICLE: 1
CHECKED BY / DATE: JM / 10-19-73				PAGE: 52
REVISION NUMBER:				

SSE/2 LOADS FOR LOWER LUG

Table 0—Computation Sheet for Local Stresses in Cylindrical Shells *

1. Applied Loads*

- Radial load, P = 36.835 (K)
- Circ. Moment, Mc = ——— in. lb.
- Long. Moment, ML = ——— in. lb.
- Torsion Moment, MT = ——— in. lb.
- Shear Load, Vc = ——— lb. (½)
- Shear Load, VL = ——— lb. 12.794 K

2. Geometry

- Vessel thickness, T = .9375 in.
- Attachment radius, ro = ——— in.
- Vessel radius, Rm = ——— in. 339.139

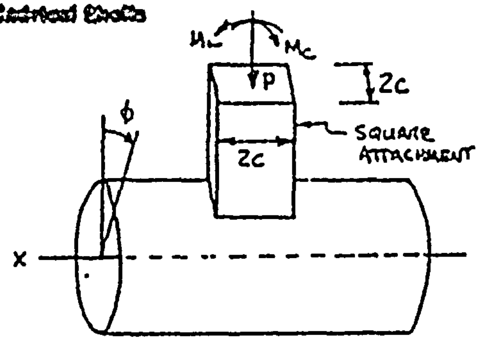
3. Geometric Parameters

$\gamma = \frac{R_m}{T} = 361.748$

$\beta = \frac{c}{R_m} = .03931$

Stress Concentration due to:
a) membrane load, Kn = ———
b) bending load, Kb = ———

*NOTE: Enter all force values in accordance with sign convention



CYLINDRICAL SHELL

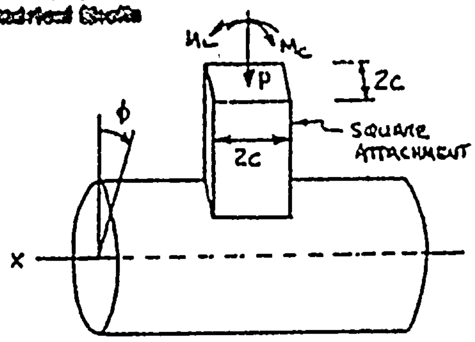
From Fig.	Read curves for	Compute absolute values of stress and enter result	STRESSES — if load is opposite that shown, reverse signs shown: Au	AL	Bu	BL	Cu	CL	Du	DL
3C	$\frac{N\phi}{P/R_m}$ = .54	$K_n\left(\frac{N\phi}{P/R_m}\right)\cdot\frac{P}{R_mT}$ =	-6.26	-	-	-		-	-	-
1C	$\frac{M\phi}{P}$ = .12	$K_b\left(\frac{M\phi}{P}\right)\cdot\frac{6P}{T^2}$ =	-30.18	-	-	+	-	+	+	+
3A	$\frac{N\phi}{M_c/R_m^2\beta}$ =	$K_n\left(\frac{N\phi}{M_c/R_m^2\beta}\right)\cdot\frac{M_c}{R_m^2\beta T}$ =					-	-	+	+
1A	$\frac{M\phi}{M_c/R_m\beta}$ =	$K_b\left(\frac{M\phi}{M_c/R_m\beta}\right)\cdot\frac{6M_c}{R_m\beta T^2}$ =					-	+	+	-
3B	$\frac{N\phi}{M_L/R_m^2\beta}$ =	$K_n\left(\frac{N\phi}{M_L/R_m^2\beta}\right)\cdot\frac{M_L}{R_m^2\beta T}$ =	-	+	+	-				
1B or 1B-1	$\frac{M\phi}{M_L/R_m\beta}$ =	$K_b\left(\frac{M\phi}{M_L/R_m\beta}\right)\cdot\frac{6M_L}{R_m\beta T^2}$ =	-	+	+	-				
Add algebraically for summation of φ stresses, σφ =			36.44							
4C	$\frac{N_x}{P/R_m}$ = .62	$K_n\left(\frac{N_x}{P/R_m}\right)\cdot\frac{P}{R_mT}$ =	-7.18	-	-	-	-	-	-	-
2C	$\frac{M_x}{P}$ = .07	$K_b\left(\frac{M_x}{P}\right)\cdot\frac{6P}{T^2}$ =	-17.60	+	-	+	-	+	-	+
4A	$\frac{N_x}{M_c/R_m^2\beta}$ =	$K_n\left(\frac{N_x}{M_c/R_m^2\beta}\right)\cdot\frac{M_c}{R_m^2\beta T}$ =					-	-	+	+
2A	$\frac{M_x}{M_c/R_m\beta}$ =	$K_b\left(\frac{M_x}{M_c/R_m\beta}\right)\cdot\frac{6M_c}{R_m\beta T^2}$ =					-	+	+	-
4B	$\frac{N_x}{M_L/R_m^2\beta}$ =	$K_n\left(\frac{N_x}{M_L/R_m^2\beta}\right)\cdot\frac{M_L}{R_m^2\beta T}$ =	-	-	+	+				
2B or 2B-1	$\frac{M_x}{M_L/R_m\beta}$ =	$K_b\left(\frac{M_x}{M_L/R_m\beta}\right)\cdot\frac{6M_L}{R_m\beta T^2}$ =	-	+	+	-				
Add algebraically for summation of x stresses, σx =			24.78							
Shear stress due to Torsion, MT		$\tau_{x\phi} = \tau_{\phi x} = \frac{M_T}{2A'}$ =	+	+	+	+	+	+	+	+
Shear stress due to load, Vc		$\tau_{x\phi} = \frac{V_c}{4cT}$ =	+	-	-	+				
Shear stress due to load, VL		$\tau_{x\phi} = \frac{V_L}{4cT}$ =						-	+	+
Add algebraically for summation of shear stresses, τ =										

* FROM REF. 7, P. 10

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 2
PREPARED BY / DATE: JKS/8-7-73					ARTICLE: 1
CHECKED BY / DATE: DCL/8-29-73					PAGE: 53
REVISION NUMBER:					

SSE LOADS FOR LOWER LUG

Table 5—Computation Sheet for Local Stresses in Cylindrical Shells *



1. Applied Loads*
   - Radial load, P = 42.615 lb. K
   - Circ. Moment, Mc = —— in. lb.
   - Long. Moment, ML = —— in. lb.
   - Torsion Moment, MT = —— in. lb.
   - Shear Load, Vc = 18 lb. (K)
   - Shear Load, VL = —— lb. 17.915 K
2. Geometry
   - Vessel thickness, T = .9375 in.
   - Attachment radius, ro = —— in.
   - Vessel radius, Rm = —— in. 339.139

3. Geometric Parameters
   - $\gamma = \frac{R_m}{T}$ = 361.748
   - $\beta = \frac{c}{R_m}$ = .03981

Stress Concentration due to:
- a) membrane load, Kn = ——
- b) bending load, Kb = ——

*NOTE: Enter all force values in accordance with sign convention

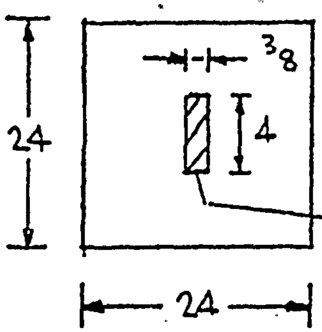
CYLINDRICAL SHELL

From Fig.	Read curves for	Compute absolute values of stress and enter result	Au	AL	Bu	BL	Cu	CL	Du	DL
3C	$\frac{N\phi}{P/R_m}$ = .54	$K_n\left(\frac{N\phi}{P/R_m}\right)\cdot\frac{P}{R_mT}$ =	-7.24	-	-	-	-	-	-	-
1C	$\frac{M\phi}{P}$ =	$K_b\left(\frac{M\phi}{P}\right)\cdot\frac{6P}{T^2}$ =	-	+	-	+	-	+	-	+
3A	$\frac{N\phi}{M_c/R_m^2\beta}$ =	$K_n\left(\frac{N\phi}{M_c/R_m^2\beta}\right)\cdot\frac{M_c}{R_m^2\beta T}$ =					-	-	+	+
1A	$\frac{M\phi}{M_c/R_m\beta}$ =	$K_b\left(\frac{M\phi}{M_c/R_m\beta}\right)\cdot\frac{6M_c}{R_m\beta T^2}$ =					-	+	+	-
3B	$\frac{N\phi}{M_L/R_m^2\beta}$ =	$K_n\left(\frac{N\phi}{M_L/R_m^2\beta}\right)\cdot\frac{M_L}{R_m^2\beta T}$ =	-	-	+	+				
1B or 1B-1	$\frac{M\phi}{M_L/R_m\beta}$ =	$K_b\left(\frac{M\phi}{M_L/R_m\beta}\right)\cdot\frac{6M_L}{R_m\beta T^2}$ =	-	+	+	-				
Add algebraically for summation of φ stresses, $\sigma\phi$ =										
4C	$\frac{N_x}{P/R_m}$ = .62	$K_n\left(\frac{N_x}{P/R_m}\right)\cdot\frac{P}{R_mT}$ =	-8.31	-	-	-	-	-	-	-
2C	$\frac{M_x}{P}$ =	$K_b\left(\frac{M_x}{P}\right)\cdot\frac{6P}{T^2}$ =	-	+	-	+	-	+	-	+
4A	$\frac{N_x}{M_c/R_m^2\beta}$ =	$K_n\left(\frac{N_x}{M_c/R_m^2\beta}\right)\cdot\frac{M_c}{R_m^2\beta T}$ =					-	-	+	+
2A	$\frac{M_x}{M_c/R_m\beta}$ =	$K_b\left(\frac{M_x}{M_c/R_m\beta}\right)\cdot\frac{6M_c}{R_m\beta T^2}$ =					-	+	+	-
4B	$\frac{N_x}{M_L/R_m^2\beta}$ =	$K_n\left(\frac{N_x}{M_L/R_m^2\beta}\right)\cdot\frac{M_L}{R_m^2\beta T}$ =	-	-	+	+				
2B or 2B-1	$\frac{M_x}{M_L/R_m\beta}$ =	$K_b\left(\frac{M_x}{M_L/R_m\beta}\right)\cdot\frac{6M_L}{R_m\beta T^2}$ =	-	+	+	-				
Add algebraically for summation of X stresses, σ_x =										
Shear stress due to Torsion, MT		$\tau x\phi = \tau\phi x = \frac{M_T}{2\pi r_o^2 T}$ =	+	+	+	+	+	+	+	+
Shear stress due to load, Vc		$\tau x\phi = \frac{V_c}{4cT}$ =	+	+	-	-				
Shear stress due to load, VL		$\tau x\phi = \frac{V_L}{4cT}$ =					-	-	+	+
Add algebraically for summation of shear stresses, τ =										

* FROM REF. 7, P. 10

III. DESIGN OF PAD PLATE

A. DESIGN OF UPPER RATE



USE CASE #38, TABLE X OF REF. 5

$b = a = 24''$, $b_1 = .375$, $a_1 = 4$

$a_1/b = .1667$ $b_1/b = .01563$

$\beta = 1.82$

SSE/2 LOADS: $P_{r_T} = 39.877$

$S = 1.82 \times 39.877 / t^2$ WITH $S_{ALL} = .75 \times 38 = 28.5$ KSI

$t = \sqrt{1.82 \times 39.877 / 28.5} = 1.596$

SSE LOADS: $P_{r_T} = 44.827$ K

$S_{ALL} = 1.5 \times 33.26 = 49.89$ KSI

$t = \sqrt{1.82 \times 44.827 / 49.89} = 1.279$

USE $t = 1.625'' > 1.596''$

B. DESIGN OF LOWER RATE

LOADING ON LOWER PAD R IS LESS SEVERE THAN ON UPPER PAD R; 1 5/8" R, THEREFORE, WILL BE SATISFACTORY FOR LOWER PAD R.

PREPARED BY / DATE: DCL / 11-27-73				
CHECKED BY / DATE: HFS / 11-28-73				
REVISION NUMBER:				

AX-2 CONE ANALYSIS

THE MODEL ANALYZED AND A PREFACE TO THE FOLLOWING AX-2 PRINTOUT ARE FOUND ON PAGES IV.2.1.10, 11, 12. AS IS INDICATED ON PAGE IV.2.1.12, THE RESULTS FOR BODY 4-1 ARE NOT VALID. AN ANALYSIS OF THIS BODY CAN BE FOUND ON PAGES IV.10.3.45-48

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

NUMBER OF NODES = 35 NUMBER OF BODIES = 36

NODE NO.	COORDINATE R	COORDINATE Z	OBLIQUE AXIS ANGLE	FIXITY CODE
1	0.502823E 03	0.0	0.739486E 02	100
2	0.490722E 03	0.420583E 02	0.0	0
3	0.489911E 03	0.418250E 02	0.0	0
4	0.455467E 03	0.161543E 03	0.0	0
5	0.455557E 03	0.161569E 03	0.0	0
6	0.437882E 03	0.223000E 03	0.0	0
7	0.410507E 03	0.223000E 03	0.0	0
9	0.430258E 03	0.249500E 03	0.0	0
10	0.410507E 03	0.249500E 03	0.0	0
13	0.422892E 03	0.275098E 03	0.0	0
15	0.422862E 03	0.275090E 03	0.0	0
16	0.392059E 03	0.382152E 03	0.0	0
17	0.392029E 03	0.382143E 03	0.0	0
18	0.361070E 03	0.489747E 03	0.0	0
19	0.361130E 03	0.489764E 03	0.0	0
21	0.348186E 03	0.534750E 03	0.0	0
22	0.325250E 03	0.534750E 03	0.0	0
23	0.339699E 03	0.564250E 03	0.0	0
24	0.325250E 03	0.564250E 03	0.0	0
25	0.330844E 03	0.595024E 03	0.0	0
26	0.330604E 03	0.594955E 03	0.0	0
27	0.299386E 03	0.703459E 03	0.0	0
28	0.280427E 03	0.734000E 03	0.0	0
29	0.290599E 03	0.734000E 03	0.0	0
30	0.280427E 03	0.729519E 03	0.0	0
31	0.280427E 03	0.738481E 03	0.0	0
32	0.267047E 03	0.815856E 03	0.0	0
33	0.266957E 03	0.815830E 03	0.0	0
34	0.228921E 03	0.911326E 03	0.0	0
35	0.239482E 03	0.911326E 03	0.0	0
36	0.228921E 03	0.908076E 03	0.0	0
37	0.228921E 03	0.914576E 03	0.0	0
38	0.237670E 03	0.917621E 03	0.0	0
39	0.237714E 03	0.917633E 03	0.0	0
40	0.190541E 03	0.999500E 03	0.0	0

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

NODE NO.	ELASTIC FOUNDATION CONSTANTS R-DIR.	Z-DIR.	ROTATION
1	0.0	0.0	0.0
2	0.0	0.0	0.0
3	0.0	0.0	0.0
4	0.0	0.0	0.0
5	0.0	0.0	0.0
6	0.0	0.0	0.0
7	0.0	0.0	0.0
9	0.0	0.0	0.0
10	0.0	0.0	0.0
13	0.0	0.0	0.0
15	0.0	0.0	0.0
16	0.0	0.0	0.0
17	0.0	0.0	0.0
18	0.0	0.0	0.0
19	0.0	0.0	0.0
21	0.0	0.0	0.0
22	0.0	0.0	0.0
23	0.0	0.0	0.0
24	0.0	0.0	0.0
25	0.0	0.0	0.0
26	0.0	0.0	0.0
27	0.0	0.0	0.0
28	0.0	0.0	0.0
29	0.0	0.0	0.0
30	0.0	0.0	0.0
31	0.0	0.0	0.0
32	0.0	0.0	0.0
33	0.0	0.0	0.0
34	0.0	0.0	0.0
35	0.0	0.0	0.0
36	0.0	0.0	0.0
37	0.0	0.0	0.0
38	0.0	0.0	0.0
39	0.0	0.0	0.0
40	0.0	0.0	0.0

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

NODE NO.	PRESCRIBED DISPLACEMENTS R-DIR.	Z-DIR.	ROTATION
1	0.0	0.0	0.0
2	0.0	0.0	0.0
3	0.0	0.0	0.0
4	0.0	0.0	0.0
5	0.0	0.0	0.0
6	0.0	0.0	0.0
7	0.0	0.0	0.0
9	0.0	0.0	0.0
10	0.0	0.0	0.0
13	0.0	0.0	0.0
15	0.0	0.0	0.0
16	0.0	0.0	0.0
17	0.0	0.0	0.0
18	0.0	0.0	0.0
19	0.0	0.0	0.0
21	0.0	0.0	0.0
22	0.0	0.0	0.0
23	0.0	0.0	0.0
24	0.0	0.0	0.0
25	0.0	0.0	0.0
26	0.0	0.0	0.0
27	0.0	0.0	0.0
28	0.0	0.0	0.0
29	0.0	0.0	0.0
30	0.0	0.0	0.0
31	0.0	0.0	0.0
32	0.0	0.0	0.0
33	0.0	0.0	0.0
34	0.0	0.0	0.0
35	0.0	0.0	0.0
36	0.0	0.0	0.0
37	0.0	0.0	0.0
38	0.0	0.0	0.0
39	0.0	0.0	0.0
40	0.0	0.0	0.0

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

BODY NO. 1 -- BODY TYPE 6, SEGMENT OF A CONE

EDGE NODES ARE 2 AND 1 THICKNESS = 0.293750E 01

APEX ANGLE = 0.160517E 02 MERIDIAN LENGTH = 0.437645E 02

DIMENSION XA = 0.177474E 04 DIMENSION XB = 0.181850E 04

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 2 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 2 AND 3

BODY NO. 3 -- BODY TYPE 6, SEGMENT OF A CONE

EDGE NODES ARE 4 AND 3 THICKNESS = 0.125000E 01

APEX ANGLE = 0.160513E 02 MERIDIAN LENGTH = 0.124575E 03

DIMENSION XA = 0.164726E 04 DIMENSION XB = 0.177184E 04

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 4 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 5 AND 4

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

BODY NO. 5 -- BODY TYPE 6, SEGMENT OF A CONE

EDGE NODES ARE 6 AND 5 THICKNESS = 0.143750E 01

APEX ANGLE = 0.160513E 02 MERIDIAN LENGTH = 0.639230E 02

DIMENSION XA = 0.158367E 04 DIMENSION XB = 0.164760E 04

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 7 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 7 AND 6 THICKNESS = 0.150000E 01

INSIDE RADIUS =0.410507E 03 OUTSIDE RADIUS = 0.437882E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 8 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 10 AND 7 THICKNESS = 0.250000E 01

RADIUS = 0.410507E 03 LENGTH = 0.265000E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 9 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 10 AND 9 THICKNESS = 0.150000E 01

INSIDE RADIUS =0.410507E 03 OUTSIDE RADIUS = 0.430258E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

BODY NO. 12 -- BODY TYPE 6, SEGMENT OF A CONE
EDGE NODES ARE 9 AND 6 THICKNESS = 0.143750E 01
APEX ANGLE = 0.160514E 02 MERIDIAN LENGTH = 0.275750E 02
DIMENSION XA = 0.155608E 04 DIMENSION XB = 0.158366E 04
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 15 -- BODY TYPE 6, SEGMENT OF A CONE
EDGE NODES ARE 13 AND 9 THICKNESS = 0.143750E 01
APEX ANGLE = 0.160518E 02 MERIDIAN LENGTH = 0.266366E 02
DIMENSION XA = 0.152941E 04 DIMENSION XB = 0.155604E 04
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 16 -- BODY TYPE 9, RIGID CONNECTOR
EDGE NODES ARE 13 AND 15

BODY NO. 17 -- BODY TYPE 6, SEGMENT OF A CONE
EDGE NODES ARE 16 AND 15 THICKNESS = 0.137500E 01
APEX ANGLE = 0.160514E 02 MERIDIAN LENGTH = 0.111406E 03
DIMENSION XA = 0.141793E 04 DIMENSION XB = 0.152934E 04
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

BODY NO. 18 -- BODY TYPE 9, RIGID CONNECTOR
EDGE NODES ARE 16 AND 17

BODY NO. 19 -- BODY TYPE 6, SEGMENT OF A CONE
EDGE NODES ARE 18 AND 17 THICKNESS = 0.131250E 01
APEX ANGLE = 0.160513E 02 MERIDIAN LENGTH = 0.111968E 03
DIMENSION XA = 0.130587E 04 DIMENSION XB = 0.141784E 04
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 20 -- BODY TYPE 9, RIGID CONNECTOR
EDGE NODES ARE 18 AND 19

BODY NO. 21 -- BODY TYPE 6, SEGMENT OF A CONE
EDGE NODES ARE 21 AND 19 THICKNESS = 0.143750E 01
APEX ANGLE = 0.160515E 02 MERIDIAN LENGTH = 0.468113E 02
DIMENSION XA = 0.125926E 04 DIMENSION XB = 0.130607E 04
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

BODY NO. 22 -- BODY TYPE 6, SEGMENT OF A CONE

EDGE NODES ARE 23 AND 21 THICKNESS = 0.143750E 01

APEX ANGLE = 0.160512E 02 MERIDIAN LENGTH = 0.306967E 02

DIMENSION XA = 0.122858E 04 DIMENSION XB = 0.125928E 04

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 23 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 22 AND 21 THICKNESS = 0.150000E 01

INSIDE RADIUS =0.325250E 03 OUTSIDE RADIUS = 0.348186E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 24 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 24 AND 22 THICKNESS = 0.250000E 01

RADIUS = 0.325250E 03 LENGTH = 0.295000E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 25 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 24 AND 23 THICKNESS = 0.150000E 01

INSIDE RADIUS =0.325250E 03 OUTSIDE RADIUS = 0.339699E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

BODY NO. 26 -- BODY TYPE 6, SEGMENT OF A CONE
EDGE NODES ARE 25 AND 23 THICKNESS = 0.143750E 01
APEX ANGLE = 0.160513E 02 MERIDIAN LENGTH = 0.320228E 02
DIMENSION XA = 0.119655E 04 DIMENSION XB = 0.122858E 04
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 27 -- BODY TYPE 9, RIGID CONNECTOR
EDGE NODES ARE 25 AND 26

BODY NO. 28 -- BODY TYPE 6, SEGMENT OF A CONE
EDGE NODES ARE 27 AND 26 THICKNESS = 0.937500E 00
APEX ANGLE = 0.160513E 02 MERIDIAN LENGTH = 0.112906E 03
DIMENSION XA = 0.108277E 04 DIMENSION XB = 0.119568E 04
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 29 -- BODY TYPE 6, SEGMENT OF A CONE
EDGE NODES ARE 29 AND 27 THICKNESS = 0.937500E 00
APEX ANGLE = 0.160514E 02 MERIDIAN LENGTH = 0.317797E 02
DIMENSION XA = 0.105099E 04 DIMENSION XB = 0.108277E 04
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

BODY NO. 30 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 28 AND 29 THICKNESS = 0.499000E 00

INSIDE RADIUS =0.280427E 03 OUTSIDE RADIUS = 0.290599E 03 +0.172

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 31 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 28 AND 30 THICKNESS = 0.795000E 00

RADIUS = 0.280427E 03 LENGTH = 0.448120E 01

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 32 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 31 AND 28 THICKNESS = 0.795000E 00

RADIUS = 0.280427E 03 LENGTH = 0.448096E 01

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 33 -- BODY TYPE 6, SEGMENT OF A CONE

EDGE NODES ARE 32 AND 29 THICKNESS = 0.937500E 00

APEX ANGLE = 0.160515E 02 MERIDIAN LENGTH = 0.851769E 02

DIMENSION XA = 0.965809E 03 DIMENSION XB = 0.105099E 04

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

BODY NO. 34 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 32 AND 33

BODY NO. 35 -- BODY TYPE 6, SEGMENT OF A CONE

EDGE NODES ARE 35 AND 33 THICKNESS = 0.750000E 00

APEX ANGLE = 0.160513E 02 MERIDIAN LENGTH = 0.993696E 02

DIMENSION XA = 0.866122E 03 DIMENSION XB = 0.965491E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 36 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 34 AND 35 THICKNESS = 0.348000E 00

INSIDE RADIUS =0.228921E 03 OUTSIDE RADIUS = 0.239482E 03 10.561.

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 37 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 34 AND 36 THICKNESS = 0.451000E 00

RADIUS = 0.228921E 03 LENGTH = 0.325000E 01

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

BODY NO. 38 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 37 AND 34 THICKNESS = 0.451000E 00

RADIUS = 0.228921E 03 LENGTH = 0.325000E 01

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 39 -- BODY TYPE 6, SEGMENT OF A CONE

EDGE NODES ARE 38 AND 35 THICKNESS = 0.750000E 00

APEX ANGLE = 0.160518E 02 MERIDIAN LENGTH = 0.655030E 01

DIMENSION XA = 0.859548E 03 DIMENSION XB = 0.866098E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 40 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 39 AND 38

BODY NO. 41 -- BODY TYPE 6, SEGMENT OF A CONE

EDGE NODES ARE 40 AND 39 THICKNESS = 0.812500E 00

APEX ANGLE = 0.299513E 02 MERIDIAN LENGTH = 0.944852E 02

DIMENSION XA = 0.381643E 03 DIMENSION XB = 0.476129E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY LOADS

```
BODY NO.   1  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.   3  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.   5  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY LOADS

```
BODY NO.   7  BODY TYPE   3  X = RADIUS
     PN = ( 0.0          ) + ( 0.0          )*X
     PPHI = ( 0.0        ) + ( 0.0          )*X
     T = ( 0.0           + ( 0.0            )*Z/H)
      + ( 0.0            + ( 0.0            )*Z/H)*X
      + ( 0.0            + ( 0.0            )*Z/H)*X*X
BODY NO.   8  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.0          ) + ( 0.0          )*X
     PPHI = ( 0.0        ) + ( 0.0          )*X
     T = ( 0.0           + ( 0.0            )*Z/H)
      + ( 0.0            + ( 0.0            )*Z/H)*X
      + ( 0.0            + ( 0.0            )*Z/H)*X*X
BODY NO.   9  BODY TYPE   3  X = RADIUS
     PN = ( 0.0          ) + ( 0.0          )*X
     PPHI = ( 0.0        ) + ( 0.0          )*X
     T = ( 0.0           + ( 0.0            )*Z/H)
      + ( 0.0            + ( 0.0            )*Z/H)*X
      + ( 0.0            + ( 0.0            )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY LOADS

```
BODY NO.  12  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0           )*X
     PPHI = ( 0.0         ) + ( 0.0           )*X
     T = ( 0.0           + ( 0.0           )*Z/H)
       + ( 0.0           + ( 0.0           )*Z/H)*X
       + ( 0.0           + ( 0.0           )*Z/H)*X*X
BODY NO.  15  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0           )*X
     PPHI = ( 0.0         ) + ( 0.0           )*X
     T = ( 0.0           + ( 0.0           )*Z/H)
       + ( 0.0           + ( 0.0           )*Z/H)*X
       + ( 0.0           + ( 0.0           )*Z/H)*X*X
BODY NO.  17  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0           )*X
     PPHI = ( 0.0         ) + ( 0.0           )*X
     T = ( 0.0           + ( 0.0           )*Z/H)
       + ( 0.0           + ( 0.0           )*Z/H)*X
       + ( 0.0           + ( 0.0           )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY LOADS

```
BODY NO.  19   BODY TYPE   6   X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0            )*X
     PPHI = ( 0.0            ) + ( 0.0            )*X
     T = ( 0.0            + ( 0.0            )*Z/H)
      + ( 0.0             + ( 0.0            )*Z/H)*X
      + ( 0.0             + ( 0.0            )*Z/H)*X*X
BODY NO.  21   BODY TYPE   6   X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0            )*X
     PPHI = ( 0.0            ) + ( 0.0            )*X
     T = ( 0.0            + ( 0.0            )*Z/H)
      + ( 0.0             + ( 0.0            )*Z/H)*X
      + ( 0.0             + ( 0.0            )*Z/H)*X*X
BODY NO.  22   BODY TYPE   6   X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0            )*X
     PPHI = ( 0.0            ) + ( 0.0            )*X
     T = ( 0.0            + ( 0.0            )*Z/H)
      + ( 0.0             + ( 0.0            )*Z/H)*X
      + ( 0.0             + ( 0.0            )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY LOADS

```
BODY NO.  23  BODY TYPE   3  X = RADIUS
     PN = ( 0.0          ) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
       + ( 0.0          + ( 0.0          )*Z/H)*X
       + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  24  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.0          ) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
       + ( 0.0          + ( 0.0          )*Z/H)*X
       + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  25  BODY TYPE   3  X = RADIUS
     PN = ( 0.0          ) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
       + ( 0.0          + ( 0.0          )*Z/H)*X
       + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY LOADS

```
BODY NO.  26  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0           )*Z/H)
      + ( 0.0          + ( 0.0           )*Z/H)*X
      + ( 0.0          + ( 0.0           )*Z/H)*X*X
BODY NO.  28  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0           )*Z/H)
      + ( 0.0          + ( 0.0           )*Z/H)*X
      + ( 0.0          + ( 0.0           )*Z/H)*X*X
BODY NO.  29  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0           )*Z/H)
      + ( 0.0          + ( 0.0           )*Z/H)*X
      + ( 0.0          + ( 0.0           )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY LOADS

```
BODY NO.  30  BODY TYPE  3  X = RADIUS
     PN = ( 0.0           ) + ( 0.0           )*X
     PPHI = ( 0.0         ) + ( 0.0           )*X
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0            + ( 0.0           )*Z/H)*X
      + ( 0.0            + ( 0.0           )*Z/H)*X*X
BODY NO.  31  BODY TYPE  1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.0           ) + ( 0.0           )*X
     PPHI = ( 0.0         ) + ( 0.0           )*X
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0            + ( 0.0           )*Z/H)*X
      + ( 0.0            + ( 0.0           )*Z/H)*X*X
BODY NO.  32  BODY TYPE  1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.0           ) + ( 0.0           )*X
     PPHI = ( 0.0         ) + ( 0.0           )*X
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0            + ( 0.0           )*Z/H)*X
      + ( 0.0            + ( 0.0           )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY LOADS

```
BODY NO.  33   BODY TYPE   6   X=DISTANCE ALONG MERIDIAN FROM SMALL END
      PN = ( 0.450000E 02) + ( 0.0            )*X
      PPHI = ( 0.0          ) + ( 0.0            )*X
      T = ( 0.0           + ( 0.0            )*Z/H)
       + ( 0.0            + ( 0.0            )*Z/H)*X
       + ( 0.0            + ( 0.0            )*Z/H)*X*X
BODY NO.  35   BODY TYPE   6   X=DISTANCE ALONG MERIDIAN FROM SMALL END
      PN = ( 0.450000E 02) + ( 0.0            )*X
      PPHI = ( 0.0          ) + ( 0.0            )*X
      T = ( 0.0           + ( 0.0            )*Z/H)
       + ( 0.0            + ( 0.0            )*Z/H)*X
       + ( 0.0            + ( 0.0            )*Z/H)*X*X
BODY NO.  36   BODY TYPE   3   X = RADIUS
      PN = ( 0.0          ) + ( 0.0            )*X
      PPHI = ( 0.0          ) + ( 0.0            )*X
      T = ( 0.0           + ( 0.0            )*Z/H)
       + ( 0.0            + ( 0.0            )*Z/H)*X
       + ( 0.0            + ( 0.0            )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY LOADS

```
BODY NO.  37  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.0          ) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  38  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.0          ) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO.  39  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY LOADS

BODY NO. 41 BODY TYPE 6 X=DISTANCE ALONG MERIDIAN FROM SMALL END

```
    PN = ( 0.450000E 02) + ( 0.0           )*X
    PPHI = ( 0.0          ) + ( 0.0          )*X
    T = ( 0.0          + ( 0.0           )*Z/H)
      + ( 0.0          + ( 0.0           )*Z/H)*X
      + ( 0.0          + ( 0.0           )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF CONE

UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS
CIRCUMFERENTIAL LINE LOADS

NODE	R-DIR.	Z-DIR.	MOMENT
1	0.0	0.0	0.0
2	0.0	0.0	0.0
3	0.0	0.0	0.0
4	0.0	0.0	0.0
5	0.0	0.0	0.0
6	0.0	0.0	0.0
7	0.0	0.0	0.0
9	0.0	0.0	0.0
10	0.0	0.0	0.0
13	0.0	0.0	0.0
15	0.0	0.0	0.0
16	0.0	0.0	0.0
17	0.0	0.0	0.0
18	0.0	0.0	0.0
19	0.0	0.0	0.0
21	0.0	0.0	0.0
22	0.0	0.0	0.0
23	0.0	0.0	0.0
24	0.0	0.0	0.0
25	0.0	0.0	0.0
26	0.0	0.0	0.0
27	0.0	0.0	0.0
28	0.0	0.0	0.0
29	0.0	0.0	0.0
30	0.0	0.0	0.0
31	0.0	0.0	0.0
32	0.0	0.0	0.0
33	0.0	0.0	0.0
34	0.0	0.0	0.0
35	0.0	0.0	0.0
36	0.0	0.0	0.0
37	0.0	0.0	0.0
38	0.0	0.0	0.0
39	0.0	0.0	0.0
40	0.0	0.427640E 04	0.0

$$\frac{P*R}{2} = \frac{45*190.0625}{2}$$

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

NODE NO.	NODE DISPLACEMENTS R OR R' DIR.	Z OR Z' DIR.	ROTATION	OBLIQUE AXIS ANGLE
1	0.0	0.497210E-01	0.311422E-02	0.739486E 02
2	0.212465E 00	0.636928E-01	0.586569E-02	0.0
3	0.211096E 00	0.684486E-01	0.586569E-02	0.0
4	0.227627E 00	0.896279E-01	-0.181841E-02	0.0
5	0.227580E 00	0.897917E-01	-0.181841E-02	0.0
6	0.714358E-01	0.534321E-01	-0.898275E-03	0.0
7	0.724487E-01	0.648310E-01	-0.665146E-04	0.0
9	0.739050E-01	0.592615E-01	0.107063E-02	0.0
10	0.747174E-01	0.634762E-01	0.300296E-03	0.0
13	0.154423E 00	0.864956E-01	0.296068E-02	0.0
15	0.154398E 00	0.865844E-01	0.296068E-02	0.0
16	0.163203E 00	0.100641E 00	0.221677E-03	0.0
17	0.163201E 00	0.100647E 00	0.221677E-03	0.0
18	0.138347E 00	0.104593E 00	-0.123258E-02	0.0
19	0.138326E 00	0.104667E 00	-0.123258E-02	0.0
21	0.463684E-01	0.834354E-01	-0.379356E-03	0.0
22	0.470034E-01	0.899470E-01	-0.335422E-03	0.0
23	0.455289E-01	0.875931E-01	0.353707E-03	0.0
24	0.459589E-01	0.887976E-01	0.329529E-03	0.0
25	0.137164E 00	0.117419E 00	0.481364E-02	0.0
26	0.136832E 00	0.118576E 00	0.481364E-02	0.0
27	0.136742E 00	0.131668E 00	-0.646809E-03	0.0
28	0.853938E-01	0.117803E 00	-0.299002E-03	0.0
29	0.846756E-01	0.120834E 00	-0.214297E-03	0.0
30	0.857833E-01	0.118214E 00	-0.161442E-04	0.0
31	0.831248E-01	0.117399E 00	-0.575406E-03	0.0
32	0.122542E 00	0.141147E 00	0.206503E-02	0.0
33	0.122489E 00	0.141332E 00	0.206503E-02	0.0
34	-0.201560E-01	0.165301E-01	-0.731675E-02	0.0
35	-0.199340E-01	0.113084E 00	-0.108944E-01	0.0
36	0.366182E-02	0.164949E-01	-0.733009E-02	0.0
37	-0.434033E-01	0.166657E-01	-0.709619E-02	0.0
38	-0.647299E-01	0.102304E 00	0.245520E-03	0.0
39	-0.647269E-01	0.102293E 00	0.245520E-03	0.0
40	0.835911E 00	0.627539E 00	0.839607E-01	0.0

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

NODE NO.	REACTION LOADS R OR R' DIR.	Z OR Z' DIR.	MOMENT	OBLIQUE AXIS ANGLE
1	0.117266E 05	0.0	0.0	0.739486E 02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 1

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11442.	38917.	-8219.	-2271.	-13.
2	11476.	36770.	-8163.	-2264.	53.
3	11507.	34736.	-7965.	-2214.	111.
4	11536.	32812.	-7646.	-2128.	159.
5	11562.	30995.	-7227.	-2012.	198.
6	11586.	29277.	-6726.	-1870.	229.
7	11608.	27652.	-6164.	-1709.	253.
8	11628.	26112.	-5557.	-1534.	269.
9	11645.	24648.	-4920.	-1349.	278.
10	11661.	23253.	-4271.	-1160.	281.
11	11675.	21918.	-3623.	-970.	278.
12	11687.	20633.	-2990.	-785.	268.
13	11698.	19391.	-2385.	-607.	253.
14	11707.	18183.	-1823.	-440.	233.
15	11715.	17003.	-1314.	-290.	207.
16	11721.	15843.	-872.	-159.	176.
17	11725.	14697.	-507.	-50.	139.
18	11728.	13562.	-233.	31.	98.
19	11730.	12433.	-60.	83.	51.
20	11730.	11308.	0.	101.	-0.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 1

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.2219E 00	-0.2772E-02	0.5866E-02
2	0.2087E 00	-0.2769E-02	0.5572E-02
3	0.1962E 00	-0.2748E-02	0.5282E-02
4	0.1844E 00	-0.2708E-02	0.5002E-02
5	0.1732E 00	-0.2652E-02	0.4736E-02
6	0.1625E 00	-0.2582E-02	0.4486E-02
7	0.1525E 00	-0.2496E-02	0.4255E-02
8	0.1429E 00	-0.2395E-02	0.4044E-02
9	0.1338E 00	-0.2281E-02	0.3856E-02
10	0.1251E 00	-0.2157E-02	0.3692E-02
11	0.1168E 00	-0.2019E-02	0.3550E-02
12	0.1088E 00	-0.1869E-02	0.3431E-02
13	0.1010E 00	-0.1709E-02	0.3334E-02
14	0.9339E-01	-0.1540E-02	0.3258E-02
15	0.8596E-01	-0.1358E-02	0.3201E-02
16	0.7863E-01	-0.1167E-02	0.3162E-02
17	0.7138E-01	-0.9670E-03	0.3136E-02
18	0.6418E-01	-0.7563E-03	0.3122E-02
19	0.5699E-01	-0.5369E-03	0.3116E-02
20	0.4982E-01	-0.3080E-03	0.3114E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 1

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	3895.	13248.	-1820.	11669.	9610.	14827.
2	3907.	12518.	-1769.	10943.	9583.	14092.
3	3917.	11825.	-1621.	10285.	9456.	13365.
4	3927.	11170.	-1389.	9690.	9244.	12650.
5	3936.	10552.	-1089.	9153.	8961.	11950.
6	3944.	9967.	-733.	8666.	8621.	11267.
7	3952.	9413.	-334.	8225.	8238.	10602.
8	3958.	8889.	94.	7822.	7822.	9956.
9	3964.	8391.	543.	7453.	7386.	9329.
10	3970.	7916.	1000.	7109.	6939.	8723.
11	3975.	7461.	1455.	6787.	6494.	8136.
12	3979.	7024.	1900.	6478.	6057.	7569.
13	3982.	6601.	2324.	6179.	5641.	7023.
14	3985.	6190.	2718.	5884.	5253.	6496.
15	3988.	5788.	3074.	5587.	4902.	5990.
16	3990.	5393.	3384.	5283.	4596.	5503.
17	3992.	5003.	3639.	4968.	4344.	5038.
18	3993.	4617.	3830.	4639.	4155.	4595.
19	3993.	4233.	3951.	4290.	4035.	4175.
20	3993.	3850.	3993.	3920.	3993.	3779.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 1 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	13248.		13489.		14827.	
2	12518.		12713.		14092.	
3	11826.		11906.		13365.	
4	11172.		11079.		12650.	
5	10554.		10242.		11950.	
6	9970.		9399.		11267.	
7	9418.		8559.		10602.	
8	8894.		7822.		9956.	
9	8396.		7453.		9329.	
10	7921.		7109.		8723.	
11	7466.		6787.		8136.	
12	7029.		6478.		7569.	
13	6605.		6179.		7023.	
14	6194.		5884.		6496.	
15	5791.		5587.		5990.	
16	5395.		5283.		5503.	
17	5005.		4968.		5038.	
18	4618.		4639.		4595.	
19	4233.		4290.		4175.	
20	3993.		3993.		3993.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 3

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	10650.	20625.	562.	164.	-16.
2	10691.	21293.	437.	128.	-21.
3	10734.	21682.	299.	88.	-20.
4	10777.	21880.	178.	52.	-17.
5	10821.	21963.	83.	24.	-12.
6	10864.	21993.	15.	4.	-9.
7	10908.	22013.	-32.	-10.	-6.
8	10951.	22051.	-62.	-19.	-4.
9	10994.	22126.	-81.	-25.	-2.
10	11037.	22250.	-88.	-28.	-0.
11	11080.	22425.	-82.	-26.	2.
12	11124.	22648.	-53.	-18.	7.
13	11168.	22899.	9.	1.	13.
14	11213.	23140.	118.	34.	21.
15	11258.	23306.	287.	85.	31.
16	11303.	23294.	522.	157.	41.
17	11348.	22970.	812.	246.	47.
18	11390.	22165.	1120.	342.	46.
19	11427.	20708.	1371.	422.	29.
20	11458.	18465.	1434.	445.	-13.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 3

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.2438E 00	-0.2394E-01	-0.1818E-02
2	0.2534E 00	-0.2311E-01	-0.1157E-02
3	0.2593E 00	-0.2231E-01	-0.6732E-03
4	0.2626E 00	-0.2152E-01	-0.3619E-03
5	0.2644E 00	-0.2073E-01	-0.1933E-03
6	0.2654E 00	-0.1993E-01	-0.1316E-03
7	0.2663E 00	-0.1912E-01	-0.1445E-03
8	0.2674E 00	-0.1831E-01	-0.2073E-03
9	0.2690E 00	-0.1749E-01	-0.3018E-03
10	0.2714E 00	-0.1667E-01	-0.4136E-03
11	0.2745E 00	-0.1585E-01	-0.5265E-03
12	0.2782E 00	-0.1504E-01	-0.6173E-03
13	0.2824E 00	-0.1423E-01	-0.6498E-03
14	0.2865E 00	-0.1342E-01	-0.5713E-03
15	0.2895E 00	-0.1262E-01	-0.3113E-03
16	0.2900E 00	-0.1181E-01	0.2134E-03
17	0.2860E 00	-0.1099E-01	0.1084E-02
18	0.2749E 00	-0.1013E-01	0.2353E-02
19	0.2543E 00	-0.9195E-02	0.3998E-02
20	0.2220E 00	-0.8154E-02	0.5866E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 3

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8520.	16500.	10678.	17128.	6362.	15871.
2	8553.	17035.	10229.	17525.	6876.	16544.
3	8587.	17346.	9736.	17683.	7438.	17008.
4	8622.	17504.	9304.	17705.	7939.	17303.
5	8657.	17571.	8975.	17664.	8338.	17477.
6	8692.	17595.	8748.	17610.	8635.	17579.
7	8726.	17610.	8605.	17572.	8847.	17648.
8	8761.	17641.	8523.	17567.	8999.	17714.
9	8795.	17701.	8486.	17605.	9104.	17797.
10	8829.	17800.	8491.	17694.	9168.	17906.
11	8864.	17940.	8551.	17841.	9177.	18040.
12	8899.	18118.	8695.	18051.	9103.	18186.
13	8934.	18319.	8969.	18323.	8900.	18315.
14	8970.	18512.	9425.	18643.	8516.	18382.
15	9006.	18644.	10110.	18972.	7903.	18316.
16	9043.	18635.	11046.	19239.	7039.	18032.
17	9078.	18376.	12195.	19322.	5962.	17430.
18	9112.	17732.	13414.	19046.	4809.	16418.
19	9142.	16567.	14408.	18186.	3876.	14947.
20	9166.	14772.	14673.	16482.	3659.	13062.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 3 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	16500.		17128.		15871.	
2	17035.		17525.		16544.	
3	17346.		17683.		17008.	
4	17504.		17705.		17303.	
5	17571.		17664.		17477.	
6	17595.		17610.		17579.	
7	17610.		17572.		17648.	
8	17641.		17567.		17714.	
9	17701.		17605.		17797.	
10	17800.		17694.		17906.	
11	17940.		17841.		18040.	
12	18118.		18051.		18186.	
13	18319.		18323.		18315.	
14	18512.		18643.		18382.	
15	18645.		18972.		18316.	
16	18636.		19239.		18032.	
17	18376.		19322.	*	17430.	
18	17733.		19046.		16418.	
19	16567.		18186.		14947.	
20	14772.		16482.		13062.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 5

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	10366.	9654.	-4086.	-1230.	442.
2	10365.	10157.	-2731.	-830.	362.
3	10365.	11017.	-1636.	-505.	288.
4	10367.	12090.	-781.	-251.	221.
5	10372.	13260.	-140.	-60.	162.
6	10380.	14446.	317.	78.	111.
7	10389.	15586.	618.	169.	69.
8	10401.	16643.	791.	222.	35.
9	10415.	17593.	861.	245.	8.
10	10431.	18429.	851.	244.	-12.
11	10449.	19152.	781.	224.	-28.
12	10467.	19772.	668.	192.	-38.
13	10487.	20304.	525.	150.	-45.
14	10508.	20766.	366.	103.	-49.
15	10530.	21180.	199.	54.	-49.
16	10552.	21567.	35.	5.	-48.
17	10575.	21947.	-119.	-42.	-43.
18	10599.	22340.	-254.	-83.	-37.
19	10623.	22763.	-363.	-116.	-28.
20	10648.	23230.	-436.	-138.	-16.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 5

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.8345E-01	-0.3162E-01	-0.8979E-03
2	0.8916E-01	-0.3100E-01	-0.2397E-02
3	0.9897E-01	-0.3039E-01	-0.3354E-02
4	0.1112E 00	-0.2981E-01	-0.3879E-02
5	0.1247E 00	-0.2926E-01	-0.4073E-02
6	0.1384E 00	-0.2874E-01	-0.4025E-02
7	0.1516E 00	-0.2825E-01	-0.3811E-02
8	0.1639E 00	-0.2778E-01	-0.3492E-02
9	0.1750E 00	-0.2734E-01	-0.3120E-02
10	0.1849E 00	-0.2692E-01	-0.2736E-02
11	0.1935E 00	-0.2652E-01	-0.2371E-02
12	0.2009E 00	-0.2613E-01	-0.2047E-02
13	0.2073E 00	-0.2576E-01	-0.1781E-02
14	0.2129E 00	-0.2539E-01	-0.1582E-02
15	0.2180E 00	-0.2504E-01	-0.1456E-02
16	0.2228E 00	-0.2469E-01	-0.1403E-02
17	0.2276E 00	-0.2435E-01	-0.1421E-02
18	0.2325E 00	-0.2402E-01	-0.1504E-02
19	0.2377E 00	-0.2370E-01	-0.1641E-02
20	0.2435E 00	-0.2339E-01	-0.1818E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 5

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	7211.	6716.	-4654.	3145.	19075.	10287.
2	7210.	7066.	-719.	4657.	15139.	9475.
3	7210.	7664.	2460.	6197.	11961.	9132.
4	7212.	8410.	4944.	7681.	9481.	9139.
5	7216.	9225.	6809.	9052.	7622.	9398.
6	7221.	10049.	8140.	10275.	6301.	9824.
7	7227.	10842.	9021.	11333.	5434.	10352.
8	7236.	11577.	9531.	12222.	4940.	10932.
9	7246.	12238.	9745.	12949.	4746.	11527.
10	7257.	12820.	9728.	13527.	4785.	12113.
11	7269.	13323.	9537.	13974.	5001.	12672.
12	7282.	13754.	9221.	14311.	5343.	13198.
13	7295.	14124.	8821.	14560.	5770.	13689.
14	7310.	14446.	8372.	14745.	6248.	14147.
15	7325.	14734.	7904.	14890.	6746.	14578.
16	7340.	15003.	7442.	15016.	7239.	14990.
17	7357.	15267.	7011.	15146.	7702.	15388.
18	7373.	15541.	6635.	15301.	8111.	15781.
19	7390.	15835.	6336.	15499.	8444.	16172.
20	7408.	16160.	6141.	15758.	8674.	16562.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 5 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	7269.		7799.		19075.	
2	7250.		5376.		15139.	
3	7677.		6197.		11961.	
4	8417.		7681.		9481.	
5	9229.		9052.		9398.	
6	10051.		10275.		9824.	
7	10843.		11333.		10352.	
8	11578.		12222.		10932.	
9	12238.		12949.		11527.	
10	12820.		13527.		12113.	
11	13323.		13974.		12672.	
12	13755.		14311.		13198.	
13	14125.		14560.		13689.	
14	14447.		14745.		14147.	
15	14734.		14890.		14578.	
16	15003.		15016.		14990.	
17	15268.		15146.		15388.	
18	15541.		15301.		15781.	
19	15836.		15499.		16172.	
20	16160.		15758.		16562.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 7

STATION	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
		STRESS RESULTANTS			
1	417.	7511.	1474.	441.	-129.
2	441.	7486.	1285.	389.	-128.
3	466.	7462.	1097.	336.	-128.
4	490.	7437.	911.	283.	-128.
5	514.	7413.	725.	230.	-127.
6	538.	7390.	541.	177.	-127.
7	561.	7366.	358.	123.	-126.
8	585.	7343.	176.	69.	-126.
9	608.	7320.	-5.	15.	-125.
10	630.	7297.	-185.	-39.	-125.
11	653.	7274.	-364.	-94.	-125.
12	675.	7252.	-542.	-149.	-124.
13	697.	7230.	-719.	-204.	-124.
14	719.	7208.	-895.	-259.	-123.
15	741.	7186.	-1070.	-315.	-123.
16	763.	7165.	-1244.	-370.	-122.
17	784.	7144.	-1417.	-426.	-122.
18	805.	7123.	-1589.	-482.	-122.
19	826.	7102.	-1760.	-539.	-121.
20	846.	7081.	-1930.	-595.	-121.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 7

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.6483E-01	0.7245E-01	-0.6651E-04
2	0.6476E-01	0.7239E-01	0.1638E-03
3	0.6437E-01	0.7232E-01	0.3626E-03
4	0.6373E-01	0.7226E-01	0.5298E-03
5	0.6286E-01	0.7220E-01	0.6659E-03
6	0.6182E-01	0.7215E-01	0.7709E-03
7	0.6066E-01	0.7209E-01	0.8452E-03
8	0.5940E-01	0.7203E-01	0.8888E-03
9	0.5811E-01	0.7198E-01	0.9022E-03
10	0.5682E-01	0.7192E-01	0.8853E-03
11	0.5557E-01	0.7187E-01	0.8385E-03
12	0.5442E-01	0.7182E-01	0.7619E-03
13	0.5339E-01	0.7177E-01	0.6558E-03
14	0.5254E-01	0.7172E-01	0.5203E-03
15	0.5191E-01	0.7167E-01	0.3557E-03
16	0.5153E-01	0.7162E-01	0.1621E-03
17	0.5145E-01	0.7157E-01	-0.6030E-04
18	0.5172E-01	0.7153E-01	-0.3113E-03
19	0.5236E-01	0.7148E-01	-0.5907E-03
20	0.5343E-01	0.7144E-01	-0.8983E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 7

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	278.	5007.	4207.	6183.	-3652.	3832.
2	294.	4991.	3720.	6027.	-3132.	3955.
3	311.	4974.	3236.	5870.	-2615.	4078.
4	327.	4958.	2755.	5713.	-2102.	4203.
5	343.	4942.	2277.	5556.	-1592.	4329.
6	359.	4926.	1801.	5398.	-1084.	4455.
7	374.	4911.	1329.	5239.	-580.	4582.
8	390.	4895.	858.	5080.	-79.	4711.
9	405.	4880.	391.	4920.	419.	4840.
10	420.	4865.	-74.	4760.	914.	4969.
11	435.	4850.	-536.	4599.	1407.	5100.
12	450.	4835.	-996.	4438.	1896.	5231.
13	465.	4820.	-1453.	4277.	2383.	5363.
14	480.	4805.	-1907.	4114.	2867.	5496.
15	494.	4791.	-2360.	3952.	3348.	5630.
16	508.	4777.	-2809.	3789.	3826.	5764.
17	522.	4762.	-3256.	3626.	4301.	5899.
18	537.	4748.	-3701.	3462.	4774.	6035.
19	550.	4735.	-4143.	3298.	5244.	6171.
20	564.	4721.	-4583.	3133.	5712.	6308.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 7 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	5058.		6183.		7484.	
2	5039.		6027.		7087.	
3	5020.		5870.		6694.	
4	5002.		5713.		6305.	
5	4984.		5556.		5920.	
6	4967.		5398.		5539.	
7	4949.		5239.		5162.	
8	4932.		5080.		4789.	
9	4916.		4920.		4840.	
10	4899.		4834.		4969.	
11	4883.		5135.		5100.	
12	4867.		5434.		5231.	
13	4851.		5729.		5363.	
14	4835.		6022.		5496.	
15	4820.		6312.		5630.	
16	4805.		6598.		5764.	
17	4790.		6882.		5899.	
18	4775.		7163.		6035.	
19	4760.		7441.		6171.	
20	4746.		7717.		6308.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 8

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	129.	12734.	918.	275.	-379.
2	129.	12660.	420.	126.	-335.
3	129.	12582.	-18.	-5.	-292.
4	129.	12504.	-396.	-119.	-250.
5	129.	12430.	-715.	-214.	-208.
6	129.	12361.	-975.	-292.	-165.
7	129.	12301.	-1176.	-353.	-124.
8	129.	12250.	-1319.	-396.	-82.
9	129.	12210.	-1404.	-421.	-40.
10	129.	12182.	-1432.	-430.	1.
11	129.	12165.	-1401.	-420.	43.
12	129.	12160.	-1313.	-394.	84.
13	129.	12166.	-1167.	-350.	125.
14	129.	12181.	-964.	-289.	167.
15	129.	12205.	-703.	-211.	208.
16	129.	12234.	-384.	-115.	249.
17	129.	12266.	-7.	-2.	291.
18	129.	12299.	428.	129.	333.
19	129.	12328.	922.	277.	375.
20	129.	12349.	1474.	442.	417.

HANFORD NO. 2 CONTAINMENT VESSEL.
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 8

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.7472E-01	-0.6348E-01	0.3003E-03
2	0.7428E-01	-0.6355E-01	0.3235E-03
3	0.7382E-01	-0.6362E-01	0.3303E-03
4	0.7337E-01	-0.6370E-01	0.3230E-03
5	0.7293E-01	-0.6377E-01	0.3034E-03
6	0.7252E-01	-0.6384E-01	0.2737E-03
7	0.7217E-01	-0.6391E-01	0.2360E-03
8	0.7187E-01	-0.6398E-01	0.1922E-03
9	0.7163E-01	-0.6405E-01	0.1444E-03
10	0.7147E-01	-0.6412E-01	0.9473E-04
11	0.7137E-01	-0.6419E-01	0.4508E-04
12	0.7134E-01	-0.6426E-01	-0.2506E-05
13	0.7137E-01	-0.6433E-01	-0.4600E-04
14	0.7147E-01	-0.6440E-01	-0.8339E-04
15	0.7160E-01	-0.6448E-01	-0.1127E-03
16	0.7177E-01	-0.6455E-01	-0.1318E-03
17	0.7196E-01	-0.6462E-01	-0.1388E-03
18	0.7216E-01	-0.6469E-01	-0.1316E-03
19	0.7232E-01	-0.6476E-01	-0.1082E-03
20	0.7245E-01	-0.6483E-01	-0.6652E-04

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 8

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	52.	5094.	933.	5358.	-830.	4829.
2	52.	5064.	455.	5185.	-352.	4943.
3	52.	5033.	35.	5028.	68.	5038.
4	52.	5002.	-328.	4888.	432.	5116.
5	52.	4972.	-635.	4766.	738.	5178.
6	52.	4945.	-884.	4664.	987.	5225.
7	52.	4920.	-1078.	4582.	1181.	5259.
8	52.	4900.	-1215.	4520.	1318.	5280.
9	52.	4884.	-1297.	4480.	1400.	5288.
10	52.	4873.	-1323.	4460.	1426.	5285.
11	52.	4866.	-1294.	4462.	1397.	5270.
12	52.	4864.	-1209.	4486.	1312.	5242.
13	52.	4866.	-1069.	4530.	1172.	5203.
14	52.	4873.	-874.	4595.	977.	5150.
15	52.	4882.	-623.	4680.	726.	5084.
16	52.	4894.	-317.	4783.	420.	5004.
17	52.	4907.	45.	4905.	58.	4908.
18	52.	4919.	463.	5043.	-360.	4796.
19	52.	4931.	936.	5196.	-833.	4666.
20	52.	4939.	1466.	5364.	-1363.	4515.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 8 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	5296.		5358.		5659.	
2	5241.		5185.		5295.	
3	5184.		5028.		5038.	
4	5128.		5216.		5116.	
5	5073.		5401.		5178.	
6	5021.		5548.		5225.	
7	4973.		5659.		5259.	
8	4930.		5735.		5280.	
9	4894.		5776.		5288.	
10	4873.		5783.		5285.	
11	4877.		5756.		5270.	
12	4895.		5695.		5242.	
13	4920.		5599.		5203.	
14	4950.		5469.		5150.	
15	4984.		5303.		5084.	
16	5020.		5100.		5004.	
17	5057.		4905.		4908.	
18	5095.		5043.		5156.	
19	5131.		5196.		5499.	
20	5165.		5364.		5878.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 9

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	378.	7731.	-918.	-270.	129.
2	397.	7712.	-783.	-231.	129.
3	415.	7694.	-648.	-192.	128.
4	434.	7676.	-513.	-153.	128.
5	452.	7657.	-380.	-114.	128.
6	470.	7639.	-246.	-75.	127.
7	488.	7622.	-114.	-35.	127.
8	505.	7604.	18.	4.	127.
9	523.	7586.	150.	44.	126.
10	540.	7569.	281.	83.	126.
11	558.	7551.	411.	123.	126.
12	575.	7534.	541.	163.	126.
13	592.	7517.	670.	204.	125.
14	609.	7500.	799.	244.	125.
15	626.	7483.	927.	284.	125.
16	643.	7467.	1055.	325.	124.
17	659.	7450.	1182.	365.	124.
18	676.	7434.	1309.	406.	124.
19	692.	7417.	1435.	447.	123.
20	708.	7401.	1560.	488.	123.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 9

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.6348E-01	0.7472E-01	0.3003E-03
2	0.6322E-01	0.7467E-01	0.1976E-03
3	0.6306E-01	0.7462E-01	0.1113E-03
4	0.6298E-01	0.7458E-01	0.4127E-04
5	0.6297E-01	0.7453E-01	-0.1256E-04
6	0.6300E-01	0.7448E-01	-0.5027E-04
7	0.6307E-01	0.7444E-01	-0.7194E-04
8	0.6315E-01	0.7439E-01	-0.7764E-04
9	0.6322E-01	0.7435E-01	-0.6747E-04
10	0.6328E-01	0.7431E-01	-0.4149E-04
11	0.6330E-01	0.7426E-01	0.2138E-06
12	0.6328E-01	0.7422E-01	0.5757E-04
13	0.6318E-01	0.7418E-01	0.1305E-03
14	0.6300E-01	0.7414E-01	0.2189E-03
15	0.6272E-01	0.7410E-01	0.3227E-03
16	0.6232E-01	0.7406E-01	0.4419E-03
17	0.6179E-01	0.7402E-01	0.5764E-03
18	0.6112E-01	0.7398E-01	0.7260E-03
19	0.6028E-01	0.7394E-01	0.8908E-03
20	0.5926E-01	0.7390E-01	0.1071E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 9

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	252.	5154.	-2196.	4435.	2700.	5873.
2	265.	5141.	-1822.	4526.	2351.	5757.
3	277.	5129.	-1450.	4617.	2004.	5642.
4	289.	5117.	-1080.	4709.	1658.	5525.
5	301.	5105.	-711.	4801.	1313.	5409.
6	313.	5093.	-344.	4893.	970.	5292.
7	325.	5081.	21.	4986.	629.	5176.
8	337.	5069.	385.	5080.	288.	5058.
9	349.	5057.	748.	5174.	-50.	4941.
10	360.	5046.	1108.	5268.	-388.	4823.
11	372.	5034.	1468.	5363.	-724.	4705.
12	383.	5023.	1825.	5458.	-1059.	4587.
13	395.	5011.	2182.	5554.	-1392.	4469.
14	406.	5000.	2536.	5650.	-1724.	4350.
15	417.	4989.	2889.	5747.	-2055.	4231.
16	428.	4978.	3241.	5843.	-2384.	4112.
17	439.	4967.	3591.	5941.	-2712.	3993.
18	450.	4956.	3940.	6038.	-3039.	3873.
19	461.	4945.	4287.	6136.	-3365.	3753.
20	472.	4934.	4633.	6235.	-3689.	3633.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 9 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	5208.		6631.		5873.	
2	5194.		6348.		5757.	
3	5180.		6067.		5642.	
4	5166.		5788.		5525.	
5	5152.		5512.		5409.	
6	5138.		5237.		5292.	
7	5125.		4986.		5176.	
8	5112.		5080.		5058.	
9	5099.		5174.		4991.	
10	5086.		5268.		5211.	
11	5073.		5363.		5429.	
12	5060.		5458.		5646.	
13	5048.		5554.		5861.	
14	5035.		5650.		6074.	
15	5023.		5747.		6286.	
16	5011.		5843.		6496.	
17	4999.		5941.		6705.	
18	4987.		6038.		6912.	
19	4976.		6136.		7118.	
20	4964.		6235.		7322.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 12

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	10026.	9897.	-1956.	-582.	320.
2	10025.	9780.	-1515.	-451.	286.
3	10025.	9702.	-1124.	-335.	252.
4	10025.	9651.	-783.	-233.	218.
5	10024.	9620.	-491.	-147.	183.
6	10024.	9602.	-250.	-74.	149.
7	10024.	9590.	-59.	-17.	114.
8	10023.	9579.	82.	25.	80.
9	10023.	9566.	173.	52.	45.
10	10022.	9550.	214.	65.	11.
11	10022.	9528.	204.	62.	-24.
12	10022.	9501.	144.	44.	-59.
13	10021.	9471.	34.	11.	-93.
14	10020.	9440.	-127.	-37.	-128.
15	10020.	9413.	-338.	-101.	-163.
16	10019.	9394.	-600.	-180.	-198.
17	10019.	9390.	-913.	-274.	-233.
18	10018.	9408.	-1277.	-384.	-269.
19	10018.	9457.	-1691.	-510.	-304.
20	10017.	9548.	-2156.	-651.	-338.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI. + END CAP LOADS

BODY NO. 12

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.8751E-01	-0.3688E-01	0.1071E-02
2	0.8621E-01	-0.3662E-01	0.7393E-03
3	0.8533E-01	-0.3637E-01	0.4876E-03
4	0.8476E-01	-0.3611E-01	0.3060E-03
5	0.8441E-01	-0.3585E-01	0.1850E-03
6	0.8420E-01	-0.3559E-01	0.1150E-03
7	0.8406E-01	-0.3533E-01	0.8629E-04
8	0.8393E-01	-0.3508E-01	0.8934E-04
9	0.8379E-01	-0.3482E-01	0.1146E-03
10	0.8360E-01	-0.3456E-01	0.1524E-03
11	0.8334E-01	-0.3430E-01	0.1931E-03
12	0.8304E-01	-0.3404E-01	0.2272E-03
13	0.8269E-01	-0.3378E-01	0.2450E-03
14	0.8234E-01	-0.3352E-01	0.2369E-03
15	0.8202E-01	-0.3326E-01	0.1931E-03
16	0.8180E-01	-0.3300E-01	0.1042E-03
17	0.8175E-01	-0.3274E-01	-0.3980E-04
18	0.8195E-01	-0.3248E-01	-0.2485E-03
19	0.8250E-01	-0.3222E-01	-0.5314E-03
20	0.8353E-01	-0.3196E-01	-0.8982E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 12

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	6974.	6885.	1295.	5195.	12654.	8575.
2	6974.	6804.	2574.	5493.	11374.	8114.
3	6974.	6749.	3710.	5776.	10238.	7722.
4	6974.	6714.	4702.	6036.	9246.	7392.
5	6974.	6692.	5547.	6267.	8400.	7118.
6	6973.	6680.	6248.	6463.	7699.	6896.
7	6973.	6671.	6803.	6621.	7143.	6721.
8	6973.	6664.	7212.	6737.	6733.	6591.
9	6972.	6655.	7476.	6807.	6469.	6502.
10	6972.	6643.	7593.	6832.	6351.	6455.
11	6972.	6628.	7565.	6809.	6378.	6448.
12	6971.	6609.	7391.	6738.	6552.	6481.
13	6971.	6589.	7070.	6621.	6872.	6556.
14	6971.	6567.	6602.	6460.	7339.	6675.
15	6970.	6548.	5988.	6256.	7953.	6840.
16	6970.	6535.	5226.	6013.	8713.	7056.
17	6970.	6532.	4317.	5736.	9622.	7328.
18	6969.	6545.	3261.	5429.	10678.	7660.
19	6969.	6579.	2058.	5099.	11880.	8059.
20	6968.	6642.	709.	4753.	13228.	8532.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONF.
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 12 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	7006.		5195.		12654.	
2	7000.		5493.		11374.	
3	6994.		5776.		10238.	
4	6989.		6036.		9246.	
5	6984.		6267.		8400.	
6	6980.		6463.		7699.	
7	6977.		6803.		7143.	
8	6975.		7212.		6733.	
9	6973.		7476.		6502.	
10	6972.		7593.		6455.	
11	6972.		7565.		6448.	
12	6973.		7391.		6552.	
13	6974.		7070.		6872.	
14	6976.		6602.		7339.	
15	6979.		6256.		7953.	
16	6982.		6013.		8713.	
17	6987.		5736.		9622.	
18	6992.		5429.		10678.	
19	6998.		5099.		11880.	
20	7004.		4753.		13228.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 15

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	9884.	17610.	722.	230.	-8.
2	9891.	17217.	706.	226.	-15.
3	9898.	16808.	678.	218.	-24.
4	9904.	16384.	636.	206.	-35.
5	9909.	15945.	579.	189.	-46.
6	9915.	15495.	505.	167.	-59.
7	9920.	15033.	411.	140.	-74.
8	9924.	14562.	296.	105.	-90.
9	9928.	14086.	157.	64.	-108.
10	9932.	13607.	-8.	15.	-127.
11	9935.	13129.	-200.	-43.	-148.
12	9937.	12658.	-423.	-110.	-170.
13	9940.	12196.	-677.	-187.	-194.
14	9942.	11752.	-966.	-275.	-219.
15	9943.	11331.	-1291.	-373.	-246.
16	9944.	10942.	-1654.	-483.	-273.
17	9945.	10591.	-2056.	-605.	-303.
18	9945.	10289.	-2500.	-740.	-333.
19	9945.	10046.	-2986.	-888.	-363.
20	9945.	9873.	-3515.	-1050.	-395.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 15

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.1722E 00	-0.3996E-01	0.2961E-02
2	0.1679E 00	-0.3980E-01	0.3092E-02
3	0.1635E 00	-0.3963E-01	0.3219E-02
4	0.1589E 00	-0.3946E-01	0.3340E-02
5	0.1542E 00	-0.3928E-01	0.3451E-02
6	0.1493E 00	-0.3910E-01	0.3551E-02
7	0.1442E 00	-0.3892E-01	0.3635E-02
8	0.1391E 00	-0.3872E-01	0.3699E-02
9	0.1338E 00	-0.3853E-01	0.3740E-02
10	0.1286E 00	-0.3833E-01	0.3754E-02
11	0.1233E 00	-0.3812E-01	0.3734E-02
12	0.1181E 00	-0.3791E-01	0.3676E-02
13	0.1131E 00	-0.3769E-01	0.3574E-02
14	0.1081E 00	-0.3747E-01	0.3422E-02
15	0.1035E 00	-0.3724E-01	0.3213E-02
16	0.9917E-01	-0.3701E-01	0.2941E-02
17	0.9528E-01	-0.3677E-01	0.2598E-02
18	0.9192E-01	-0.3654E-01	0.2177E-02
19	0.8921E-01	-0.3630E-01	0.1671E-02
20	0.8728E-01	-0.3605E-01	0.1070E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 15

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	6876.	12251.	8973.	12919.	4779.	11583.
2	6881.	11977.	8930.	12632.	4832.	11322.
3	6885.	11692.	8853.	12325.	4918.	11060.
4	6890.	11397.	8737.	11995.	5042.	10800.
5	6894.	11092.	8575.	11642.	5212.	10543.
6	6897.	10779.	8363.	11265.	5431.	10293.
7	6901.	10458.	8094.	10863.	5707.	10052.
8	6904.	10130.	7763.	10436.	6044.	9824.
9	6906.	9799.	7362.	9984.	6451.	9613.
10	6909.	9466.	6887.	9508.	6931.	9424.
11	6911.	9134.	6330.	9008.	7492.	9259.
12	6913.	8805.	5686.	8485.	8140.	9126.
13	6915.	8484.	4948.	7941.	8881.	9028.
14	6916.	8175.	4111.	7378.	9721.	8972.
15	6917.	7883.	3169.	6800.	10665.	8966.
16	6918.	7612.	2116.	6209.	11719.	9014.
17	6918.	7368.	948.	5610.	12889.	9125.
18	6918.	7158.	-340.	5008.	14177.	9307.
19	6919.	6989.	-1751.	4409.	15588.	9568.
20	6919.	6868.	-3289.	3820.	17126.	9917.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 15 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	12251.		12919.		11583.	
2	11977.		12632.		11322.	
3	11693.		12325.		11060.	
4	11398.		11995.		10800.	
5	11093.		11642.		10543.	
6	10779.		11265.		10293.	
7	10458.		10863.		10052.	
8	10132.		10436.		9824.	
9	9801.		9984.		9613.	
10	9468.		9508.		9424.	
11	9137.		9008.		9259.	
12	8810.		8485.		9126.	
13	8490.		7941.		9028.	
14	8183.		7378.		9721.	
15	7892.		6800.		10665.	
16	7623.		6209.		11719.	
17	7382.		5610.		12889.	
18	7175.		5348.		14177.	
19	7009.		6160.		15588.	
20	6968.		7109.		17126.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 17

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	9164.	18719.	-149.	-44.	-0.
2	9203.	18593.	-139.	-41.	3.
3	9242.	18536.	-115.	-34.	4.
4	9280.	18534.	-89.	-27.	4.
5	9317.	18574.	-67.	-21.	3.
6	9355.	18647.	-52.	-16.	2.
7	9393.	18743.	-44.	-14.	1.
8	9430.	18861.	-43.	-14.	-0.
9	9468.	18997.	-43.	-14.	-0.
10	9507.	19153.	-41.	-14.	1.
11	9545.	19326.	-30.	-11.	3.
12	9584.	19511.	-2.	-2.	7.
13	9624.	19694.	51.	14.	12.
14	9664.	19851.	138.	40.	18.
15	9704.	19942.	264.	79.	25.
16	9744.	19910.	430.	130.	32.
17	9783.	19680.	626.	190.	35.
18	9820.	19168.	827.	253.	33.
19	9854.	18287.	987.	304.	20.
20	9884.	16973.	1031.	321.	-8.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 17

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.1847E 00	-0.5168E-01	0.2217E-03
2	0.1838E 00	-0.5114E-01	0.9315E-04
3	0.1836E 00	-0.5058E-01	-0.1922E-04
4	0.1840E 00	-0.5001E-01	-0.1087E-03
5	0.1848E 00	-0.4944E-01	-0.1765E-03
6	0.1860E 00	-0.4887E-01	-0.2280E-03
7	0.1875E 00	-0.4829E-01	-0.2696E-03
8	0.1891E 00	-0.4771E-01	-0.3075E-03
9	0.1911E 00	-0.4714E-01	-0.3451E-03
10	0.1932E 00	-0.4656E-01	-0.3825E-03
11	0.1955E 00	-0.4599E-01	-0.4144E-03
12	0.1980E 00	-0.4542E-01	-0.4297E-03
13	0.2005E 00	-0.4485E-01	-0.4097E-03
14	0.2027E 00	-0.4428E-01	-0.3284E-03
15	0.2042E 00	-0.4371E-01	-0.1536E-03
16	0.2043E 00	-0.4314E-01	0.1501E-03
17	0.2021E 00	-0.4256E-01	0.6142E-03
18	0.1967E 00	-0.4195E-01	0.1256E-02
19	0.1871E 00	-0.4131E-01	0.2060E-02
20	0.1724E 00	-0.4061E-01	0.2960E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 17

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	6665.	13614.	6193.	13475.	7137.	13752.
2	6693.	13522.	6254.	13392.	7133.	13653.
3	6721.	13480.	6357.	13371.	7085.	13590.
4	6749.	13479.	6468.	13393.	7030.	13565.
5	6776.	13509.	6565.	13443.	6987.	13574.
6	6804.	13561.	6639.	13509.	6968.	13614.
7	6831.	13632.	6690.	13586.	6972.	13677.
8	6858.	13717.	6723.	13672.	6994.	13762.
9	6886.	13816.	6748.	13770.	7024.	13862.
10	6914.	13929.	6783.	13885.	7045.	13974.
11	6942.	14055.	6847.	14021.	7038.	14089.
12	6970.	14190.	6964.	14182.	6977.	14197.
13	6999.	14323.	7162.	14367.	6837.	14280.
14	7028.	14437.	7466.	14565.	6590.	14310.
15	7057.	14503.	7896.	14753.	6219.	14254.
16	7086.	14480.	8451.	14891.	5722.	14068.
17	7115.	14313.	9102.	14917.	5128.	13709.
18	7142.	13940.	9768.	14744.	4516.	13136.
19	7167.	13300.	10300.	14266.	4033.	12334.
20	7189.	12344.	10461.	13363.	3917.	11325.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 17 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	13614.		13475.		13752.	
2	13522.		13392.		13653.	
3	13480.		13371.		13590.	
4	13479.		13393.		13565.	
5	13509.		13443.		13574.	
6	13561.		13509.		13614.	
7	13632.		13586.		13677.	
8	13717.		13672.		13762.	
9	13816.		13770.		13862.	
10	13929.		13885.		13974.	
11	14055.		14021.		14089.	
12	14190.		14182.		14197.	
13	14323.		14367.		14280.	
14	14437.		14565.		14310.	
15	14503.		14753.		14254.	
16	14480.		14891.		14068.	
17	14313.		14917.		13709.	
18	13940.		14744.		13136.	
19	13300.		14266.		12334.	
20	12344.		13363.		11325.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 19

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	8432.	16560.	552.	161.	-24.
2	8470.	17082.	401.	117.	-25.
3	8509.	17365.	259.	76.	-22.
4	8549.	17494.	144.	42.	-17.
5	8589.	17537.	62.	18.	-11.
6	8628.	17543.	10.	3.	-7.
7	8667.	17543.	-20.	-6.	-3.
8	8706.	17553.	-32.	-10.	-1.
9	8745.	17581.	-35.	-11.	0.
10	8783.	17628.	-32.	-10.	1.
11	8822.	17693.	-26.	-9.	1.
12	8860.	17771.	-18.	-6.	2.
13	8898.	17859.	-7.	-3.	2.
14	8937.	17950.	6.	1.	3.
15	8975.	18036.	24.	6.	3.
16	9014.	18109.	47.	13.	4.
17	9052.	18156.	74.	22.	5.
18	9090.	18161.	103.	31.	5.
19	9128.	18112.	128.	39.	3.
20	9165.	17994.	138.	42.	-0.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 19

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.1619E 00	-0.6227E-01	-0.1233E-02
2	0.1676E 00	-0.6172E-01	-0.7443E-03
3	0.1709E 00	-0.6119E-01	-0.4085E-03
4	0.1727E 00	-0.6066E-01	-0.2053E-03
5	0.1736E 00	-0.6012E-01	-0.1027E-03
6	0.1740E 00	-0.5959E-01	-0.6834E-04
7	0.1745E 00	-0.5904E-01	-0.7496E-04
8	0.1750E 00	-0.5849E-01	-0.1024E-03
9	0.1757E 00	-0.5793E-01	-0.1374E-03
10	0.1766E 00	-0.5737E-01	-0.1718E-03
11	0.1777E 00	-0.5681E-01	-0.2014E-03
12	0.1789E 00	-0.5624E-01	-0.2236E-03
13	0.1803E 00	-0.5567E-01	-0.2363E-03
14	0.1817E 00	-0.5510E-01	-0.2371E-03
15	0.1831E 00	-0.5453E-01	-0.2220E-03
16	0.1843E 00	-0.5396E-01	-0.1863E-03
17	0.1852E 00	-0.5338E-01	-0.1250E-03
18	0.1857E 00	-0.5279E-01	-0.3455E-04
19	0.1856E 00	-0.5220E-01	0.8415E-04
20	0.1847E 00	-0.5160E-01	0.2217E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 19

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	6425.	12617.	8348.	13177.	4501.	12058.
2	6453.	13015.	7851.	13424.	5055.	12606.
3	6483.	13230.	7385.	13495.	5582.	12965.
4	6514.	13328.	7015.	13476.	6012.	13181.
5	6544.	13361.	6760.	13425.	6328.	13298.
6	6574.	13366.	6607.	13375.	6540.	13357.
7	6604.	13366.	6536.	13344.	6672.	13387.
8	6633.	13374.	6520.	13338.	6746.	13409.
9	6663.	13395.	6540.	13356.	6785.	13433.
10	6692.	13431.	6580.	13395.	6804.	13467.
11	6721.	13480.	6631.	13450.	6812.	13510.
12	6750.	13540.	6688.	13518.	6812.	13562.
13	6780.	13607.	6754.	13596.	6805.	13618.
14	6809.	13676.	6830.	13679.	6788.	13673.
15	6838.	13742.	6921.	13764.	6755.	13720.
16	6867.	13797.	7030.	13844.	6705.	13751.
17	6897.	13833.	7154.	13908.	6639.	13757.
18	6926.	13837.	7285.	13945.	6566.	13730.
19	6955.	13799.	7401.	13934.	6508.	13664.
20	6983.	13710.	7464.	13857.	6502.	13562.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 19 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	12618.		13177.		12058.	
2	13015.		13424.		12606.	
3	13230.		13495.		12965.	
4	13328.		13476.		13181.	
5	13362.		13425.		13298.	
6	13366.		13375.		13357.	
7	13366.		13344.		13387.	
8	13374.		13338.		13409.	
9	13395.		13356.		13433.	
10	13431.		13395.		13467.	
11	13480.		13450.		13510.	
12	13540.		13518.		13562.	
13	13607.		13596.		13618.	
14	13676.		13679.		13673.	
15	13742.		13764.		13720.	
16	13797.		13844.		13751.	
17	13833.		13908.		13757.	
18	13837.		13945.		13730.	
19	13799.		13934.		13664.	
20	13710.		13857.		13562.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 21

STATION	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
	STRESS RESULTANTS				
1	8246.	7815.	-3425.	-1030.	397.
2	8245.	8056.	-2514.	-761.	339.
3	8245.	8519.	-1743.	-534.	284.
4	8246.	9134.	-1106.	-345.	232.
5	8249.	9845.	-591.	-192.	185.
6	8252.	10605.	-188.	-72.	143.
7	8258.	11379.	117.	20.	106.
8	8264.	12139.	337.	86.	74.
9	8273.	12868.	483.	131.	46.
10	8282.	13551.	568.	157.	24.
11	8293.	14183.	603.	169.	6.
12	8305.	14760.	598.	168.	-9.
13	8318.	15283.	561.	158.	-20.
14	8331.	15756.	502.	141.	-27.
15	8346.	16183.	427.	120.	-32.
16	8361.	16572.	343.	95.	-35.
17	8377.	16929.	256.	69.	-35.
18	8394.	17264.	170.	44.	-33.
19	8411.	17582.	92.	21.	-30.
20	8428.	17891.	26.	1.	-24.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 21

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.6780E-01	-0.6793E-01	-0.3793E-03
2	0.6997E-01	-0.6757E-01	-0.1339E-02
3	0.7417E-01	-0.6722E-01	-0.2025E-02
4	0.7976E-01	-0.6687E-01	-0.2483E-02
5	0.8625E-01	-0.6654E-01	-0.2753E-02
6	0.9321E-01	-0.6623E-01	-0.2875E-02
7	0.1003E 00	-0.6592E-01	-0.2883E-02
8	0.1073E 00	-0.6563E-01	-0.2805E-02
9	0.1141E 00	-0.6535E-01	-0.2669E-02
10	0.1205E 00	-0.6509E-01	-0.2495E-02
11	0.1264E 00	-0.6483E-01	-0.2302E-02
12	0.1318E 00	-0.6459E-01	-0.2105E-02
13	0.1368E 00	-0.6436E-01	-0.1915E-02
14	0.1413E 00	-0.6413E-01	-0.1741E-02
15	0.1453E 00	-0.6391E-01	-0.1589E-02
16	0.1491E 00	-0.6370E-01	-0.1463E-02
17	0.1526E 00	-0.6350E-01	-0.1365E-02
18	0.1559E 00	-0.6330E-01	-0.1295E-02
19	0.1590E 00	-0.6310E-01	-0.1252E-02
20	0.1620E 00	-0.6291E-01	-0.1233E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 21

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	5736.	5436.	-4209.	2447.	15681.	8426.
2	5736.	5604.	-1563.	3393.	13034.	7815.
3	5736.	5926.	674.	4376.	10797.	7477.
4	5736.	6354.	2525.	5351.	8948.	7357.
5	5738.	6849.	4021.	6290.	7455.	7407.
6	5741.	7377.	5195.	7168.	6286.	7586.
7	5744.	7916.	6085.	7972.	5404.	7859.
8	5749.	8445.	6727.	8694.	4771.	8195.
9	5755.	8951.	7158.	9331.	4351.	8572.
10	5761.	9427.	7412.	9883.	4111.	8971.
11	5769.	9867.	7520.	10356.	4018.	9377.
12	5777.	10268.	7513.	10756.	4042.	9780.
13	5786.	10632.	7416.	11091.	4157.	10173.
14	5796.	10960.	7253.	11370.	4339.	10550.
15	5806.	11258.	7045.	11605.	4567.	10910.
16	5816.	11528.	6812.	11804.	4821.	11252.
17	5828.	11777.	6570.	11978.	5085.	11575.
18	5839.	12009.	6334.	12138.	5344.	11881.
19	5851.	12231.	6119.	12292.	5583.	12170.
20	5863.	12446.	5938.	12449.	5788.	12442.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 21 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	5796.		6656.		15681.	
2	5779.		4956.		13034.	
3	5942.		4376.		10797.	
4	6364.		5351.		8948.	
5	6855.		6290.		7455.	
6	7381.		7168.		7586.	
7	7918.		7972.		7859.	
8	8446.		8694.		8195.	
9	8952.		9331.		8572.	
10	9427.		9883.		8971.	
11	9867.		10356.		9377.	
12	10268.		10756.		9780.	
13	10632.		11091.		10173.	
14	10961.		11370.		10550.	
15	11258.		11605.		10910.	
16	11528.		11804.		11252.	
17	11777.		11978.		11575.	
18	12010.		12138.		11881.	
19	12231.		12292.		12170.	
20	12446.		12449.		12442.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 22

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	7903.	7747.	-1925.	-576.	348.
2	7903.	7716.	-1393.	-418.	310.
3	7903.	7740.	-921.	-278.	272.
4	7902.	7799.	-511.	-155.	235.
5	7902.	7879.	-161.	-51.	197.
6	7902.	7965.	128.	36.	160.
7	7902.	8045.	357.	105.	124.
8	7903.	8112.	527.	156.	88.
9	7903.	8159.	639.	191.	52.
10	7903.	8181.	693.	208.	16.
11	7904.	8176.	690.	207.	-20.
12	7904.	8145.	628.	190.	-56.
13	7904.	8090.	508.	154.	-92.
14	7905.	8016.	330.	102.	-128.
15	7905.	7930.	93.	31.	-165.
16	7905.	7841.	-203.	-58.	-202.
17	7904.	7760.	-559.	-165.	-239.
18	7904.	7700.	-976.	-291.	-277.
19	7904.	7679.	-1453.	-436.	-315.
20	7904.	7712.	-1992.	-600.	-353.

IV.22.72

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 22

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.6821E-01	-0.7241E-01	0.3539E-03
2	0.6794E-01	-0.7219E-01	0.1937E-05
3	0.6815E-01	-0.7196E-01	-0.2432E-03
4	0.6867E-01	-0.7174E-01	-0.3943E-03
5	0.6938E-01	-0.7151E-01	-0.4646E-03
6	0.7014E-01	-0.7129E-01	-0.4669E-03
7	0.7086E-01	-0.7107E-01	-0.4141E-03
8	0.7145E-01	-0.7085E-01	-0.3187E-03
9	0.7187E-01	-0.7063E-01	-0.1934E-03
10	0.7207E-01	-0.7041E-01	-0.5044E-04
11	0.7203E-01	-0.7019E-01	0.9776E-04
12	0.7176E-01	-0.6997E-01	0.2390E-03
13	0.7127E-01	-0.6975E-01	0.3608E-03
14	0.7061E-01	-0.6953E-01	0.4509E-03
15	0.6983E-01	-0.6930E-01	0.4968E-03
16	0.6903E-01	-0.6908E-01	0.4861E-03
17	0.6830E-01	-0.6886E-01	0.4059E-03
18	0.6776E-01	-0.6863E-01	0.2435E-03
19	0.6756E-01	-0.6841E-01	-0.1389E-04
20	0.6787E-01	-0.6818E-01	-0.3795E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 22

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	5498.	5389.	-93.	3717.	11089.	7060.
2	5498.	5368.	1454.	4155.	9541.	6581.
3	5497.	5384.	2824.	4578.	8171.	6190.
4	5497.	5426.	4015.	4974.	6980.	5877.
5	5497.	5481.	5029.	5333.	5966.	5629.
6	5497.	5541.	5868.	5644.	5127.	5437.
7	5497.	5597.	6534.	5901.	4461.	5293.
8	5498.	5643.	7029.	6098.	3966.	5189.
9	5498.	5676.	7354.	6230.	3641.	5122.
10	5498.	5691.	7511.	6294.	3485.	5088.
11	5498.	5688.	7500.	6290.	3496.	5086.
12	5498.	5666.	7321.	6217.	3675.	5115.
13	5499.	5628.	6974.	6077.	4023.	5180.
14	5499.	5577.	6458.	5871.	4540.	5282.
15	5499.	5517.	5770.	5606.	5228.	5427.
16	5499.	5455.	4910.	5286.	6087.	5623.
17	5499.	5398.	3876.	4918.	7122.	5878.
18	5499.	5357.	2666.	4511.	8331.	6203.
19	5498.	5342.	1280.	4076.	9717.	6607.
20	5498.	5365.	-285.	3624.	11281.	7106.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 22 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	5546.		3811.		11089.	
2	5536.		4155.		9541.	
3	5527.		4578.		8171.	
4	5519.		4974.		6980.	
5	5513.		5333.		5966.	
6	5546.		5868.		5437.	
7	5600.		6534.		5293.	
8	5645.		7029.		5189.	
9	5676.		7354.		5122.	
10	5691.		7511.		5088.	
11	5688.		7500.		5086.	
12	5667.		7321.		5115.	
13	5630.		6974.		5180.	
14	5580.		6458.		5282.	
15	5522.		5770.		5427.	
16	5515.		5286.		6087.	
17	5521.		4918.		7122.	
18	5529.		4511.		8331.	
19	5538.		4076.		9717.	
20	5547.		3909.		11281.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 23

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	451.	6183.	1461.	430.	-131.
2	472.	6162.	1300.	387.	-130.
3	493.	6141.	1140.	343.	-130.
4	514.	6120.	981.	299.	-129.
5	534.	6100.	823.	254.	-129.
6	554.	6080.	666.	209.	-128.
7	574.	6060.	510.	165.	-128.
8	594.	6040.	355.	119.	-127.
9	614.	6020.	201.	74.	-127.
10	633.	6001.	48.	28.	-126.
11	652.	5982.	-104.	-17.	-126.
12	671.	5963.	-256.	-63.	-126.
13	690.	5944.	-406.	-110.	-125.
14	709.	5925.	-555.	-156.	-125.
15	727.	5907.	-704.	-203.	-124.
16	745.	5889.	-852.	-250.	-124.
17	763.	5871.	-998.	-297.	-123.
18	781.	5853.	-1144.	-344.	-123.
19	799.	5835.	-1290.	-391.	-122.
20	816.	5818.	-1434.	-439.	-122.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 23

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.8995E-01	0.4700E-01	-0.3354E-03
2	0.9023E-01	0.4696E-01	-0.1419E-03
3	0.9030E-01	0.4692E-01	0.2894E-04
4	0.9017E-01	0.4689E-01	0.1773E-03
5	0.8988E-01	0.4685E-01	0.3033E-03
6	0.8945E-01	0.4681E-01	0.4071E-03
7	0.8891E-01	0.4677E-01	0.4890E-03
8	0.8828E-01	0.4674E-01	0.5490E-03
9	0.8759E-01	0.4670E-01	0.5873E-03
10	0.8687E-01	0.4667E-01	0.6041E-03
11	0.8614E-01	0.4664E-01	0.5995E-03
12	0.8543E-01	0.4660E-01	0.5736E-03
13	0.8476E-01	0.4657E-01	0.5267E-03
14	0.8417E-01	0.4654E-01	0.4589E-03
15	0.8366E-01	0.4651E-01	0.3703E-03
16	0.8328E-01	0.4648E-01	0.2611E-03
17	0.8304E-01	0.4645E-01	0.1313E-03
18	0.8297E-01	0.4642E-01	-0.1870E-04
19	0.8309E-01	0.4640E-01	-0.1890E-03
20	0.8344E-01	0.4637E-01	-0.3794E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.2.2.77

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 23

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	301.	4122.	4197.	5269.	-3596.	2975.
2	315.	4108.	3781.	5139.	-3152.	3077.
3	329.	4094.	3369.	5008.	-2712.	3180.
4	342.	4080.	2959.	4876.	-2274.	3284.
5	356.	4067.	2551.	4744.	-1839.	3389.
6	370.	4053.	2146.	4612.	-1407.	3495.
7	383.	4040.	1743.	4479.	-978.	3601.
8	396.	4027.	1343.	4345.	-551.	3708.
9	409.	4014.	945.	4211.	-127.	3816.
10	422.	4001.	550.	4076.	294.	3925.
11	435.	3988.	157.	3941.	713.	4034.
12	447.	3975.	-234.	3806.	1129.	4144.
13	460.	3963.	-622.	3670.	1542.	4255.
14	472.	3950.	-1009.	3534.	1953.	4367.
15	485.	3938.	-1393.	3397.	2362.	4479.
16	497.	3926.	-1774.	3260.	2768.	4591.
17	509.	3914.	-2154.	3123.	3171.	4705.
18	521.	3902.	-2531.	2985.	3572.	4819.
19	532.	3890.	-2906.	2847.	3971.	4933.
20	544.	3879.	-3280.	2709.	4368.	5049.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 23 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	4171.		5269.		6571.	
2	4155.		5139.		6229.	
3	4139.		5008.		5892.	
4	4124.		4876.		5558.	
5	4108.		4744.		5228.	
6	4093.		4612.		4902.	
7	4079.		4479.		4579.	
8	4064.		4345.		4259.	
9	4050.		4211.		3943.	
10	4036.		4076.		3925.	
11	4022.		3941.		4034.	
12	4008.		4040.		4144.	
13	3994.		4293.		4255.	
14	3981.		4543.		4367.	
15	3968.		4790.		4479.	
16	3955.		5035.		4591.	
17	3942.		5277.		4705.	
18	3930.		5516.		4819.	
19	3917.		5754.		4933.	
20	3905.		5988.		5049.	

IV.2.2.79

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 24

STATION	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
		STRESS RESULTANTS			
1	131.	9895.	921.	276.	-410.
2	131.	9781.	321.	96.	-363.
3	131.	9662.	-207.	-62.	-317.
4	131.	9546.	-664.	-199.	-271.
5	131.	9439.	-1049.	-315.	-226.
6	131.	9345.	-1365.	-409.	-181.
7	131.	9268.	-1611.	-483.	-137.
8	131.	9213.	-1789.	-537.	-92.
9	131.	9180.	-1898.	-569.	-49.
10	131.	9172.	-1939.	-582.	-5.
11	131.	9189.	-1913.	-574.	39.
12	131.	9231.	-1818.	-545.	83.
13	131.	9296.	-1655.	-496.	127.
14	131.	9383.	-1423.	-427.	172.
15	131.	9488.	-1121.	-336.	217.
16	131.	9607.	-749.	-225.	262.
17	131.	9736.	-306.	-92.	309.
18	131.	9869.	210.	63.	355.
19	131.	9999.	798.	240.	403.
20	131.	10119.	1461.	438.	451.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 24

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.4596E-01	-0.8880E-01	0.3295E-03
2	0.4543E-01	-0.8886E-01	0.3534E-03
3	0.4487E-01	-0.8892E-01	0.3554E-03
4	0.4433E-01	-0.8898E-01	0.3383E-03
5	0.4383E-01	-0.8904E-01	0.3047E-03
6	0.4339E-01	-0.8910E-01	0.2576E-03
7	0.4304E-01	-0.8916E-01	0.1995E-03
8	0.4278E-01	-0.8922E-01	0.1331E-03
9	0.4263E-01	-0.8928E-01	0.6121E-04
10	0.4259E-01	-0.8934E-01	-0.1364E-04
11	0.4267E-01	-0.8940E-01	-0.8877E-04
12	0.4286E-01	-0.8946E-01	-0.1615E-03
13	0.4317E-01	-0.8951E-01	-0.2293E-03
14	0.4357E-01	-0.8957E-01	-0.2894E-03
15	0.4406E-01	-0.8963E-01	-0.3391E-03
16	0.4462E-01	-0.8970E-01	-0.3756E-03
17	0.4522E-01	-0.8976E-01	-0.3964E-03
18	0.4584E-01	-0.8982E-01	-0.3985E-03
19	0.4645E-01	-0.8988E-01	-0.3791E-03
20	0.4700E-01	-0.8995E-01	-0.3354E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 24

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	52.	3958.	937.	4223.	-832.	3693.
2	52.	3912.	360.	4005.	-256.	3820.
3	52.	3865.	-147.	3805.	251.	3924.
4	52.	3818.	-585.	3627.	689.	4009.
5	52.	3775.	-955.	3473.	1059.	4078.
6	52.	3738.	-1258.	3345.	1362.	4131.
7	52.	3707.	-1494.	3243.	1599.	4171.
8	52.	3685.	-1665.	3170.	1769.	4200.
9	52.	3672.	-1770.	3125.	1874.	4219.
10	52.	3669.	-1810.	3110.	1914.	4227.
11	52.	3676.	-1784.	3125.	1889.	4227.
12	52.	3692.	-1693.	3169.	1798.	4216.
13	52.	3719.	-1536.	3242.	1641.	4195.
14	52.	3753.	-1313.	3343.	1418.	4163.
15	52.	3795.	-1024.	3472.	1128.	4118.
16	52.	3843.	-667.	3627.	771.	4059.
17	52.	3895.	-241.	3807.	346.	3983.
18	52.	3948.	254.	4008.	-149.	3887.
19	52.	4000.	819.	4230.	-714.	3770.
20	52.	4048.	1455.	4468.	-1350.	3627.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.2.2.82

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 24 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	4179.		4223.		4525.	
2	4106.		4005.		4076.	
3	4031.		3952.		3924.	
4	3957.		4212.		4009.	
5	3887.		4428.		4078.	
6	3823.		4603.		4131.	
7	3767.		4738.		4171.	
8	3720.		4835.		4200.	
9	3685.		4895.		4219.	
10	3669.		4920.		4227.	
11	3685.		4909.		4227.	
12	3723.		4862.		4216.	
13	3773.		4778.		4195.	
14	3833.		4657.		4163.	
15	3902.		4496.		4118.	
16	3976.		4294.		4059.	
17	4055.		4048.		3983.	
18	4136.		4008.		4036.	
19	4217.		4230.		4484.	
20	4293.		4468.		4977.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 25

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	410.	6037.	-921.	-268.	131.
2	423.	6023.	-820.	-240.	131.
3	436.	6010.	-720.	-212.	130.
4	449.	5998.	-620.	-183.	130.
5	462.	5985.	-520.	-154.	130.
6	475.	5972.	-421.	-125.	129.
7	488.	5959.	-322.	-97.	129.
8	500.	5947.	-224.	-68.	129.
9	513.	5934.	-126.	-39.	128.
10	525.	5922.	-28.	-9.	128.
11	537.	5910.	69.	20.	128.
12	550.	5897.	166.	49.	128.
13	562.	5885.	263.	79.	127.
14	574.	5873.	359.	108.	127.
15	586.	5861.	455.	138.	127.
16	598.	5849.	550.	167.	126.
17	609.	5837.	646.	197.	126.
18	621.	5826.	740.	227.	126.
19	633.	5814.	835.	257.	126.
20	644.	5802.	929.	287.	125.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 25

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.8880E-01	0.4596E-01	0.3295E-03
2	0.8858E-01	0.4593E-01	0.2525E-03
3	0.8841E-01	0.4591E-01	0.1845E-03
4	0.8829E-01	0.4588E-01	0.1253E-03
5	0.8822E-01	0.4586E-01	0.7492E-04
6	0.8818E-01	0.4584E-01	0.3337E-04
7	0.8817E-01	0.4581E-01	0.5828E-06
8	0.8817E-01	0.4579E-01	-0.2347E-04
9	0.8820E-01	0.4576E-01	-0.3886E-04
10	0.8823E-01	0.4574E-01	-0.4560E-04
11	0.8827E-01	0.4572E-01	-0.4374E-04
12	0.8830E-01	0.4570E-01	-0.3332E-04
13	0.8831E-01	0.4568E-01	-0.1437E-04
14	0.8832E-01	0.4565E-01	0.1305E-04
15	0.8829E-01	0.4563E-01	0.4893E-04
16	0.8824E-01	0.4561E-01	0.9322E-04
17	0.8815E-01	0.4559E-01	0.1459E-03
18	0.8802E-01	0.4557E-01	0.2069E-03
19	0.8783E-01	0.4555E-01	0.2762E-03
20	0.8759E-01	0.4553E-01	0.3537E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 25

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	273.	4024.	-2183.	3309.	2730.	4740.
2	282.	4016.	-1906.	3376.	2470.	4656.
3	291.	4007.	-1629.	3443.	2211.	4571.
4	300.	3998.	-1354.	3511.	1953.	4486.
5	308.	3990.	-1079.	3578.	1696.	4401.
6	317.	3981.	-806.	3647.	1439.	4316.
7	325.	3973.	-534.	3715.	1184.	4230.
8	333.	3964.	-263.	3784.	930.	4145.
9	342.	3956.	7.	3853.	677.	4059.
10	350.	3948.	275.	3923.	425.	3973.
11	358.	3940.	543.	3993.	173.	3887.
12	366.	3932.	810.	4063.	-77.	3800.
13	374.	3923.	1076.	4133.	-327.	3714.
14	382.	3915.	1340.	4204.	-575.	3627.
15	390.	3907.	1604.	4275.	-823.	3540.
16	398.	3899.	1866.	4346.	-1069.	3453.
17	406.	3892.	2128.	4417.	-1315.	3366.
18	414.	3884.	2388.	4489.	-1560.	3279.
19	422.	3876.	2648.	4561.	-1804.	3191.
20	430.	3868.	2906.	4633.	-2047.	3103.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 25 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	4077.		5492.		4740.	
2	4067.		5281.		4656.	
3	4057.		5072.		4571.	
4	4047.		4864.		4486.	
5	4037.		4658.		4401.	
6	4027.		4453.		4316.	
7	4018.		4249.		4230.	
8	4008.		4047.		4145.	
9	3999.		3853.		4059.	
10	3990.		3923.		3973.	
11	3981.		3993.		3887.	
12	3972.		4063.		3878.	
13	3963.		4133.		4041.	
14	3954.		4204.		4202.	
15	3945.		4275.		4363.	
16	3936.		4346.		4523.	
17	3928.		4417.		4681.	
18	3919.		4489.		4839.	
19	3911.		4561.		4995.	
20	3902.		4633.		5150.	

IV.2.2.87

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 26

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	7729.	18946.	-1069.	-293.	15.
2	7744.	18010.	-1031.	-283.	29.
3	7758.	17122.	-971.	-266.	39.
4	7771.	16278.	-899.	-246.	45.
5	7782.	15476.	-821.	-224.	46.
6	7792.	14713.	-745.	-202.	44.
7	7801.	13984.	-675.	-182.	37.
8	7810.	13286.	-619.	-166.	28.
9	7817.	12618.	-583.	-156.	14.
10	7823.	11976.	-571.	-153.	-2.
11	7828.	11362.	-590.	-159.	-21.
12	7833.	10775.	-643.	-176.	-44.
13	7836.	10218.	-737.	-205.	-69.
14	7839.	9694.	-876.	-248.	-97.
15	7842.	9209.	-1063.	-305.	-127.
16	7843.	8771.	-1304.	-379.	-160.
17	7844.	8391.	-1600.	-470.	-194.
18	7845.	8080.	-1956.	-579.	-230.
19	7845.	7854.	-2373.	-707.	-268.
20	7845.	7729.	-2854.	-854.	-306.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 26

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.1645E 00	-0.7561E-01	0.4814E-02
2	0.1566E 00	-0.7552E-01	0.4578E-02
3	0.1491E 00	-0.7542E-01	0.4354E-02
4	0.1419E 00	-0.7530E-01	0.4144E-02
5	0.1351E 00	-0.7518E-01	0.3951E-02
6	0.1286E 00	-0.7504E-01	0.3776E-02
7	0.1223E 00	-0.7489E-01	0.3616E-02
8	0.1164E 00	-0.7473E-01	0.3472E-02
9	0.1106E 00	-0.7457E-01	0.3337E-02
10	0.1051E 00	-0.7440E-01	0.3208E-02
11	0.9982E-01	-0.7421E-01	0.3079E-02
12	0.9474E-01	-0.7403E-01	0.2941E-02
13	0.8991E-01	-0.7383E-01	0.2787E-02
14	0.8536E-01	-0.7362E-01	0.2608E-02
15	0.8114E-01	-0.7341E-01	0.2392E-02
16	0.7732E-01	-0.7320E-01	0.2130E-02
17	0.7399E-01	-0.7298E-01	0.1808E-02
18	0.7127E-01	-0.7275E-01	0.1413E-02
19	0.6928E-01	-0.7252E-01	0.9332E-03
20	0.6818E-01	-0.7229E-01	0.3537E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 26

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	5377.	13180.	2272.	12329.	8482.	14031.
2	5387.	12529.	2395.	11708.	8380.	13350.
3	5397.	11911.	2576.	11138.	8218.	12685.
4	5406.	11324.	2794.	10610.	8017.	12038.
5	5414.	10766.	3028.	10116.	7799.	11416.
6	5421.	10235.	3259.	9649.	7583.	10821.
7	5427.	9728.	3467.	9200.	7387.	10256.
8	5433.	9243.	3635.	8761.	7231.	9724.
9	5438.	8778.	3746.	8325.	7130.	9230.
10	5442.	8331.	3784.	7887.	7100.	8776.
11	5446.	7904.	3734.	7442.	7158.	8367.
12	5449.	7496.	3581.	6984.	7317.	8008.
13	5451.	7108.	3310.	6512.	7592.	7704.
14	5453.	6743.	2910.	6023.	7997.	7464.
15	5455.	6406.	2367.	5519.	8543.	7293.
16	5456.	6102.	1671.	5001.	9241.	7202.
17	5457.	5837.	811.	4473.	10103.	7201.
18	5457.	5621.	-222.	3940.	11137.	7302.
19	5457.	5464.	-1434.	3411.	12349.	7516.
20	5457.	5377.	-2831.	2896.	13746.	7857.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 26   DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	13180.		12329.		14031.	
2	12529.		11708.		13350.	
3	11911.		11138.		12685.	
4	11325.		10610.		12038.	
5	10767.		10116.		11416.	
6	10235.		9649.		10821.	
7	9728.		9200.		10256.	
8	9243.		8761.		9724.	
9	8778.		8325.		9230.	
10	8331.		7887.		8776.	
11	7904.		7442.		8367.	
12	7496.		6984.		8008.	
13	7109.		6512.		7704.	
14	6745.		6023.		7997.	
15	6409.		5519.		8543.	
16	6107.		5001.		9241.	
17	5845.		4473.		10103.	
18	5632.		4162.		11137.	
19	5486.		4846.		12349.	
20	5495.		5727.		13746.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.2.2.91.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 28

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	6997.	14046.	138.	40.	-11.
2	7036.	14246.	77.	23.	-9.
3	7075.	14335.	33.	10.	-6.
4	7114.	14375.	7.	2.	-3.
5	7153.	14403.	-5.	-2.	-1.
6	7192.	14436.	-8.	-3.	-0.
7	7231.	14480.	-8.	-3.	0.
8	7269.	14535.	-8.	-3.	-0.
9	7308.	14600.	-10.	-3.	-1.
10	7346.	14678.	-15.	-5.	-1.
11	7384.	14776.	-24.	-8.	-2.
12	7423.	14906.	-34.	-11.	-1.
13	7462.	15079.	-39.	-13.	0.
14	7502.	15300.	-29.	-10.	4.
15	7542.	15554.	11.	2.	10.
16	7583.	15786.	98.	29.	20.
17	7625.	15882.	247.	74.	31.
18	7666.	15652.	458.	139.	40.
19	7704.	14834.	696.	213.	38.
20	7736.	13146.	865.	267.	15.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 28

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.1678E 00	-0.8880E-01	-0.6469E-03
2	0.1707E 00	-0.8817E-01	-0.3453E-03
3	0.1722E 00	-0.8754E-01	-0.1933E-03
4	0.1732E 00	-0.8691E-01	-0.1400E-03
5	0.1740E 00	-0.8627E-01	-0.1393E-03
6	0.1749E 00	-0.8562E-01	-0.1591E-03
7	0.1759E 00	-0.8497E-01	-0.1825E-03
8	0.1771E 00	-0.8431E-01	-0.2044E-03
9	0.1783E 00	-0.8365E-01	-0.2283E-03
10	0.1798E 00	-0.8298E-01	-0.2627E-03
11	0.1815E 00	-0.8231E-01	-0.3179E-03
12	0.1836E 00	-0.8164E-01	-0.4004E-03
13	0.1863E 00	-0.8097E-01	-0.5056E-03
14	0.1896E 00	-0.8031E-01	-0.6065E-03
15	0.1934E 00	-0.7965E-01	-0.6410E-03
16	0.1969E 00	-0.7900E-01	-0.5001E-03
17	0.1987E 00	-0.7835E-01	-0.2798E-04
18	0.1962E 00	-0.7769E-01	0.9546E-03
19	0.1860E 00	-0.7699E-01	0.2583E-02
20	0.1643E 00	-0.7619E-01	0.4814E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 28

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	7463.	14982.	8404.	15257.	6522.	14707.
2	7505.	15196.	8033.	15350.	6977.	15042.
3	7547.	15291.	7773.	15356.	7320.	15225.
4	7589.	15333.	7637.	15346.	7540.	15320.
5	7630.	15363.	7597.	15351.	7664.	15375.
6	7672.	15399.	7615.	15380.	7729.	15418.
7	7713.	15446.	7657.	15427.	7768.	15464.
8	7754.	15504.	7701.	15486.	7807.	15522.
9	7795.	15573.	7728.	15551.	7862.	15596.
10	7836.	15657.	7730.	15622.	7941.	15691.
11	7877.	15762.	7710.	15708.	8043.	15815.
12	7918.	15900.	7684.	15825.	8152.	15975.
13	7959.	16085.	7691.	15998.	8227.	16171.
14	8002.	16320.	7802.	16254.	8201.	16387.
15	8045.	16591.	8117.	16605.	7972.	16577.
16	8089.	16838.	8757.	17033.	7420.	16643.
17	8133.	16941.	9821.	17447.	6445.	16435.
18	8177.	16695.	11305.	17644.	5049.	15746.
19	8218.	15823.	12968.	17277.	3468.	14370.
20	8251.	14023.	14160.	15848.	2343.	12198.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 28 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	14982.		15257.		14707.	
2	15196.		15350.		15042.	
3	15291.		15356.		15225.	
4	15333.		15346.		15320.	
5	15363.		15351.		15375.	
6	15399.		15380.		15418.	
7	15446.		15427.		15464.	
8	15504.		15486.		15522.	
9	15573.		15551.		15596.	
10	15657.		15622.		15691.	
11	15762.		15708.		15815.	
12	15900.		15825.		15975.	
13	16085.		15998.		16171.	
14	16320.		16254.		16387.	
15	16591.		16605.		16577.	
16	16839.		17033.		16643.	
17	16941.		17447.		16435.	
18	16696.		17644.		15746.	
19	15824.		17277.		14370.	
20	14023.		15848.		12198.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 29

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	6841.	9674.	-1117.	-335.	170.
2	6845.	9759.	-849.	-257.	148.
3	6850.	9941.	-618.	-188.	127.
4	6855.	10194.	-422.	-130.	107.
5	6861.	10495.	-258.	-82.	89.
6	6867.	10824.	-124.	-42.	72.
7	6873.	11166.	-17.	-10.	57.
8	6880.	11510.	66.	15.	43.
9	6888.	11844.	128.	34.	32.
10	6896.	12164.	173.	48.	22.
11	6904.	12462.	203.	57.	14.
12	6913.	12737.	220.	63.	7.
13	6922.	12986.	227.	65.	2.
14	6932.	13209.	226.	65.	-3.
15	6942.	13406.	218.	63.	-6.
16	6952.	13578.	207.	60.	-8.
17	6963.	13725.	192.	56.	-10.
18	6973.	13851.	175.	51.	-10.
19	6984.	13957.	157.	46.	-11.
20	6995.	14045.	138.	40.	-11.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 29

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.1149E 00	-0.9305E-01	-0.2144E-03
2	0.1159E 00	-0.9280E-01	-0.9925E-03
3	0.1181E 00	-0.9255E-01	-0.1573E-02
4	0.1211E 00	-0.9231E-01	-0.1983E-02
5	0.1246E 00	-0.9206E-01	-0.2250E-02
6	0.1285E 00	-0.9183E-01	-0.2399E-02
7	0.1326E 00	-0.9160E-01	-0.2452E-02
8	0.1367E 00	-0.9138E-01	-0.2430E-02
9	0.1407E 00	-0.9116E-01	-0.2351E-02
10	0.1445E 00	-0.9095E-01	-0.2229E-02
11	0.1482E 00	-0.9075E-01	-0.2078E-02
12	0.1515E 00	-0.9055E-01	-0.1908E-02
13	0.1545E 00	-0.9035E-01	-0.1729E-02
14	0.1573E 00	-0.9016E-01	-0.1548E-02
15	0.1597E 00	-0.8997E-01	-0.1371E-02
16	0.1619E 00	-0.8979E-01	-0.1201E-02
17	0.1637E 00	-0.8961E-01	-0.1042E-02
18	0.1654E 00	-0.8942E-01	-0.8962E-03
19	0.1667E 00	-0.8924E-01	-0.7642E-03
20	0.1679E 00	-0.8907E-01	-0.6468E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 29

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	7297.	10319.	-325.	8029.	14919.	12608.
2	7302.	10409.	1504.	8658.	13099.	12161.
3	7307.	10604.	3086.	9318.	11527.	11890.
4	7312.	10874.	4431.	9985.	10193.	11763.
5	7318.	11194.	5554.	10638.	9082.	11751.
6	7324.	11546.	6475.	11261.	8173.	11830.
7	7331.	11911.	7213.	11845.	7449.	11976.
8	7339.	12277.	7789.	12382.	6889.	12172.
9	7347.	12634.	8223.	12868.	6470.	12400.
10	7355.	12975.	8537.	13302.	6174.	12648.
11	7365.	13293.	8748.	13683.	5981.	12904.
12	7374.	13586.	8874.	14013.	5874.	13160.
13	7384.	13852.	8932.	14295.	5836.	13409.
14	7394.	14090.	8935.	14533.	5854.	13647.
15	7405.	14300.	8896.	14730.	5914.	13869.
16	7416.	14483.	8826.	14891.	6005.	14074.
17	7427.	14640.	8735.	15020.	6118.	14261.
18	7438.	14775.	8630.	15122.	6246.	14428.
19	7449.	14888.	8518.	15199.	6381.	14576.
20	7461.	14982.	8404.	15257.	6518.	14707.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 29 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	10329.		8355.		14919.	
2	10417.		8658.		13099.	
3	10610.		9318.		11890.	
4	10878.		9985.		11763.	
5	11197.		10638.		11751.	
6	11547.		11261.		11830.	
7	11912.		11845.		11976.	
8	12278.		12382.		12172.	
9	12634.		12868.		12400.	
10	12975.		13302.		12648.	
11	13293.		13683.		12904.	
12	13586.		14013.		13160.	
13	13852.		14295.		13409.	
14	14090.		14533.		13647.	
15	14300.		14730.		13869.	
16	14483.		14891.		14074.	
17	14640.		15020.		14261.	
18	14775.		15122.		14428.	
19	14888.		15199.		14576.	
20	14982.		15257.		14707.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 30

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	215.	4304.	-5.	-2.	2.
2	223.	4296.	-4.	-2.	2.
3	230.	4288.	-4.	-1.	2.
4	238.	4281.	-3.	-1.	2.
5	246.	4273.	-2.	-1.	2.
6	253.	4265.	-1.	-1.	2.
7	261.	4258.	-0.	-0.	2.
8	269.	4250.	1.	-0.	2.
9	276.	4243.	1.	0.	2.
10	283.	4235.	2.	0.	2.
11	291.	4228.	3.	1.	2.
12	298.	4221.	4.	1.	2.
13	306.	4213.	5.	1.	2.
14	313.	4206.	5.	1.	2.
15	320.	4199.	6.	2.	2.
16	327.	4192.	7.	2.	2.
17	334.	4185.	8.	2.	2.
18	341.	4177.	9.	2.	2.
19	349.	4170.	9.	3.	2.
20	356.	4163.	10.	3.	2.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 30

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.1178E 00	0.8539E-01	-0.2990E-03
2	0.1180E 00	0.8535E-01	-0.3071E-03
3	0.1181E 00	0.8531E-01	-0.3137E-03
4	0.1183E 00	0.8527E-01	-0.3189E-03
5	0.1185E 00	0.8523E-01	-0.3227E-03
6	0.1186E 00	0.8519E-01	-0.3251E-03
7	0.1188E 00	0.8515E-01	-0.3261E-03
8	0.1190E 00	0.8511E-01	-0.3258E-03
9	0.1192E 00	0.8508E-01	-0.3240E-03
10	0.1193E 00	0.8504E-01	-0.3208E-03
11	0.1195E 00	0.8500E-01	-0.3163E-03
12	0.1197E 00	0.8496E-01	-0.3104E-03
13	0.1198E 00	0.8492E-01	-0.3031E-03
14	0.1200E 00	0.8489E-01	-0.2945E-03
15	0.1202E 00	0.8485E-01	-0.2845E-03
16	0.1203E 00	0.8482E-01	-0.2731E-03
17	0.1205E 00	0.8478E-01	-0.2604E-03
18	0.1206E 00	0.8474E-01	-0.2464E-03
19	0.1207E 00	0.8471E-01	-0.2310E-03
20	0.1208E 00	0.8468E-01	-0.2143E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 30

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	431.	8625.	303.	8579.	559.	8671.
2	446.	8610.	339.	8570.	554.	8649.
3	462.	8594.	375.	8560.	549.	8628.
4	477.	8579.	410.	8551.	544.	8607.
5	493.	8563.	446.	8541.	540.	8585.
6	508.	8548.	481.	8532.	535.	8564.
7	523.	8533.	516.	8523.	530.	8543.
8	538.	8518.	551.	8514.	525.	8522.
9	553.	8503.	586.	8505.	520.	8501.
10	568.	8488.	620.	8496.	516.	8480.
11	583.	8473.	655.	8487.	511.	8459.
12	598.	8458.	689.	8478.	506.	8438.
13	612.	8444.	724.	8470.	501.	8418.
14	627.	8429.	758.	8461.	496.	8397.
15	641.	8415.	792.	8453.	491.	8376.
16	656.	8400.	825.	8445.	486.	8356.
17	670.	8386.	859.	8436.	481.	8335.
18	684.	8372.	893.	8428.	476.	8315.
19	698.	8357.	926.	8420.	471.	8295.
20	713.	8343.	959.	8412.	466.	8275.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 30 . DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	8625.		8579.		8671.	
2	8610.		8570.		8649.	
3	8594.		8560.		8628.	
4	8579.		8551.		8607.	
5	8563.		8541.		8585.	
6	8548.		8532.		8564.	
7	8533.		8523.		8543.	
8	8518.		8514.		8522.	
9	8503.		8505.		8501.	
10	8488.		8496.		8480.	
11	8473.		8487.		8459.	
12	8458.		8478.		8438.	
13	8444.		8470.		8418.	
14	8429.		8461.		8397.	
15	8415.		8453.		8376.	
16	8400.		8445.		8356.	
17	8386.		8436.		8335.	
18	8372.		8428.		8315.	
19	8357.		8420.		8295.	
20	8343.		8412.		8275.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 31

STRESS RESULTANTS

STATION	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	0.	6754.	243.	73.	-108.
2	0.	6759.	218.	65.	-103.
3	0.	6764.	195.	58.	-97.
4	0.	6768.	172.	52.	-91.
5	0.	6771.	151.	45.	-86.
6	0.	6774.	132.	40.	-80.
7	0.	6776.	114.	34.	-74.
8	0.	6777.	97.	29.	-68.
9	0.	6779.	82.	24.	-63.
10	0.	6780.	67.	20.	-57.
11	0.	6781.	55.	16.	-51.
12	0.	6782.	43.	13.	-46.
13	0.	6783.	33.	10.	-40.
14	0.	6783.	24.	7.	-34.
15	0.	6784.	17.	5.	-29.
16	0.	6784.	11.	3.	-23.
17	0.	6784.	6.	2.	-17.
18	0.	6785.	3.	1.	-11.
19	0.	6785.	1.	0.	-6.
20	0.	6785.	0.	0.	-0.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 31

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.8539E-01	-0.1178E 00	-0.2991E-03
2	0.8546E-01	-0.1178E 00	-0.2567E-03
3	0.8551E-01	-0.1178E 00	-0.2189E-03
4	0.8556E-01	-0.1179E 00	-0.1853E-03
5	0.8560E-01	-0.1179E 00	-0.1555E-03
6	0.8564E-01	-0.1179E 00	-0.1296E-03
7	0.8567E-01	-0.1179E 00	-0.1070E-03
8	0.8569E-01	-0.1180E 00	-0.8759E-04
9	0.8571E-01	-0.1180E 00	-0.7129E-04
10	0.8572E-01	-0.1180E 00	-0.5762E-04
11	0.8573E-01	-0.1180E 00	-0.4637E-04
12	0.8574E-01	-0.1180E 00	-0.3749E-04
13	0.8575E-01	-0.1181E 00	-0.3041E-04
14	0.8576E-01	-0.1181E 00	-0.2518E-04
15	0.8576E-01	-0.1181E 00	-0.2132E-04
16	0.8577E-01	-0.1181E 00	-0.1877E-04
17	0.8577E-01	-0.1181E 00	-0.1731E-04
18	0.8578E-01	-0.1182E 00	-0.1649E-04
19	0.8578E-01	-0.1182E 00	-0.1622E-04
20	0.8578E-01	-0.1182E 00	-0.1623E-04

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 31

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	0.	8496.	2307.	9188.	-2306.	7804.
2	0.	8502.	2071.	9123.	-2070.	7881.
3	0.	8508.	1847.	9062.	-1846.	7954.
4	0.	8513.	1637.	9004.	-1636.	8022.
5	0.	8517.	1439.	8948.	-1438.	8085.
6	0.	8520.	1253.	8896.	-1253.	8144.
7	0.	8523.	1081.	8847.	-1080.	8199.
8	0.	8525.	921.	8801.	-920.	8249.
9	0.	8527.	774.	8759.	-774.	8295.
10	0.	8528.	640.	8720.	-639.	8337.
11	0.	8530.	519.	8685.	-518.	8374.
12	0.	8531.	410.	8653.	-409.	8408.
13	0.	8532.	314.	8626.	-313.	8437.
14	0.	8532.	231.	8601.	-230.	8463.
15	0.	8533.	161.	8581.	-160.	8485.
16	0.	8533.	103.	8564.	-103.	8502.
17	0.	8534.	59.	8551.	-58.	8516.
18	0.	8534.	27.	8542.	-26.	8526.
19	0.	8534.	7.	8536.	-7.	8532.
20	0.	8535.	1.	8535.	-0.	8534.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 31 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	8700.		9188.		10110.	
2	8696.		9123.		9951.	
3	8691.		9062.		9800.	
4	8685.		9004.		9658.	
5	8678.		8948.		9523.	
6	8671.		8896.		9397.	
7	8662.		8847.		9279.	
8	8654.		8801.		9169.	
9	8645.		8759.		9068.	
10	8636.		8720.		8976.	
11	8626.		8685.		8892.	
12	8616.		8653.		8817.	
13	8607.		8626.		8751.	
14	8596.		8601.		8693.	
15	8586.		8581.		8645.	
16	8576.		8564.		8605.	
17	8566.		8551.		8574.	
18	8555.		8542.		8552.	
19	8545.		8536.		8539.	
20	8535.		8535.		8534.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 32

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-0.	6575.	0.	0.	0.
2	-0.	6585.	1.	0.	6.
3	-0.	6596.	3.	1.	11.
4	-0.	6607.	6.	2.	17.
5	-0.	6617.	11.	3.	22.
6	-0.	6628.	16.	5.	28.
7	-0.	6639.	24.	7.	33.
8	-0.	6649.	32.	10.	39.
9	-0.	6660.	42.	13.	45.
10	-0.	6670.	53.	16.	50.
11	-0.	6680.	66.	20.	56.
12	-0.	6690.	79.	24.	61.
13	-0.	6699.	95.	28.	67.
14	-0.	6709.	111.	33.	73.
15	-0.	6717.	129.	39.	78.
16	-0.	6726.	148.	44.	84.
17	-0.	6734.	169.	51.	90.
18	-0.	6741.	190.	57.	95.
19	-0.	6748.	213.	64.	101.
20	-0.	6754.	238.	71.	107.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 32

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.8312E-01	-0.1174E 00	-0.5755E-03
2	0.8326E-01	-0.1174E 00	-0.5753E-03
3	0.8339E-01	-0.1174E 00	-0.5751E-03
4	0.8353E-01	-0.1175E 00	-0.5744E-03
5	0.8366E-01	-0.1175E 00	-0.5729E-03
6	0.8380E-01	-0.1175E 00	-0.5706E-03
7	0.8394E-01	-0.1175E 00	-0.5669E-03
8	0.8407E-01	-0.1175E 00	-0.5617E-03
9	0.8420E-01	-0.1176E 00	-0.5549E-03
10	0.8433E-01	-0.1176E 00	-0.5462E-03
11	0.8446E-01	-0.1176E 00	-0.5351E-03
12	0.8458E-01	-0.1176E 00	-0.5220E-03
13	0.8470E-01	-0.1177E 00	-0.5060E-03
14	0.8482E-01	-0.1177E 00	-0.4870E-03
15	0.8493E-01	-0.1177E 00	-0.4650E-03
16	0.8504E-01	-0.1177E 00	-0.4397E-03
17	0.8514E-01	-0.1177E 00	-0.4106E-03
18	0.8523E-01	-0.1178E 00	-0.3776E-03
19	0.8532E-01	-0.1178E 00	-0.3404E-03
20	0.8539E-01	-0.1178E 00	-0.2991E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 32

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-1.	8270.	-0.	8270.	-1.	8270.
2	-1.	8283.	6.	8285.	-7.	8281.
3	-1.	8297.	24.	8304.	-25.	8289.
4	-1.	8310.	56.	8327.	-57.	8294.
5	-1.	8324.	99.	8354.	-100.	8294.
6	-1.	8337.	155.	8384.	-156.	8290.
7	-1.	8351.	224.	8418.	-225.	8283.
8	-1.	8364.	305.	8455.	-306.	8272.
9	-1.	8377.	398.	8497.	-399.	8257.
10	-1.	8390.	504.	8541.	-505.	8238.
11	-1.	8403.	623.	8590.	-624.	8215.
12	-1.	8415.	754.	8641.	-755.	8188.
13	-1.	8427.	898.	8696.	-899.	8157.
14	-1.	8439.	1054.	8755.	-1055.	8122.
15	-1.	8450.	1224.	8817.	-1225.	8082.
16	-1.	8460.	1405.	8882.	-1406.	8039.
17	-1.	8470.	1600.	8950.	-1601.	7990.
18	-1.	8480.	1807.	9022.	-1808.	7937.
19	-1.	8488.	2026.	9096.	-2027.	7880.
20	-1.	8496.	2259.	9173.	-2260.	7818.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 32 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	8270.		8270.		8270.	
2	8294.		8285.		8288.	
3	8318.		8304.		8315.	
4	8342.		8327.		8350.	
5	8366.		8354.		8394.	
6	8390.		8384.		8447.	
7	8414.		8418.		8508.	
8	8438.		8455.		8578.	
9	8461.		8497.		8657.	
10	8485.		8541.		8744.	
11	8508.		8590.		8839.	
12	8531.		8641.		8944.	
13	8554.		8696.		9056.	
14	8576.		8755.		9178.	
15	8598.		8817.		9307.	
16	8619.		8882.		9445.	
17	8640.		8950.		9591.	
18	8660.		9022.		9745.	
19	8679.		9096.		9907.	
20	8697.		9173.		10078.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 33

STATION	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	6242.	13875.	-371.	-107.	-2.
2	6275.	13136.	-340.	-99.	13.
3	6305.	12705.	-265.	-78.	18.
4	6334.	12513.	-184.	-55.	17.
5	6362.	12486.	-114.	-35.	14.
6	6390.	12562.	-62.	-19.	10.
7	6418.	12692.	-27.	-9.	6.
8	6447.	12845.	-2.	-2.	5.
9	6476.	12999.	17.	4.	4.
10	6505.	13136.	38.	11.	5.
11	6535.	13239.	67.	19.	7.
12	6565.	13284.	105.	31.	10.
13	6594.	13238.	152.	46.	11.
14	6623.	13063.	201.	61.	10.
15	6650.	12722.	235.	72.	4.
16	6676.	12190.	228.	71.	-9.
17	6698.	11479.	139.	45.	-32.
18	6717.	10668.	-80.	-20.	-68.
19	6732.	9944.	-486.	-143.	-116.
20	6745.	9645.	-1127.	-338.	-172.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 33

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.1567E 00	-0.1016E 00	0.2065E-02
2	0.1492E 00	-0.1012E 00	0.1294E-02
3	0.1449E 00	-0.1008E 00	0.6449E-03
4	0.1432E 00	-0.1003E 00	0.1667E-03
5	0.1432E 00	-0.9989E-01	-0.1482E-03
6	0.1443E 00	-0.9944E-01	-0.3326E-03
7	0.1460E 00	-0.9899E-01	-0.4241E-03
8	0.1480E 00	-0.9855E-01	-0.4530E-03
9	0.1500E 00	-0.9810E-01	-0.4367E-03
10	0.1519E 00	-0.9766E-01	-0.3783E-03
11	0.1534E 00	-0.9722E-01	-0.2680E-03
12	0.1542E 00	-0.9678E-01	-0.8691E-04
13	0.1540E 00	-0.9634E-01	0.1859E-03
14	0.1524E 00	-0.9588E-01	0.5624E-03
15	0.1488E 00	-0.9541E-01	0.1030E-02
16	0.1431E 00	-0.9491E-01	0.1532E-02
17	0.1352E 00	-0.9437E-01	0.1938E-02
18	0.1262E 00	-0.9379E-01	0.2027E-02
19	0.1180E 00	-0.9317E-01	0.1459E-02
20	0.1147E 00	-0.9251E-01	-0.2143E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 33

STATION	MEMBRANE STRESSES SIG-PHI	MEMBRANE STRESSES SIG-THETA	MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS SIG-PHI	OUTSIDE FIBERS SIG-THETA	INSIDE FIBERS SIG-PHI	INSIDE FIBERS SIG-THETA
1	6658.	14800.	4124.	14068.	9191.	15532.
2	6693.	14012.	4375.	13334.	9011.	14690.
3	6726.	13552.	4915.	13018.	8537.	14087.
4	6756.	13347.	5500.	12973.	8013.	13722.
5	6786.	13319.	6006.	13083.	7567.	13555.
6	6816.	13399.	6391.	13267.	7241.	13531.
7	6846.	13538.	6664.	13478.	7028.	13598.
8	6877.	13701.	6860.	13690.	6893.	13712.
9	6908.	13865.	7023.	13894.	6792.	13836.
10	6939.	14012.	7199.	14085.	6678.	13939.
11	6971.	14122.	7425.	14255.	6516.	13989.
12	7002.	14169.	7719.	14383.	6285.	13955.
13	7034.	14120.	8073.	14434.	5994.	13806.
14	7064.	13934.	8436.	14353.	5692.	13515.
15	7094.	13570.	8698.	14065.	5489.	13076.
16	7121.	13003.	8674.	13488.	5567.	12517.
17	7144.	12244.	8095.	12553.	6194.	11934.
18	7164.	11379.	6617.	11240.	7712.	11517.
19	7181.	10607.	3862.	9629.	10500.	11584.
20	7194.	10288.	-497.	7978.	14886.	12598.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 33 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	14800.		14068.		15532.	
2	14012.		13334.		14690.	
3	13553.		13018.		14087.	
4	13348.		12973.		13722.	
5	13319.		13083.		13555.	
6	13399.		13267.		13531.	
7	13538.		13478.		13598.	
8	13701.		13690.		13712.	
9	13865.		13894.		13836.	
10	14012.		14085.		13939.	
11	14122.		14255.		13989.	
12	14169.		14383.		13955.	
13	14120.		14434.		13806.	
14	13934.		14353.		13515.	
15	13570.		14065.		13076.	
16	13003.		13488.		12517.	
17	12244.		12553.		11934.	
18	11380.		11240.		11517.	
19	10612.		9629.		11584.	
20	10298.		8475.		14886.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURF LOAD OF 45 PSI + END CAP LOADS

BODY NO. 35

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	5680.	-38.	-389.	-129.	276.
2	5660.	4749.	523.	145.	90.
3	5667.	8498.	706.	204.	-6.
4	5691.	10773.	567.	166.	-39.
5	5725.	11853.	349.	103.	-40.
6	5762.	12191.	165.	49.	-29.
7	5799.	12173.	49.	15.	-16.
8	5836.	12046.	-10.	-3.	-7.
9	5871.	11934.	-30.	-9.	-1.
10	5906.	11880.	-30.	-9.	1.
11	5940.	11887.	-24.	-7.	1.
12	5974.	11942.	-19.	-6.	1.
13	6008.	12034.	-14.	-5.	1.
14	6042.	12152.	-9.	-3.	1.
15	6076.	12285.	2.	0.	3.
16	6111.	12411.	26.	7.	6.
17	6146.	12482.	67.	20.	10.
18	6180.	12421.	125.	38.	12.
19	6214.	12120.	186.	57.	10.
20	6244.	11474.	213.	66.	-2.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2
PAGE115.
IV. 2.2.116

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 35

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.1205E-01	-0.1140E 00	-0.1089E-01
2	0.6900E-01	-0.1128E 00	-0.1015E-01
3	0.1141E 00	-0.1118E 00	-0.6956E-02
4	0.1419E 00	-0.1112E 00	-0.3789E-02
5	0.1554E 00	-0.1106E 00	-0.1563E-02
6	0.1600E 00	-0.1101E 00	-0.3395E-03
7	0.1603E 00	-0.1095E 00	0.1529E-03
8	0.1591E 00	-0.1090E 00	0.2274E-03
9	0.1582E 00	-0.1084E 00	0.1208E-03
10	0.1580E 00	-0.1078E 00	-0.2879E-04
11	0.1585E 00	-0.1072E 00	-0.1616E-03
12	0.1596E 00	-0.1067E 00	-0.2644E-03
13	0.1612E 00	-0.1061E 00	-0.3429E-03
14	0.1631E 00	-0.1055E 00	-0.3995E-03
15	0.1653E 00	-0.1049E 00	-0.4186E-03
16	0.1674E 00	-0.1043E 00	-0.3563E-03
17	0.1688E 00	-0.1037E 00	-0.1391E-03
18	0.1684E 00	-0.1031E 00	0.3199E-03
19	0.1649E 00	-0.1024E 00	0.1076E-02
20	0.1567E 00	-0.1018E 00	0.2065E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 35

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	7574.	-50.	3423.	-1427.	11724.	1326.
2	7547.	6332.	13124.	7883.	1971.	4781.
3	7556.	11330.	15089.	13507.	23.	9153.
4	7588.	14364.	13632.	16133.	1544.	12596.
5	7633.	15804.	11351.	16901.	3915.	14707.
6	7683.	16254.	9447.	16780.	5918.	15729.
7	7733.	16231.	8251.	16388.	7214.	16073.
8	7781.	16062.	7679.	16033.	7884.	16090.
9	7829.	15912.	7513.	15819.	8144.	16005.
10	7875.	15841.	7553.	15744.	8196.	15937.
11	7920.	15849.	7661.	15770.	8179.	15929.
12	7965.	15923.	7768.	15860.	8163.	15985.
13	8010.	16045.	7859.	15996.	8161.	16094.
14	8056.	16203.	7960.	16170.	8151.	16236.
15	8101.	16381.	8126.	16383.	8077.	16378.
16	8148.	16548.	8422.	16626.	7873.	16470.
17	8194.	16643.	8906.	16855.	7482.	16431.
18	8241.	16561.	9571.	16964.	6910.	16159.
19	8285.	16161.	10266.	16767.	6304.	15555.
20	8325.	15299.	10593.	16001.	6058.	14596.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONF
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 35 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	7664.		4851.		11724.	
2	7556.		13124.		4781.	
3	11330.		15089.		9153.	
4	14365.		16133.		12596.	
5	15804.		16901.		14707.	
6	16255.		16780.		15729.	
7	16231.		16388.		16073.	
8	16062.		16033.		16090.	
9	15912.		15819.		16005.	
10	15841.		15744.		15937.	
11	15849.		15770.		15929.	
12	15923.		15860.		15985.	
13	16045.		15996.		16094.	
14	16203.		16170.		16236.	
15	16381.		16383.		16378.	
16	16548.		16626.		16470.	
17	16643.		16855.		16431.	
18	16561.		16964.		16159.	
19	16161.		16767.		15555.	
20	15299.		16001.		14596.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 36

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-31.	-864.	-40.	-15.	0.
2	-33.	-862.	-40.	-15.	0.
3	-35.	-860.	-39.	-15.	0.
4	-37.	-858.	-39.	-15.	0.
5	-39.	-856.	-39.	-15.	0.
6	-41.	-854.	-39.	-15.	0.
7	-43.	-852.	-38.	-15.	0.
8	-45.	-850.	-38.	-15.	0.
9	-47.	-849.	-38.	-15.	0.
10	-49.	-847.	-38.	-15.	0.
11	-51.	-845.	-38.	-15.	0.
12	-53.	-843.	-37.	-15.	0.
13	-55.	-841.	-37.	-15.	0.
14	-56.	-839.	-37.	-15.	0.
15	-58.	-837.	-37.	-15.	0.
16	-60.	-836.	-37.	-15.	0.
17	-62.	-834.	-36.	-15.	0.
18	-64.	-832.	-36.	-15.	0.
19	-65.	-830.	-36.	-15.	0.
20	-67.	-828.	-36.	-15.	0.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 36

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.1653E-01	-0.2016E-01	-0.7317E-02
2	0.2065E-01	-0.2014E-01	-0.7516E-02
3	0.2489E-01	-0.2013E-01	-0.7715E-02
4	0.2923E-01	-0.2012E-01	-0.7912E-02
5	0.3368E-01	-0.2011E-01	-0.8108E-02
6	0.3824E-01	-0.2009E-01	-0.8302E-02
7	0.4291E-01	-0.2008E-01	-0.8495E-02
8	0.4768E-01	-0.2007E-01	-0.8687E-02
9	0.5257E-01	-0.2006E-01	-0.8878E-02
10	0.5755E-01	-0.2004E-01	-0.9068E-02
11	0.6264E-01	-0.2003E-01	-0.9256E-02
12	0.6784E-01	-0.2002E-01	-0.9443E-02
13	0.7314E-01	-0.2001E-01	-0.9628E-02
14	0.7854E-01	-0.2000E-01	-0.9813E-02
15	0.8405E-01	-0.1999E-01	-0.9996E-02
16	0.8966E-01	-0.1998E-01	-0.1018E-01
17	0.9536E-01	-0.1997E-01	-0.1036E-01
18	0.1012E 00	-0.1996E-01	-0.1054E-01
19	0.1071E 00	-0.1994E-01	-0.1072E-01
20	0.1131E 00	-0.1993E-01	-0.1089E-01

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 36

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-90.	-2484.	-2064.	-3231.	1884.	-1736.
2	-96.	-2478.	-2059.	-3226.	1867.	-1730.
3	-102.	-2472.	-2053.	-3220.	1850.	-1724.
4	-107.	-2466.	-2048.	-3215.	1833.	-1718.
5	-113.	-2461.	-2042.	-3210.	1816.	-1712.
6	-119.	-2455.	-2037.	-3204.	1800.	-1706.
7	-124.	-2449.	-2031.	-3199.	1783.	-1700.
8	-130.	-2444.	-2026.	-3194.	1766.	-1694.
9	-135.	-2438.	-2020.	-3189.	1750.	-1688.
10	-141.	-2433.	-2015.	-3183.	1734.	-1682.
11	-146.	-2427.	-2010.	-3178.	1717.	-1677.
12	-151.	-2422.	-2004.	-3173.	1701.	-1671.
13	-157.	-2417.	-1999.	-3168.	1685.	-1666.
14	-162.	-2411.	-1994.	-3163.	1669.	-1660.
15	-167.	-2406.	-1988.	-3157.	1653.	-1655.
16	-173.	-2401.	-1983.	-3152.	1638.	-1650.
17	-178.	-2396.	-1978.	-3147.	1622.	-1644.
18	-183.	-2391.	-1972.	-3142.	1606.	-1639.
19	-188.	-2385.	-1967.	-3137.	1591.	-1634.
20	-193.	-2380.	-1962.	-3132.	1575.	-1629.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 36 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	2484.		3231.		3620.	
2	2478.		3226.		3597.	
3	2472.		3220.		3574.	
4	2466.		3215.		3551.	
5	2461.		3210.		3528.	
6	2455.		3204.		3505.	
7	2449.		3199.		3483.	
8	2444.		3194.		3460.	
9	2438.		3189.		3438.	
10	2433.		3183.		3416.	
11	2427.		3178.		3394.	
12	2422.		3173.		3373.	
13	2417.		3168.		3351.	
14	2411.		3163.		3330.	
15	2406.		3157.		3308.	
16	2401.		3152.		3287.	
17	2396.		3147.		3266.	
18	2391.		3142.		3245.	
19	2385.		3137.		3225.	
20	2380.		3132.		3204.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 37

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	0.	-1108.	-5.	-2.	6.
2	0.	-1039.	-4.	-1.	6.
3	0.	-970.	-3.	-1.	5.
4	0.	-901.	-3.	-1.	4.
5	0.	-832.	-2.	-1.	4.
6	0.	-764.	-2.	-0.	3.
7	0.	-695.	-1.	-0.	2.
8	0.	-626.	-1.	-0.	2.
9	0.	-557.	-0.	-0.	1.
10	0.	-488.	-0.	-0.	1.
11	0.	-419.	-0.	-0.	1.
12	0.	-350.	0.	0.	0.
13	0.	-281.	0.	0.	0.
14	0.	-212.	0.	0.	0.
15	0.	-143.	0.	0.	-0.
16	0.	-74.	0.	0.	-0.
17	0.	-5.	0.	0.	-0.
18	0.	63.	0.	0.	-0.
19	0.	132.	0.	0.	-0.
20	0.	201.	0.	0.	0.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 37

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.2016E-01	-0.1653E-01	-0.7317E-02
2	-0.1890E-01	-0.1653E-01	-0.7320E-02
3	-0.1765E-01	-0.1652E-01	-0.7323E-02
4	-0.1640E-01	-0.1652E-01	-0.7325E-02
5	-0.1515E-01	-0.1651E-01	-0.7327E-02
6	-0.1389E-01	-0.1651E-01	-0.7328E-02
7	-0.1264E-01	-0.1651E-01	-0.7329E-02
8	-0.1138E-01	-0.1651E-01	-0.7330E-02
9	-0.1013E-01	-0.1650E-01	-0.7330E-02
10	-0.8877E-02	-0.1650E-01	-0.7331E-02
11	-0.7623E-02	-0.1650E-01	-0.7331E-02
12	-0.6369E-02	-0.1650E-01	-0.7331E-02
13	-0.5115E-02	-0.1650E-01	-0.7331E-02
14	-0.3861E-02	-0.1650E-01	-0.7330E-02
15	-0.2607E-02	-0.1649E-01	-0.7330E-02
16	-0.1354E-02	-0.1649E-01	-0.7330E-02
17	-0.1000E-03	-0.1649E-01	-0.7330E-02
18	0.1154E-02	-0.1649E-01	-0.7330E-02
19	0.2408E-02	-0.1649E-01	-0.7330E-02
20	0.3662E-02	-0.1649E-01	-0.7330E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 37

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	0.	-2456.	-160.	-2504.	160.	-2408.
2	0.	-2304.	-130.	-2343.	130.	-2265.
3	0.	-2151.	-103.	-2182.	103.	-2120.
4	0.	-1998.	-80.	-2023.	80.	-1974.
5	0.	-1846.	-61.	-1864.	61.	-1828.
6	0.	-1693.	-44.	-1706.	44.	-1680.
7	0.	-1540.	-31.	-1549.	31.	-1531.
8	0.	-1387.	-20.	-1393.	20.	-1381.
9	0.	-1235.	-11.	-1238.	12.	-1231.
10	0.	-1082.	-5.	-1083.	5.	-1080.
11	0.	-929.	-0.	-929.	1.	-929.
12	0.	-776.	3.	-775.	-2.	-777.
13	0.	-623.	4.	-622.	-4.	-624.
14	0.	-471.	5.	-469.	-5.	-472.
15	0.	-318.	5.	-316.	-4.	-319.
16	0.	-165.	4.	-164.	-4.	-166.
17	0.	-12.	3.	-11.	-3.	-13.
18	0.	141.	2.	141.	-2.	140.
19	0.	294.	1.	294.	-1.	293.
20	0.	446.	1.	447.	-1.	446.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 37 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	2478.		2504.		2569.	
2	2323.		2343.		2395.	
3	2167.		2182.		2223.	
4	2012.		2023.		2055.	
5	1858.		1864.		1888.	
6	1703.		1706.		1724.	
7	1548.		1549.		1562.	
8	1394.		1393.		1401.	
9	1240.		1238.		1243.	
10	1085.		1083.		1085.	
11	931.		929.		929.	
12	778.		778.		777.	
13	624.		626.		624.	
14	471.		474.		472.	
15	318.		321.		319.	
16	165.		168.		166.	
17	13.		14.		13.	
18	141.		141.		142.	
19	294.		294.		294.	
20	446.		447.		447.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 38

STATION	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
		STRESS RESULTANTS			
1	-0.	-2386.	0.	0.	-0.
2	-0.	-2319.	-0.	-0.	-2.
3	-0.	-2252.	-1.	-0.	-3.
4	-0.	-2186.	-1.	-0.	-5.
5	-0.	-2119.	-2.	-1.	-7.
6	-0.	-2052.	-4.	-1.	-8.
7	-0.	-1985.	-5.	-2.	-10.
8	-0.	-1918.	-7.	-2.	-11.
9	-0.	-1852.	-9.	-3.	-13.
10	-0.	-1785.	-11.	-3.	-14.
11	-0.	-1718.	-14.	-4.	-15.
12	-0.	-1651.	-17.	-5.	-17.
13	-0.	-1583.	-19.	-6.	-18.
14	-0.	-1516.	-23.	-7.	-19.
15	-0.	-1449.	-26.	-8.	-20.
16	-0.	-1381.	-29.	-9.	-21.
17	-0.	-1313.	-33.	-10.	-22.
18	-0.	-1245.	-37.	-11.	-23.
19	-0.	-1177.	-41.	-12.	-24.
20	-0.	-1108.	-45.	-14.	-25.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 38

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	-0.4340E-01	-0.1667E-01	-0.7096E-02
2	-0.4219E-01	-0.1666E-01	-0.7096E-02
3	-0.4097E-01	-0.1665E-01	-0.7097E-02
4	-0.3976E-01	-0.1664E-01	-0.7097E-02
5	-0.3855E-01	-0.1663E-01	-0.7099E-02
6	-0.3733E-01	-0.1662E-01	-0.7101E-02
7	-0.3612E-01	-0.1661E-01	-0.7104E-02
8	-0.3490E-01	-0.1660E-01	-0.7108E-02
9	-0.3369E-01	-0.1660E-01	-0.7114E-02
10	-0.3247E-01	-0.1659E-01	-0.7122E-02
11	-0.3125E-01	-0.1658E-01	-0.7131E-02
12	-0.3003E-01	-0.1658E-01	-0.7142E-02
13	-0.2881E-01	-0.1657E-01	-0.7155E-02
14	-0.2758E-01	-0.1656E-01	-0.7170E-02
15	-0.2635E-01	-0.1656E-01	-0.7188E-02
16	-0.2512E-01	-0.1655E-01	-0.7208E-02
17	-0.2389E-01	-0.1654E-01	-0.7231E-02
18	-0.2265E-01	-0.1654E-01	-0.7257E-02
19	-0.2140E-01	-0.1653E-01	-0.7285E-02
20	-0.2016E-01	-0.1653E-01	-0.7317E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 38

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-0.	-5290.	1.	-5290.	-1.	-5290.
2	-0.	-5142.	-4.	-5143.	4.	-5141.
3	-0.	-4994.	-17.	-4999.	17.	-4989.
4	-0.	-4846.	-39.	-4858.	39.	-4834.
5	-0.	-4698.	-69.	-4719.	69.	-4677.
6	-0.	-4550.	-107.	-4582.	107.	-4518.
7	-0.	-4402.	-153.	-4448.	153.	-4356.
8	-0.	-4254.	-206.	-4316.	206.	-4192.
9	-0.	-4106.	-266.	-4185.	266.	-4026.
10	-0.	-3957.	-334.	-4057.	333.	-3857.
11	-0.	-3809.	-408.	-3931.	408.	-3686.
12	-0.	-3660.	-488.	-3806.	488.	-3513.
13	-0.	-3511.	-575.	-3683.	575.	-3338.
14	-0.	-3362.	-668.	-3562.	668.	-3161.
15	-0.	-3212.	-766.	-3442.	766.	-2982.
16	-0.	-3062.	-870.	-3323.	870.	-2801.
17	-0.	-2911.	-979.	-3205.	979.	-2618.
18	-0.	-2760.	-1094.	-3088.	1094.	-2432.
19	-0.	-2609.	-1213.	-2972.	1212.	-2245.
20	-0.	-2457.	-1336.	-2857.	1336.	-2056.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 38 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	5290.		5290.		5290.	
2	5148.		5143.		5145.	
3	5005.		4999.		5006.	
4	4863.		4858.		4873.	
5	4720.		4719.		4746.	
6	4577.		4582.		4625.	
7	4435.		4448.		4509.	
8	4291.		4316.		4398.	
9	4148.		4185.		4292.	
10	4004.		4057.		4190.	
11	3860.		3931.		4094.	
12	3715.		3806.		4002.	
13	3570.		3683.		3913.	
14	3425.		3562.		3829.	
15	3279.		3442.		3748.	
16	3132.		3323.		3671.	
17	2985.		3205.		3597.	
18	2837.		3088.		3526.	
19	2689.		2972.		3458.	
20	2539.		2857.		3392.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 39

STRESS RESULTANTS

STATION	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	5759.	-3969.	-3725.	-1117.	705.
2	5755.	-3956.	-3484.	-1046.	684.
3	5751.	-3910.	-3252.	-978.	663.
4	5747.	-3833.	-3026.	-911.	641.
5	5743.	-3729.	-2808.	-847.	620.
6	5740.	-3598.	-2596.	-784.	600.
7	5736.	-3444.	-2393.	-724.	579.
8	5732.	-3267.	-2196.	-666.	559.
9	5729.	-3070.	-2006.	-610.	538.
10	5725.	-2855.	-1824.	-556.	519.
11	5722.	-2622.	-1648.	-504.	499.
12	5719.	-2374.	-1478.	-453.	480.
13	5715.	-2114.	-1316.	-405.	461.
14	5712.	-1841.	-1160.	-359.	443.
15	5709.	-1558.	-1010.	-314.	425.
16	5706.	-1265.	-866.	-271.	407.
17	5704.	-965.	-729.	-230.	390.
18	5701.	-658.	-597.	-191.	373.
19	5699.	-346.	-471.	-154.	357.
20	5696.	-30.	-351.	-118.	341.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 39

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	-0.3377E-01	-0.1167E 00	0.2444E-03
2	-0.3365E-01	-0.1166E 00	-0.9072E-03
3	-0.3315E-01	-0.1164E 00	-0.1983E-02
4	-0.3229E-01	-0.1163E 00	-0.2987E-02
5	-0.3110E-01	-0.1162E 00	-0.3919E-02
6	-0.2960E-01	-0.1161E 00	-0.4782E-02
7	-0.2781E-01	-0.1160E 00	-0.5580E-02
8	-0.2576E-01	-0.1159E 00	-0.6313E-02
9	-0.2346E-01	-0.1158E 00	-0.6984E-02
10	-0.2095E-01	-0.1157E 00	-0.7594E-02
11	-0.1824E-01	-0.1156E 00	-0.8149E-02
12	-0.1534E-01	-0.1154E 00	-0.8648E-02
13	-0.1228E-01	-0.1153E 00	-0.9093E-02
14	-0.9079E-02	-0.1152E 00	-0.9488E-02
15	-0.5743E-02	-0.1151E 00	-0.9834E-02
16	-0.2301E-02	-0.1150E 00	-0.1013E-01
17	0.1236E-02	-0.1149E 00	-0.1039E-01
18	0.4852E-02	-0.1148E 00	-0.1060E-01
19	0.8537E-02	-0.1147E 00	-0.1077E-01
20	0.1227E-01	-0.1146E 00	-0.1090E-01

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 39

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	7678.	-5293.	-32052.	-17209.	47409.	6624.
2	7673.	-5275.	-29494.	-16436.	44841.	5887.
3	7668.	-5213.	-27015.	-15642.	42351.	5216.
4	7663.	-5111.	-24613.	-14830.	39939.	4608.
5	7658.	-4972.	-22289.	-14004.	37605.	4060.
6	7653.	-4798.	-20043.	-13165.	35348.	3569.
7	7648.	-4591.	-17873.	-12315.	33169.	3133.
8	7643.	-4356.	-15779.	-11459.	31064.	2747.
9	7638.	-4093.	-13759.	-10597.	29036.	2411.
10	7634.	-3806.	-11818.	-9734.	27085.	2121.
11	7629.	-3496.	-9944.	-8867.	25203.	1875.
12	7625.	-3166.	-8142.	-8001.	23391.	1669.
13	7620.	-2819.	-6414.	-7139.	21655.	1502.
14	7616.	-2455.	-4755.	-6281.	19988.	1371.
15	7612.	-2077.	-3158.	-5427.	18383.	1273.
16	7609.	-1687.	-1632.	-4582.	16849.	1208.
17	7605.	-1287.	-169.	-3744.	15379.	1171.
18	7602.	-878.	1232.	-2917.	13971.	1161.
19	7598.	-462.	2571.	-2100.	12625.	1176.
20	7595.	-41.	3851.	-1295.	11339.	1214.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 39 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	13222.		32052.	* *	47409.	* *
2	13184.		29494.	* *	44841.	* *
3	13103.		27015.	*	42351.	* *
4	12983.		24613.	*	39939.	* *
5	12826.		22289.	*	37605.	* *
6	12634.		20043.	*	35348.	* *
7	12411.		17873.		33169.	* *
8	12159.		15779.		31064.	* *
9	11880.		13759.		29036.	* *
10	11578.		11818.		27085.	*
11	11254.		9944.		25203.	*
12	10910.		8142.		23391.	*
13	10549.		7139.		21655.	*
14	10173.		6281.		19988.	*
15	9783.		5427.		18383.	
16	9382.		4582.		16849.	
17	8971.		3744.		15379.	
18	8552.		4149.		13971.	
19	8127.		4671.		12625.	
20	7716.		5147.		11339.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 41

STATION	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
	STRESS RESULTANTS				
1	3705.	100560.	-0.	274.	-2135.
2	4677.	59448.	-6261.	-1653.	-560.
3	5172.	30026.	-6848.	-1912.	186.
4	5367.	13360.	-5151.	-1474.	412.
5	5414.	6212.	-3075.	-899.	382.
6	5411.	4692.	-1438.	-433.	264.
7	5407.	5783.	-424.	-138.	145.
8	5422.	7639.	71.	9.	60.
9	5459.	9372.	232.	60.	11.
10	5513.	10695.	230.	62.	-7.
11	5578.	11610.	189.	52.	-6.
12	5651.	12189.	187.	53.	7.
13	5726.	12442.	268.	80.	26.
14	5800.	12250.	441.	135.	43.
15	5867.	11363.	669.	209.	47.
16	5918.	9465.	853.	272.	23.
17	5940.	6332.	804.	265.	-50.
18	5923.	2120.	229.	98.	-193.
19	5859.	-2222.	-1247.	-349.	-415.
20	5760.	-4445.	-3985.	-1195.	-700.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 41

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.1038E 01	-0.1264E 00	0.8396E-01
2	0.6457E 00	-0.1307E 00	0.6991E-01
3	0.3598E 00	-0.1325E 00	0.4479E-01
4	0.1949E 00	-0.1327E 00	0.2257E-01
5	0.1229E 00	-0.1321E 00	0.7644E-02
6	0.1073E 00	-0.1312E 00	-0.3735E-03
7	0.1186E 00	-0.1304E 00	-0.3563E-02
8	0.1383E 00	-0.1296E 00	-0.4060E-02
9	0.1572E 00	-0.1290E 00	-0.3423E-02
10	0.1720E 00	-0.1285E 00	-0.2545E-02
11	0.1827E 00	-0.1280E 00	-0.1779E-02
12	0.1899E 00	-0.1275E 00	-0.1112E-02
13	0.1935E 00	-0.1271E 00	-0.3103E-03
14	0.1922E 00	-0.1267E 00	0.9504E-03
15	0.1829E 00	-0.1262E 00	0.2951E-02
16	0.1615E 00	-0.1256E 00	0.5736E-02
17	0.1252E 00	-0.1248E 00	0.8828E-02
18	0.7538E-01	-0.1238E 00	0.1088E-01
19	0.2290E-01	-0.1225E 00	0.9333E-02
20	-0.5012E-02	-0.1209E 00	0.2455E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

BODY NO. 41

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	4560.	123766.	4560.	126260.	4560.	121273.
2	5757.	73166.	-51150.	58144.	62664.	88189.
3	6365.	36955.	-55876.	19579.	68607.	54330.
4	6606.	16443.	-40211.	3043.	53422.	29843.
5	6663.	7645.	-21289.	-524.	34616.	15815.
6	6659.	5775.	-6415.	1843.	19733.	9708.
7	6655.	7117.	2799.	5862.	10511.	8372.
8	6674.	9402.	7318.	9484.	6029.	9319.
9	6719.	11535.	8832.	12077.	4606.	10993.
10	6785.	13163.	8879.	13724.	4691.	12602.
11	6865.	14289.	8582.	14758.	5149.	13821.
12	6954.	15002.	8657.	15484.	5252.	14520.
13	7047.	15313.	9487.	16037.	4607.	14589.
14	7139.	15077.	11145.	16303.	3133.	13851.
15	7221.	13986.	13301.	15884.	1141.	12088.
16	7283.	11650.	15039.	14119.	-472.	9181.
17	7311.	7794.	14620.	10203.	2.	5384.
18	7290.	2609.	9368.	3497.	5211.	1721.
19	7211.	-2735.	-4125.	-5911.	18547.	441.
20	7089.	-5470.	-29131.	-16330.	43309.	5390.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF CONE
UNIFORM PRESSURE LOAD OF 45 PSI + END CAP LOADS

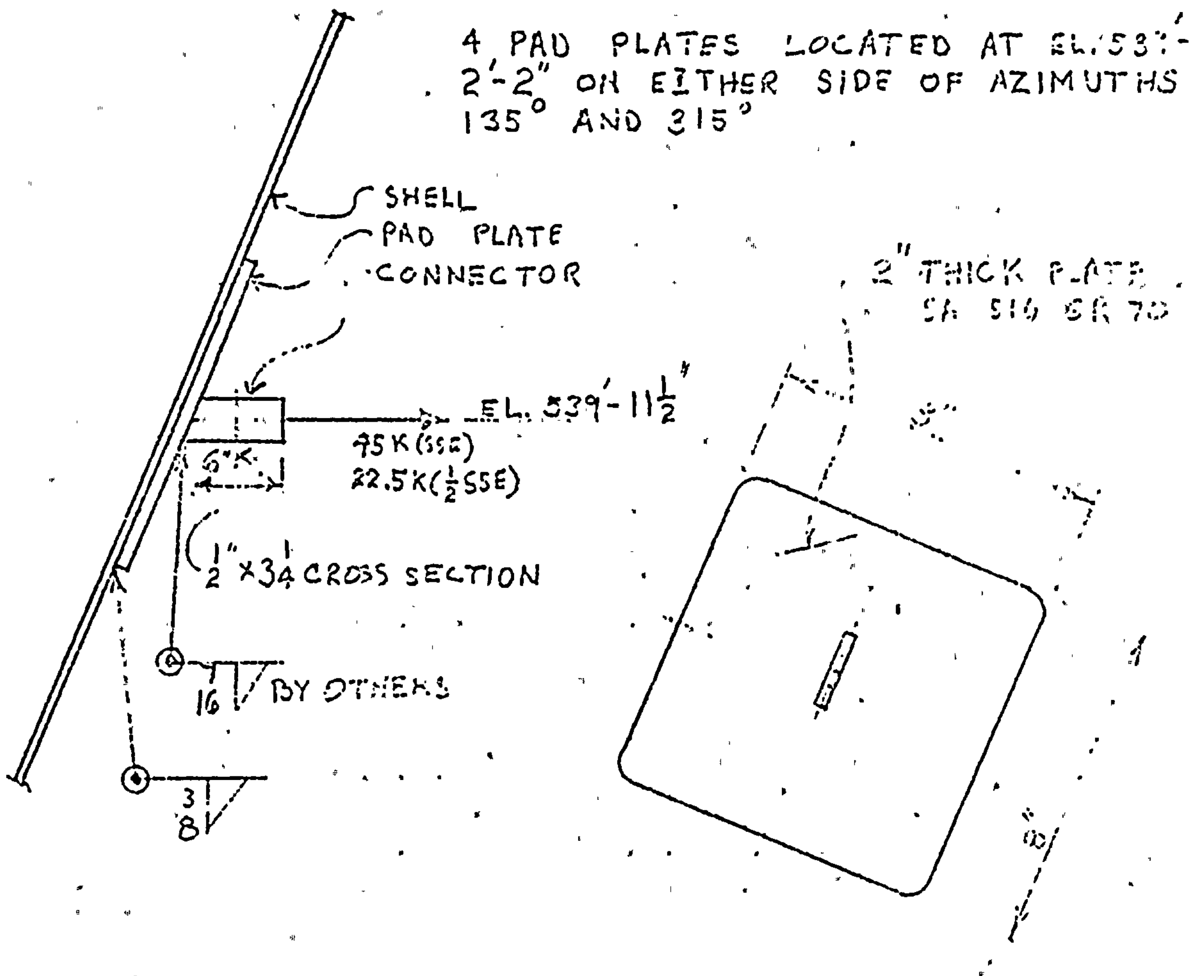
BODY NO. 41 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	126040.	* * *	126260.	* * *	121273.	* * *
2	73346.	* * *	109294.	* * *	88189.	* * *
3	36973.	* *	75455.	* * *	68607.	* * *
4	16530.		43254.	* *	53422.	* *
5	7719.		21289.	*	34616.	* *
6	6730.		8258.		19733.	*
7	7128.		5862.		10511.	
8	9403.		9484.		9319.	
9	11535.		12077.		10993.	
10	13163.		13724.		12602.	
11	14289.		14758.		13821.	
12	15002.		15484.		14520.	
13	15314.		16037.		14589.	
14	15078.		16303.		13851.	
15	13987.		15884.		12088.	
16	11650.		15039.		9652.	
17	7795.		14620.		5384.	
18	7324.		9368.		5211.	
19	10027.		5911.		18547.	
20	12787.		29131.	* *	43309.	* *

SEE PAGES IV.10.3.45-48 FOR VALID RESULTS (stations 1–18, handwritten)

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC. 2
PREPARED BY / DATE: DRFIX 4-3-74					ARTICLE: 2
CHECKED BY / DATE: ACL / 7-2-74					PAGE: 1
REVISION NUMBER:					

4 PAD PLATES LOCATED AT EL. 539'-11½"
2'-2" ON EITHER SIDE OF AZIMUTHS
135° AND 315°



CONNECTOR

ALLOWABLE STRESSES. (SA 516 GR 70 @ 340°F; F_y = 33260. PSI)

SSE $0.9F_y = 29934.$ PSI
½ SSE $0.6F_y = 19956.$ PSI

$$\tau = \frac{P}{A} = \frac{P}{HW}$$

LET W = 0.5 IN

$$H = \frac{P}{\tau W}$$

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12704

WPPSS HANFORD NO. 2 CONTAINMENT VESSEL

				FINAL STRESS REPORT	SECTION: IV
PREPARED BY / DATE: CRF 4-3-74					SUBSEC:
CHECKED BY / DATE: ACL 7-2-74					ARTICLE:
REVISION NUMBER:					PAGE:

SSE CONDITION $\tau = 0.9 F_y = 29934.$ PSI

$P = 45000.$ LB

$$H = \frac{45000.}{29934.(.5)} = 3.007 \text{ IN}$$

$\frac{1}{2}$ SSE CONDITION $\tau = 0.6 F_y = 19956.$ PSI

$P = 22500.$ LB

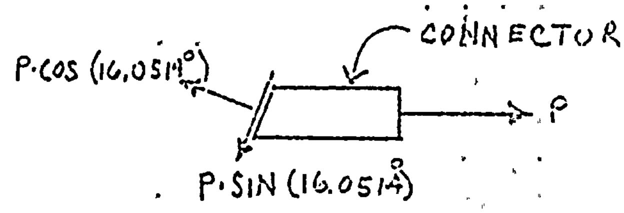
$$H = \frac{22500.}{19956.(.5)} = 2.255 \text{ IN.}$$

∴ SSE CONDITION CONTROLS

USE CONNECTOR CROSS SECTION OF <u>3.25" × 0.5"</u>

<u>WELDING OF CONNECTOR TO PAD PLATE</u>

$$\text{LENGTH OF WELD} = \frac{3.25''(2)}{\cos(16.0514^\circ)} = 6.76'' \text{ (FILLET)}$$



SSE CONDITION $P = 45000.$ LB

TENSION FORCE ON WELD = $(45000.)\cos(16.0514^\circ) = 43246.$ LB

SHEAR FORCE ON WELD = $(45000.)\sin(16.0514^\circ) = 12442.$ LB

TENSION FORCE ON WELD THROAT $= 0.707(43246.) = 30575.$ LB

SHEAR FORCE ON WELD THROAT $= \sqrt{[.707(43246.)]^2 + (12442.)^2} = 33010.$ LB

TENSION FORCE PER INCH ON THROAT $= \frac{30575. \text{ LB}}{6.76 \text{ IN}} = 4523.$ LB/IN.

SHEAR FORCE PER INCH ON THROAT $= \frac{33010. \text{ LB}}{6.76 \text{ IN}} = 4883.$ LB/IN.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12784				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 2
PREPARED BY / DATE: DR FIX 4-9-74					ARTICLE: 3
CHECKED BY / DATE: KCL 7-2-74					PAGE: 3
REVISION NUMBER:					

ALLOWABLE TENSION IN WELD $= .9 S_y = .9(33260.) = 29934.$ PSI

ALLOWABLE SHEAR IN WELD $= \frac{.9 S_y}{\sqrt{3}} = 17282.4$ PSI.

WELD THROAT SIZE $= \frac{4893. \text{ LB/IN}}{17282.4 \text{ LB/IN}^2} = 0.283$ IN

WELD LEG SIZE $= \frac{0.283 \text{ IN}}{0.707} = 0.40$ IN

$\frac{1}{2}$ SSE CONDITION P = 22500. LB

TENSION FORCE ON WELD $= (22500.)\cos(16.0514°) = 21623.$ LB

SHEAR FORCE ON WELD $= (22500.)\sin(16.0514°) = 6221.$ LB

TENSION FORCE ON WELD THROAT $= 0.707(21623.) = 15287.$ LB

SHEAR FORCE ON WELD THROAT $= \sqrt{[.707(21623.)]^2 + (6221)^2} = 16505.$ LB

TENSION FORCE PER INCH ON THROAT $= \frac{15287. \text{ LB}}{6.76 \text{ IN}} = 2261.$ LB/IN

SHEAR FORCE PER INCH ON THROAT $= \frac{16505. \text{ LB}}{6.76 \text{ IN}} = 2442.$ LB/IN

ALLOWABLE TENSION IN WELD $= .4(33260.) = 13304.$ PSI

ALLOWABLE SHEAR IN WELD = 21000. PSI

WELD THROAT SIZE FOR TENSION $= \frac{2261. \text{ LB/IN}}{13304. \text{ LB/IN}^2} = 0.17$ IN

WELD THROAT SIZE FOR SHEAR $= \frac{2442. \text{ LB/IN}}{21000. \text{ LB/IN}^2} = 0.116$ IN

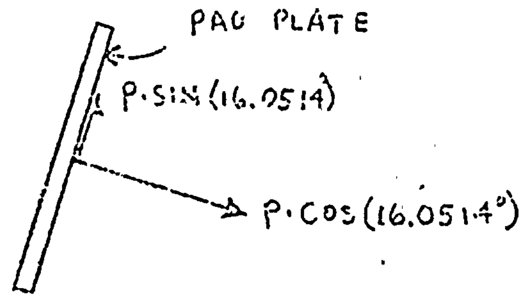
WELD LEG $= \frac{0.17 \text{ IN}}{0.707} = 0.24$ IN

∴ SSE CONDITION CONTROLS

USE A $\frac{7}{16}$ INCH FILLET WELD

PAD PLATE

TRY AN 8" X 8" X 2" PLATE (SA 516 GR70 @ 340°F, F_y = 33260. PSI)



ASSUME THE FORCE PARALLEL TO THE PAD PLATE (P·SIN(16.0514°)) IS TRANSFERRED DIRECTLY TO THE WELDS CONNECTING THE PAD PLATE TO THE SHELL

CONSIDER THE FORCE PERPENDICULAR TO THE PAD PLATE

$$\sigma_{MAX} = \frac{3P}{2\pi m t^2}\left[(m+1)\log\frac{a}{2r_o} + 0.75\,m\right]$$ (REF. #5, ROARK, TABLE X CASE 33)

m = 3.333   t = 2.0 IN
r_o = 0.25 IN   a = 8.0 IN

SSE CONDITION P = 45000. LB

$$\sigma_{MAX} = \frac{3(45000)\cos(16.0514)}{2\pi(3.333)(2)^2}\left[(3.333+1)\ln\frac{8.0}{2(.25)} + 0.75(3.333)\right]$$

σ_{MAX} = 22478. PSI < .9 S_y = 29934. PSI

½ SSE CONDITION P = 22500. LB.

σ_{MAX} = 11239. PSI < .6 S_y = 19956. PSI

∴ 8" X 8" X 2" IS OK.

WELDING OF PAD PLATE TO SHELL

16 INCHES OF HORIZONTAL FILLET WELD
16 INCHES OF VERTICAL FILLET WELD

ASSUME FORCES ARE DISTRIBUTED TO ALL WELDS EQUALLY.

CONSIDER THE FORCE PERPENDICULAR TO THE SHELL. $(P \cdot \cos(16.0514°))$

TENSION PER INCH HORIZONTAL AND VERTICAL WELD THROAT $= (\frac{1}{2}) .707\ P \cos(16.0514°)/16 \text{ IN} = \tau_1$

SHEAR PER INCH VERTICAL AND HORIZONTAL WELD THROAT $= (\frac{1}{2}) .707\ P \cos(16.0514°)/16 \text{ IN} = \tau_2$

CONSIDER THE FORCE PARALLEL TO THE SHELL. $(P \cdot \sin(16.0514°))$

SHEAR PER INCH VERTICAL WELD THROAT $= (\frac{1}{2}) P \cdot \sin(16.0514°)/16 \text{ IN} = \tau_3$

SHEAR PER INCH HORIZONTAL WELD THROAT $= (\frac{1}{2}) .707\ P \cdot \sin(16.0514°)/16 \text{ IN} = \tau_4$

TENSION PER INCH HORIZONTAL WELD THROAT $= (\frac{1}{2}) .707\ P \cdot \sin(16.0514°)/16 \text{ IN} = \tau_5$

COMBINING SHEARS AND TENSIONS ON WELD

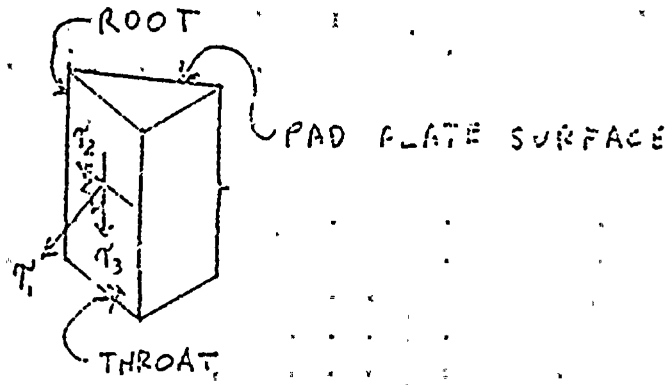
TOTAL SHEAR PER INCH VERTICAL WELD THROAT $= \sqrt{\tau_3^2 + \tau_2^2}$

TOTAL TENSION PER INCH VERTICAL WELD THROAT $= \tau_1$

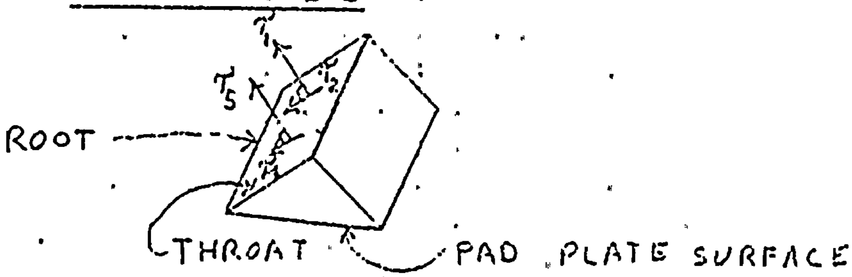
TOTAL SHEAR PER INCH HORIZONTAL WELD THROAT $= \tau_2 + \tau_4$

TOTAL TENSION PER INCH HORIZONTAL WELD THROAT $= \tau_5 + \tau_1$

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 2
PREPARED BY / DATE: DRF'Y 4-10-74					ARTICLE: 3
CHECKED BY / DATE: ACL/7-2-74					PAGE: 5-A
REVISION NUMBER:					



VERTICAL WELD



HORIZONTAL WELD

SSE CONDITION $P = 45000.$ LB.

$\tau_1 = \frac{1}{2}(.707)(45000)\cos(16.0514°)/16 = 955.46$ LB/IN

$\tau_2 = \frac{1}{2}(.707)(45000)\cos(16.0514°)/16 = 955.46$ LB/IN

$\tau_3 = \frac{1}{2}(45000)\sin(16.0514°)/16 = 388.83$ LB/IN

$\tau_4 = \frac{1}{2}(.707)(45000)\sin(16.0514°)/16 = 274.90$ LB/IN

$\tau_5 = \frac{1}{2}(.707)(45000)\sin(16.0514°)/16 = 274.90$ LB/IN

VERTICAL WELD

TOTAL SHEAR PER INCH $= \sqrt{(388.83)^2 + (955.46)^2} = 1031.55$ LB/IN

TOTAL TENSION PER INCH $= 955.46$ LB/IN

ALLOWABLE STRESS $= 49\%\ (33260\ PSI) = 16297.$ PSI

THROAT $= \dfrac{1031.55\ LB/IN}{16297.\ LB/IN^2} = 0.063$ IN

LEG SIZE $= \dfrac{0.063}{0.707} = 0.089$ IN

HORIZONTAL WELD

TOTAL SHEAR PER INCH $= 955.46 + 274.9 = 1230.36$ LB/IN

TOTAL TENSION PER INCH $= 955.46 + 274.9 = 1230.36$ LB/IN

THROAT $= \dfrac{1230.36\ LB/IN}{16297\ LB/IN^2} = 0.075$ IN

LEG SIZE $= \dfrac{0.075\ IN}{0.707} = 0.106$ IN

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 2
PREPARED BY / DATE: DRF 4-11-74					ARTICLE: 3
CHECKED BY / DATE: ACL 7-2-74					PAGE: 7
REVISION NUMBER:					

$\frac{1}{2}$ SSE CONDITION P = 22500 LB

$\tau_1 = 477.73$ LB/IN $\tau_4 = 137.45$ LB/IN

$\tau_2 = 477.73$ LB/IN $\tau_5 = 137.45$ LB/IN

$\tau_3 = 194.42$ LB/IN

VERTICAL WELD

TOTAL SHEAR PER INCH = $\sqrt{(194.42)^2 + (477.73)^2} = 515.78$ LB/IN

TOTAL TENSION PER INCH = 477.73 LB/IN

ALLOWABLE STRESS = 49% (33260 PSI) = 16297. PSI

THROAT = $\frac{515.78 \text{ LB/IN}}{16297. \text{ LB/IN}^2} = 0.032$ IN

LEG SIZE = $\frac{0.032 \text{ IN}}{0.707} = 0.044$ IN

HORIZONTAL WELD

TOTAL SHEAR PER INCH = 477.73 + 137.45 = 615.18 LB/IN

TOTAL TENSION PER INCH = 477.73 + 137.45 = 615.18 LB/IN

THROAT = $\frac{615.18 \text{ LB/IN}}{16297. \text{ LB/IN}^2} = 0.038$ IN

LEG SIZE = 0.053 IN

∴ USE 3/8" FILLET WELD ALL AROUND

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV SUBSEC: 2 ARTICLE: 3 PAGE: 3
PREPARED BY / DATE: [illegible] / 6-26-74					
CHECKED BY / DATE: DRF 7-1-74					
REVISION NUMBER:					

BIJLAARD ANALYSIS OF SHELL (REF 11.14)

SQUARE ATTACHMENT ON CYLINDER

RADIAL LOAD $= P \cdot \cos(16.0514°) = P_L$

LONGITUDINAL MOMENT $= P \sin(16.0514°)(2+.375) = M_L$

$R_m = 353.02$ in, $T = 1.4375$ in, $c = 4$ in, $K_n = 1$, $K_b = 1$

$$\gamma = \frac{R_m}{T} = \frac{353.02}{1.4375} = 245.58$$

$$\beta = \frac{c}{R_m} = \frac{4}{353.02} = 0.01133$$

RADIAL LOAD - P_L

$$\frac{N_\phi}{P/R_m} = 38 \; ; \quad \frac{N_\phi}{T} = \left[\frac{N_\phi}{P/R_m}\right]\left[\frac{P}{R_m T}\right]$$

$$\sigma_\phi = K_n \frac{N_\phi}{T} \qquad \sigma_x = K_n \frac{N_x}{T}$$

$$\frac{N_x}{P/R_m} = 50 \; ; \quad \frac{N_x}{T} = \left[\frac{N_x}{P/R_m}\right]\left[\frac{P}{R_m T}\right]$$

LONGITUDINAL MOMENT - M_L

$$\frac{N_\phi}{M_L/R_m^2\beta} = 4.8 \; ; \quad \frac{N_\phi}{T} = \left[\frac{N_\phi}{M_L/R_m^2\beta}\right]\left[\frac{M_L}{R_m^2\beta T}\right]$$

$$\frac{N_x}{M_L/R_m^2\beta} = 1.4 \; ; \quad \frac{N_x}{T} = \left[\frac{N_x}{M_L/R_m^2\beta}\right]\left[\frac{M_L}{R_m^2\beta T}\right]$$

$$\sigma_\phi = K_n \frac{N_\phi}{T} \qquad \sigma_x = K_n \frac{N_x}{T}$$

STRESSES IN SHELL DUE TO 45 PSI INTERNAL PRESSURE AS REPORTED BY AXZ (IV, 2, BODY 21 SECTION 8)

$\sigma_x = 6727.$ PSI

$\sigma_\phi = 3694$ PSI

SSE CONDITION F 45,000 LBS.

$P_\perp = 43206.31$ LB $\qquad M_L = 34216.83$ IN-LB.

* RADIAL LOAD $P_\perp$

$$\frac{N_\phi}{T} = 38.\left[\frac{43206.31}{353.02\,(1.4375)}\right] = 3253.37$$

$$\sigma_\phi = 1(3253.37) = 3253.37$$

$$\frac{N_x}{T} = 50.\left[\frac{43206.31}{353.02\,(1.4375)}\right] = 4257.06.$$

$$\sigma_x = 1(4257.06) = 4257.06 \text{ PSI}$$

* LONGITUDINAL MOMENT M_L

$$\frac{N_\phi}{T} = 4.8\left[\frac{34216.83}{(353.02)^2\,(1.4375)\,(.00112\ldots)}\right] = 80.91$$

$$\sigma_\phi = 1(80.91) = 80.91 \text{ PSI}$$

* BENDING STRESSES IN STRESS CATEGORY Q NB-3213(?). SECTION III NB- REQUIREMENTS FOR LEVEL ... [illegible]
∴ EVALUATION NOT REQUIRED

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 2
PREPARED BY / DATE: ACL / 6-26-74					ARTICLE: 3
CHECKED BY / DATE: DRF 7-1-74					PAGE: 10
REVISION NUMBER:					

$$\frac{N_x}{T} = 1.4\left[\frac{34216.83}{(353.02)^2(0.01133)(1.4375)}\right] = 23.60$$

$\sigma_x = 1(23.60) = 23.60$ PSI

COMBINE BINARE [illegible] WITH AXZ STRESSES

σ_x (TOTAL) 4257.76 + 23.60 + 6727 = 11011.66 PSI
< 1.5 S_y = 49840 PSI OK

σ_ϕ (TOTAL) 3254.37 + 80.11 + 8694 = 12028.28 PSI
< 1.5 S_y = 49840 PSI OK

$\frac{1}{2}$ SSE CONDITION P = 22500 LB.

P_L = 21603.16 LB M_L = 17108.42 IN-LB.

RADIAL LOAD - P_L

σ_ϕ = 1626.68 PSI

σ_x = 2128.53 PSI

LONGITUDINAL MOMENT

σ_ϕ - 40.46 PSI

σ_x = 11.80 PSI

COMBINE BINARE STRESSES WITH AXZ STRESSES

σ_x (TOTAL) = 2128.53 + 11.80 + 6727 = 8867.33 PSI

σ_ϕ (TOTAL) 1626.68 + 40.46 + 8694 = 10361.14 PSI

* THE [illegible] AS SHOWN ON PAGE 1 [illegible]
FOR THE LOADING [illegible]

PITTSBURGH-DES MOINES STEEL COMPANY

8108250495
12-81

B&R FILE NUMBER
213-00-0303

FINAL STRESS REPORT

SECTION IV

SUBSECTION I
(3-28-73)
REVISION A
(1-18-74)

REVISION B
(7-30-74)

REVISION C
(4-8-75)

DESIGN OF
TRANSITION REGION, SEISMIC LUGS, AND SEAL RING

THIS SUBSECTION REVIEWED BY: J. F. Stuenk

TITLE: PROJECT ENGINEER

Introduction:

This part of the Final Stress Report contains the analysis of the transition section, including the lower shear lugs, jet deflector, and drywell floor seal ring.

In analyzing the transition section, three loading combinations were defined, which govern the design for tension, hoop compression, and longitudinal compression in the shell. The loading conditions specified in Reference 1 were compared with these loading combinations and found to be non-critical.

An axisymmetric shell computer analysis (PDM program AX-2) of the transition section with seal ring, for two loading conditions - 45 psi internal pressure with LOCA seal loads and 2 psi external pressure with LOCA seal loads - provides basic stress information for the shell. Local shell stresses produced by attachment loads were then combined with the axisymmetric shell stresses where required.

The shell attachments - lower shear lug, jet deflector, and seal ring - were designed for the worst loading combination that each would experience.

Conclusion:

The transition section, lower shear lugs, jet deflector, and drywell floor seal ring presented in this report meet the requirements of the Design Specification (Reference 1).

List of References:

1. Burns and Roe, Inc., Bidding Documents and Plans and Specifications, Specification 2808-213 Primary Containment Vessel Contract No. 213, for WPPSS, Hanford No. 2.

2. ASME, Boiler and Pressure Vessel Code, Section III, "Nuclear Power Plant Components", 1971, including 1972 Summer Addenda, New York

3. AISC, Specification For the Design, Fabrication and Erection of Structural Steel For Buildings, "Manual of Steel Construction", Seventh Edition, New York, 1970

4. ASME, Boiler and Pressure Vessel Code, Section VIII, "Pressure Vessels", Division 1, 1971, including 1972 Summer Addenda, New York.

5. Roark, Raymond J., "Formulas For Stress and Strain", Fourth Edition, McGraw-Hill Book Company, New York, 1965

6. ASCE, Transactions, "Paper No. 3269--Wind Forces on Structures", New York, Vol. 126, 1961.

7. Wichman, K. R., et. al., Welding Research Council Bulletin No. 107, "Local Stresses in Spherical and Cylindrical Shells Due to External Loadings", Third Printing, April 1972.

8. Bijlaard, P. P., Welding Research Council Bulletin No. 50, "Additional Data on Stresses in Cylindrical Shells Under Local Loading", May 1959.

9. Blodgett, Omer W., "Design of Welded Structures", The James F. Lincoln Arc Welding Foundation, Cleveland, Ohio, 1966.

10. Logcher, R. D. et. al., ICES STRUDL - II Engineering User's Manual, Volume 1, Frame Analysis, Department of Civil Engineering, M. I. T., Cambridge, Mass. R68-91, Novmeber 1968.

11. Logcher, R. D., et. al., ICES STRUDL - II Engineering User's Manual Volume 2, Second Edition, Additional Design and Analysis Facilities, Department of Civil Engineering Research Report R70-77, Massachusetts Institute of Technology, Cambridge, Massachusetts, June 1971.

List of References: (Cont'd)

12. McDonnell-ECI STRUDL Improvements User's Manual, McDonnell Douglas Automation Company, St. Louis, Missouri, 1972.

13. Winter, George, et. al., "Design of Concrete Structures", Seventh Edition, McGraw-Hill Book Company, New York, 1964.

14. Bijlaard, P. P., "Stresses From Radial Loads and External Moments in Cylindrical Pressure Vessels", supplement to The Welding Journal, December 1955, p. 608-S to 617-S, 1955.

15. Gaylord, G. H. Jr., and Gaylord, G. N., "Design of Steel Structures", McGraw-Hill Book Company, New York, 1957.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: III
PREPARED BY / DATE: BJW / 3-20-73					SUBSEC: 1
CHECKED BY / DATE: BM / 3-21-73					ARTICLE: 1
REVISION NUMBER:					PAGE: 1

LOADING COMBINATIONS

THE FOLLOWING LOADING COMBINATIONS ARE EXAMINED IN THE DESIGN OF THE TORUS AND 3" CONE PLATE DEFINED AS THE TRANSITION SECTION.

1. TENSION DESIGN = 45 PSI INTERNAL PRESSURE + LOCA SEAL LOADS + SSE/2 SHEAR

2. HOOP COMPRESSION DESIGN = 4 PSI EXTERNAL

3. LONGITUDINAL COMPRESSION DESIGN = WELDING PAD L.L. + PLATFORM L.L. + VESSEL D.L. + FILLER MATERIAL D.L. + REFUELING BELLOWS LOCA LOAD + PIPE RUPTURE LOAD + SSE VERTICAL LOAD (g-FACTOR = 1.45) + SSE MOMENT + -2 PSI INTERNAL PRESSURE + -2 PSI DUE TO FILLER MATERIAL RESTRAINT

SSE SeeNE 3/31

THE ABOVE COMBINATIONS CORRESPOND TO VARIATIONS OF THE INCIDENT CONDITION SPECIFIED ON PAGE 13A-20 OF REFERENCE 1.

THE OTHER LOADING CONDITIONS ARE EXAMINED BELOW AND FOUND TO BE INCONSEQUENTIAL WHEN COMPARED WITH THE ABOVE COMBINATIONS.

A. INITIAL PROOF LOAD TEST CONDITION*: THE PROOF LOAD TEST IS A SHELL TENSION CONDITION WITH 51.8 PSI INTERNAL PRESSURE, DEAD LOADS, ½ SSE LOADS, AND EMPTY HEADER LOADS. THE ALLOWABLE FOR THIS CONDITION, AS SPECIFIED IN PARAGRAPH NE 6322 OF REF. 2, IS .90 F_y AT TEST TEMPERATURE, OR .90 * 38 KSI = 34.2 KSI. ASSUMING THE SHELL IS STRESSED TO 1.0 S_m AT DESIGN PRESSURE (45 PSI) AND STRESS IS DIRECTLY PROPORTIONAL TO

* REF 1, PARAGRAPH 3.4.1.1 OR 3.4.2.1

PRESSURE, THE MAXIMUM STRESS (HOOP) IN THE SHELL AT INITIAL PROOF TEST PRESSURE IS:

$$\frac{51.8}{45.} * 1.0 S_H = 22.2 \text{ KSI} < 34.2 \text{ KSI}.$$

SINCE AXIAL COMPRESSIVE LOADS ARE LESS THAN THE AXIAL TENSION FORCE FROM INTERNAL PRESSURE, A LONGITUDINAL TENSION - HOOP TENSION STRESS STATE EXISTS AND HOOP STRESS WILL GOVERN. THEREFORE THIS LOADING CONDITION SHOULD BE SATISFIED BY THE TENSION DESIGN, COMBINATION "1" ABOVE.

B. FINAL PROOF LOAD TEST CONDITION:* THIS CONDITION IS SIMILAR TO CONDITION "A" ABOVE WITH ADDITIONAL LONGITUDINAL COMPRESSIVE LOADS. THIS CONDITION IS GOVERNED BY LOADING COMBINATIONS "1" AND "3" ABOVE.

C. NORMAL OPERATING CONDITION:** AND NORMAL CONDITION WITH PIPE WHIP SUPPORT LOADS:*** THESE ARE SHELL TENSION CONDITIONS AND ARE GOVERNED BY LOADING COMBINATION "1".

D. REFUELING CONDITION:**** THIS IS A LONGITUDINAL COMPRESSION CONDITION WHICH INCLUDES THE FOLLOWING LOADS:

1. D.L. OF VESSEL AND APPURTENANCES
2. PLATFORM LOADS
3. D.L. OF FILLER MATERIAL
4. EARTHQUAKE LOADS (½ SSE LATERAL & VERTICAL)
5. WELDING PAD L.L.

* REFERENCE 1, PARAGRAPH 3.4.1.2 OR 3.4.2.2

** IBID., PARAGRAPH 3.4.1.3 OR 3.4.2.3

*** IBID., PARAGRAPH 3.4.1.7

**** IBID., PARAGRAPH 3.4.1.4 OR 3.4.2.4

6. WATER LOAD OF 23'-6" ON WATER SEAL.
7. REFUELING BELLOWS LOADS.
8. EXTERNAL PRESSURE OF FILLER MATERIAL.

LOADS 1, 2, 3, 5, & 8 ARE GIVEN ON PAGE IV. 1.1.8 OF THIS REPORT.

LOADS 6 & 7 ARE 417.9 K AND 278.7 K, RESPECTIVELY, AS CALCULATED ON PAGES II.8.1.2 & 3 OF THIS FINAL STRESS REPORT.

MULTIPLYING LOADS 1, 3, 5, 6, & 7 BY THE MAXIMUM VERTICAL ½ SSE FACTOR OF 1.23 THE TOTAL LOAD IS 18,145.8^K. DIVIDING THIS BY COS 16.0514° (ASSUME ALL AXIAL LOAD CARRIED BY MEMBRANE STRESS) THE TOTAL AXIAL LOAD IS 18,881.9^K, WHICH IS LESS THAN THE LOAD USED IN THE LONGITUDINAL COMPRESSION DESIGN, COMBINATION "3" ABOVE.

E. INCIDENT CONDITION* AND INCIDENT CONDITION WITH PIPE WHIP SUPPORT LOADS**: THE THREE DESIGN COMBINATIONS ARE VARIATIONS OF THESE CONDITIONS.

F. FLOODED CONDITION***: THIS CONDITION IMPOSES A LONGITUDINAL COMPRESSION - HOOP TENSION STRESS STATE IN THE SHELL.

HOOP TENSION IS CAUSED BY FLOODING TO EL 581'-10½". THE RESULTING HYDROSTATIC PRESSURE AT EL 496'-9¾" (STA ①) AND EL 488'-11⅝" (STA ②), USING A CONSERVATIVE "g" FACTOR OF 1.20, ARE:

① 44.23 PSI
② 48.31 PSI

* REFERENCE 1, PARAGRAPH 3.4.1.5 OR 3.4.2.5
** IBID., PARAGRAPH 3.4.1.6
*** IBID., PARAGRAPH 3.4.1.8 OR 3.4.2.6

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE: BJW/3-20-73	DLL/8-14-73	TA 4-5-8-74			ARTICLE: 1
CHECKED BY / DATE: EAM/3-21-73	EAM/8-15-73	ACL 6-27-74			PAGE: 4
REVISION NUMBER:	A	B			

HOOP STRESSES ARE DETERMINED BY INCREASING THE HOOP STRESSES FROM THE ENCLOSED AX-2 COMPUTER ANALYSIS BY THE RATIO OF HYDROSTATIC PRESSURE TO DESIGN PRESSURE (45 PSI):

$$\sigma_{Hoop} = 6573\left(\frac{44.23}{45}\right) = 6461. \quad (1)$$

$$\sigma_{Hoop} = 11,050\left(\frac{48.31}{45}\right) = 11,863. \quad (2)$$

LONGITUDINAL COMPRESSIVE LOADS ARE:

			SEE FOOTNOTE
1. VESSEL D.L. =	3054.5 K	(1)	1
	3233.6 K	(2)	1
2. PLATFORM L.L. =	8488.0 K		2
3. FILLER MAT'L D.L. =	87.1 K		2
4. WELDING PAD L.L. =	5000.0 K		2
5. WATER LOAD ON SEAL =	220.2 K + 5295 K		3,6
6. FILLER EXTERNAL PRESSURE =	1353.8 K	(1)	4
	1436.4 K	(2)	2
7. BELLOWS LOADS =	97.5 K		5

9381 (margin note beside item 2)

MULTIPLYING 1, 3, 4, 5, & 7 BY A 1.35 "g" FACTOR, THE TOTAL AXIAL COMPRESSIVE LOADS ARE:

19117.1 → (19,276.7) K (1)

19432.2 → (19,601.1) K (2)

THE 1/2 SSE OVERTURNING MOMENTS FROM REF 1, FIG. 8 ARE:

$200 \times 12 \times 10^6 = 2400 \times 10^6$ # IN (1)

$230 \times 12 \times 10^6 = 2760 \times 10^6$ # IN (2)

6. SEE CALCULATIONS ON PAGE II.6.1.7
1. FINAL STRESS REPORT, SECTION I.3.
2. IBID, SECTION II.8.1. PP. 136-140
3. IBID, SECTION II.8.1. P. 3
4. IBID, SECTION IV.1.1 P. 8
5. ASSUME PLANT SHUTDOWN LOAD OF 75 lb/in. ON OUTSIDE.

FROM PAGES IV.1.1.9, AND II.8.1.140 OF THIS REPORT, SECTION PROPERTIES ARE:

	①	②
C (IN)	502.77	515.81
I_z (IN^4)	549.39 $\times 10^6$	591.79 $\times 10^6$
A_s (IN^2)	4368.	4470.

TOTAL LONGITUDINAL COMPRESSIVE STRESS IS CALCULATED BY:

$$\sigma_c = \left(\frac{Mc}{I_z} + \frac{P}{A_s}\right) / \cos \alpha$$

$$= 6877.6 \text{ PSI} \quad ①$$
$$= 6790.7 \text{ PSI.} \quad ②$$

STRESS INTENSITY IS OBTAINED BY ADDING LONGITUDINAL AND HOOP STRESSES.

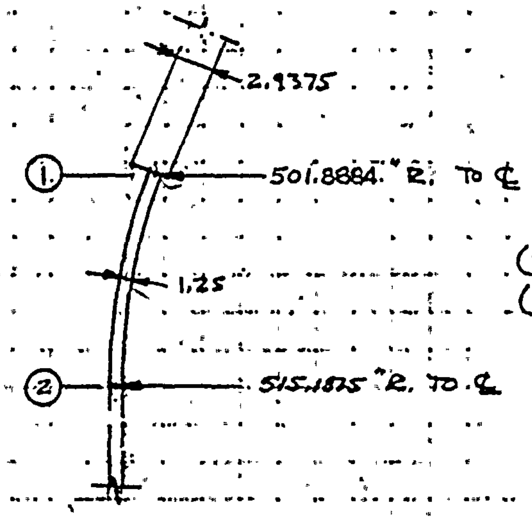
$$SI = 13,338.6 \text{ PSI} \quad ①$$
$$SI = 18,653.7 \text{ PSI} \quad ②$$

THE ALLOWABLE STRESS IS F_y @ 212°F = 34500. PSI THEREFORE THE SHELL SATISFIES THE FLOODED CONDITION REQUIREMENTS.

PITTSBURGH - DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL		CONTRACT NO. 12764		FINAL STRESS REPORT	SECTION: IV
					SUBSEC: 1
PREPARED BY / DATE: BJW /3-9-73	DCL/8-13-73				ARTICLE: 1
CHECKED BY / DATE: RAM/3-15-73	RAM/8-15-73				PAGE: 6
REVISION NUMBER:	A				

SHELL TENSION DESIGN

THE SHELL TENSION DESIGN IS BASED ON 45 PSI INTERNAL PRESSURE, LOCA SEAL LOADS, AND SSE/2 CONDITION SHEAR LOADS. STRESSES WILL BE EXAMINED AT THE TOP OF THE TORUS – ① AND AT THE BOTTOM OF THE TORUS – ②.



FROM THE AX-2 COMPUTER ANALYSIS INCLUDED IN THIS REPORT, THE STRESSES FROM 45 PSI INTERNAL PRESSURE + LOCA SEAL LOADS, IN PSI, ARE:

(BODY 614) $S_\theta = 6573$ $S_\phi = 9343$ ①
(BODY 607) $S_\theta = 11,050$ $S_\phi = 8756$ ②

FROM FIG 6 OF REF. 1, THE SHEAR FORCES AND CORRESPONDING STRESSES FROM THE SSE/2 CONDITION ARE:

V (KIPS)	$S_{\phi\theta} = V/\pi R T \cos\alpha$ (PSI)	
7000.	3696.	①
7100.	3509.	②

STRESS INTENSITIES ARE:

$S.I._{①} = 11,918$ PSI
$S.I._{②} = 13,595$ PSI

WHERE

$$S.I. = \frac{S_\theta + S_\phi}{2} + \sqrt{\left(\frac{S_\theta - S_\phi}{2}\right)^2 + (S_{\phi\theta})^2}$$

THE STRESS INTENSITIES ARE LESS THAN THE ALLOWABLE OF 19300 PSI, THEREFORE O.K.

EXTERNAL PRESSURE (HOOP COMPRESSION)

FROM REFERENCE 1, PARAGRAPH 3.4.1.5, THE VESSEL IS SUBJECTED TO 4 PSI EXTERNAL PRESSURE. FROM REFERENCE 2, PARAGRAPH NE 3133.4, FOR THE TORUS,

$T = 1.25''$
$R = 514.5625''$
$R/T = 411.6$
$R/100T = 4.116$

FROM FIG. VII-1100-2, $B = 4100$,

$$P_a = \frac{B}{R/T} = 10. \text{ PSI}.$$

10. > 4. PSI, THEREFORE TORUS O.K.

FOR THE CONE, THE DISTANCE BETWEEN ADJACENT STIFFENING RINGS IS (486'-7 7/8' TO 516'-6") = 358.125" = L.
FROM REF. 2, PARA. NE3133.7,

$T = 1.25$
$D_o = 2(502.49) = 1004.98''$
$L/D_o = .356$
$D_o/T = 803.98$

FROM FIG. VII-1100-2, $B = 2600$

$$P_a = \frac{4B}{3D_o/T} = 4.3 \text{ PSI}.$$

4.3 > 4. PSI THEREFORE CONE O.K.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV SUBSEC: 1 ARTICLE: 1 PAGE: 8
PREPARED BY / DATE: BJW/3-13-73	DCL/8-13-73	TAW 5-8-74			
CHECKED BY / DATE: RAM/3-20-73	RAM/8-15-73	ACL/6-29-74			
REVISION NUMBER:	A	B			

LONGITUDINAL COMPRESSION

THE LONGITUDINAL COMPRESSION ANALYSIS IS BASED ON THE INCIDENT CONDITION* LOADS WITH SSE AND NEGATIVE 2 PSIG INTERNAL PRESSURE AT 135° F. THE LOADS GIVEN BELOW ARE CALCULATED IN SECTION II. 8.1 Pp. 136-140 OF THIS FINAL STRESS REPORT.

AXIAL COMPRESSIVE LOADS:

	1. WELDING PAD L.L.	=	3000.0 K
	2. PLATFORM L.L.	=	8488. K
	3. VESSEL D.L. @ EL 496'-9¾"	=	3054.5 K
	4. FILLER MAT'L D.L.	=	87.1 K
	5. REFUELING BELLOWS	=	249.9 K
USE THE LARGER: {	6. PIPE RUPTURE	=	561.0 K
	7. JET LOAD	=	534.0 K

FROM REFERENCE 1, FIGURE 5, THE MAXIMUM VERTICAL ACCELERATION IS 1.45 G's. MULTIPLYING ITEMS 1, 3, 4, & 5 BY THIS FACTOR, THE AXIAL COMPRESSIVE LOAD = 18,316.7 KIPS

THE NEGATIVE 2 PSIG INTERNAL PRESSURE ADDS AN AXIAL COMPRESSIVE LOAD OF:

$$2\pi(501.5665)^{2**}/1000 = 1580.7 \text{ KIPS} \checkmark$$

THE FILLER MATERIAL 2 PSIG EXTERNAL PRESSURE ADDS AN AXIAL COMPRESSIVE LOAD OF:

$$2\pi(501.5665^2 - 190.0^2)/1000 = 1353.8 \text{ KIPS}$$

TOTAL AXIAL LOAD = 21,251.2 KIPS

* REF 1, PARAGRAPH 3.4.1.6

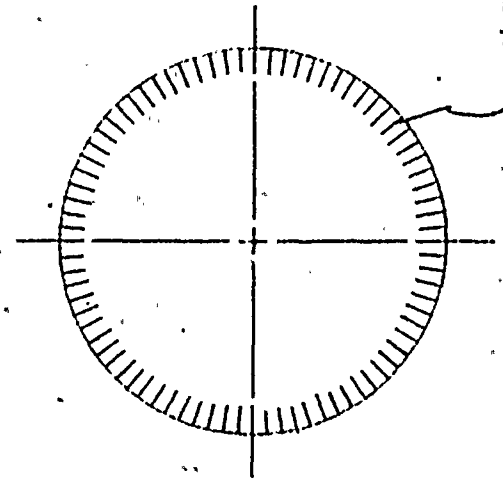
** SEE NEXT PAGE FOR GEOMETRY.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV / SUBSEC: 1 / ARTICLE: 1 / PAGE: 9
PREPARED BY / DATE: BJW/3-13-73	DCL/8-14-73	TAK/5-8-74			
CHECKED BY / DATE: RAM/3-20-73	RAM/8-15-73	ACL/6-27-74			
REVISION NUMBER:	A	B			

THE VESSEL GEOMETRY IS AS FOLLOWS:

$R_M = 502.1671$
$t = 1.25$

ASSUME: 80 WT 8×18 EQ. SPACED
$A = 5.3$ IN², $I = 30.8$ IN⁴



PLAN OF STIFFENED SHELL

$A_s = 2\pi R_M t + 80A = 4368.$ IN²

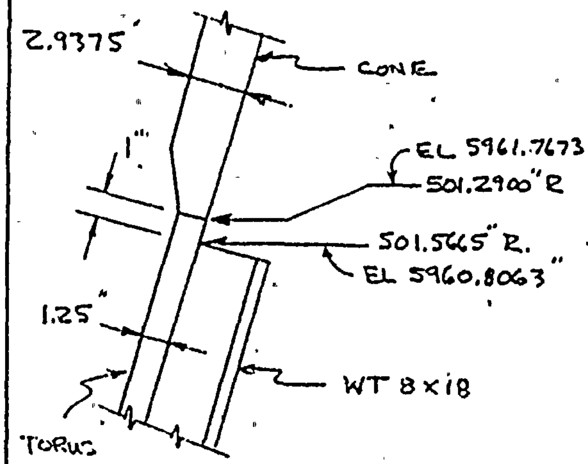
$I_s = \pi R_M^3 t + Ad^2$

$d^2 = R_T^2 [2(\cos^2 0° + \cos^2 90°) + 4(\cos^2 4.5° + \cos^2 9° + \cos^2 13.5° + \ldots + \cos^2 81° + \cos^2 85.5)]$

$R_T = 501.5665 - (7.93 - 1.89)\cos 16.0514° = 495.7620$ IN.

$d^2 = (495.7620)^2 (40)$
$d^2 = 9831198.$

$I_s = 549.39 \times 10^6$ IN.



FROM REF 1, FIGURE 9, THE MAXIMUM BENDING MOMENT FROM SSE CONDITION IS:

$M = 230 \times 12 \times 10^6 = 2760 \times 10^6$ in. lb.

NOTE: ALL DIMENSIONS SHOW 1/16" CORROSION

TOTAL COMPRESSIVE STRESSES AT ELEVATION 5960.8063" ARE:

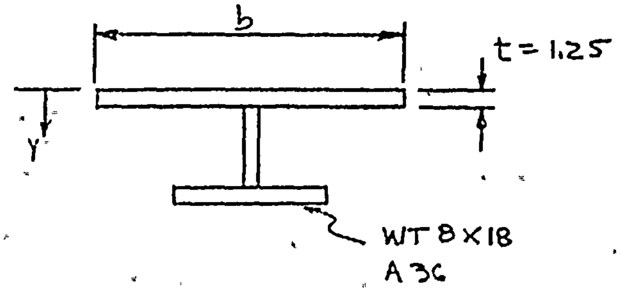
$\sigma_c = \left(\frac{Mc}{I_s} + \frac{P}{A_s}\right) / \cos 16.0514°$ *

$\sigma_c = 7691.$ PSI ← ACTUAL STRESS

* $c = R + t\cos\alpha = 501.5665 + 1.25\cos 16.0514° = 502.77"$

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV SUBSEC: 1 ARTICLE: 1 PAGE: 10
PREPARED BY / DATE: BJW/3-13-73	DCL/8-14-73	TAW/5-8-74			
CHECKED BY / DATE: RAM/5-20-73	RAM/8-15-73	ACL/6-27-74			
REVISION NUMBER:	A.	B			

AN ALLOWABLE STRESS FOR THE COMBINED SHELL-"T" SECTION IS DEVELOPED FROM REFERENCE 3.



$$b = \frac{2t * 95}{\sqrt{F_y}}$$

$$b = 39.15 < \frac{2\pi R_m}{80} = 39.44$$

WHERE: $F_y = 36.81$ KSI @ 135°F
$R_M = 502.1671"$.

$$C_c = \sqrt{\frac{2\pi^2 E}{F_y}} = 128.68$$

WHERE $E = 27.9 \times 10^3$ KSI
$F_y = 33.26$ KSI @ 340°F

ASSUME AN UNBRACED LENGTH OF (496'-9¾" − 493'-5") = 40.75 AND PINNED - FREE END CONDITIONS ($K = 2.0$).

SECTION PROPERTIES FOR THE SHELL-"T" COMBINATION ARE:

$\bar{y}_s = 1.282$ IN.

$I_s = 253.61$ IN^4

$A_s = 54.26$ IN^2

$r_s = \sqrt{I_s/A_s} = 2.16$

$F_y = 36$ KSI FOR "T"

$$\frac{Kl}{r_s} = 37.73$$

$F_a = 19427$ PSI ← ALLOWABLE STRESS

ACTUAL STRESS, 7691. < 19427 ∴ STIFFENED TORUS O.K.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE: BJW/3-13-73	DCL/8-14-73	TAW 5-8-74			ARTICLE: 1
CHECKED BY / DATE: RAM/3-20-73	RAM/8-15-73	ACL/6-27-74			PAGE: 11
REVISION NUMBER:	A	B			

REFERENCE 2 WILL ALSO BE USED TO DEVELOP AN ALLOWABLE STRESS. AN EFFECTIVE THICKNESS OF THE STIFFENED TORUS IS CALCULATED BY ASSUMING THE MOMENT OF INERTIA OF THE EFFECTIVE SECTION IS EQUAL TO THE MOMENT OF INERTIA OF THE STIFFENED TORUS. USING THE EFFECTIVE THICKNESS AND THE PROCEDURE SPECIFIED IN REF. 2, PARAGRAPH NE 3133.6, AN ALLOWABLE STRESS IS DETERMINED AS FOLLOWS:

$$\text{ASSUME: } I_s = \frac{b t_e^3}{12} = 253.61 \text{ IN}^4$$

$$t_e = \left(\frac{12 I_s}{b}\right)^{1/3} = 4.27 \text{ IN.}$$

$$R/100\, t_e = 1.17$$

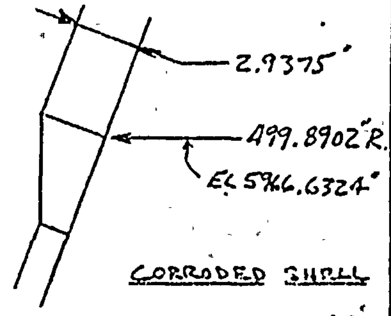
FROM FIG VIII-1100-2, B = 12200 PSI

ALLOWABLE = 12200 PSI > 7691 PSI ∴ O.K.

THE 1" SECTION OF UNSTIFFENED TORUS WILL NOT BUCKLE SINCE IT IS A VERY SHORT COLUMN.

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764		PDM	FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE: DJW / 3-14-73	DCL / 8-14-73	TAW 5-8-74			ARTICLE: 1
CHECKED BY / DATE: RAM / 3-20-73	RAM / 8-15-73	ACW / 6-27-74			PAGE: 12
REVISION NUMBER:	A	B			

THE 3" CONE PLATE WILL BE ANALYZED AT THE TOP OF THE CIRCUMFERENTIAL TAPER, IE, EL 5966.6324"



CORRODED SHELL

FROM THE TORUS ANALYSIS, AXIAL COMPRESSIVE LOAD, INCLUDING SSE FACTOR, IS 18,316.7 KIPS

NEGATIVE 2 PSIG INTERNAL PRESSURE ADDS AN AXIAL COMPRESSIVE LOAD OF:

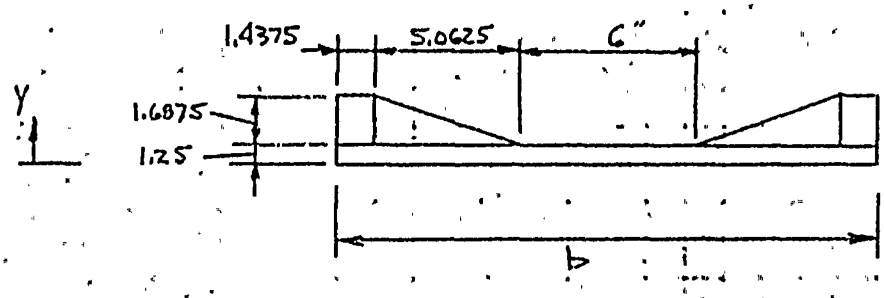
$$2\pi(499.89)^2/1000 = 1570.1 \text{ KIPS}$$

FILLER MATERIAL 2 PSIG EXTERNAL PRESSURE ADDS AN AXIAL COMPRESSIVE LOAD OF:

$$2\pi(499.89^2 - 190.0^2)/1000 = 1343.3 \text{ KIPS.}$$

TOTAL AXIAL LOAD = 21,230.1 KIPS

THE 3" CONE PLATES ARE TAPERED DOWN TO $1\frac{5}{16}$" IN 14 PLACES, AT THE LONGITUDINAL WELD SEAMS. THE GEOMETRY IS SHOWN BELOW. AN EFFECTIVE WIDTH, b, IS CALCULATED FROM REF. 3.



TAPERED SHELL

$$b = \frac{t * 95}{\sqrt{F_y}}$$

$b = 19.57"$ USE 19.0"

WHERE $t = 1.25"$

$F_y = 36.81$ KSI @ 135° F.

AREA AND MOMENT OF INERTIA AVAILABLE FOR RESISTING AXIAL AND BENDING LOADS ARE:

$$A = 2\pi R_m t - A_R$$

$$= 8991.10 \text{ IN}^2$$

WHERE: $R_M = 501.3017''$
$t = 2.9375''$
$A_R = 261.35 \text{ IN}^2$ (AREA REMOVED BY TAPER)

$$I = \pi R_m^3 t - I_R$$

$$= 1129.56 \times 10^6 \text{ IN}^4$$

(ASSUME 14 JOINTS ARE EQUALLY SPACED)

WHERE: $I_R = \frac{Ad^2}{14}$

$d^2 = R^2[\cos^2 0° + \cos^2 25.71° + \ldots + \cos^2 308.57° + \cos^2 334.29°]$
$= R^2(7)$

$R = 502.71$

$I_R = 33.024 \times 10^6 \text{ IN}^4$

FROM REF. 1, FIG. 9, THE MAXIMUM SSE BENDING MOMENT IS:

$$M = 230 \times 12 \times 10^6 = 2760 \times 10^6 \text{ IN-LB.}$$

TOTAL COMPRESSIVE STRESS IS:

$c = 502.7132$

$$\sigma_c = \left(\frac{Mc}{I} + \frac{P}{A}\right) / \cos 16.0714°$$

σ_c 3785. PSI ← ACTUAL STRESS

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE: BJW / 3-14-73	DCL / 8-14-73	TAW / 5-8-74			ARTICLE: 1
CHECKED BY / DATE: RAM / 3-20-73	RAM / 8-15-73	ACL / 6-21-74			PAGE: 14
REVISION NUMBER:	A	B			

THE ALLOWABLE FOR THE 3" CONE PLATE IS DEVELOPED FROM REFERENCE 2 BY COMPUTING AN EFFECTIVE THICKNESS FOR THE TAPERED SHELL SECTION.

SECTION PROPERTIES ARE:

$\bar{y}_s = 1.090$ IN.

$I_s = 20.08$ IN.^{4}

ASSUME: $I_s = b t_e^3 / 12$

$t_e = \left(\frac{12 I_s}{b}\right)^{1/3} = 2.33$

FROM PARAGRAPH NE 3133.6, REF. 2,

$R/100 t_e = 2.15$

FROM FIG. VII-1100-2, B = 8000 PSI.

ASME ALLOWABLE = 8000 PSI

3735 PSI < 8000 PSI O.K.

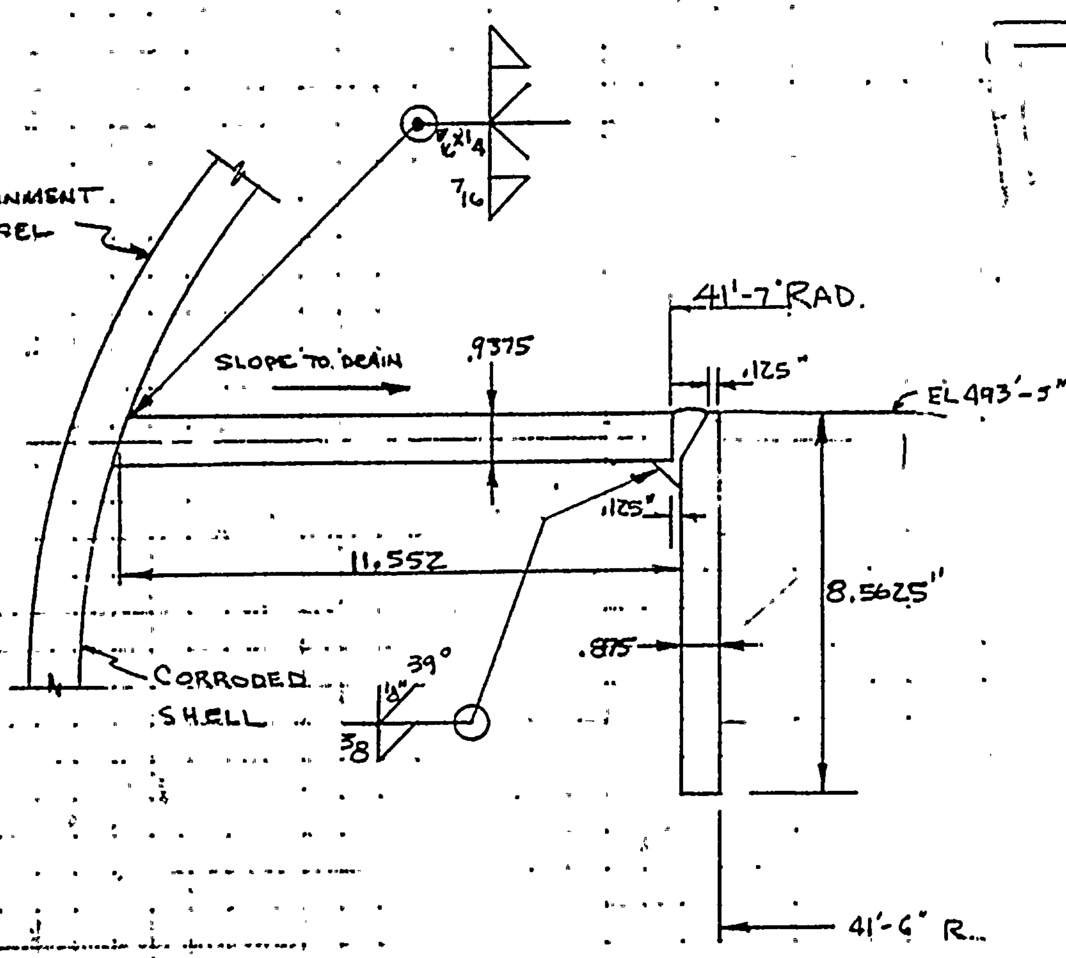
THE TAPERED SECTION OF THE 3" CONE PLATE AT THE CIRCUMFERENTIAL SEAM WILL NOT BUCKLE SINCE IT IS A VERY SHORT COLUMN.

NOTE THAT A 20% INCREASE IN THE ALLOWABLES IS PERMITTED BY REFERENCE 2, PARAGRAPH NE 3131 BUT WAS NOT USED IN THE ABOVE ANALYSIS. THIS FURTHER SUBSTANTIATES THE DESIGN.

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY/ DATE: BW /3-7-73	DCL/11-13-73				ARTICLE: 2
CHECKED BY/ DATE: RAM/3-11-73	RAM/1-3-74				PAGE: 1
REVISION NUMBER:	A				

DRYWELL FLOOR SEAL

ASSUME THE GEOMETRY SHOWN BELOW.

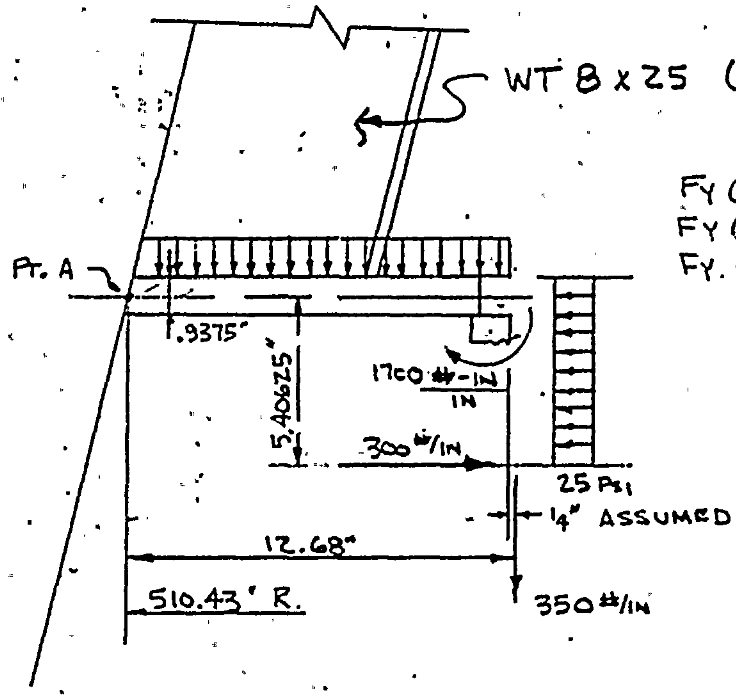


NOTE:
1. ALL MATL SA 516 GR. 70

PITTSBURGH - DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
					SUBSEC: 1
PREPARED BY / DATE: DCL / 11-13-73					ARTICLE: 2
CHECKED BY / DATE: RAM / 1-3-74					PAGE: 2
REVISION NUMBER: A					

ANNULAR SEAL PLATE

STRESSES GIVEN IN THE AXISYMMETRIC SHELL ANALYSIS INCLUDED IN THIS REPORT ARE GREATER THAN THE ALLOWABLE. THE AXISYMMETRIC SHELL ANALYSIS DOES NOT INCLUDE THE 104 WT 8x25 TEES WHICH BUTT INTO THE SEAL R. AN EFFECTIVE SEAL R AND TEE SECTION ANALYSIS IS GIVEN BELOW.



F_Y (SEAL R) = 38 KSI
F_Y (SEAL R @ 340°) = 33.26 KSI
F_Y (WT 8x25) = 36 KSI

SEE B & R CALC 8.70.64 FOR REPEAT OF THIS ANALYSIS FOR REVISED LOADS
M = 2005 #-IN/IN
V = 334 #/IN
H = 118 #/IN

ASSUMED GEOMETRY AND LOCA SEAL LOADS

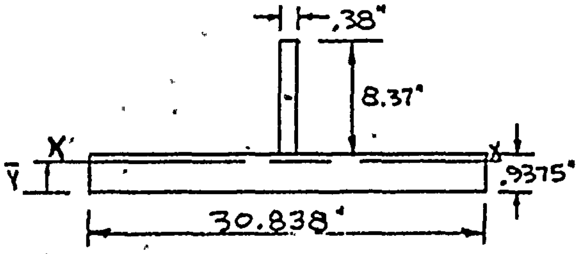
EFFECTIVE LENGTH OF TEE STEM = $127/\sqrt{F_Y} * .38" = 8.37"$

EFFECTIVE LENGTH OF SEAL R. = $2 * 95/\sqrt{33.26} = 32.95"$

HOWEVER, USING 104 TEES. THE INTERVAL BETWEEN TEES IS;

$$2 * 510.43 * \pi/104 = 30.838" < 32.95"$$

THE EFFECTIVE SECTION GEOMETRY BECOMES,



$\bar{Y} = .930"$ $C_{XX} = 8.3775"$

$I_{XX} = 82.74 \ IN^4$

EFFECTIVE SECTION

THE MOMENT AT PT. A IS,

$$M_A = 25 \text{ PSI} * (12.43)^2/2 + 25 \text{ PSI} * (5.40625)^2/2 + 1700 \frac{\#\text{-IN}}{\text{IN}} + 350 \#/\text{IN} * 12.68 - 25 \text{ PSI} * (.4375)^2/2 - 300 * 5.40625$$

$$M_A = 6810.03 \frac{\#\text{-IN}}{\text{IN}}$$

THE MOMENT FOR EVERY TEE SECTION IS,

$$M = 6810.03 * 30.838 = 210{,}008 \ \#\text{-IN}$$

$$\sigma_B = \frac{M C_{XX}}{I_{XX}} = 21.26 \text{ KSI} \quad \sigma_T = \frac{30.838\,(300 - 25 * 5.875)}{30.838 * .9375 + 8.37 * .38}$$

$$\sigma_B + \sigma_T = 21.26 + .15 = 21.41 < 22.80 \text{ KSI (AISC EQ. 1.5-5a)}$$

THE WELD OF TEE TO SEAL R MUST BE DESIGNED FOR $\frac{VQ}{Ib}$

$$V = (350 \#/\text{IN} + 25 \text{ PSI} * 12.43")\,30.838" = 20{,}376 \#$$

$$Q = .38" * 8.37" * 4.1925" = 13.335 \text{ IN}^3$$

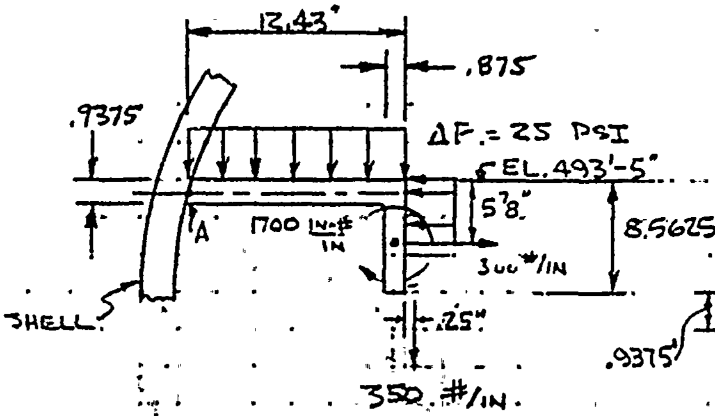
$$\frac{VQ}{Ib} = \frac{20.376 \text{ K} * 13.335 \text{ IN}^3}{82.74 \text{ IN}^4 * (2 \text{ WELDS})} = 1.642 \text{ K/IN}$$

REQ'D THROAT = 1.642 K/IN / .4 * 36 KSI = .114"

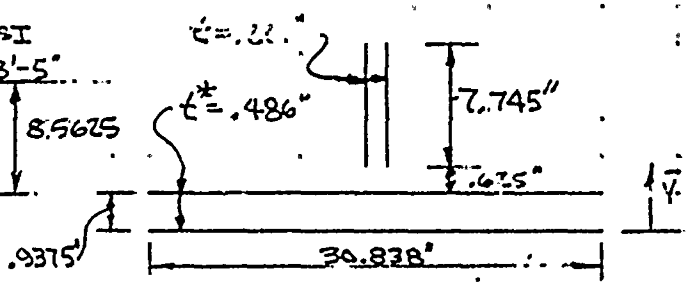
USE AISC MIN. 5/16" FILLET. THROAT = .221" > .114"

WELD DESIGN

THE TEE TO SHELL WELD IS AN AISC MIN. 5/16" FILLET. SEE P. IV.1.2.6. FOR ASSUMED WELD FROM SEAL PL. TO SHELL.
THE DRYWELL FLOOR SEAL TO SHELL WELD IS DESIGNED AS FOLLOWS. THE LOCA SEAL LOADS ARE GIVEN ON DWG. S 799 OF REF. 1. THE WELDS TO THE EFFECTIVE SECTION, P. IV.1.2.3., ARE ASSUMED TO BE IN A VERTICAL PLANE.



LOADING ON SEAL PLS



EFFECTIVE WELD SECTION

SECTION PROPERTIES OF WELD GROUP

$\bar{Y} = .978"$ $\quad A = 33.40 \text{ in}^2$

$I = 99.47 \text{ in}^4$

MOMENT AT "A" IS,

$$M_A = [1700 - 300 \times 5.40625 + 25 \times (5.40625)^2/2 - 25 \times (.46875)^2/2 + 25 \times (12.43)^2/2 + 350 \times (12.68)]\ 30.838$$

$$M_A = 210{,}008 \text{ \#-in}$$

* THROAT OF PARTIAL PENETRATION WELD ASSUMED.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE: DCL / 11-13-73					ARTICLE: 2
CHECKED BY / DATE: RAW/1-3-74					PAGE: 5
REVISION NUMBER: A					

TENSILE LOAD ON WELDS,

$$T = (300 - 25 * 5.875)\,30.838'' = 4{,}722^{\#}$$

SHEAR LOAD ON WELDS,

$$V = (350 + 25 * 12.43)\,30.838'' = 20{,}376^{\#}$$

CHECK SHEAR IN 5/16" FILLETS FROM TEE TO SHELL:

$$f_T = \frac{210.01 \text{ K-IN}}{99.47 \text{ IN}^4} * 8.3295 \text{IN.} + \frac{4.722^K}{33.40} = 17.73^{KSI}$$

$$f_V = 20.376^K / 2 * .221'' * 7.745'' = 5.95 \text{ KSI}$$

ADD SHEAR STRESS CONTRIBUTION OF f_T TO f_V VECTORALLY,

$$f_{V_{TOTAL}} = \sqrt{(17.73 * \sin 45°)^2 + (5.95)^2} = 13.88 \text{ KSI}$$

$$13.88 \text{ KSI} < .4 * 36 \text{ KSI} = 14.4 \text{ KSI}, \text{ O.K.} ?$$

$$\text{all } .55(.9 F_y) = .55 \times .9 \times 33.26 = 16.46 \text{ ksi}$$

CHECK SHEAR IN PARTIAL PENETRATION WELD FROM SEAL PL TO SHELL.

$$f_T = \frac{210.01 \text{ K-IN}}{99.47 \text{ IN}^4} * .978'' + \frac{4.722^K}{2 * .486'' * 30.838''} = 2.22 \text{ KSI}$$

$$f_V = 20.376 / 33.40 \text{ IN}^2 = .610 \text{ KSI}$$

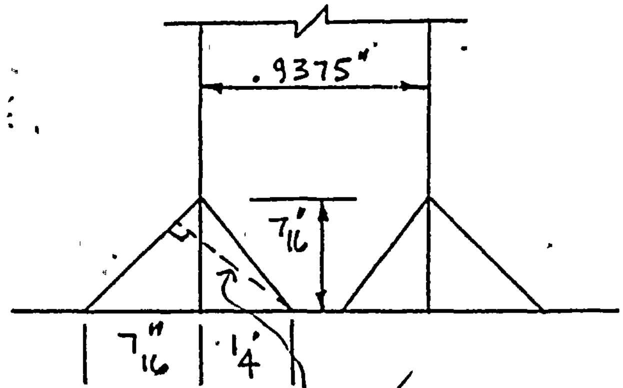
ON A 45° THROAT SUBJECT TO TRANSVERSE LOADS,

$$f_{V_{TOTAL}} = \sin 45° * (f_T + f_V) = 2.00 \text{ KSI}$$

$$2.00 \text{ KSI} < .6 S_M = 11.58 \text{ KSI}, \text{ OK.}$$

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV
PREPARED BY / DATE: DCL /11-13-73					SUBSEC: 1
CHECKED BY / DATE: RDM/1-3-74					ARTICLE: 2
REVISION NUMBER: A					PAGE: 6

ASSUMED WELD FOR SEAL ℞ TO SHELL,



t_{WELD} = .486" ✓

ASME MIN. WELD

REQ'D, $t_1 + t_2$ = 1.25" * .75" = .9375"

PROV'D, $t_1 + t_2$ = .972" > .9375", O.K

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE: RAM/1-18-73	RAM/8-9-73				ARTICLE: 3
CHECKED BY / DATE: BJW/2-6-73	DCL/8-9-73				PAGE: 1
REVISION NUMBER:	Δ				

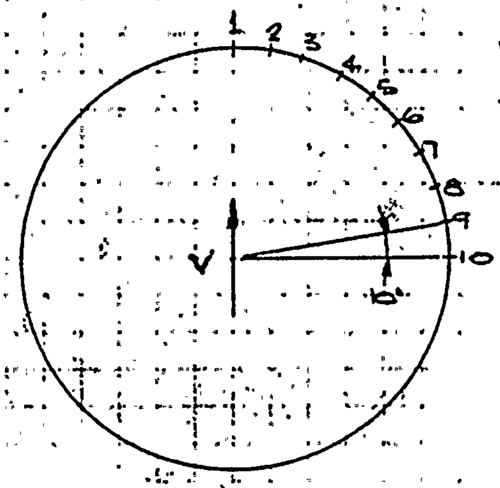
MAXIMUM SHEAR LOADINGS

FROM DRAWING S-799 OF THE SPECIFICATION (REFERENCE 1), THE FOLLOWING HORIZONTAL SHEAR LOADS OCCUR AT THE DRYWELL FLOOR (EL. 499'-6):

½ SSE = 8750 kips
SSE = 17500 kips
FLOOD = 6200 kips
PIPE RUP. = 569 kips
JET FOR. = 534 kips

THE TWO GOVERNING DESIGN CONDITIONS WILL THEREFORE BE:

1. ½ SSE + PIPE RUPTURE (NORMAL ALLOW.)
2. SSE + PIPE RUPTURE (.9 × YIELD FOR PRIMARY STRESSES.)



FOR 36 LUGS, THE MAXIMUM LOAD PER LUG CAN BE DETERMINED AS FOLLOWS:

$$\frac{V}{2} = V_{10} + 2(V_9 + V_8 + V_7 + V_6 + V_5 + V_4 + V_3 + V_2)$$

W/ $V_9 = V_{10} \cos^2 \alpha$
$V_8 = V_{10} \cos^2 2\alpha$
⋮
$V_2 = V_{10} \cos^2 8\alpha$
AND $\alpha = 10°$

THEREFORE, $\frac{V}{2} = 9 V_{10}$, OR, $V_{10} = \frac{V}{18}$

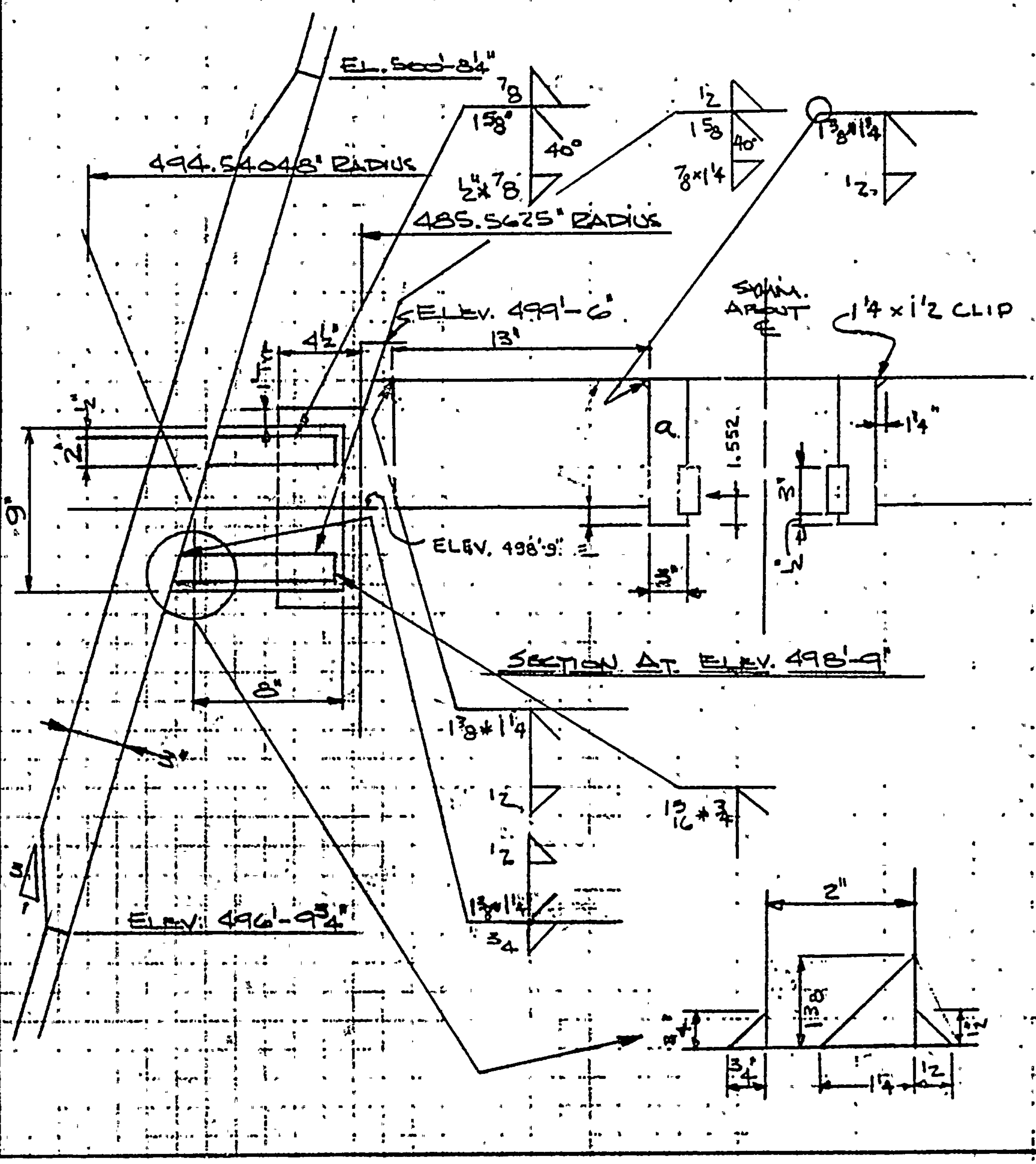
AND MAXIMUM LOADINGS ON SHEAR LUG ARE:

1. $(8750 + 569)/18 = 517.72$ kips
2. $(17500 + 569)/18 = 1003.83$ kips ✓

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE: RAM/1-18-73	DCL/7-25-73				ARTICLE: 3
CHECKED BY / DATE: BJW/2-6-73	RAM/8-9-73				PAGE: 2
REVISION NUMBER:	A				

FEMALE LUG DESIGN:

ASSUME THE FOLLOWING GEOMETRY (UNCORRODED):



CHECK BENDING AT SHELL - LUG INTERSECTION:

FOR THE SSE LOADING, ASSUME THE ALLOWABLE BENDING STRESS IN THE LUG IS .9 F_Y AT 340°F, OR, 29.93 ksi ✓

FOR THE ½SSE LOADING, ASSUME AN AISC (REFERENCE 3) ALLOWABLE.

IN THE NON-THERMAL CONDITION, THE LOADING MOMENT ARM, MEASURED AT ELEVATION 498'-9 IS (CORRODED):

$$ARM = [(494.54048 - 485.5625 - 8) - 4\tfrac{1}{2}]/2 + 8 + 0.0625/\cos\alpha = 6.304 \text{ in}$$

IF THE SHELL IS ASSUMED TO BE AT 340°F WITH THE CONCRETE FLOOR NOT MOVING (70°F = AMBIENT), THEN THE MAXIMUM RADIAL DISPLACEMENT OF THE SHELL IS:

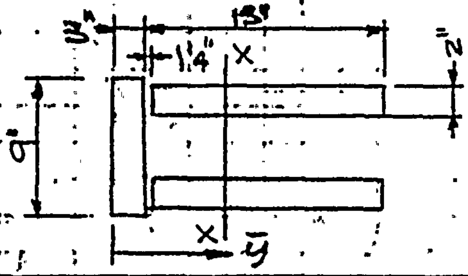
$$\Delta_{THERMAL} = \alpha R \Delta T = (6.688 \times 10^{-6})(496.13385) * (340-70)$$

$$\Delta = 0.896 \text{ in}$$

THEREFORE, MAXIMUM MOMENT ARM IS 6.304 + 0.896/2 = 6.752 IN (CONSERVATIVE SINCE SHIMS ARE NOT TAKEN INTO ACCOUNT) MAX. MOMENTS ARE:

SSE — M = 1003.83 * 6.752 = 6777.86 in kips.
½SSE — M = 517.72 * 6.752 = 3495.65 IN kips

CALCULATE MOMENT OF INERTIA OF LUG AT SHELL JUNCTURE



$$\bar{y} = \frac{(9)(3)(1\tfrac{1}{2}) + (11\tfrac{3}{4})(2)(2)(10\tfrac{1}{8})}{(9)(3) + (11\tfrac{3}{4})(2)(2)}$$

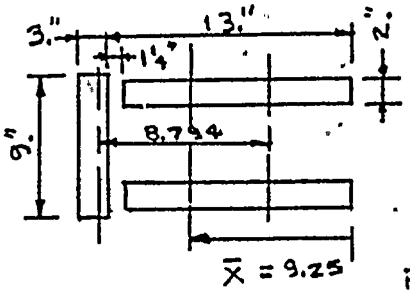
$$\bar{y} = 6.978$$

$$I_{xx} = \frac{(9)(3)^3}{12} + (9)(3)(5.478)^2 + \frac{(2)(2)(11.75)^3}{12} + (2)(2)(11.75)(3.147)^2$$

$I_{xx} = 1836.69 \text{ IN}^3$

$y = 16 - 6.978 = 9.022 \text{ IN.}$

CALCULATE PLASTIC MODULUS OF LUG AT SHELL JUNCTURE :



AREA = (9)(3) + (11.75)(2)(2)

AREA = 74"

PLASTIC CENTROID = $\frac{74}{(2)(4)}$ = 9.25"

RIGHT HALF-AREA CENTROID = $\frac{9.25}{2}$

RIGHT HALF AREA CENTROID TO PLASTIC CENTROID = 4.625"

LEFT HALF AREA CENTROID = $\frac{(9)(3)(5.25) + 2(2.5)^2}{(9)(3) + 2(2.50)(2)}$

LEFT HALF AREA CENTROID TO PLASTIC CENTROID = 4.169"

d = MOMENT ARM = 4.625 + 4.169 = 8.794"

$Z = (A/2)(d) = (37.0)(8.794) = 325.4$ ✓

$M_P = Z * .9 F_y = 9,741$ IN-KIPS W/ F_y = 33.26 KSI @ 340°F

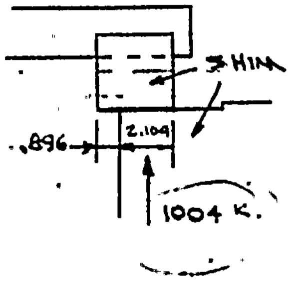
THE MAXIMUM MOMENT (6,777.86 IN-KIPS) DOES NOT APPROACH THE ALLOWED PLASTIC MOMENT OF 9741 IN-KIPS FOR THE SECTION.

∴ DESIGN IS O.K.

CALCULATE SHEAR STRESS IN LUG AT LOAD :

THE LOAD IS TRANSMITTED THROUGH THE SHIMS

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE: RAM/1-18-73	DCL/7-26-73				ARTICLE: 3
CHECKED BY / DATE: BJW/2-6-73	RAM/8-9-73				PAGE: 5
REVISION NUMBER:	A				



AS SHOWN AT THERMAL DISPLACEMENT OF .896" RADIALLY. THE SECTION HAS A SHEAR STRESS CALCULATED AS FOLLOWS: USING THE VON MISES YIELD STRESS * .9 AS A NOMINAL ALLOWABLE $V_u = \frac{F_y * .9}{\sqrt{3}} * t_w * d$ W/ d = WEB DEPTH + 1/2 THE FLANGE DEPTH. *
$t_w = 2 + 2 = 4$ ∴ $V_u = 33.26(.9)(4)(14.5)/\sqrt{3}$
$V_u = 1002.38 \doteq 1003.83$ ∴ SAY O.K.

CALCULATE BENDING STRESS FOR THE 1/2 SSE CONDITION:

$$\sigma_{SSE} = \frac{(3495.65)(9.022)}{(1836.69)} = 17.17 \text{ ksi}$$

THE BENDING ALLOWABLE FOR THE 1/2 SSE CONDITION WILL BE CALCULATED AS FOLLOWS:

1. FOR TENSION ON EXTREME FIBERS, $F_b = 0.66 F_y$ — ¶ 1.5.1.4.1 OF REF. 3

2. FOR COMPRESSION ON EXTREME FIBERS, FROM ¶ 1.5.1.4.1, $F_b = 0.66 F_y = (0.66)(38) = 25.08$ ksi ∴ MEMBER OK.

CHECK BEARING ON PLATE "a":

THE BEARING AREA IN TRANSMITTING THE LOAD IS THE SHIM OVERLAP = 2.104". ONLY THE 1/2 SSE CONDITION WILL BE EXAMINED SINCE BEARING STRESS IS NOT A PRIMARY STRESS IN THE PLATE. THE ALLOWABLE FROM REFERENCE 3, ¶ 1.5.1.5 IS $0.9 F_y = 34.2$ ksi

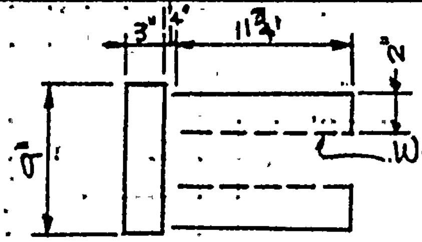
$$\sigma_{BEAR} = \frac{517.72}{(9)(2.104)} = 27.34 < 34.2 \therefore OK$$

LUG WELD TO SHELL:

AGAIN ASSUME FOR DESIGN PURPOSES A SECTION WHICH IS PARALLEL TO THE VESSEL AXIS. USING THE SKETCH AT THE TOP OF THE FOLLOWING PAGE,

* BASED ON REF. 3 CRITERIA

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE: RAM/1-18-73	DCL/9-23-73				ARTICLE: 3
CHECKED BY / DATE: BJW/2-6-73	RAM/9-27-73				PAGE: 6
REVISION NUMBER:	A				



WELD w/ 1/4 THROAT OR REMAINING WELDS.

TOTAL WELD LENGTH = $(2)(12) + (2)(1\tfrac{3}{4}) + (2)(2) + (2)(11\tfrac{3}{4})(\tfrac{1}{4})$
$= 57.375 \text{ in}^2$

TREAT THE WELD AS A LINE,

$$\bar{y} = \frac{(2)(3)(1.5) + (10)(11\tfrac{3}{4})(10.5)/4 + (2)(2)(16) + (9)(3)}{57.375}$$

$\bar{y} = 6.927$

$$I = (9)(6.927)^2 + (9)(3.927)^2 + (2)(3)(5.427)^2 + \frac{(2)(3)^3}{12} + (10)(11\tfrac{3}{4})(3.198)^2/4 + \frac{(10)(11\tfrac{3}{4})^3}{48} + (2)(2)(9.073)^2$$

$I = 1719.52$

$$S = \frac{I}{y} = \frac{1719.52}{(16-6.927)} = 189.52 \text{ in}^2$$

FOR 1/2 SSE CONDITION,

$f_1 = \frac{V}{A} = \frac{517.72}{57.375} = 9.02 \text{ K/in.}$

$f_2 = \frac{M}{S} = \frac{3495.65}{189.52} = 18.44 \text{ K/in.}$

FOR GROOVE WELDS,

THROAT REQ'D = 9.02 K/in / .4Fy = .593"
OR = 18.44 K/in / 21.0 = .878"

FOR 1/2 SSE, .878" THROAT GOVERNS

FOR SSE CONDITION,

$f_1 = 17.50$ K/in. ✓

$f_2 = 35.76$ K/in. ✓

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV
PREPARED BY / DATE: RAM/1-19-73	DCL/9-23-73				SUBSEC: 1
CHECKED BY / DATE: BJW/2-6-73	RAM/1-3-73				ARTICLE: 3
REVISION NUMBER:	A				PAGE: 7

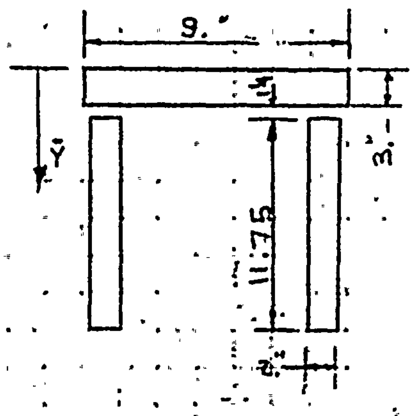
REQ'D THROAT $= 17.50^k/in / .9F_y/\sqrt{3} = 1.013"$
OR $= 35.76^k/in / .9F_y = 1.195"$

THROAT OF 1.195" GOVERNS

USE A 1⅛ * 1¼ BEVEL ∴ THROAT EQUALS 1.25 IN. > 1.195 IN. ∴ USE A ½" COVER FILLET.
FOR INSIDE LEG OF PLATE USE A ¾" FILLET,
THROAT $= .5303" > 1.195"/4 = .299"$
SHEAR IN FILLET:

$$\text{SHEAR STRESS} = \frac{\sqrt{(17.5/4)^2 + (\sin 45° * 35.76/4)^2}}{.5303"}$$

SHEAR IN FILLET $= 14.50\ ksi < .9F_y/\sqrt{3} = 17.28\ ksi$



WELD LUG WINGS TO "G":

$\bar{Y} = 6.978$

$I_{xx} = 1836.69$

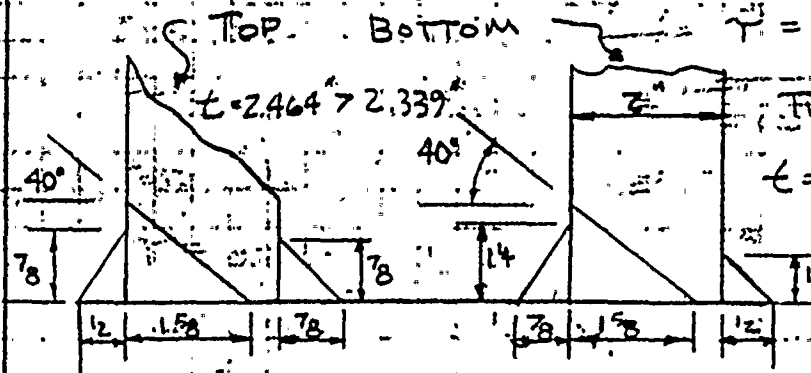
FOR ½ SSE: $\tau = \frac{Vay}{I} = \frac{517.72 * 27 * 5.478}{1836.69}$

$\tau = 41.69\ ksi$, THROAT $= \frac{41.69}{.4F_y(4)} = .686"$

FOR SSE $\tau = \frac{1003.83 * 27 * 5.478}{1836.69}$

$\tau = 80.84$, THROAT $= \frac{80.84}{2 * .9F_y/\sqrt{3}}$

THROAT REQD = 2.339"



STRESSES IN INSERT PLATE AND SHELL:
A PROCEDURE SIMILAR TO THAT USED IN SECTION II, SUBSECTION 5 OF THIS FINAL STRESS REPORT (SUPPRESSION CHAMBER PENETRATIONS) WILL BE USED TO DETERMINE

THE STATE OF STRESS IN THE 3" INSERT PLATE, AND $1\frac{5}{16}$" SHELL PLATE. USING REFERENCE 7 (WRC BULLETIN #107),

FOR THE 3" INSERT PLATE:

$T_V = 1.25"$

$R_V = 494.54048/\cos\alpha + 2.9375/2 + 0.0625$

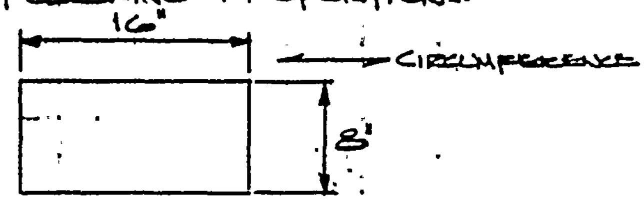
$= 516.1340"$ (ASSUME EQUIV. CYLINDER FOR CONE)

$T_P = 2.9375"$

$\gamma_0 = R_V/T_V = 412.9$

$\gamma_P = R_V/T_P = 175.7$

ASSUME A RECTANGULAR ATTACHMENT OF THE FOLLOWING PROPORTIONS:



$\beta_1 = \frac{C_1}{R_V} = \frac{8}{R_V}$ $\quad \beta_2 = \frac{C_2}{R_V} = \frac{4}{R_V}$

FOR M_C MEMBRANE STRESSES, $\beta = (\beta_1^2 \beta_2)^{1/3}$

FOR M_C BENDING STRESSES, $\beta = K_C(\beta_1^2 \beta_2)^{1/3}$, W/

$K_C = 1.06$ FOR $M\phi$ AND $K_C = 0.93$ FOR M_X

ALSO, $C_C = 1.30$ FOR $N\phi$ AND $C_C = 1.00$ FOR N_X.

	β_0	CURVE FACT.	MOMENT	PARA. FACT.	STRESS	
1.	.01230	3A — 8.00	3495.65	$C_C/R_V^2\beta_0 T_P$	3.78	σ_ϕ
2.	.01304	1A — 0.10	3495.65	$(1.2)(6)/R_V\beta_0 T_P^2$	43.34	
3.	.01230	3A — 8.00	6777.86	$C_C/R_V^2\beta_0 T_P$	7.32	
4.	.0230	4A — 4.20	3495.65	$C_C/R_V^2\beta_0 T_P$	1.53	σ_X
5.	.01144	2A — 0.06	3495.65	$(1.2)(6)/\beta_0 R_V T_P^2$	29.64	
6.	.0230	4A — 4.20	6777.86	$C_C/R_V^2\beta_0 T_P$	2.96	

ALSO, $\tau_V = \frac{V_C}{4C_1 T_P} = 5.51$ ksi FOR SSE/2

$= 10.68$ ksi FOR SSE

BUT τ_V^{MAX} OCCURS 90° FROM $\sigma_{BENDING}^{MAX}$.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE: RAM/1-21-73	KL /7-27-73				ARTICLE: 3
CHECKED BY / DATE: BJW /2-6-73	RAM/8-9-73				PAGE: 9
REVISION NUMBER:	A				

DUE TO INTERNAL PRESSURE, THE ADDITIONAL STRESSES ARE TAKEN FROM BODY 102 OF THE AXZ OUTPUT (AT STATION 8 WHICH SHOULD APPROXIMATE THE TOP OF THE ATTACHMENT):

$\sigma_\theta = 8.10$ ksi, $\sigma_\phi = 3.95$ ksi } MEMB. $\sigma_\theta = 9.70$ ksi, $\sigma_\phi = 9.57$ ksi } MEMB. + BEND

THEREFORE, STRESS INTENSITIES IN THE 3" INSERT PLATE ARE CALCULATED AS FOLLOWS:

1. FOR SSE/2 MEMBRANE STRESS INTENSITY,

$\sigma_{Hoop} = 1 + \sigma_\theta^P = 11.88$ ksi
$\sigma_{Long.} = 4 + \sigma_\phi^P = 5.48$ ksi
$\sigma_{Shear} = 5.51$ ksi

$\therefore$ S.I. = 15.05 $\leq 1.5 S_M = 28.95$ ksi $\therefore$ OK

2. FOR SSE/2 MEMBRANE + BENDING STRESS INTENSITY,

$\sigma_{Hoop} = 1 + 2 + \sigma_\theta^P = 56.82$ ksi ✓
$\sigma_{Long.} = 4 + 5 + \sigma_\phi^P = 40.74$ ksi
$\sigma_{Shear} = 0.0$

$\therefore$ S.I. = σ_{Hoop} = 56.82 ksi $\leq 3 S_M = 57.9$ ksi $\therefore$ OK

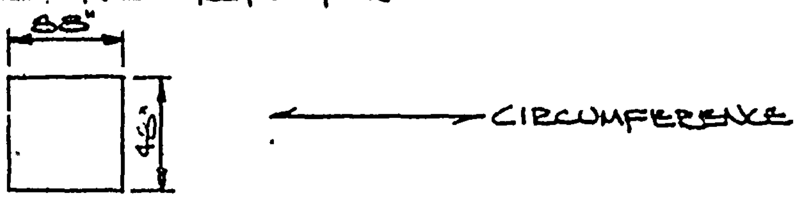
3. FOR SSE MEMBRANE STRESS INTENSITY,

$\sigma_{Hoop} = 3 + \sigma_\theta^P = 15.42$ ksi
$\sigma_{Long.} = 6 + \sigma_\phi^P = 6.91$ ksi
$\sigma_{Shear} = 10.68$ ksi

$\therefore$ S.I. = 22.66 ksi $\leq 1.5 F_y$ @ 340°F = 49.89 ksi $\therefore$ OK

FOR THE 1 5/16" SHELL PLATE:

$T_V = 1.25"$
$R_V = 494.54048/\cos\alpha + 1.25/2 + .0625 = 515.2903$ in
$T_P = 2.9375"$
$\gamma_o = R_V/T_V = 412.2$
$\gamma_p = R_V/T_P = 175.4$
ASSUME A RECTANGULAR ATTACHMENT OF THE FOLLOWING PROPORTIONS:



$\beta_1 = \frac{C_1}{R_V} = \frac{44}{R_V}$ $\beta_2 = \frac{C_2}{R_V} = \frac{24}{R_V}$

$K_c \doteq 0.99$ FOR M_ϕ, AND $K_c \doteq 0.90$ FOR M_x
$C_c \doteq 1.30$ FOR N_ϕ, AND $C_c \doteq 1.00$ FOR N_x

	β_o	CURVE. FACTOR	MOMENT	PARA FACTOR	STRESS	
1.	.06977	3A – 22.0	3495.65	$C_c/R_V^2 \beta_o T_V$	4.32	σ_ϕ
2.	.06977	1A – 0.086	3495.65	$(1.2)(C_c)/R_V \beta_o T_V^2$	38.92	
3.	.06977	3A – 22.0	6777.86	$C_c/R_V^2 \beta_o T_V$	8.37	
4.	.06977	4A – 40.0	3495.65	$C_c/R_V^2 \beta_o T_V$	6.04	σ_x
5.	.06279	2A – .042	3495.65	$(C_c)/R_V \beta_o T_V^2$	17.42	
6	.06977	4A – 40.0	6777.86	$C_c/R_V^2 \beta_o T_V$	11.71	

ALSO, $\tau_V = 2.35$ ksi FOR SSE/2, AND $\tau_V = 4.56$ ksi FOR SSE.

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE: RAM/1-21-73	DCL 7-27-73				ARTICLE: 3
CHECKED BY / DATE: BLW / 2-6-73	RAM/8-9-73				PAGE: 11
REVISION NUMBER:	A				

DUE TO INTERNAL PRESSURE, THE ADDITIONAL STRESSES ARE TAKEN FROM THE AX2 OUTPUT FROM THIS SECTION (MAXIMUM STRESSES FROM BODY 614 OR BODY 704 ADJACENT TO THE INSERT PLATE WILL BE USED)

$\sigma_\theta = 13.78$ ksi, $\sigma_\phi = 9.36$ ksi } MEMB. $\qquad$ $\sigma_\theta = 14.70$ ksi, $\sigma_\phi = 18.16$ ksi } MEMB. + BEND.

STRESS INTENSITIES IN THE 15% SHELL PLATE ARE CALCULATED AS FOLLOWS:

1. FOR SSE/2 MEMBRANE STRESS INTENSITY,

$\sigma_{HOOP} = 1 + \sigma_\theta^P = 18.10$ ksi

$\sigma_{LONG} = 4 + \sigma_\phi^P = 15.40$ ksi

$\sigma_{SHEAR} = 2.35$ ksi

$S.I. = \frac{\sigma_h + \sigma_L}{2} + \sqrt{\left(\frac{\sigma_h - \sigma_L}{2}\right)^2 + (\sigma_s)^2}$

$\therefore$ S.I. = 19.46 ksi $\leq 1.5 S_M = 28.95$ ksi $\therefore$ OK

2. FOR SSE/2 MEMBRANE + BENDING STRESS INTENSITY,

$\sigma_{HOOP} = 1 + 2 + \sigma_\theta^P = 57.94$ ksi

$\sigma_{LONG} = 4 + 5 + \sigma_\phi^P = 41.62$ ksi

$\sigma_{SHEAR} = 0.0$,

$\therefore$ S.I. = σ_{HOOP} = 57.94 ksi $\doteq 3 S_M = 57.9$ ksi $\therefore \leq$

3. FOR SSE MEMBRANE STRESS INTENSITY,

$\sigma_{HOOP} = 3 + \sigma_\theta^P = 22.15$ ksi

$\sigma_{LONG} = 6 + \sigma_\phi^P = 21.07$ ksi

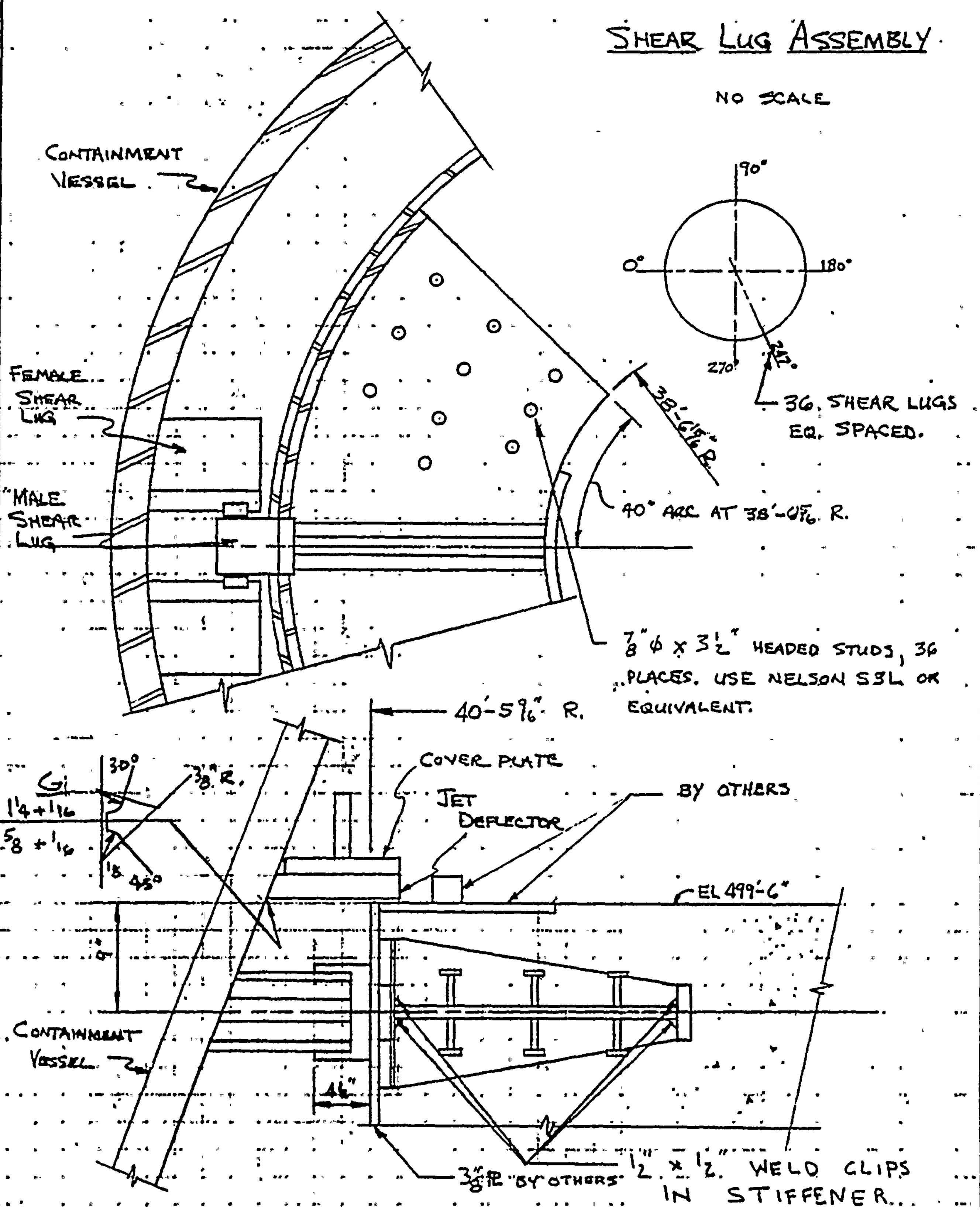
$\sigma_{SHEAR} = 4.56$ ksi

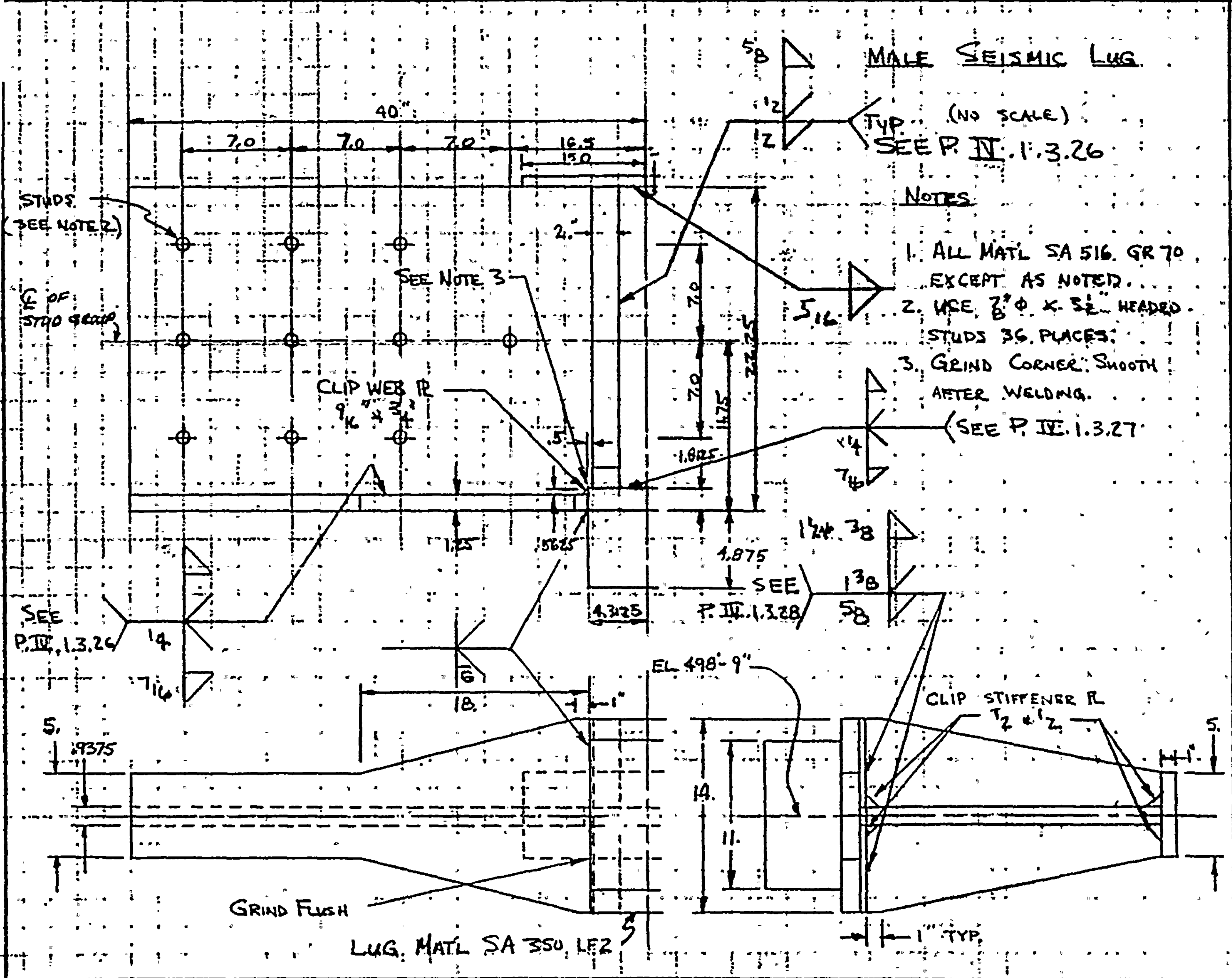
$\therefore$ S.I. = 26.20 ksi $\leq 1\frac{1}{2} F_y$ @ 340°F = 49.89 ksi $\therefore$ OK

PITTSBURGH - DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
PREPARED BY / DATE: BJW/2-23-73	DCL/7-27-73				SUBSEC: 1
CHECKED BY / DATE: RAM/3-8-73	RAM/8-12-73				ARTICLE: 3
REVISION NUMBER:	A				PAGE: 12

SHEAR LUG ASSEMBLY

NO SCALE





PITTSBURGH - DES MOINES STEEL CO.

WPPSS HANFORD NO. 2 CONTAINMENT VESSEL

CONTRACT NO. 12764

PREPARED BY / DATE: BW 2-13-73 | KL 7-27-73

CHECKED BY / DATE: RAM 3-8-73 | RAM 8-12-73

REVISION NUMBER: | A

PDM

FINAL STRESS REPORT

SECTION: IV

SUBSEC: 1

ARTICLE: 3

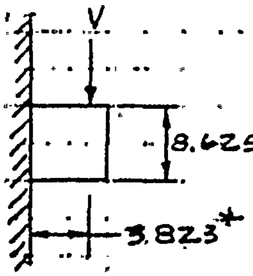
PAGE: 13

BENDING OF LUG: (LUG. MAT'L SA 350 LF 2)

ASSUME A CANTILEVER. FOR SSE, V = 1004 K

AND $F_{ALL} = .9 F_y = 28.31$ KSI @ 340° F.

Par. IV.1.3.1



$M = 1004(3.823) = 3838$ K-IN

$\sigma_b = \frac{6M}{bt^2} = \frac{6(3838)}{11(8.625)^2}$

$\sigma_b = 28.14$ KSI < 28.31 KSI ∴ OK.

*SEE P. IV.1.3.5

And P. IV.1.3.1

$F_y = 36$ KSI

FOR ½ SSE, V = 518 K AND $F_{ALL} = .75(36)$
$= 27$ KSI

$M = 518(3.823) = 1980$ K

$\sigma_b = \frac{6(1980)}{11(3.625)^2}$

$\sigma_b = 14.52$ KSI < 27 KSI ∴ O.K.

SHEAR IN LUG:

FOR SSE: $\sigma_v = \frac{V}{bt} = \frac{1004}{11(8.625)}$

$\sigma_v = 10.58$ KSI

FOR SHEAR ALLOWABLE USE THE VON MISES YIELD STRESS * 0.9, OR,

$F_{ALL} = \frac{.9 F_y}{\sqrt{3}} = \frac{(.9)(31.46)}{(3)^{1/2}} = 16.35$ KSI

∴ SSE SHEAR O.K.

FOR ½ SSE SHEAR:

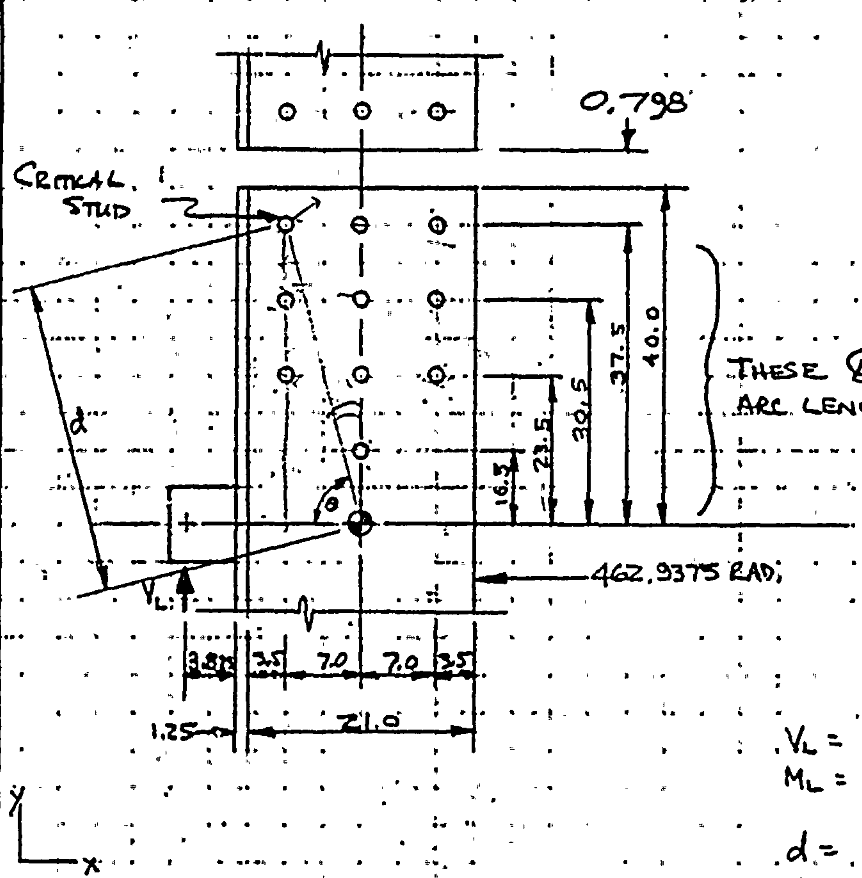
$$\sigma_v = \frac{518}{11(8.625)}$$

$$\sigma_v = 5.46 \text{ KSI} < .4(36) = 14.4 \text{ KSI} \therefore \text{ O.K.}$$

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE: BJW/2-26-73	DLL/7-26-73				ARTICLE: 3
CHECKED BY / DATE: EAM/3-8-73	EAM/8-12-73				PAGE: 16
REVISION NUMBER:	A				

STUD DESIGN

ASSUME ALL MOMENT & SHEAR IS TRANSFERRED TO THE CONCRETE BY THE STUDS.



$V_L = 1004$ K
$M_L = 1004(15.573) = 15{,}635$ K·IN.

$d = 38.148$ IN
$\theta = 79.426°$

CONSIDER STUDS AS POINT MASSES

$$J = \Sigma(x^2+y^2)$$

$$= 4\left\{6(7)^2 + 3(23.5^2 + 30.5^2 + 37.5^2) + (16.5)^2\right\}$$

$$= 36930.\ \text{IN}^2$$

$$S_{CRIT} = \frac{36930}{38.148} = 968.07\ \text{IN.}$$

FORCE ON CRITICAL STUD IS

$$F = \left\{\left(\frac{1004}{40}\right)^2 + \left(\frac{15635}{968.07}\right)^2 + 2\left(\frac{1004}{40}\right)\left(\frac{15{,}635}{968.07}\right)\cos 79.426\right\}^{\frac{1}{2}}$$

$F = 32.2$ K/STUD

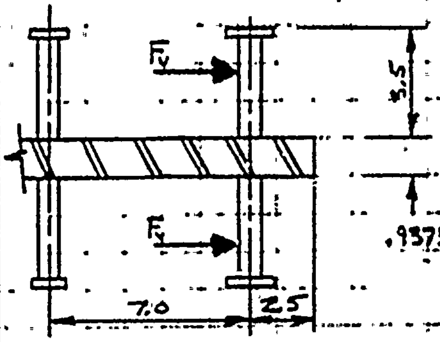
FROM REFERENCE 3, TABLE 1.11.4 & COMMENTARY P. 5-150, ULTIMATE STRENGTH OF STUD IS 2.5 TIMES ALLOWABLE STRENGTH OF 18 KIPS / STUD. FROM P 5-33, PARA. 1.11.4, FACTOR OF SAFETY FOR YIELD STRENGTH IS 2.0. THEREFORE, ALLOWABLE FORCE PER STUD IS .9(18)(2) = 32.4 KIPS, SO STUDS O.K.

Stud $\frac{7}{8}$" x $3\frac{11}{16}$" lg Allow shear = 15.0 k

FOR 2SSE LOADS, THE FORCE PER STUD IS:

$$32.2 \times \frac{518}{1004} = 16.6 \text{ K/STUD} < 18.0 \therefore \text{OK}$$

WEB PLATE



STUDS IMPOSE A SHEAR FORCE ON WEB OF 32.2 KIPS PER STUD DURING SSE CONDITION.

SHEAR STRESS IS DETERMINED FROM REFERENCE 3, ¶ 1.11.4, P. 5-33.

$V = 2(32.2) = 64.4$ K.

FOR AREA OF STEEL USE EDGE DISTANCE + ½ DISTANCE TO NEXT STUD.

$A_s = .9375[2.5 + (7.0/2)] = 5.625 \ \text{IN}^2$

$\tau = \frac{V}{A_s}$

$\tau = 11.45$ KSI $< .9F_y^*/\sqrt{3} = 19.04$ FOR SSE CONDITION.

∴ O.K.

FOR ½ SSE CONDITION, ALLOWABLE SHEAR STRESS IS

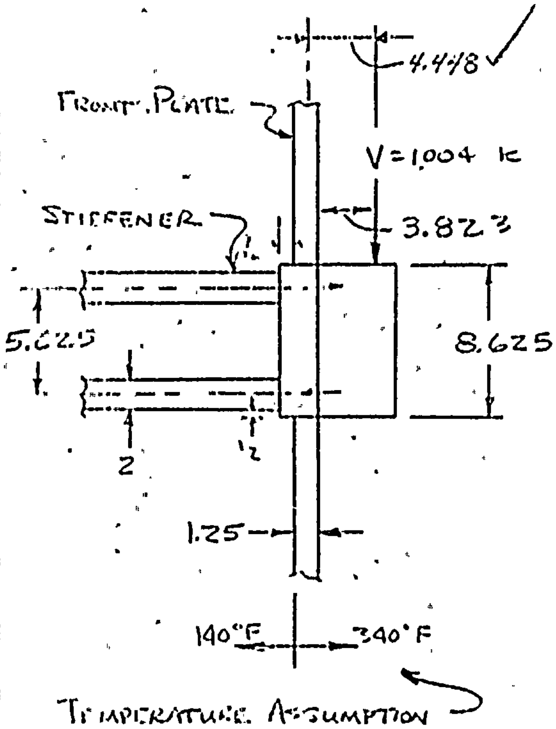
$.4 F_y = 15.2$ KSI, WHERE $F_y = 38$ KSI.

SHEAR STRESS IS:

$\tau = \frac{16.6 (2)}{5.625}$

$= 5.90$ KSI < 15.2 KSI ∴ O.K.

$^*F_y$ @ 140° F = 36.64 KSI



FRONT PLATES & STIFFENERS

ASSUME FRONT PLATES RESIST ENTIRE SHEAR FORCE AND STIFFENERS RESIST ENTIRE MOMENT

FRONT PLATES:

TENSION IN ONE, COMPRESSION IN THE OTHER.

$$\sigma_t = \frac{1004}{2(14)\,1.25}$$

σ_t = 28.69 KSI < 29.93 .9 F_y OF 516 GR 70 @ 340° F

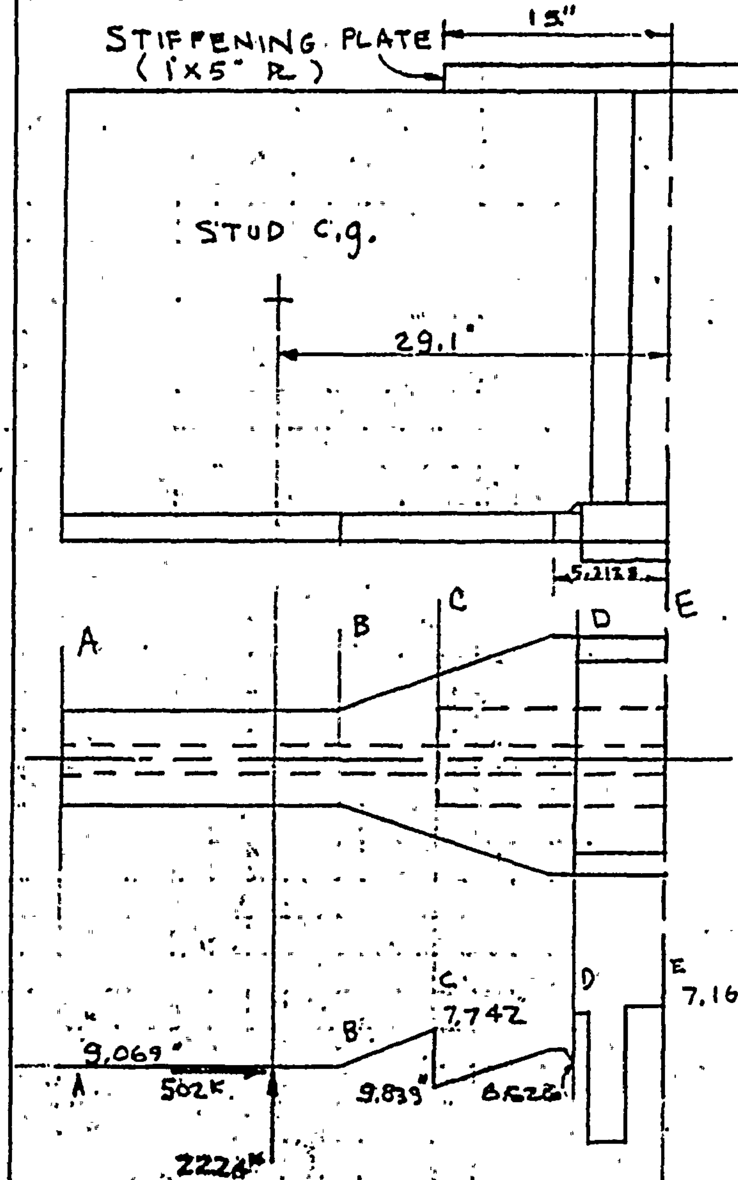
STIFFENER PLATES:

MOMENT RESISTED BY TENSION IN ONE STIFFENER, COMPRESSION IN THE OTHER.

$$\sigma_t = \frac{1004(4.448)}{(5.625)(12.0625)(2)}$$ ✓

σ_t = 32.91 KSI < 32.98 KSI = .9 F_y FOR 516 GR 70 @ 140° F.

$$\frac{V_{SSE}}{.9\,F_y} > \frac{V_{\frac{1}{2}SSE}}{.6\,F_y}$$ ∴ SSE GOVERNS.



PLOT OF C.g. FOR VARYING SECTION (DISTANCES FROM OUTER SURFACE OF FRONT PLATE)

LONGITUDINAL STIFFENING PLATE

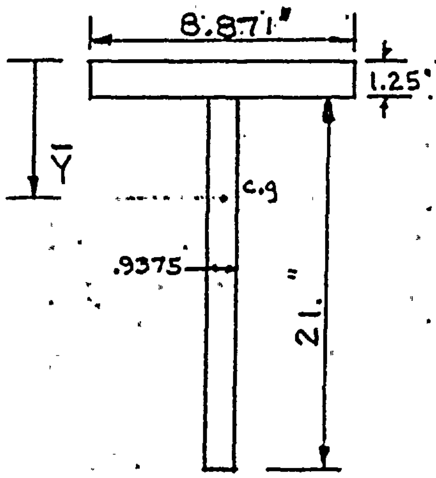
ASSUME A 1"x5" PL 30" LONG WILL BE SUFFICIENT.

CHECK UNSTIFFENED SECTION AT "C":

FRONT PLATE WIDTH AT C,

$$b = 14 - \frac{(15 - 5.3125)\,9}{17}$$

$$b = 8.871''$$



SECTION AT "C"

$$\bar{Y} = \frac{8.871(1.25)(.625) + 21(.9375)(11.75)}{8.871(1.25) + 21(.9375)}$$

$$\bar{Y} = 7.742$$

$$I = \frac{(8.871)(1.25)^3}{12} + \frac{.9375(21)^3}{12} + 1.25(8.871)(7.117)^2$$

$$+ (.9375)(21)(4.008)^2 = 1602.88 \text{ IN}^4$$

PITTSBURGH-DES MOINES STEEL CO. CONTRACT NO. 12784				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE: DCL/7-27-73					ARTICLE: 3
CHECKED BY / DATE: RAM/8-12-73					PAGE: 21
REVISION NUMBER: A					

CALCULATE VERTICAL END FORCE $= \frac{1004(9.069+3.823)}{2(29.1)}$

VERTICAL END FORCE = 222.4 K

HORIZONTAL END FORCE = 1004K/2 = 502 K

TAKE MOMENT OF END FORCES ABOUT C.G.

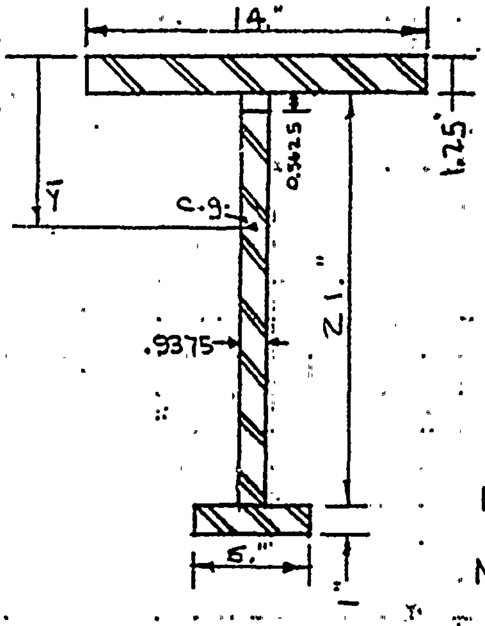
$\therefore M = 222.4(29.1-15) - 502(9.069-7.742)$

M = 2470 IN-K

$\sigma_b = \frac{Mc}{I} = \frac{2470\ (22.25-7.742)}{1602.88}$

$\sigma_b = 22.36$ KSI $< .9F_y$ @ 340° F = 29.93 KSI $\therefore$ LENGTH O.K.

CHECK CRITICAL SECTION THROUGH POINT "D":



$\bar{Y} = \frac{14(1.25)(.625) + (20\tfrac{7}{16})(.9375)(12.03125) + 5(22.75)}{14(1.25) + 20\tfrac{7}{16}(.9375) + 5}$

$\bar{Y}$ = 8.526 IN.

$I = 14(1.25)(7.901)^2 + 20\tfrac{7}{16}(.9375)(3.505)^2 + 5(14.224)^2 + \frac{14(1.25)^3}{12} + \frac{.9375(20\tfrac{7}{16})^3}{12} + \frac{5}{12}$

I = 3009 IN⁴

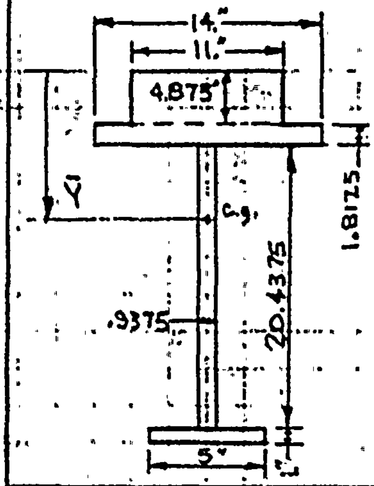
M = 222.4(29.1 - 4.3125) - 502(9.069 - 8.526)

M = 5240 K-IN

SECTION AT "D"

$\sigma_b = \frac{Mc}{I} = \frac{5240\ (23.25-8.526)}{3009}$

$\sigma_b = 25.64 < 29.93$ KSI $\therefore$ R O.K.



SECTION PROPERTIES AT ℄:

$\bar{Y} = \frac{4.875(11)(2.438) + 1.8125(14)(5.781) + (20.4375)(.9375)(16.906) + 5(27.625)}{(4.875)(11) + 1.8125(14) + 20.4375(.9375) + 5}$

$\bar{Y}$ = 7.168

PITTSBURGH - DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
PREPARED BY / DATE: DCL / 7-27-73					SUBSEC: 1
CHECKED BY / DATE: RDM / 8-12-73					ARTICLE: 3
REVISION NUMBER: A					PAGE: 22

$$I = \frac{11(4.875)^3 + 14(1.8125)^3 + .9375(20.4375)^3 + 5}{12}$$

$$+ 4.875(11)(4.73)^2 + 1.8125(14)(1.387)^2 +$$

$$+ 20.4375(.9375)(9.738)^2 + 5(20.457)^2$$

$$I^* = 5938.\ \text{IN}^4$$

$$Q_{LUG} = (4.875)(11)(4.73) + (1.8125)(14)(1.387) =$$

$$Q^*_{LUG} = 288.84\ \text{IN}^3$$

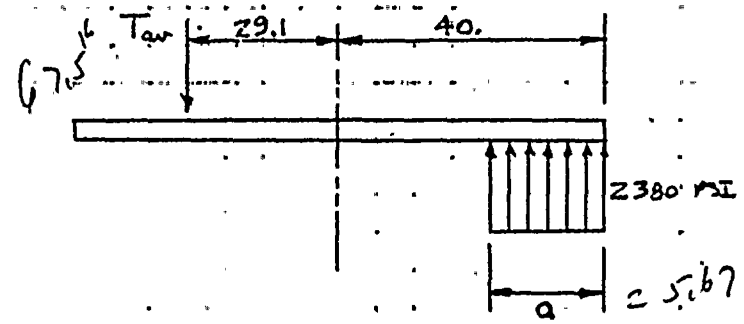
*TO BE USED LATER IN THIS REPORT

PITTSBURGH - DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
PREPARED BY / DATE: BJW / 2-13-73	DCL / 7-26-73				SUBSEC: 1
CHECKED BY / DATE: RAM / 3-8-73	RAM / 8-12-73				ARTICLE: 3
REVISION NUMBER:	A				PAGE: 23

Check Bearing on Concrete

Assume Moment is resisted by Compression (Front plate bearing on concrete) on one side, and Tension (shear in studs) on the other. Use ultimate strength for SSE. Assume dimensions at 38'-6 5/16" rad.

Consider front plates & lug as a base plate.



Depth, $b = 5''$
$p = 2380$ psi

Location of Tav :

$\bar{y} = [3(37.5) + 3(30.5) + 3(23.5) + 16.5] / 10.$

$= 29.1$ in. at 38'-6 15/16" rad.

Assume $T = 67.5$ k.

$C = T = P a b$

$a = \frac{67.5}{2.38(5)}$

$= 5.67$

$M = 67.5 (29.1 + 40 - a/2)$

$= 4473$ k-in.

Page IV-1-3-1

$M_{IMPOSED} = .1004 (4,448) = 4466$ k-in.

12

O.K.

BENDING ON FRONT PLATE:

CONSIDER A CANTILEVER BEAM 1 IN. WIDE.

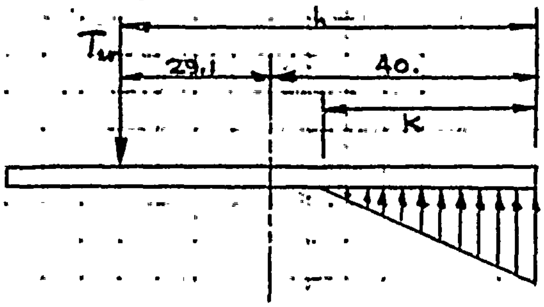
$$M = \frac{w l^2}{2} = \frac{P(2.5)^2}{2} \qquad P = 2.38 \text{ KSI}$$

$$M = 7.4375 \text{ K-IN}$$

$$\sigma_b = \frac{6M}{t^2} = \frac{6(7.4375)}{(1.25)^2}$$

$$\sigma_b = 28.56 \text{ KSI} < .9F_y = 29.93^{\text{KSI}} \therefore \text{ O.K.}$$

FOR ½ SSE ASSUME STRESS DISTRIBUTION SHOWN BELOW.



REF 15, Pp 304 - 315

$$M_{IMPOSED} = 518(4.448) = 2304 \text{ K-IN}$$

ASSUME $K = 36''$ $K/3 = 12$

$$T = \frac{M}{h - K/3} = \frac{2304}{69.1 - 12.0}$$

$$T = 40.35 \text{ K}$$

(CONTINUED)

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				FINAL STRESS REPORT	SECTION: IV
					SUBSEC: 1
PREPARED BY/ DATE: BJW/2-13-73	DCL/7-26-73				ARTICLE: 3
CHECKED BY / DATE: RAM/3-8-73	RAM/8-5-73				PAGE: 25
REVISION NUMBER:	A				

n = No. of studs
A = Area of 1 stud

$$S_b = \frac{T}{nA} \quad \frac{40.35}{20(.60132)}$$

$$S_b = 3.355$$

$$p = S_b \frac{E_c}{E_b}\left(\frac{k}{h-k}\right)$$

$E_c = 57\sqrt{f'_c} = 3605$ KSI
$E_b = 29000$ KSI

$p = .454$ KSI $<$ 1.5 KSI ∴ OK

$T' = \frac{1}{2} p b k$

$T' = 40.86$ K ≈ 40.35 O.K.

BENDING OF FRONT PLATE.

CONSIDER A CANTILEVER BEAM 1 IN. WIDE.

$$M = \frac{w\ell^2}{2} = \frac{.454(2.5)^2}{2}$$

$M = 1.42$ k-in.

$$\sigma_b = \frac{6M}{t^2}$$

$\sigma_b = 5.45$ KSI $<$ 28.5 KSI $= .75 F_y$ ∴ O.K.

PITTSBURGH - DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
PREPARED BY / DATE: BJW/2-13-73	DCL/7-30-73				SUBSEC: 1
CHECKED BY / DATE: RAM/3-8-73	RAM/8-12-73				ARTICLE: 3.
REVISION NUMBER:	A				PAGE: 26

WELD DESIGN

$F_y = 36.64$ KSI

FRONT PLATE TO WEB

ASSUME ALL OF FRONT PL - WEB INTERSECTION OUT TO 32" FROM ℄ IS EFFECTIVE IN TRANSFERING LOAD. NOTE THAT 50K IS ASSUMED TO BE CARRIED BY WELD OF LUG TO WEB.

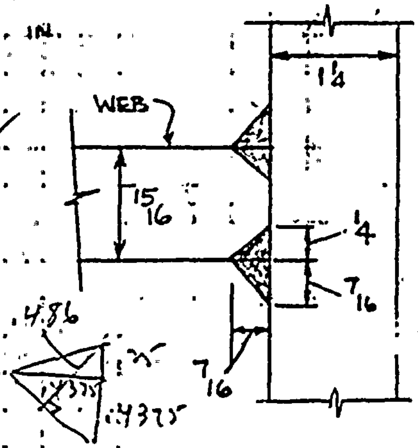
$$F = \frac{1004-50}{2(32.-5.0625)} = 17.71 \text{ K/IN.}$$

actually used $\frac{(.9)(36.64)}{\sqrt{3}} = 19.04$ ksi

THROAT REQ'D $= \frac{17.71}{.9F_y/\sqrt{3}} = .930$ IN.

Shear allow PVC III NB-3227.5 $.55(36.64) = 20.15$

USE: 19 ksi $.486 \times 2 =$ $t = .972$ IN ✓



ALSO,

$$\frac{VQ}{I} = \frac{(222.4)(.887)(1.25)(7.117)}{1602.88}$$

$= 10.95 \leq 17.71$ AT "C" O.K.

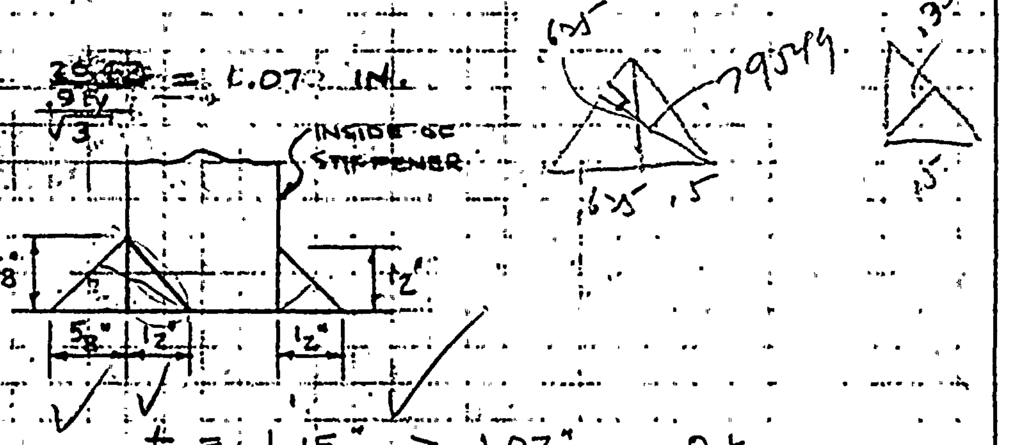
STIFFENER TO WEB

ASSUME FULL LENGTH OF STIFFENER IS EFFECTIVE IN TRANSFERRING THE LOAD.

$$F = \frac{1004(4.448)}{(2)(5.625)(19.4375)} = 20.42 \text{ K/IN.}$$

$$t_{REQ'D} = \frac{20.42}{.9F_y/\sqrt{3}} = 1.07 \text{ IN.}$$

USE:



$t = 1.15" > 1.07"$, O.K.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764

WPPSS HANFORD NO. 2 CONTAINMENT VESSEL

PREPARED BY / DATE. [illegible]	JES 1-5-74			SECTION:	IV
CHECKED BY / DATE. [illegible]	FDS 1-5-74			SUBSEC:	1
REVISION NUMBER. A	C			ARTICLE:	3
				PAGE:	27

WELD DESIGN

$F_y = 34.72$ KSI

WEB TO [illegible]

WELD IS DESIGNED FOR FLEXURAL SHEAR AND A DIRECT SHEAR OF 50 KIPS.

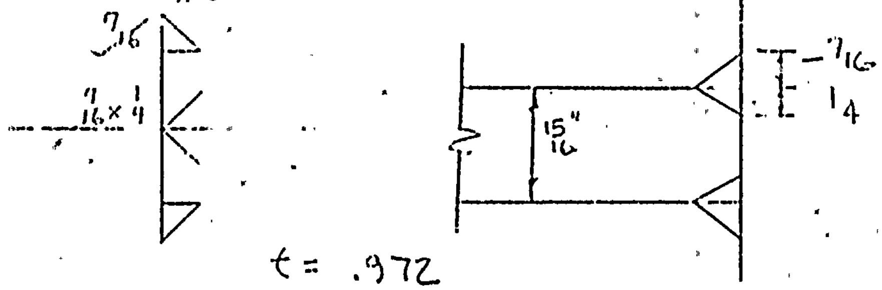
$$F = \frac{VQ}{I}^{*} + \frac{P}{L} \quad \frac{(222.4)(288.84)}{(5938.0)} + \frac{50k}{(8.625)}$$

$F = 16.62$ K/IN (CONSERVATIVE SINCE P/L & VQ/I ARE ADDED TOGETHER)

THROAT REQD

$$t = \frac{16.62}{.9F_y/\sqrt{3}} = .921 \text{ IN}$$

USE



$t = .972$

BACK PLATE TO WEB

DESIGN FOR FLEXURAL SHEAR

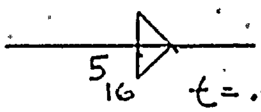
$$F = \frac{VQ}{I} = \frac{(222.4)(5)(12.911)}{(2572.2)} \quad (\text{AT "C" W/BACK PL})$$

$F = 5.58$ K/IN

THROAT REQ'D:

$$t = \frac{5.58}{.9F_y/\sqrt{3}} = .293$$

USE MIN AISC WELDS —



$t = .442"$

* SEE PAGES III.1.3.20, 21, 22 FOR V, Q, AND I VALUES

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				STRESS REPORT	SECTION: IV
"WPPSS" HANFORD NO 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE	[illegible] /2-13 73	[illegible] /7 /73	JTS 9-5-74		ARTICLE: 3
CHECKED BY / DATE	[illegible]	[illegible]	FDS 7-5-74		PAGE: 28
REVISION NUMBER:	A	C			

WELD DESIGN

Fy OF LUG @ 340° = 31.46 KSI

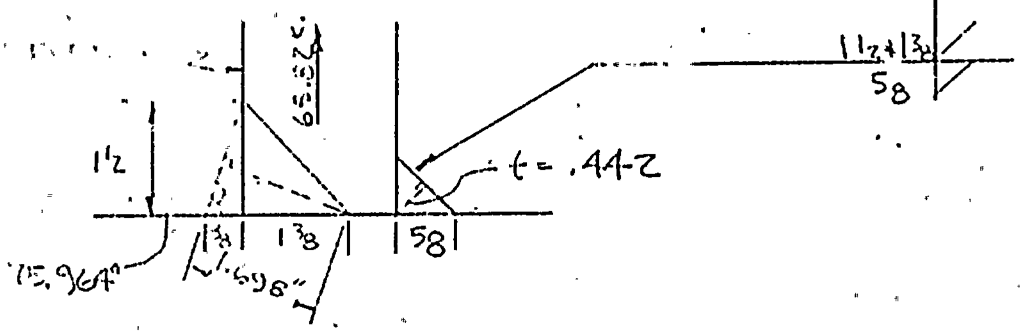
FROM [illegible] TO LUG

LOAD ON WELD IS SAME AS LOAD IN PLATE. USE FULL PENETRATION.

STIFFENER TO LUG @ 140°, .9Fy FOR LUG = 31.25 KSI

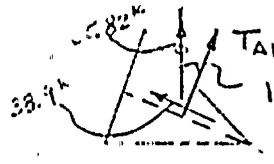
$$F = \frac{100.4\,(4.448)}{5.625\,(12.0625)} = 65.82\ K.$$

ASSUME THE FOLLOWING WELD, $1\frac{1}{2} \times \frac{3}{8}$



THE ALLOWABLE LOAD ON THE PARTIAL PENETRATION IS GOVERNED BY TENSION. ALLOWABLE TENSILE LOAD ON THROAT,

$$T = 1.698'' * .9\,F_y = 53.06\,K$$



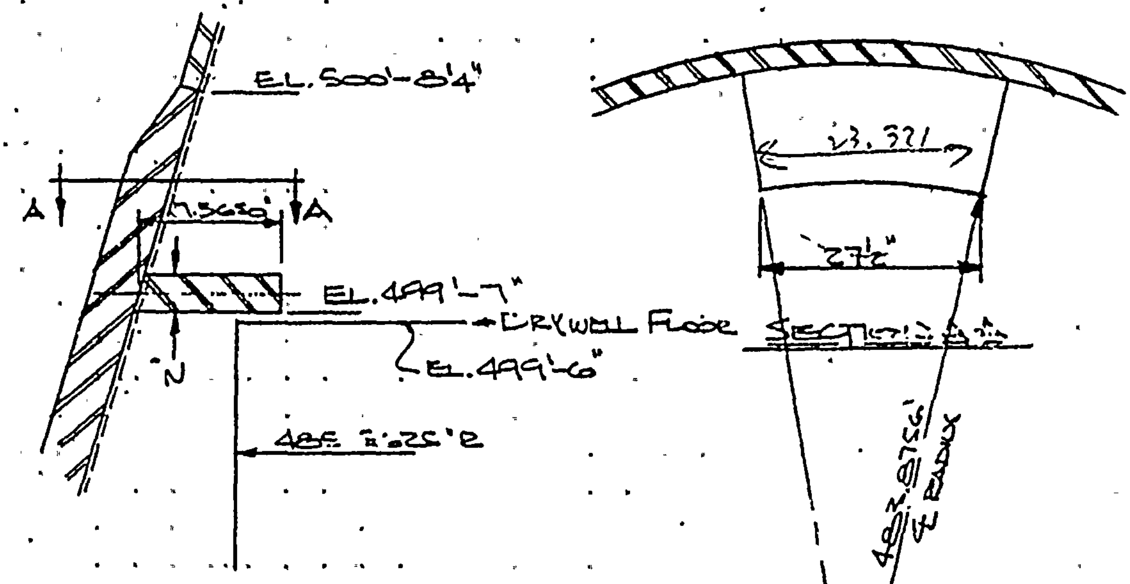
MAX. VERTICAL LOAD ON PARTIAL = 53.06/cos 14.036°
MAX. VERT. LOAD = 54.69 K.

THE FILLET IS GOVERNED BY THROAT AND MUST CARRY 65.82K − 54.69 = 11.13 K
RECD FILLET THROAT = 11.13 * SIN 45°/.9Fy/√3 = .436, O.K.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL				SUBSEC: 1
PREPARED BY / DATE: RAM/6-14-73				ARTICLE: 4
CHECKED BY / DATE: DXL/8-8-73				PAGE: 1
REVISION NUMBER: Δ				

JET DEFLECTOR

A JET DEFLECTOR WILL BE DESIGNED FOR A BOTTOM ELEVATION OF 499'-7". THE ASSUMED ALLOWABLE EXTREME FIBER STRESS INTENSITY IS 1.5 Fy W/ Fy AT 340°F EQUAL TO 33.26 KSI.



ASSUME A 7.5650 × 27.9337" (LARGE END) CANTILEVERED BEAM. FOR A 534 KIPS JET LOAD, ASSUME A CIRCULAR CONTACT AREA OF RADIUS $(429/\pi)^{1/2}$, OR A DIAMETER OF 23.371 IN. THE TOTAL LOAD IS THEREFORE:

$$P = (7.565)(23.371)(534/429) = 220.07 \text{ Kips}$$

$$\therefore t_{REQD} = \left(\frac{6M}{b\sigma_{ALL}}\right)^{1/2} = \sqrt{\frac{(6)(220.07)(7.565)}{(2)(27.9337)(1.5)(33.26)}} = 1.893"$$

∴ 2" JET DEFLECTOR IS ADEQUATE

SHELL STRESSES

SHELL STRESSES WILL BE DETERMINED FROM REF. 7 ASSUMING A RECTANGULAR ATTACHMENT 27.93" x 2" ON A CYLINDRICAL SHELL. THE APPLIED LOADS AND SHELL GEOMETRY ARE AS FOLLOWS:

$M_L = (220.07)(7.565)/2 = 832.41$ IN-KIPS
$V_L = 220.07$ KIPS
$T = 2.9375$ IN
$R_M = 491.4406/\cos\theta + 2.9375/2 = 512.8459$ IN
$C_1 = 13.97$ IN $\beta_1 = 0.02724$
$C_2 = 1.00$ IN $\beta_2 = 0.00195$
$\gamma = 174.59$

MEMBRANE STRESSES ARE*:

STRESS	β	C_L	CURVE FACTOR	STRESS
N_ϕ	4.7×10^{-3}	0.84	2.1 ✓	0.404 ✓
N_x	4.7×10^{-3}	0.18	0.51 ✓	0.021
$\tau_{x\phi}$	$\tau_{x\phi} = V_L/4C_2T$			18.729

FROM THE ENCLOSED AX-2 COMPUTER OUTPUT, THE MAXIMUM MEMBRANE STRESSES IN BODY 702 ARE:

$\sigma_\phi = 12255.$ psi $\sigma_\phi = 12.255 + .404 = 12.7$ KSI

$\sigma_x = 3979.$ psi $\sigma_x = 3.979 + .021 = 4.00$ KSI
 $\sigma_v = 18.729 + 2.536 = 21.3$ KSI

FROM REF. 1, THE FOLLOWING SSE SHEAR EXISTS IN THE $2\frac{15}{16}$" PLATE

$f_V = 12\times10^3$ KIPS, OR $\sigma_V = f_V/\pi R_M T = 2536.$ psi

*MEMBRANE + BENDING STRESSES ARE NOT EXAMINED FOR JET LOAD CONDITION.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE	JFS 9-5-74				ARTICLE: 4
CHECKED BY / DATE	FDS 9-5-74				PAGE: 3
REVISION NUMBER: A	C				

THEREFORE, THE TOTAL STRESSES ARE:

$\sigma_\phi = 12.7$ ksi
$\tau_x = 4.0$ ksi
$\sigma_y = 21.3$ ksi

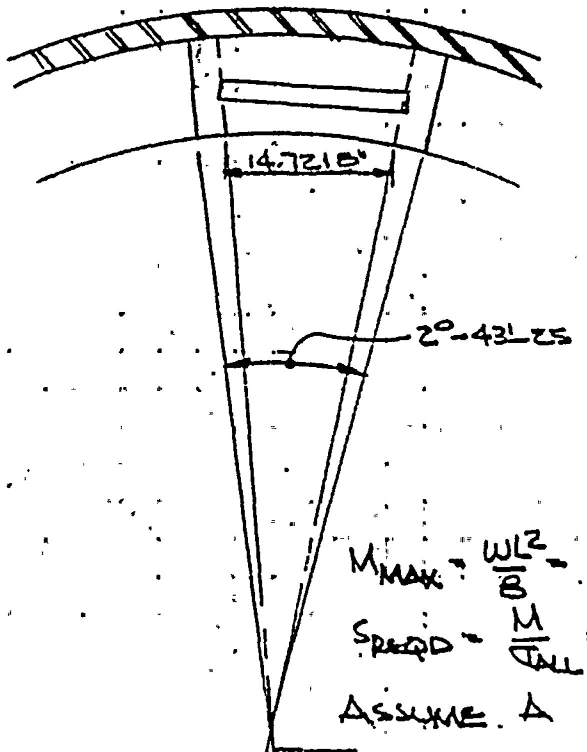
AND, THE CORRESPONDING STRESS INTENSITY IS:

$S.I = 43.5 \text{ ksi} \leq 1.5 S_y = 49.9 \text{ ksi} \quad \therefore \text{OK}$

PITTSBURGH - DES MOINES STEEL CO. WPPSS HANFORD NO. 2 CONTAINMENT VESSEL	CONTRACT NO. 12764			FINAL STRESS REPORT	SECTION: IV
					SUBSEC: 1
PREPARED BY / DATE: RAM / 6-15-73					ARTICLE: 4
CHECKED BY / DATE: DKL / 8-8-73					PAGE: 4
REVISION NUMBER: A					

JET DEFLECTOR ACCESS PLATES

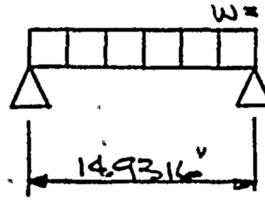
THE COVER PLATES WILL BE DESIGNED FOR JET LOADING ONLY. FOR ANALYSIS, ASSUME A CONFIGURATION AS SHOWN BELOW:



ASSUME A SIMPLE - SIMPLE BEAM, 6 7/8" WIDE BY 14.9316" LONG. THE LOAD ON THE PLATE IS CALCULATED AS

P = (6 7/8)(14.9316)(534/429)
= 127.780 kips,

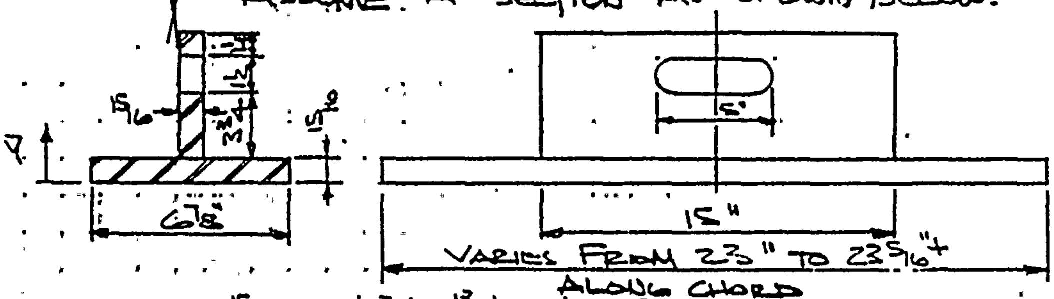
OR,



$M_{MAX} = \frac{wL^2}{8} = (8.558)(14.9316)^2/8 = 238.50$ IN kips

$S_{REQD} = \frac{M}{\sigma_{ALL}} = \frac{M}{0.9 F_Y} = 7.97$ IN^3

ASSUME A SECTION AS SHOWN BELOW:



$\bar{Y} = \frac{(6\,7/8)(15/32) + (3\,3/4)(2\,13/16) + (1\,1/4)(6\,13/16)}{6\,7/8 + 3\,3/4 + 1\,1/4} = 1.877"$

I = 49.149 IN^4, S = 8.84 > 7.97 IN^3 ∴ OK

Q = 9.486 IN^3, V = 127.780/2 KIPS

$\tau_Y = \frac{VQ}{It} = \frac{(127.780)(9.486)}{(2)(49.149)(15/16)} = 13.153$ ksi ≤ $\frac{0.9 F_Y}{\sqrt{3}}$ ∴ OK

$\frac{.9 \times 33.36}{\sqrt{3}}$ = 17.28 ksi ✓

HOLD DOWN BOLTS

BOLTS MUST TAKE A SHEAR FORCE EQUAL TO A JET HITTING THE ACCESS PLATE FROM THE SIDE. THE APPROXIMATE AREA, AS SEEN FROM THE PREVIOUS PAGE, IS:

$$A = (23)(\tfrac{15}{16}) + (15)(6\tfrac{1}{2}) - (1\tfrac{1}{2})^2 \tfrac{\pi}{4} - (3\tfrac{1}{2})(1\tfrac{1}{2}) = 112.05 \text{ IN}^2$$

THE TOTAL SHEAR LOAD / BOLT IS THEREFORE

$$P = (112.05)(534)/429 * \tfrac{1}{2} = 69.74 \text{ kips}$$

USING FOR A SHEAR YIELD ALLOWABLE A VALUE OF $0.9 F_Y/\sqrt{3}$ (VON MISES YIELD CRITERIA * 0.9), THE REQUIRED BOLT AREA FOR A325 BOLTS IS ($F_Y = 81$ ksi)*.

$F_Y = 77$ KSI

$$A_{REQD} = \frac{P}{F_A} = \frac{(69.74)\sqrt{3}}{(0.9)(81)} = 1.657 \text{ IN}^2 \quad \Bigg| \quad \frac{69.74}{\left(\frac{.9 \times 77}{\sqrt{3}}\right)} = 1.74 \text{ in}^2$$

∴ USE 2 - $1\tfrac{1}{2}$"φ BOLTS/PLATE — $A = 1.767 \text{ in}^2$ ✓
BEARING STRESS IN THE PLATE IS $(69.74)/(\tfrac{15}{16})(1\tfrac{1}{2}) = 49.59$ ksi WITH A NORMAL ALLOWABLE OF

$$\sigma_{ALL} = 1.35 F_Y = (1.35)(38) = 51.3 \text{ ksi} > 49.59 \therefore \underline{OK}$$

CONNECTION WELD

WELD MUST BE DESIGNED FOR $V = 127.780/2$ k.

$$\tau_V = \frac{VQ}{It} = \frac{(127.780)(6\tfrac{7}{8})(\tfrac{15}{16})(1.408)}{(2)(49.149)(2)} = 5.898 \text{ K/IN}$$

THROAT REQD = $\frac{5.898}{17.282} = 0.341$ in — USE $\tfrac{1}{2}$" FILLETS

* BEARING CONNECTION W/ THREADS EXCLUDED FROM SHEAR PLANE.

PITTSBURGH - DES MOINES STEEL CO. CONTRACT NO. 12764 PDM				FINAL STRESS REPORT	SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL					SUBSEC: 1
PREPARED BY / DATE: RAM/2-2-73					ARTICLE: 5
CHECKED BY / DATE: BJW / 2-6-73					PAGE: 1
REVISION NUMBER:					

AXISYMMETRIC SHELL ANALYSIS:

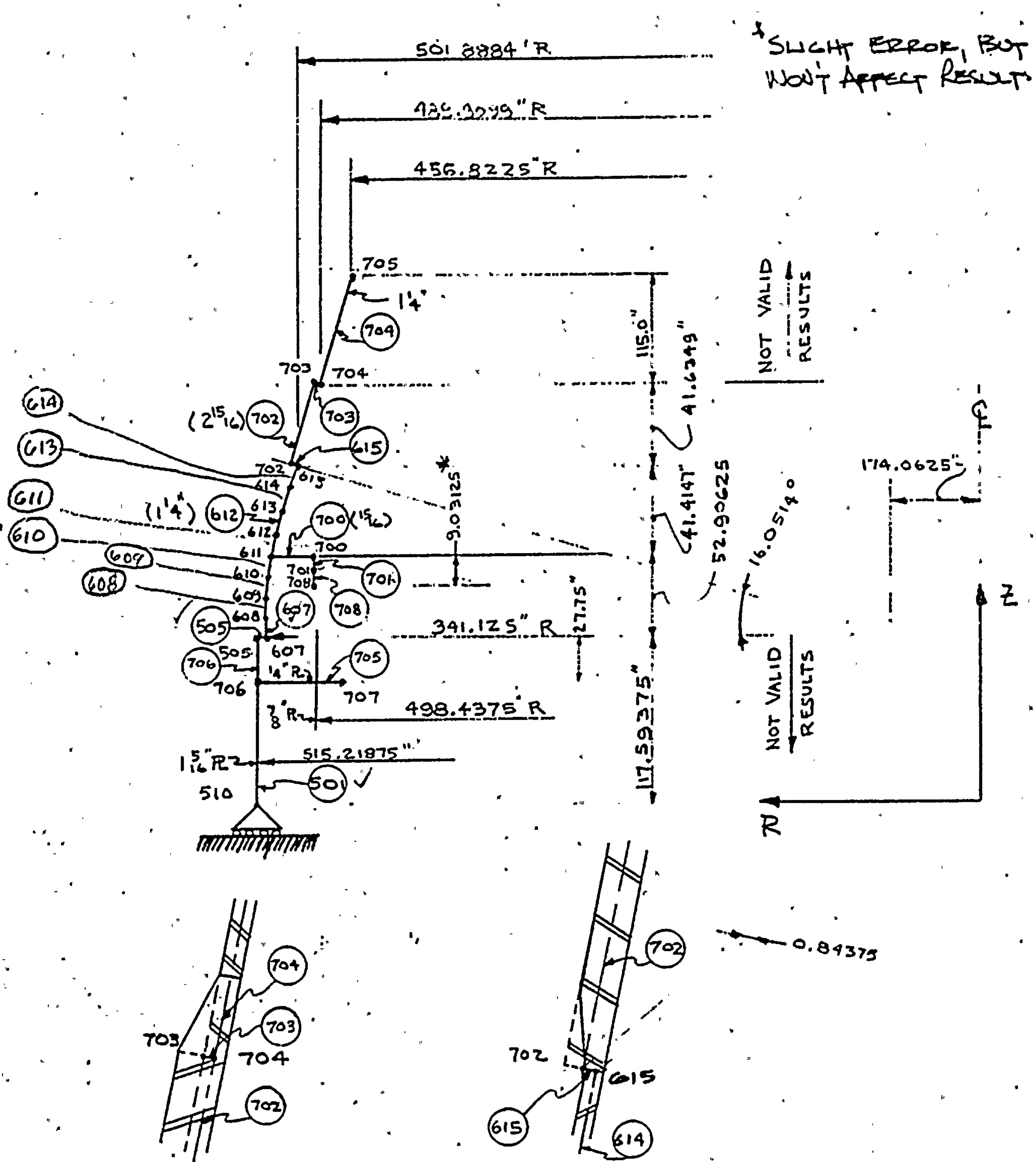
THE FOLLOWING PAGES CONTAIN THE AXISYMMETRIC SHELL ANALYSIS OF THE DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION USING PDM'S COMPUTER PROGRAM AX-2 (SEE APPENDIX V, ARTICLE 1 OF THIS FINAL STRESS REPORT.) A PORTION OF THE DRYWELL CONE AND SUPPRESSION CHAMBER CYLINDER ARE INCLUDED TO GIVE VALID RESULTS WITHIN THE TRANSITION AREA, BUT THEIR SPECIFIC DESIGN WILL NOT BE INCLUDED HERE.

THE LOADINGS IMPOSED UPON THE SHELL ARE -2 & 45 psi INTERNAL PRESSURE AND LOCA SEAL LOADS AS GIVEN IN DRAWING 5799 OF REFERENCE 1. STRUCTURE DEAD WEIGHT IS ASSUMED TO BE NEGLIGIBLE. PAGE 2 OF THIS ARTICLE CONTAINS A STRUCTURAL MODEL OF THE AREA TO BE EXAMINED, ALONG WITH A PRESENTATION OF HOW INTERSECTIONS OF DIFFERENT PLATE THICKNESSES WERE MODELED USING THE RIGID CONNECTOR ELEMENT. A COUPLE ITEMS SHOULD BE NOTED ON THIS MODEL AND THE CORRESPONDING ANALYSIS:

1. BODIES 607 TO 614 ARE OF A TORUS GEOMETRY, BUT WERE MODELED USING SPHERICAL SEGMENT BODIES. THE ANALYSIS, HOWEVER WILL NOT LOSE ACCURACY BECAUSE OF THIS SUBSTITUTION.

2. THE INTERSECTION OF TORUS BODIES TO THE CONE AND CYLINDER WERE NOT MODELED TO SHOW THE MATERIAL TAPER. THE REASON FOR THIS IS THAT IT LEADS TO SHORT-THICK ELEMENTS WHICH NO LONGER CAN BE CLASSIFIED AS THIN SHELLS.

PITTSBURGH - DES MOINES STEEL CO.	CONTRACT NO. 12764			SECTION: IV
WPPSS HANFORD NO. 2 CONTAINMENT VESSEL			FINAL STRESS REPORT	SUBSEC: 1
PREPARED BY / DATE: RAM/1-21-73	JCL/8-7-73			ARTICLE: 5
CHECKED BY / DATE: BJW/2-6-73	RAM/8-8-73			PAGE: 2
REVISION NUMBER:	A			



NOTES:

1. THICKNESSES SHOWN ARE IN THE CORRODED CONDITION
2. BODY NUMBERS ARE CIRCLED
3. MODELED THICKNESS SHOWN IN CROSS HATCH

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

NUMBER OF NODES = 20 NUMBER OF BODIES = 19

NODE NO.	COORDINATE R	COORDINATE Z	OBLIQUE AXIS ANGLE	FIXITY CODE
510	0.515219E 03	0.0	0.0	10
706	0.515219E 03	0.898438E 02	0.0	0
707	0.465500E 03	0.898438E 02	0.0	0
505	0.515219E 03	0.117594E 03	0.0	0
607	0.515188E 03	0.117594E 03	0.0	0
608	0.514929E 03	0.130871E 03	0.0	0
609	0.514154E 03	0.144128E 03	0.0	0
610	0.512864E 03	0.157345E 03	0.0	0
611	0.511060E 03	0.170501E 03	0.0	0
612	0.508745E 03	0.183576E 03	0.0	0
613	0.506729E 03	0.193087E 03	0.0	0
614	0.504443E 03	0.202536E 03	0.0	0
615	0.501888E 03	0.211916E 03	0.0	0
700	0.498438E 03	0.170500E 03	0.0	0
701	0.498438E 03	0.165094E 03	0.0	0
708	0.498438E 03	0.161469E 03	0.0	0
702	0.502700E 03	0.212148E 03	0.0	0
703	0.490721E 03	0.253783E 03	0.0	0
704	0.489910E 03	0.253550E 03	0.0	0
705	0.456822E 03	0.368550E 03	0.0	0

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

NODE NO.	ELASTIC FOUNDATION CONSTANTS R-DIR.	Z-DIR.	ROTATION
510	0.0	0.0	0.0
706	0.0	0.0	0.0
707	0.0	0.0	0.0
505	0.0	0.0	0.0
607	0.0	0.0	0.0
608	0.0	0.0	0.0
609	0.0	0.0	0.0
610	0.0	0.0	0.0
611	0.0	0.0	0.0
612	0.0	0.0	0.0
613	0.0	0.0	0.0
614	0.0	0.0	0.0
615	0.0	0.0	0.0
700	0.0	0.0	0.0
701	0.0	0.0	0.0
708	0.0	0.0	0.0
702	0.0	0.0	0.0
703	0.0	0.0	0.0
704	0.0	0.0	0.0
705	0.0	0.0	0.0

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

NODE NO.	PRESCRIBED DISPLACEMENTS R-DIR.	Z-DIR.	ROTATION
510	0.0	0.0	0.0
706	0.0	0.0	0.0
707	0.0	0.0	0.0
505	0.0	0.0	0.0
607	0.0	0.0	0.0
608	0.0	0.0	0.0
609	0.0	0.0	0.0
610	0.0	0.0	0.0
611	0.0	0.0	0.0
612	0.0	0.0	0.0
613	0.0	0.0	0.0
614	0.0	0.0	0.0
615	0.0	0.0	0.0
700	0.0	0.0	0.0
701	0.0	0.0	0.0
708	0.0	0.0	0.0
702	0.0	0.0	0.0
703	0.0	0.0	0.0
704	0.0	0.0	0.0
705	0.0	0.0	0.0

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

BODY NO. 501 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 706 AND 510 THICKNESS = 0.131250E 01

RADIUS = 0.515219E 03 LENGTH = 0.898438E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 505 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 607 AND 505

BODY NO. 607 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 608 AND 607

THICKNESS = 0.125000E 01 RADIUS = 0.515198E 03

ANGLE PHI-A = 0.881461E 02 ANGLE PHI-B = 0.896230E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 608 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE

EDGE NODES ARE 609 AND 608

THICKNESS = 0.125000E 01 RADIUS = 0.515463E 03

ANGLE PHI-A = 0.859157E 02 ANGLE PHI-B = 0.873918E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

BODY NO. 609 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE
EDGE NODES ARE 610 AND 609
THICKNESS = 0.125000E 01 RADIUS = 0.515992E 03
ANGLE PHI-A = 0.836869E 02 ANGLE PHI-B = 0.851615E 02
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 610 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE
EDGE NODES ARE 611 AND 610
THICKNESS = 0.125000E 01 RADIUS = 0.516794E 03
ANGLE PHI-A = 0.814568E 02 ANGLE PHI-B = 0.829291E 02
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 611 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE
EDGE NODES ARE 612 AND 611
THICKNESS = 0.125000E 01 RADIUS = 0.517871E 03
ANGLE PHI-A = 0.792278E 02 ANGLE PHI-B = 0.806970E 02
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 612 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE
EDGE NODES ARE 613 AND 612
THICKNESS = 0.125000E 01 RADIUS = 0.519043E 03
ANGLE PHI-A = 0.774944E 02 ANGLE PHI-B = 0.785676E 02
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

BODY NO. 613 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE
EDGE NODES ARE 614 AND 613
THICKNESS = 0.125000E 01 RADIUS = 0.520199E 03
ANGLE PHI-A = 0.758622E 02 ANGLE PHI-B = 0.769330E 02
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 614 -- BODY TYPE 4, OPEN CROWN SEGMENT OF A SPHERE
EDGE NODES ARE 615 AND 614
THICKNESS = 0.125000E 01 RADIUS = 0.521515E 03
ANGLE PHI-A = 0.742311E 02 ANGLE PHI-B = 0.752992E 02
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 700 --BODY TYPE 3, FLAT ANNULUS
EDGE NODES ARE 700 AND 611 THICKNESS = 0.937500E 00
INSIDE RADIUS =0.498438E 03 OUTSIDE RADIUS = 0.511060E 03
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 701 -- BODY TYPE 1, CYLINDER
EDGE NODES ARE 700 AND 701 THICKNESS = 0.875000E 00
RADIUS = 0.498438E 03 LENGTH = 0.540601E 01
E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

BODY NO. 708 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 701 AND 708 THICKNESS = 0.875000E 00

RADIUS = 0.498438E 03 LENGTH = 0.362500E 01

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 615 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 702 AND 615

BODY NO. 702 -- BODY TYPE 6, SEGMENT OF A CONE

EDGE NODES ARE 703 AND 702 THICKNESS = 0.293750E 01

APEX ANGLE = 0.160513E 02 MERIDIAN LENGTH = 0.433239E 02

DIMENSION XA = 0.177477E 04 DIMENSION XB = 0.181809E 04

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 706 -- BODY TYPE 1, CYLINDER

EDGE NODES ARE 505 AND 706 THICKNESS = 0.131250E 01

RADIUS = 0.515219E 03 LENGTH = 0.277500E 02

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

BODY NO. 705 --BODY TYPE 3, FLAT ANNULUS

EDGE NODES ARE 707 AND 706 THICKNESS = 0.250000E 00

INSIDE RADIUS =0.465500E 03 OUTSIDE RADIUS = 0.515219E 03

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

BODY NO. 703 -- BODY TYPE 9, RIGID CONNECTOR

EDGE NODES ARE 704 AND 703

BODY NO. 704 -- BODY TYPE 6, SEGMENT OF A CONE

EDGE NODES ARE 705 AND 704 THICKNESS = 0.125000E 01

APEX ANGLE = 0.160514E 02 MERIDIAN LENGTH = 0.119665E 03

DIMENSION XA = 0.165216E 04 DIMENSION XB = 0.177183E 04

E = 0.279000E 08 NU = 0.300000E 00 ALPHA = 0.650000E-05

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY LOADS

```
BODY NO. 501   BODY TYPE   1   X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.450000E 02) +  ( 0.0           )*X
     PPHI = ( 0.0         ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( 0.0          )*Z/H)*X*X
BODY NO. 607   BODY TYPE   4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0           )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0         )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( 0.0          )*Z/H)*X*X
BODY NO. 608   BODY TYPE   4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0           )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0         )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY LOADS

```
BODY NO. 609   BODY TYPE    4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0           )*COS(X)
       + ( 0.0           )*COS(X)*COS(X)
     PPHI = ( 0.0           )*SIN(X) + ( 0.0           )*SIN(X)*COS(X)
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0            + ( 0.0           )*Z/H)*X
      + ( 0.0            + ( 0.0           )*Z/H)*X*X
BODY NO. 610   BODY TYPE    4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0           )*COS(X)
       + ( 0.0           )*COS(X)*COS(X)
     PPHI = ( 0.0           )*SIN(X) + ( 0.0           )*SIN(X)*COS(X)
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0            + ( 0.0           )*Z/H)*X
      + ( 0.0            + ( 0.0           )*Z/H)*X*X
BODY NO. 611   BODY TYPE    4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0           )*COS(X)
       + ( 0.0           )*COS(X)*COS(X)
     PPHI = ( 0.0           )*SIN(X) + ( 0.0           )*SIN(X)*COS(X)
     T = ( 0.0           + ( 0.0           )*Z/H)
      + ( 0.0            + ( 0.0           )*Z/H)*X
      + ( 0.0            + ( 0.0           )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY LOADS

```
BODY NO. 612   BODY TYPE   4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 613   BODY TYPE   4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 614   BODY TYPE   4   X = MERIDIAN ANGLE
     PN = ( 0.450000E 02) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY LOADS

```
BODY NO. 700   BODY TYPE   3   X = RADIUS
     PN = (-0.250000E 02) +  ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0            + ( 0.0          )*Z/H)
      + ( 0.0             + ( 0.0          )*Z/H)*X
      + ( 0.0             + ( 0.0          )*Z/H)*X*X
BODY NO. 701   BODY TYPE   1   X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.250000E 02) +  ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0            + ( 0.0          )*Z/H)
      + ( 0.0             + ( 0.0          )*Z/H)*X
      + ( 0.0             + ( 0.0          )*Z/H)*X*X
BODY NO. 708   BODY TYPE   1   X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.0           ) +  ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0            + ( 0.0          )*Z/H)
      + ( 0.0             + ( 0.0          )*Z/H)*X
      + ( 0.0             + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY LOADS

```
BODY NO. 702  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
    PN = ( 0.450000E 02) +  ( 0.0          )*X
    PPHI = ( 0.0         ) + ( 0.0          )*X
    T = ( 0.0           + ( 0.0          )*Z/H)
     + ( 0.0            + ( 0.0          )*Z/H)*X
     + ( 0.0            + ( 0.0          )*Z/H)*X*X
BODY NO. 706  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
    PN = ( 0.450000E 02) +  ( 0.0          )*X
    PPHI = ( 0.0         ) + ( 0.0          )*X
    T = ( 0.0           + ( 0.0          )*Z/H)
     + ( 0.0            + ( 0.0          )*Z/H)*X
     + ( 0.0            + ( 0.0          )*Z/H)*X*X
BODY NO. 705  BODY TYPE   3  X = RADIUS
    PN = ( 0.0          ) +  ( 0.0          )*X
    PPHI = ( 0.0         ) + ( 0.0          )*X
    T = ( 0.0           + ( 0.0          )*Z/H)
     + ( 0.0            + ( 0.0          )*Z/H)*X
     + ( 0.0            + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY LOADS

```
BODY NO. 704  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = ( 0.450000E 02) +  ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0         )*X
     T = ( 0.0           + ( 0.0          )*Z/H)
      + ( 0.0            + ( 0.0          )*Z/H)*X
      + ( 0.0            + ( 0.0          )*Z/H)*X*X
```

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS
CIRCUMFERENTIAL LINE LOADS

NODE	R-DIR.	Z-DIR.	MOMENT
510	0.0	0.0	0.0
706	0.0	0.0	0.0
707	0.0	0.0	0.0
505	0.0	0.0	0.0
607	0.0	0.0	0.0
608	0.0	0.0	0.0
609	0.0	0.0	0.0
610	0.0	0.0	0.0
611	0.0	0.0	0.0
612	0.0	0.0	0.0
613	0.0	0.0	0.0
614	0.0	0.0	0.0
615	0.0	0.0	0.0
700	0.0	0.0	0.0
701	-0.300000E 03	-0.350000E 03	-0.170000E 04
708	0.0	0.0	0.0
702	0.0 118	0.0 .334	0.0 2005
703	0.0	0.0	0.0
704	0.0	0.0	0.0
705	0.0	0.102785E 05	0.0

SEAL LOADS

= PR/2

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

NODE NO.	NODE DISPLACEMENTS R OR R' DIR.	Z OR Z' DIR.	ROTATION	OBLIQUE AXIS ANGLE
510	0.279816E 00	0.0	0.122601E-03	0.0
706	0.217430E 00	0.103226E-01	-0.168111E-02	0.0
707	0.223083E 00	-0.742656E-01	-0.172513E-02	0.0
505	0.155537E 00	0.147591E-01	-0.355981E-02	0.0
607	0.155535E 00	0.146478E-01	-0.355981E-02	0.0
608	0.107066E 00	0.164920E-01	-0.328424E-02	0.0
609	0.707982E-01	0.175156E-01	-0.231584E-02	0.0
610	0.373688E-01	0.176120E-01	-0.307265E-02	0.0
611	-0.202301E-01	0.133743E-01	-0.584894E-02	0.0
612	-0.318482E-01	0.159235E-01	0.270770E-02	0.0
613	0.448569E-02	0.267623E-01	0.456586E-02	0.0
614	0.453757E-01	0.395395E-01	0.383080E-02	0.0
615	0.677089E-01	0.482908E-01	0.616211E-03	0.0
700	-0.204824E-01	-0.206756E 00	-0.227141E-01	0.0
701	0.106127E 00	-0.206691E 00	-0.249936E-01	0.0
708	0.196516E 00	-0.206361E 00	-0.249144E-01	0.0
702	0.678521E-01	0.477906E-01	0.616211E-03	0.0
703	0.195015E 00	0.870843E-01	0.582477E-02	0.0
704	0.193656E 00	0.918084E-01	0.582477E-02	0.0
705	0.211056E 01	0.647452E 00	0.102201E 00	0.0

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

NODE NO.	REACTION LOADS R OR R' DIR.	Z OR Z' DIR.	MOMENT	OBLIQUE AXIS ANGLE
510	0.0	-0.109440E 05	0.0	0.0

IV 1.5.20

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 501

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	10944.	18737.	-807.	-242.	127.
2	10944.	19387.	-298.	-89.	89.
3	10944.	20124.	47.	14.	58.
4	10944.	20850.	259.	78.	33.
5	10944.	21507.	369.	111.	15.
6	10944.	22065.	406.	122.	2.
7	10944.	22512.	394.	118.	-6.
8	10944.	22851.	353.	106.	-11.
9	10944.	23093.	297.	89.	-13.
10	10944.	23254.	236.	71.	-13.
11	10944.	23349.	178.	53.	-12.
12	10944.	23396.	127.	38.	-10.
13	10944.	23407.	85.	26.	-8.
14	10944.	23395.	53.	16.	-6.
15	10944.	23368.	30.	9.	-4.
16	10944.	23333.	14.	4.	-3.
17	10944.	23294.	5.	2.	-1.
18	10944.	23253.	1.	0.	-1.
19	10944.	23212.	-0.	-0.	-0.
20	10944.	23171.	-0.	-0.	-0.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 501

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.2174E 00	-0.1032E-01	-0.1681E-02
2	0.2266E 00	-0.9647E-02	-0.2121E-02
3	0.2369E 00	-0.8999E-02	-0.2213E-02
4	0.2472E 00	-0.8380E-02	-0.2080E-02
5	0.2564E 00	-0.7787E-02	-0.1817E-02
6	0.2643E 00	-0.7219E-02	-0.1495E-02
7	0.2705E 00	-0.6669E-02	-0.1165E-02
8	0.2753E 00	-0.6135E-02	-0.8578E-03
9	0.2787E 00	-0.5612E-02	-0.5914E-03
10	0.2810E 00	-0.5097E-02	-0.3734E-03
11	0.2823E 00	-0.4586E-02	-0.2044E-03
12	0.2830E 00	-0.4079E-02	-0.8015E-04
13	0.2831E 00	-0.3572E-02	0.6017E-05
14	0.2830E 00	-0.3066E-02	0.6180E-04
15	0.2826E 00	-0.2558E-02	0.9490E-04
16	0.2821E 00	-0.2050E-02	0.1123E-03
17	0.2815E 00	-0.1540E-02	0.1199E-03
18	0.2810E 00	-0.1028E-02	0.1223E-03
19	0.2804E 00	-0.5148E-03	0.1226E-03
20	0.2798E 00	0.7451E-08	0.1226E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 501

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8338.	14276.	5528.	13433.	11149.	15119.
2	8338.	14771.	7302.	14460.	9375.	15082.
3	8338.	15332.	8502.	15382.	8174.	15283.
4	8338.	15886.	9240.	16156.	7436.	15615.
5	8338.	16387.	9624.	16772.	7052.	16001.
6	8338.	16811.	9754.	17236.	6923.	16387.
7	8338.	17152.	9712.	17564.	6964.	16740.
8	8338.	17410.	9567.	17779.	7109.	17041.
9	8338.	17595.	9371.	17904.	7305.	17285.
10	8338.	17717.	9160.	17963.	7517.	17471.
11	8338.	17790.	8958.	17976.	7718.	17604.
12	8338.	17826.	8781.	17958.	7896.	17693.
13	8338.	17834.	8635.	17923.	8042.	17745.
14	8338.	17825.	8522.	17880.	8154.	17770.
15	8338.	17805.	8441.	17835.	8235.	17774.
16	8338.	17778.	8388.	17793.	8289.	17763.
17	8338.	17748.	8357.	17753.	8320.	17742.
18	8338.	17717.	8342.	17718.	8334.	17716.
19	8338.	17685.	8338.	17685.	8338.	17685.
20	8338.	17654.	8338.	17654.	8338.	17654.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.1.5.23

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 501 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	14278.		13433.		15119.	
2	14773.		14460.		15082.	
3	15333.		15382.		15283.	
4	15886.		16156.		15615.	
5	16387.		16772.		16001.	
6	16811.		17236.		16387.	
7	17152.		17564.		16740.	
8	17410.		17779.		17041.	
9	17595.		17904.		17285.	
10	17717.		17963.		17471.	
11	17790.		17976.		17604.	
12	17826.		17958.		17693.	
13	17834.		17923.		17745.	
14	17825.		17880.		17770.	
15	17805.		17835.		17774.	
16	17778.		17793.		17763.	
17	17748.		17753.		17742.	
18	17717.		17718.		17716.	
19	17685.		17685.		17685.	
20	17654.		17654.		17654.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 607

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	10947.	10535.	-618.	-186.	85.
2	10947.	10693.	-559.	-169.	83.
3	10946.	10854.	-502.	-151.	81.
4	10946.	11018.	-446.	-135.	79.
5	10946.	11186.	-391.	-118.	78.
6	10946.	11356.	-337.	-102.	77.
7	10946.	11528.	-284.	-86.	75.
8	10946.	11702.	-232.	-70.	75.
9	10946.	11878.	-180.	-55.	74.
10	10946.	12054.	-128.	-39.	74.
11	10946.	12232.	-77.	-24.	73.
12	10946.	12410.	-25.	-8.	74.
13	10946.	12589.	26.	7.	74.
14	10946.	12767.	78.	23.	75.
15	10945.	12944.	130.	39.	75.
16	10945.	13121.	183.	55.	76.
17	10945.	13297.	237.	71.	78.
18	10945.	13471.	292.	87.	79.
19	10945.	13643.	348.	104.	81.
20	10945.	13812.	405.	121.	83.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 607

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.1075E 00	-0.1302E-01	-0.3284E-02
2	0.1099E 00	-0.1301E-01	-0.3367E-02
3	0.1122E 00	-0.1301E-01	-0.3441E-02
4	0.1146E 00	-0.1301E-01	-0.3507E-02
5	0.1171E 00	-0.1301E-01	-0.3566E-02
6	0.1196E 00	-0.1302E-01	-0.3617E-02
7	0.1221E 00	-0.1303E-01	-0.3660E-02
8	0.1247E 00	-0.1305E-01	-0.3696E-02
9	0.1272E 00	-0.1307E-01	-0.3725E-02
10	0.1298E 00	-0.1310E-01	-0.3746E-02
11	0.1324E 00	-0.1313E-01	-0.3761E-02
12	0.1351E 00	-0.1317E-01	-0.3768E-02
13	0.1377E 00	-0.1321E-01	-0.3768E-02
14	0.1403E 00	-0.1326E-01	-0.3761E-02
15	0.1429E 00	-0.1331E-01	-0.3746E-02
16	0.1455E 00	-0.1336E-01	-0.3724E-02
17	0.1481E 00	-0.1342E-01	-0.3694E-02
18	0.1506E 00	-0.1348E-01	-0.3657E-02
19	0.1531E 00	-0.1355E-01	-0.3613E-02
20	0.1556E 00	-0.1362E-01	-0.3560E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 607

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8757.	8428.	6383.	7713.	11131.	9144.
2	8757.	8554.	6609.	7906.	10905.	9202.
3	8757.	8683.	6830.	8102.	10685.	9265.
4	8757.	8815.	7045.	8298.	10469.	9332.
5	8757.	8949.	7256.	8495.	10258.	9402.
6	8757.	9085.	7463.	8693.	10051.	9476.
7	8757.	9222.	7666.	8892.	9847.	9553.
8	8757.	9362.	7867.	9092.	9646.	9631.
9	8757.	9502.	8067.	9293.	9447.	9712.
10	8757.	9644.	8265.	9493.	9249.	9794.
11	8757.	9786.	8462.	9695.	9051.	9877.
12	8757.	9928.	8659.	9897.	8854.	9960.
13	8756.	10071.	8857.	10099.	8656.	10043.
14	8756.	10213.	9056.	10301.	8457.	10125.
15	8756.	10356.	9257.	10504.	8256.	10207.
16	8756.	10497.	9460.	10707.	8052.	10287.
17	8756.	10637.	9667.	10909.	7845.	10365.
18	8756.	10776.	9878.	11112.	7635.	10441.
19	8756.	10914.	10093.	11314.	7419.	10514.
20	8756.	11050.	10313.	11516.	7199.	10584.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 607 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	8760.		7713.		11131.	
2	8759.		7906.		10905.	
3	8759.		8102.		10685.	
4	8816.		8298.		10469.	
5	8950.		8495.		10258.	
6	9086.		8693.		10051.	
7	9223.		8892.		9847.	
8	9363.		9092.		9646.	
9	9503.		9293.		9712.	
10	9644.		9493.		9794.	
11	9787.		9695.		9877.	
12	9929.		9897.		9960.	
13	10072.		10099.		10043.	
14	10214.		10301.		10125.	
15	10356.		10504.		10207.	
16	10498.		10707.		10287.	
17	10638.		10909.		10365.	
18	10777.		11112.		10441.	
19	10915.		11314.		10514.	
20	11051.		11516.		10584.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 608

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	10949.	8087.	-283.	-86.	19.
2	10949.	8198.	-271.	-83.	13.
3	10948.	8310.	-264.	-81.	8.
4	10948.	8424.	-261.	-80.	2.
5	10948.	8540.	-261.	-80.	-3.
6	10948.	8658.	-264.	-81.	-8.
7	10947.	8777.	-271.	-83.	-12.
8	10947.	8899.	-282.	-86.	-17.
9	10947.	9022.	-295.	-90.	-22.
10	10947.	9146.	-312.	-95.	-26.
11	10947.	9273.	-331.	-101.	-30.
12	10947.	9403.	-354.	-107.	-34.
13	10947.	9534.	-379.	-115.	-38.
14	10947.	9668.	-406.	-123.	-41.
15	10947.	9805.	-436.	-132.	-45.
16	10947.	9944.	-469.	-142.	-48.
17	10947.	10087.	-503.	-152.	-51.
18	10947.	10233.	-540.	-163.	-54.
19	10947.	10382.	-578.	-175.	-56.
20	10947.	10536.	-618.	-187.	-59.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 608

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.7187E-01	-0.1243E-01	-0.2316E-02
2	0.7348E-01	-0.1236E-01	-0.2354E-02
3	0.7513E-01	-0.1229E-01	-0.2392E-02
4	0.7679E-01	-0.1222E-01	-0.2429E-02
5	0.7849E-01	-0.1216E-01	-0.2465E-02
6	0.8021E-01	-0.1210E-01	-0.2502E-02
7	0.8195E-01	-0.1204E-01	-0.2539E-02
8	0.8372E-01	-0.1199E-01	-0.2578E-02
9	0.8552E-01	-0.1194E-01	-0.2618E-02
10	0.8735E-01	-0.1189E-01	-0.2660E-02
11	0.8921E-01	-0.1184E-01	-0.2705E-02
12	0.9110E-01	-0.1180E-01	-0.2753E-02
13	0.9302E-01	-0.1177E-01	-0.2804E-02
14	0.9499E-01	-0.1173E-01	-0.2859E-02
15	0.9699E-01	-0.1170E-01	-0.2918E-02
16	0.9903E-01	-0.1167E-01	-0.2981E-02
17	0.1011E 00	-0.1165E-01	-0.3049E-02
18	0.1033E 00	-0.1163E-01	-0.3122E-02
19	0.1055E 00	-0.1161E-01	-0.3201E-02
20	0.1077E 00	-0.1160E-01	-0.3284E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 608

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8759.	6470.	7674.	6139.	9844.	6801.
2	8759.	6558.	7716.	6240.	9801.	6876.
3	8759.	6648.	7744.	6338.	9773.	6958.
4	8758.	6740.	7757.	6434.	9760.	7045.
5	8758.	6832.	7757.	6526.	9760.	7138.
6	8758.	6926.	7743.	6616.	9774.	7236.
7	8758.	7022.	7716.	6704.	9800.	7340.
8	8758.	7119.	7676.	6789.	9840.	7449.
9	8758.	7217.	7624.	6872.	9892.	7563.
10	8758.	7317.	7560.	6953.	9955.	7682.
11	8758.	7419.	7485.	7032.	10030.	7806.
12	8758.	7522.	7400.	7109.	10115.	7935.
13	8757.	7627.	7304.	7186.	10211.	8069.
14	8757.	7734.	7198.	7261.	10317.	8208.
15	8757.	7844.	7082.	7336.	10433.	8351.
16	8757.	7955.	6958.	7410.	10557.	8500.
17	8757.	8069.	6826.	7485.	10689.	8654.
18	8757.	8186.	6685.	7559.	10829.	8813.
19	8757.	8306.	6538.	7635.	10977.	8977.
20	8757.	8428.	6383.	7711.	11132.	9146.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 608   DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	8759.		7674.		9844.	
2	8759.		7716.		9801.	
3	8759.		7744.		9773.	
4	8758.		7757.		9760.	
5	8758.		7757.		9760.	
6	8758.		7743.		9774.	
7	8758.		7716.		9800.	
8	8758.		7676.		9840.	
9	8758.		7624.		9892.	
10	8758.		7560.		9955.	
11	8758.		7485.		10030.	
12	8758.		7400.		10115.	
13	8758.		7304.		10211.	
14	8758.		7261.		10317.	
15	8758.		7336.		10433.	
16	8758.		7410.		10557.	
17	8758.		7485.		10689.	
18	8758.		7559.		10829.	
19	8758.		7635.		10977.	
20	8759.		7711.		11132.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 609

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	10957.	5828.	552.	163.	9.
2	10956.	5972.	556.	164.	1.
3	10955.	6113.	553.	163.	-8.
4	10955.	6249.	545.	161.	-16.
5	10954.	6382.	531.	157.	-24.
6	10953.	6512.	512.	151.	-32.
7	10953.	6638.	487.	144.	-40.
8	10952.	6761.	456.	135.	-47.
9	10952.	6880.	421.	124.	-54.
10	10951.	6997.	380.	112.	-62.
11	10951.	7112.	334.	98.	-69.
12	10950.	7224.	284.	83.	-76.
13	10950.	7334.	229.	67.	-82.
14	10950.	7443.	169.	49.	-89.
15	10949.	7550.	104.	30.	-95.
16	10949.	7657.	36.	9.	-102.
17	10949.	7764.	-38.	-13.	-108.
18	10949.	7870.	-115.	-36.	-114.
19	10948.	7978.	-197.	-61.	-120.
20	10948.	8087.	-283.	-87.	-125.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 609

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.3908E-01	-0.1340E-01	-0.3073E-02
2	0.4118E-01	-0.1327E-01	-0.2995E-02
3	0.4323E-01	-0.1314E-01	-0.2917E-02
4	0.4522E-01	-0.1302E-01	-0.2840E-02
5	0.4717E-01	-0.1290E-01	-0.2764E-02
6	0.4905E-01	-0.1278E-01	-0.2691E-02
7	0.5089E-01	-0.1267E-01	-0.2621E-02
8	0.5268E-01	-0.1256E-01	-0.2555E-02
9	0.5443E-01	-0.1246E-01	-0.2493E-02
10	0.5613E-01	-0.1235E-01	-0.2437E-02
11	0.5780E-01	-0.1225E-01	-0.2387E-02
12	0.5944E-01	-0.1216E-01	-0.2343E-02
13	0.6104E-01	-0.1206E-01	-0.2307E-02
14	0.6263E-01	-0.1197E-01	-0.2279E-02
15	0.6420E-01	-0.1188E-01	-0.2260E-02
16	0.6575E-01	-0.1180E-01	-0.2250E-02
17	0.6731E-01	-0.1171E-01	-0.2250E-02
18	0.6887E-01	-0.1163E-01	-0.2261E-02
19	0.7044E-01	-0.1156E-01	-0.2282E-02
20	0.7203E-01	-0.1148E-01	-0.2316E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 609

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8765.	4663.	10886.	5287.	6644.	4038.
2	8765.	4778.	10899.	5407.	6630.	4149.
3	8764.	4890.	10889.	5517.	6639.	4263.
4	8764.	4999.	10857.	5617.	6671.	4382.
5	8763.	5106.	10802.	5708.	6724.	4504.
6	8763.	5209.	10727.	5789.	6798.	4630.
7	8762.	5310.	10630.	5862.	6894.	4759.
8	8762.	5408.	10514.	5925.	7010.	4892.
9	8761.	5504.	10377.	5980.	7146.	5028.
10	8761.	5598.	10221.	6028.	7301.	5168.
11	8761.	5689.	10045.	6067.	7476.	5312.
12	8760.	5779.	9851.	6099.	7670.	5459.
13	8760.	5867.	9639.	6123.	7882.	5611.
14	8760.	5954.	9408.	6142.	8111.	5767.
15	8760.	6040.	9161.	6154.	8359.	5927.
16	8759.	6126.	8896.	6160.	8623.	6092.
17	8759.	6211.	8614.	6161.	8904.	6261.
18	8759.	6296.	8316.	6157.	9201.	6436.
19	8759.	6382.	8003.	6149.	9515.	6616.
20	8759.	6469.	7673.	6137.	9844.	6802.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 609 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	8765.		10886.		6644. — node 610	
2	8765.		10899.		6630.	
3	8764.		10889.		6639.	
4	8764.		10857.		6671.	
5	8763.		10802.		6724.	
6	8763.		10727.		6798.	
7	8763.		10630.		6894.	
8	8763.		10514.		7010.	
9	8762.		10377.		7146.	
10	8762.		10221.		7301.	
11	8762.		10045.		7476.	
12	8762.		9851.		7670.	
13	8762.		9639.		7882.	
14	8762.		9408.		8111.	
15	8763.		9161.		8359.	
16	8763.		8896.		8623.	
17	8763.		8614.		8904.	
18	8763.		8316.		9201.	
19	8764.		8003.		9515.	
20	8764.		7673.		9844.	

IV.1.5.36

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 610

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	10979.	1914.	1067.	312.	75.
2	10977.	2188.	1115.	327.	61.
3	10976.	2454.	1153.	339.	48.
4	10974.	2713.	1181.	347.	35.
5	10972.	2964.	1201.	354.	22.
6	10971.	3207.	1212.	357.	9.
7	10969.	3442.	1214.	358.	-3.
8	10968.	3669.	1207.	356.	-15.
9	10966.	3888.	1193.	352.	-26.
10	10965.	4099.	1171.	346.	-37.
11	10964.	4302.	1141.	337.	-48.
12	10963.	4498.	1103.	326.	-59.
13	10962.	4686.	1058.	313.	-69.
14	10961.	4867.	1006.	298.	-79.
15	10960.	5041.	947.	280.	-89.
16	10959.	5209.	881.	260.	-99.
17	10958.	5372.	809.	239.	-108.
18	10957.	5528.	730.	215.	-118.
19	10957.	5680.	644.	190.	-127.
20	10956.	5828.	552.	162.	-136.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 610

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.1801E-01	-0.1623E-01	-0.5849E-02
2	-0.1400E-01	-0.1600E-01	-0.5696E-02
3	-0.1010E-01	-0.1578E-01	-0.5536E-02
4	-0.6304E-02	-0.1556E-01	-0.5373E-02
5	-0.2628E-02	-0.1536E-01	-0.5205E-02
6	0.9301E-03	-0.1515E-01	-0.5036E-02
7	0.4370E-02	-0.1496E-01	-0.4866E-02
8	0.7693E-02	-0.1477E-01	-0.4696E-02
9	0.1090E-01	-0.1458E-01	-0.4527E-02
10	0.1398E-01	-0.1440E-01	-0.4361E-02
11	0.1695E-01	-0.1423E-01	-0.4199E-02
12	0.1981E-01	-0.1406E-01	-0.4042E-02
13	0.2256E-01	-0.1390E-01	-0.3890E-02
14	0.2521E-01	-0.1374E-01	-0.3745E-02
15	0.2776E-01	-0.1359E-01	-0.3608E-02
16	0.3022E-01	-0.1344E-01	-0.3480E-02
17	0.3259E-01	-0.1329E-01	-0.3361E-02
18	0.3488E-01	-0.1315E-01	-0.3253E-02
19	0.3710E-01	-0.1301E-01	-0.3157E-02
20	0.3926E-01	-0.1288E-01	-0.3073E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 610

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8783.	1531.	12882.	2731.	4685.	331.
2	8782.	1750.	13063.	3006.	4501.	495.
3	8780.	1963.	13207.	3264.	4354.	663.
4	8779.	2171.	13315.	3505.	4243.	836.
5	8778.	2371.	13389.	3729.	4167.	1014.
6	8777.	2566.	13429.	3937.	4124.	1195.
7	8775.	2754.	13436.	4129.	4115.	1379.
8	8774.	2936.	13411.	4304.	4138.	1567.
9	8773.	3111.	13355.	4464.	4192.	1757.
10	8772.	3279.	13268.	4608.	4276.	1951.
11	8771.	3442.	13152.	4737.	4390.	2147.
12	8770.	3598.	13007.	4851.	4534.	2346.
13	8769.	3749.	12834.	4950.	4705.	2547.
14	8769.	3894.	12633.	5036.	4905.	2751.
15	8768.	4033.	12405.	5108.	5131.	2958.
16	8767.	4168.	12151.	5168.	5383.	3168.
17	8766.	4297.	11872.	5214.	5661.	3380.
18	8766.	4423.	11567.	5249.	5964.	3596.
19	8765.	4544.	11238.	5273.	6292.	3816.
20	8765.	4663.	10885.	5286.	6644.	4039.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 610   DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	8785.		12882.		4685.	NODE 611
2	8783.		13063.		4501.	
3	8781.		13207.		4354.	
4	8779.		13315.		4243.	
5	8778.		13389.		4167.	
6	8777.		13429.		4124.	
7	8775.		13436.		4115.	
8	8774.		13411.		4138.	
9	8773.		13355.		4192.	
10	8773.		13268.		4276.	
11	8772.		13152.		4390.	
12	8771.		13007.		4534.	
13	8771.		12834.		4705.	
14	8771.		12633.		4905.	
15	8770.		12405.		5131.	
16	8770.		12151.		5383.	
17	8770.		11872.		5661.	
18	8770.		11567.		5964.	
19	8770.		11238.		6292.	
20	8771.		10885.		6644.	NODE 610

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 611

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11631.	1306.	-1857.	-553.	-114.
2	11629.	1188.	-1941.	-578.	-128.
3	11627.	1082.	-2035.	-607.	-142.
4	11624.	989.	-2139.	-639.	-157.
5	11622.	911.	-2253.	-673.	-171.
6	11619.	848.	-2378.	-711.	-186.
7	11617.	800.	-2512.	-752.	-200.
8	11614.	768.	-2657.	-796.	-215.
9	11612.	755.	-2812.	-843.	-230.
10	11610.	760.	-2977.	-893.	-244.
11	11608.	784.	-3152.	-947.	-259.
12	11605.	829.	-3338.	-1003.	-274.
13	11603.	896.	-3533.	-1063.	-288.
14	11601.	986.	-3739.	-1125.	-303.
15	11599.	1101.	-3955.	-1191.	-317.
16	11597.	1242.	-4181.	-1259.	-331.
17	11595.	1410.	-4417.	-1331.	-345.
18	11593.	1608.	-4662.	-1405.	-359.
19	11592.	1836.	-4917.	-1482.	-372.
20	11590.	2096.	-5181.	-1563.	-385.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 611

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.2831E-01	-0.2159E-01	0.2708E-02
2	-0.3014E-01	-0.2133E-01	0.2442E-02
3	-0.3178E-01	-0.2106E-01	0.2163E-02
4	-0.3322E-01	-0.2079E-01	0.1871E-02
5	-0.3446E-01	-0.2052E-01	0.1563E-02
6	-0.3547E-01	-0.2024E-01	0.1239E-02
7	-0.3624E-01	-0.1997E-01	0.8966E-03
8	-0.3677E-01	-0.1969E-01	0.5347E-03
9	-0.3705E-01	-0.1941E-01	0.1519E-03
10	-0.3704E-01	-0.1913E-01	-0.2533E-03
11	-0.3675E-01	-0.1886E-01	-0.6826E-03
12	-0.3614E-01	-0.1858E-01	-0.1137E-02
13	-0.3521E-01	-0.1830E-01	-0.1618E-02
14	-0.3393E-01	-0.1803E-01	-0.2127E-02
15	-0.3229E-01	-0.1776E-01	-0.2665E-02
16	-0.3026E-01	-0.1749E-01	-0.3235E-02
17	-0.2782E-01	-0.1723E-01	-0.3836E-02
18	-0.2494E-01	-0.1697E-01	-0.4472E-02
19	-0.2162E-01	-0.1671E-01	-0.5142E-02
20	-0.1780E-01	-0.1647E-01	-0.5849E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 611

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	LONG SIG-PHI	HOOP SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	9305.	1045.	2175.	-1077.	16435.	3167.
2	9303.	950.	1850.	-1271.	16757.	3171.
3	9301.	865.	1486.	-1466.	17116.	3196.
4	9299.	791.	1084.	-1661.	17514.	3244.
5	9297.	729.	644.	-1857.	17950.	3315.
6	9295.	678.	165.	-2053.	18425.	3409.
7	9293.	640.	-353.	-2249.	18940.	3528.
8	9292.	615.	-910.	-2442.	19493.	3672.
9	9290.	604.	-1507.	-2634.	20086.	3842.
10	9288.	608.	-2142.	-2823.	20718.	4038.
11	9286.	627.	-2818.	-3008.	21390.	4262.
12	9284.	663.	-3533.	-3189.	22101.	4515.
13	9283.	717.	-4286.	-3363.	22851.	4797.
14	9281.	789.	-5078.	-3531.	23640.	5109.
15	9279.	881.	-5909.	-3691.	24467.	5453.
16	9278.	994.	-6778.	-3841.	25333.	5829.
17	9276.	1128.	-7684.	-3981.	26236.	6238.
18	9275.	1286.	-8627.	-4109.	27177.	6682.
19	9273.	1469.	-9606.	-4224.	28153.	7161.
20	9272.	1677.	-10622.	-4323.	29166.	7678.

$$45 \times \frac{4}{M} \times \frac{S}{S}$$

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.1.5.43

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 611   DESIGN STRESS INTENSITY =   19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3	
1	9309.		3252.		16435.		NODE 612
2	9308.		3120.		16757.		
3	9307.		2952.		17116.		
4	9307.		2746.		17514.		
5	9306.		2502.		17950.		
6	9306.		2219.		18425.		
7	9306.		2249.		18940.		
8	9306.		2442.		19493.	*	
9	9306.		2634.		20086.	*	
10	9306.		2823.		20718.	*	
11	9307.		3008.		21390.	*	
12	9307.		3533.		22101.	*	
13	9308.		4286.		22851.	*	
14	9309.		5078.		23640.	*	
15	9310.		5909.		24467.	*	
16	9312.		6778.		25333.	*	
17	9313.		7684.		26236.	*	
18	9315.		8627.		27177.	*	
19	9316.		9606.		28153.	*	
20	9318.		10622.		29166.	* *	NODE 611.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 612

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11663.	3808.	-325.	-89.	-76.
2	11662.	3654.	-366.	-101.	-83.
3	11660.	3500.	-410.	-114.	-91.
4	11658.	3349.	-459.	-129.	-99.
5	11657.	3198.	-512.	-145.	-108.
6	11655.	3050.	-569.	-162.	-116.
7	11653.	2904.	-631.	-181.	-125.
8	11651.	2760.	-697.	-201.	-133.
9	11650.	2618.	-767.	-222.	-142.
10	11648.	2479.	-842.	-245.	-151.
11	11646.	2343.	-922.	-269.	-160.
12	11644.	2211.	-1006.	-295.	-170.
13	11642.	2081.	-1095.	-322.	-179.
14	11641.	1956.	-1189.	-350.	-189.
15	11639.	1835.	-1288.	-380.	-198.
16	11637.	1719.	-1392.	-411.	-208.
17	11635.	1607.	-1500.	-444.	-218.
18	11633.	1501.	-1614.	-479.	-228.
19	11632.	1401.	-1733.	-515.	-238.
20	11630.	1306.	-1857.	-552.	-248.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 612

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.1018E-01	-0.2515E-01	0.4566E-02
2	0.7832E-02	-0.2501E-01	0.4530E-02
3	0.5498E-02	-0.2486E-01	0.4490E-02
4	0.3188E-02	-0.2471E-01	0.4445E-02
5	0.9000E-03	-0.2455E-01	0.4395E-02
6	-0.1361E-02	-0.2439E-01	0.4339E-02
7	-0.3590E-02	-0.2423E-01	0.4278E-02
8	-0.5787E-02	-0.2407E-01	0.4209E-02
9	-0.7948E-02	-0.2391E-01	0.4134E-02
10	-0.1007E-01	-0.2374E-01	0.4051E-02
11	-0.1214E-01	-0.2357E-01	0.3961E-02
12	-0.1417E-01	-0.2339E-01	0.3862E-02
13	-0.1614E-01	-0.2322E-01	0.3754E-02
14	-0.1806E-01	-0.2304E-01	0.3637E-02
15	-0.1991E-01	-0.2286E-01	0.3510E-02
16	-0.2170E-01	-0.2267E-01	0.3372E-02
17	-0.2341E-01	-0.2249E-01	0.3223E-02
18	-0.2504E-01	-0.2230E-01	0.3064E-02
19	-0.2659E-01	-0.2211E-01	0.2892E-02
20	-0.2805E-01	-0.2192E-01	0.2708E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 612

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	9331.	3047.	8083.	2706.	10578.	3387.
2	9329.	2923.	7926.	2536.	10733.	3311.
3	9328.	2800.	7753.	2361.	10903.	3240.
4	9327.	2679.	7564.	2183.	11089.	3175.
5	9325.	2559.	7360.	2001.	11291.	3116.
6	9324.	2440.	7139.	1816.	11509.	3064.
7	9322.	2323.	6901.	1628.	11744.	3018.
8	9321.	2208.	6646.	1436.	11996.	2980.
9	9320.	2094.	6374.	1240.	12265.	2948.
10	9318.	1983.	6085.	1042.	12551.	2924.
11	9317.	1874.	5778.	841.	12856.	2908.
12	9315.	1768.	5453.	637.	13178.	2900.
13	9314.	1665.	5109.	430.	13519.	2900.
14	9313.	1565.	4747.	221.	13878.	2909.
15	9311.	1468.	4366.	9.	14256.	2927.
16	9310.	1375.	3966.	-205.	14653.	2955.
17	9308.	1286.	3547.	-420.	15070.	2992.
18	9307.	1201.	3108.	-637.	15505.	3040.
19	9305.	1121.	2650.	-856.	15960.	3097.
20	9304.	1045.	2172.	-1076.	16436.	3166.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 612 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	9332.		8083.		10578.	
2	9331.		7926.		10733.	
3	9330.		7753.		10903.	
4	9330.		7564.		11089.	
5	9329.		7360.		11291.	
6	9328.		7139.		11509.	
7	9327.		6901.		11744.	
8	9327.		6646.		11996.	
9	9326.		6374.		12265.	
10	9325.		6085.		12551.	
11	9325.		5778.		12856.	
12	9324.		5453.		13178.	
13	9324.		5109.		13519.	
14	9324.		4747.		13878.	
15	9323.		4366.		14256.	
16	9323.		4171.		14653.	
17	9323.		3967.		15070.	
18	9323.		3746.		15505.	
19	9323.		3506.		15960.	
20	9323.		3248.		16436.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 613

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11688.	6644.	892.	276.	-69.
2	11687.	6512.	855.	265.	-74.
3	11685.	6377.	816.	253.	-80.
4	11684.	6240.	773.	241.	-85.
5	11683.	6100.	728.	228.	-90.
6	11682.	5957.	681.	213.	-96.
7	11680.	5812.	630.	198.	-102.
8	11679.	5665.	576.	182.	-108.
9	11678.	5515.	520.	165.	-114.
10	11676.	5364.	460.	147.	-120.
11	11675.	5212.	397.	129.	-126.
12	11674.	5058.	331.	109.	-132.
13	11672.	4903.	261.	88.	-139.
14	11671.	4747.	189.	66.	-146.
15	11669.	4590.	112.	43.	-153.
16	11668.	4433.	32.	19.	-160.
17	11666.	4276.	-51.	-6.	-167.
18	11665.	4119.	-139.	-32.	-174.
19	11663.	3963.	-230.	-60.	-182.
20	11661.	3807.	-325.	-88.	-190.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 613

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.5366E-01	-0.2726E-01	0.3831E-02
2	0.5165E-01	-0.2717E-01	0.3920E-02
3	0.4960E-01	-0.2707E-01	0.4005E-02
4	0.4750E-01	-0.2698E-01	0.4087E-02
5	0.4536E-01	-0.2688E-01	0.4163E-02
6	0.4319E-01	-0.2678E-01	0.4235E-02
7	0.4097E-01	-0.2667E-01	0.4302E-02
8	0.3873E-01	-0.2656E-01	0.4364E-02
9	0.3646E-01	-0.2646E-01	0.4420E-02
10	0.3415E-01	-0.2634E-01	0.4469E-02
11	0.3183E-01	-0.2623E-01	0.4513E-02
12	0.2948E-01	-0.2611E-01	0.4550E-02
13	0.2712E-01	-0.2599E-01	0.4580E-02
14	0.2474E-01	-0.2586E-01	0.4603E-02
15	0.2235E-01	-0.2573E-01	0.4618E-02
16	0.1996E-01	-0.2560E-01	0.4625E-02
17	0.1757E-01	-0.2547E-01	0.4624E-02
18	0.1518E-01	-0.2533E-01	0.4614E-02
19	0.1280E-01	-0.2519E-01	0.4595E-02
20	0.1042E-01	-0.2505E-01	0.4566E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.1.5.50

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 613

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	9350.	5315.	12775.	6375.	5925.	4255.
2	9349.	5210.	12633.	6228.	6066.	4192.
3	9348.	5102.	12480.	6075.	6217.	4129.
4	9347.	4992.	12317.	5917.	6378.	4067.
5	9346.	4880.	12143.	5753.	6550.	4006.
6	9345.	4766.	11959.	5585.	6732.	3947.
7	9344.	4649.	11763.	5411.	6925.	3888.
8	9343.	4532.	11557.	5231.	7130.	3832.
9	9342.	4412.	11338.	5047.	7346.	3777.
10	9341.	4291.	11108.	4858.	7575.	3725.
11	9340.	4169.	10865.	4663.	7815.	3675.
12	9339.	4046.	10610.	4464.	8068.	3628.
13	9338.	3922.	10342.	4260.	8334.	3584.
14	9336.	3797.	10061.	4051.	8612.	3543.
15	9335.	3672.	9766.	3838.	8905.	3506.
16	9334.	3546.	9458.	3620.	9210.	3473.
17	9333.	3421.	9136.	3398.	9530.	3444.
18	9332.	3295.	8799.	3172.	9864.	3419.
19	9330.	3170.	8448.	2941.	10213.	3399.
20	9329.	3046.	8081.	2707.	10577.	3385.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 613 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	9352.		12775.		5925.	
2	9351.		12633.		6066.	
3	9350.		12480.		6217.	
4	9350.		12317.		6378.	
5	9349.		12143.		6550.	
6	9348.		11959.		6732.	
7	9348.		11763.		6925.	
8	9347.		11557.		7130.	
9	9346.		11338.		7346.	
10	9345.		11108.		7575.	
11	9345.		10865.		7815.	
12	9344.		10610.		8068.	
13	9344.		10342.		8334.	
14	9343.		10061.		8612.	
15	9342.		9766.		8905.	
16	9342.		9458.		9210.	
17	9341.		9136.		9530.	
18	9341.		8799.		9864.	
19	9341.		8448.		10213.	
20	9340.		8081.		10577.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV 1.5.52

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 614

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11704.	8216.	2290.	688.	-107.
2	11703.	8192.	2234.	672.	-111.
3	11703.	8160.	2176.	655.	-114.
4	11702.	8121.	2116.	638.	-118.
5	11701.	8074.	2054.	620.	-121.
6	11700.	8020.	1991.	601.	-125.
7	11699.	7958.	1926.	582.	-129.
8	11698.	7890.	1859.	563.	-132.
9	11697.	7816.	1790.	542.	-136.
10	11696.	7735.	1719.	522.	-140.
11	11695.	7649.	1646.	500.	-144.
12	11695.	7556.	1571.	478.	-148.
13	11694.	7458.	1494.	455.	-152.
14	11693.	7355.	1415.	432.	-156.
15	11692.	7247.	1333.	408.	-161.
16	11691.	7135.	1250.	383.	-165.
17	11690.	7018.	1164.	357.	-170.
18	11688.	6896.	1076.	331.	-174.
19	11687.	6772.	985.	304.	-179.
20	11686.	6643.	892.	276.	-184.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 614

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.7829E-01	-0.2807E-01	0.6159E-03
2	0.7788E-01	-0.2801E-01	0.8476E-03
3	0.7736E-01	-0.2795E-01	0.1074E-02
4	0.7673E-01	-0.2789E-01	0.1294E-02
5	0.7598E-01	-0.2783E-01	0.1507E-02
6	0.7513E-01	-0.2777E-01	0.1715E-02
7	0.7417E-01	-0.2770E-01	0.1915E-02
8	0.7311E-01	-0.2764E-01	0.2109E-02
9	0.7196E-01	-0.2757E-01	0.2296E-02
10	0.7071E-01	-0.2751E-01	0.2476E-02
11	0.6937E-01	-0.2744E-01	0.2648E-02
12	0.6794E-01	-0.2737E-01	0.2813E-02
13	0.6644E-01	-0.2729E-01	0.2970E-02
14	0.6485E-01	-0.2722E-01	0.3119E-02
15	0.6319E-01	-0.2714E-01	0.3259E-02
16	0.6146E-01	-0.2706E-01	0.3391E-02
17	0.5966E-01	-0.2698E-01	0.3515E-02
18	0.5781E-01	-0.2690E-01	0.3629E-02
19	0.5589E-01	-0.2681E-01	0.3735E-02
20	0.5393E-01	-0.2673E-01	0.3831E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 614

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	9363.	6573.	18156.	9217.	571.	3929.
2	9363.	6554.	17940.	9135.	785.	3973.
3	9362.	6528.	17717.	9045.	1007.	4012.
4	9361.	6497.	17487.	8946.	1236.	4047.
5	9361.	6459.	17250.	8840.	1471.	4078.
6	9360.	6416.	17006.	8725.	1714.	4106.
7	9359.	6367.	16755.	8603.	1964.	4130.
8	9359.	6312.	16496.	8473.	2221.	4152.
9	9358.	6253.	16231.	8336.	2485.	4170.
10	9357.	6188.	15958.	8191.	2757.	4186.
11	9356.	6119.	15677.	8039.	3036.	4199.
12	9356.	6045.	15388.	7880.	3323.	4210.
13	9355.	5967.	15091.	7715.	3618.	4219.
14	9354.	5884.	14787.	7542.	3922.	4226.
15	9353.	5798.	14473.	7363.	4233.	4233.
16	9352.	5708.	14151.	7177.	4554.	4238.
17	9352.	5614.	13821.	6986.	4882.	4242.
18	9351.	5517.	13481.	6788.	5221.	4246.
19	9350.	5417.	13132.	6585.	5568.	4250.
20	9349.	5315.	12773.	6376.	5925.	4254.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 614   DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	9367.		18156.		3929.	
2	9367.		17940.		3973.	
3	9366.		17717.		4012.	
4	9366.		17487.		4047.	
5	9365.		17250.		4078.	
6	9365.		17006.		4106.	
7	9364.		16755.		4130.	
8	9364.		16496.		4152.	
9	9364.		16231.		4170.	
10	9363.		15958.		4186.	
11	9363.		15677.		4199.	
12	9362.		15388.		4210.	
13	9362.		15091.		4219.	
14	9362.		14787.		4226.	
15	9361.		14473.		4233.	
16	9361.		14151.		4554.	
17	9360.		13821.		4882.	
18	9360.		13481.		5221.	
19	9360.		13132.		5568.	
20	9359.		12773.		5925.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 700

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	242.	-1002.	-48.	-103.	351.
2	241.	-1001.	190.	-31.	367.
3	239.	-999.	439.	44.	383.
4	237.	-997.	698.	122.	399.
5	236.	-996.	968.	204.	415.
6	234.	-994.	1248.	290.	431.
7	232.	-992.	1538.	379.	447.
8	231.	-991.	1839.	471.	463.
9	229.	-989.	2150.	567.	479.
10	228.	-988.	2471.	666.	495.
11	226.	-986.	2803.	769.	511.
12	224.	-984.	3145.	875.	527.
13	223.	-983.	3497.	985.	543.
14	221.	-981.	3860.	1098.	559.
15	220.	-980.	4232.	1215.	575.
16	218.	-978.	4615.	1335.	591.
17	216.	-976.	5008.	1459.	606.
18	215.	-975.	5412.	1586.	622.
19	213.	-973.	5825.	1717.	638.
20	212.	-972.	6249.	1851.	654.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 700

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.2068E 00	-0.2048E-01	-0.2271E-01
2	-0.1917E 00	-0.2047E-01	-0.2268E-01
3	-0.1766E 00	-0.2045E-01	-0.2257E-01
4	-0.1617E 00	-0.2044E-01	-0.2239E-01
5	-0.1469E 00	-0.2043E-01	-0.2211E-01
6	-0.1323E 00	-0.2041E-01	-0.2176E-01
7	-0.1179E 00	-0.2040E-01	-0.2131E-01
8	-0.1039E 00	-0.2039E-01	-0.2077E-01
9	-0.9034E-01	-0.2037E-01	-0.2013E-01
10	-0.7719E-01	-0.2036E-01	-0.1939E-01
11	-0.6457E-01	-0.2035E-01	-0.1855E-01
12	-0.5253E-01	-0.2033E-01	-0.1761E-01
13	-0.4117E-01	-0.2032E-01	-0.1655E-01
14	-0.3054E-01	-0.2031E-01	-0.1539E-01
15	-0.2072E-01	-0.2029E-01	-0.1411E-01
16	-0.1179E-01	-0.2028E-01	-0.1270E-01
17	-0.3837E-02	-0.2027E-01	-0.1118E-01
18	0.3066E-02	-0.2026E-01	-0.9533E-02
19	0.8831E-02	-0.2024E-01	-0.7757E-02
20	0.1337E-01	-0.2023E-01	-0.5849E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 700

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	258.	-1069.	-68.	-1772.	585.	-366.
2	257.	-1067.	1556.	-1281.	-1043.	-853.
3	255.	-1065.	3251.	-767.	-2742.	-1364.
4	253.	-1064.	5018.	-229.	-4512.	-1899.
5	251.	-1062.	6857.	333.	-6354.	-2457.
6	250.	-1060.	8766.	918.	-8267.	-3039.
7	248.	-1059.	10747.	1527.	-10251.	-3644.
8	246.	-1057.	12798.	2159.	-12306.	-4273.
9	244.	-1055.	14920.	2816.	-14431.	-4926.
10	243.	-1053.	17112.	3495.	-16627.	-5602.
11	241.	-1052.	19375.	4199.	-18893.	-6302.
12	239.	-1050.	21708.	4926.	-21229.	-7026.
13	238.	-1048.	24111.	5677.	-23636.	-7773.
14	236.	-1047.	26584.	6452.	-26112.	-8545.
15	234.	-1045.	29127.	7250.	-28658.	-9340.
16	233.	-1043.	31739.	8072.	-31274.	-10159.
17	231.	-1042.	34421.	8919.	-33959.	-11002.
18	229.	-1040.	37172.	9789.	-36714.	-11869.
19	228.	-1038.	39992.	10683.	-39537.	-12760.
20	226.	-1037.	42883.	11601.	-42431.	-13675.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 700 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	1774.		1772.		951.	
2	1796.		2837.		1043.	
3	1819.		4018.		2742.	
4	1841.		5247.		4512.	
5	1864.		6857.		6354.	
6	1886.		8766.		8267.	
7	1909.		10747.		10251.	
8	1931.		12798.		12306.	
9	1954.		14920.		14431.	
10	1976.		17112.		16627.	
11	1999.		19375.	*	18893.	
12	2021.		21708.	*	21229.	*
13	2044.		24111.	*	23636.	*
14	2066.		26584.	*	26112.	*
15	2089.		29127.	* *	28658.	*
16	2111.		31739.	* *	31274.	* *
17	2134.		34421.	* *	33959.	* *
18	2157.		37172.	* *	36714.	* *
19	2179.		39992.	* *	39537.	* *
20	2202.		42883.	* *	42431.	* *

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 701

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	352.	-898.	49.	15.	-242.
2	352.	-581.	-21.	-6.	-250.
3	352.	-264.	-93.	-28.	-257.
4	352.	53.	-168.	-50.	-264.
5	352.	370.	-244.	-73.	-271.
6	352.	687.	-322.	-97.	-278.
7	352.	1006.	-402.	-121.	-285.
8	352.	1325.	-484.	-145.	-291.
9	352.	1646.	-568.	-170.	-297.
10	352.	1967.	-653.	-196.	-303.
11	352.	2291.	-740.	-222.	-309.
12	352.	2616.	-829.	-249.	-315.
13	352.	2943.	-920.	-276.	-321.
14	352.	3272.	-1012.	-303.	-326.
15	352.	3603.	-1105.	-332.	-331.
16	352.	3938.	-1200.	-360.	-336.
17	352.	4275.	-1296.	-389.	-341.
18	352.	4614.	-1394.	-418.	-345.
19	352.	4957.	-1493.	-448.	-350.
20	352.	5304.	-1593.	-478.	-354.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 701

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	-0.2048E-01	0.2068E 00	-0.2271E-01
2	-0.1402E-01	0.2068E 00	-0.2271E-01
3	-0.7557E-02	0.2068E 00	-0.2272E-01
4	-0.1083E-02	0.2068E 00	-0.2274E-01
5	0.5387E-02	0.2068E 00	-0.2278E-01
6	0.1188E-01	0.2068E 00	-0.2282E-01
7	0.1838E-01	0.2068E 00	-0.2288E-01
8	0.2490E-01	0.2068E 00	-0.2296E-01
9	0.3145E-01	0.2068E 00	-0.2305E-01
10	0.3801E-01	0.2068E 00	-0.2315E-01
11	0.4462E-01	0.2068E 00	-0.2326E-01
12	0.5126E-01	0.2068E 00	-0.2339E-01
13	0.5793E-01	0.2068E 00	-0.2354E-01
14	0.6465E-01	0.2068E 00	-0.2370E-01
15	0.7142E-01	0.2067E 00	-0.2388E-01
16	0.7824E-01	0.2067E 00	-0.2407E-01
17	0.8511E-01	0.2067E 00	-0.2427E-01
18	0.9205E-01	0.2067E 00	-0.2450E-01
19	0.9905E-01	0.2067E 00	-0.2474E-01
20	0.1061E 00	0.2067E 00	-0.2499E-01

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.1.5.62

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 701

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	403.	-1026.	785.	-911.	21.	-1140.
2	403.	-664.	236.	-714.	570.	-614.
3	403.	-302.	-330.	-522.	1135.	-82.
4	403.	60.	-911.	-334.	1716.	454.
5	403.	422.	-1508.	-151.	2314.	996.
6	403.	786.	-2121.	29.	2926.	1542.
7	403.	1150.	-2748.	205.	3553.	2095.
8	403.	1515.	-3390.	377.	4195.	2652.
9	403.	1881.	-4046.	547.	4851.	3215.
10	403.	2248.	-4716.	713.	5521.	3784.
11	403.	2618.	-5400.	878.	6205.	4359.
12	403.	2990.	-6095.	1040.	6901.	4939.
13	403.	3364.	-6805.	1202.	7610.	5526.
14	403.	3740.	-7525.	1362.	8331.	6118.
15	403.	4118.	-8258.	1520.	9063.	6716.
16	403.	4500.	-9002.	1679.	9807.	7321.
17	403.	4885.	-9757.	1838.	10562.	7933.
18	403.	5273.	-10521.	1996.	11327.	8550.
19	403.	5665.	-11297.	2156.	12103.	9175.
20	403.	6061.	-12081.	2316.	12887.	9807.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 701 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	1688.		1696.		1161.	
2	1338.		950.		1184.	
3	988.		522.		1217.	
4	991.		911.		1716.	
5	1013.		1508.		2314.	
6	1102.		2150.		2926.	
7	1476.		2952.		3553.	
8	1851.		3767.		4195.	
9	2228.		4592.		4851.	
10	2605.		5429.		5521.	
11	2984.		6277.		6205.	
12	3365.		7136.		6901.	
13	3748.		8006.		7610.	
14	4133.		8887.		8331.	
15	4519.		9778.		9063.	
16	4909.		10681.		9807.	
17	5302.		11594.		10562.	
18	5697.		12517.		11327.	
19	6097.		13453.		12103.	
20	6499.		14398.		12887.	

~~14398 x 2005 / 1700 = 16,981~~

14398
6499
7899 x 2005 / 1700 + 6499 ≈ 15500

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 708

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	4.	5199.	107.	32.	-54.
2	4.	5432.	97.	29.	-52.
3	4.	5666.	88.	26.	-50.
4	4.	5899.	78.	23.	-48.
5	4.	6132.	70.	21.	-45.
6	4.	6365.	61.	18.	-43.
7	4.	6598.	53.	16.	-40.
8	4.	6831.	46.	14.	-38.
9	4.	7064.	39.	12.	-35.
10	4.	7297.	32.	10.	-32.
11	4.	7530.	26.	8.	-30.
12	4.	7763.	21.	6.	-27.
13	4.	7996.	16.	5.	-24.
14	4.	8229.	12.	4.	-21.
15	4.	8462.	8.	3.	-17.
16	4.	8694.	5.	2.	-14.
17	4.	8927.	3.	1.	-11.
18	4.	9160.	1.	0.	-7.
19	4.	9393.	0.	0.	-4.
20	4.	9626.	-0.	0.	0.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.1565

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 708

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.1061E 00	0.2067E 00	-0.2499E-01
2	0.1109E 00	0.2067E 00	-0.2498E-01
3	0.1157E 00	0.2067E 00	-0.2497E-01
4	0.1204E 00	0.2067E 00	-0.2496E-01
5	0.1252E 00	0.2066E 00	-0.2495E-01
6	0.1299E 00	0.2066E 00	-0.2495E-01
7	0.1347E 00	0.2066E 00	-0.2494E-01
8	0.1395E 00	0.2066E 00	-0.2493E-01
9	0.1442E 00	0.2066E 00	-0.2493E-01
10	0.1490E 00	0.2066E 00	-0.2493E-01
11	0.1537E 00	0.2065E 00	-0.2492E-01
12	0.1585E 00	0.2065E 00	-0.2492E-01
13	0.1632E 00	0.2065E 00	-0.2492E-01
14	0.1680E 00	0.2065E 00	-0.2492E-01
15	0.1727E 00	0.2065E 00	-0.2492E-01
16	0.1775E 00	0.2064E 00	-0.2491E-01
17	0.1822E 00	0.2064E 00	-0.2491E-01
18	0.1870E 00	0.2064E 00	-0.2491E-01
19	0.1918E 00	0.2064E 00	-0.2491E-01
20	0.1965E 00	0.2064E 00	-0.2491E-01

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 708

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	4.	5941.	843.	6193.	-835.	5689.
2	4.	6208.	765.	6436.	-757.	5980.
3	4.	6475.	690.	6681.	-682.	6270.
4	4.	6742.	618.	6925.	-610.	6558.
5	4.	7008.	550.	7171.	-542.	6845.
6	4.	7274.	483.	7417.	-475.	7131.
7	4.	7541.	420.	7666.	-412.	7416.
8	4.	7807.	363.	7914.	-355.	7700.
9	4.	8074.	309.	8164.	-301.	7983.
10	4.	8340.	256.	8416.	-248.	8264.
11	4.	8606.	210.	8668.	-202.	8544.
12	4.	8872.	172.	8921.	-164.	8823.
13	4.	9138.	131.	9176.	-123.	9100.
14	4.	9404.	98.	9432.	-90.	9376.
15	4.	9670.	69.	9690.	-61.	9651.
16	4.	9936.	47.	9949.	-39.	9924.
17	4.	10202.	26.	10209.	-18.	10195.
18	4.	10468.	16.	10472.	-8.	10465.
19	4.	10735.	7.	10735.	1.	10734.
20	4.	11001.	3.	11001.	5.	11001.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 708 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	6032.		6193.		6525.	
2	6295.		6436.		6737.	
3	6558.		6681.		6952.	
4	6821.		6925.		7168.	
5	7084.		7171.		7387.	
6	7346.		7417.		7607.	
7	7608.		7666.		7828.	
8	7870.		7914.		8055.	
9	8132.		8164.		8284.	
10	8394.		8416.		8513.	
11	8655.		8668.		8746.	
12	8916.		8921.		8986.	
13	9176.		9176.		9223.	
14	9437.		9432.		9466.	
15	9698.		9690.		9711.	
16	9958.		9949.		9963.	
17	10218.		10209.		10213.	
18	10479.		10472.		10472.	
19	10739.		10735.		10734.	
20	11001.		11001.		11001.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 702

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	11430.	35998.	-8897.	-2476.	-84.
2	11461.	33897.	-9017.	-2522.	-30.
3	11488.	31916.	-9025.	-2536.	14.
4	11513.	30057.	-8944.	-2522.	49.
5	11536.	28317.	-8792.	-2487.	76.
6	11556.	26696.	-8587.	-2436.	95.
7	11574.	25189.	-8346.	-2374.	108.
8	11591.	23793.	-8086.	-2305.	113.
9	11605.	22505.	-7819.	-2235.	113.
10	11618.	21320.	-7561.	-2166.	107.
11	11630.	20234.	-7322.	-2103.	96.
12	11640.	19244.	-7114.	-2050.	80.
13	11649.	18349.	-6947.	-2008.	60.
14	11657.	17543.	-6831.	-1981.	36.
15	11664.	16826.	-6773.	-1971.	9.
16	11670.	16198.	-6780.	-1981.	-21.
17	11676.	15656.	-6860.	-2013.	-54.
18	11680.	15203.	-7017.	-2068.	-89.
19	11685.	14839.	-7256.	-2148.	-126.
20	11688.	14568.	-7580.	-2254.	-164.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 702

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.2115E 00	-0.2985E-01	0.5825E-02
2	0.1986E 00	-0.2983E-01	0.5507E-02
3	0.1864E 00	-0.2978E-01	0.5187E-02
4	0.1749E 00	-0.2972E-01	0.4868E-02
5	0.1642E 00	-0.2965E-01	0.4554E-02
6	0.1542E 00	-0.2955E-01	0.4246E-02
7	0.1448E 00	-0.2945E-01	0.3947E-02
8	0.1362E 00	-0.2933E-01	0.3656E-02
9	0.1281E 00	-0.2920E-01	0.3374E-02
10	0.1208E 00	-0.2906E-01	0.3103E-02
11	0.1140E 00	-0.2891E-01	0.2839E-02
12	0.1078E 00	-0.2875E-01	0.2584E-02
13	0.1022E 00	-0.2858E-01	0.2336E-02
14	0.9715E-01	-0.2841E-01	0.2093E-02
15	0.9265E-01	-0.2823E-01	0.1853E-02
16	0.8870E-01	-0.2804E-01	0.1614E-02
17	0.8529E-01	-0.2785E-01	0.1373E-02
18	0.8244E-01	-0.2765E-01	0.1129E-02
19	0.8015E-01	-0.2745E-01	0.8772E-03
20	0.7844E-01	-0.2725E-01	0.6161E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.1.5.70

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 702

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI.	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	3891.	12255.	-2295.	10533.	10078.	13976.
2	3901.	11539.	-2368.	9785.	10171.	13293.
3	3911.	10865.	-2365.	9102.	10187.	12628.
4	3919.	10232.	-2300.	8478.	10138.	11986.
5	3927.	9640.	-2186.	7911.	10040.	11369.
6	3934.	9088.	-2037.	7394.	9905.	10782.
7	3940.	8575.	-1863.	6924.	9744.	10226.
8	3946.	8100.	-1677.	6497.	9568.	9703.
9	3951.	7661.	-1486.	6107.	9388.	9215.
10	3955.	7258.	-1302.	5751.	9213.	8764.
11	3959.	6888.	-1132.	5425.	9050.	8351.
12	3963.	6551.	-984.	5126.	8909.	7976.
13	3966.	6246.	-865.	4850.	8797.	7642.
14	3968.	5972.	-781.	4595.	8718.	7349.
15	3971.	5728.	-738.	4357.	8680.	7099.
16	3973.	5514.	-742.	4136.	8687.	6892.
17	3975.	5330.	-795.	3930.	8745.	6730.
18	3976.	5175.	-903.	3737.	8855.	6614.
19	3978.	5052.	-1067.	3558.	9023.	6545.
20	3979.	4959.	-1292.	3392.	9250.	6527.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 702   DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	12255.		12829.		13976.	
2	11539.		12154.		13293.	
3	10865.		11467.		12628.	
4	10232.		10778.		11986.	
5	9640.		10097.		11369.	
6	9089.		9431.		10782.	
7	8576.		8788.		10226.	
8	8101.		8173.		9703.	
9	7662.		7594.		9388.	
10	7258.		7053.		9213.	
11	6889.		6558.		9050.	
12	6552.		6110.		8909.	
13	6247.		5715.		8797.	
14	5972.		5376.		8718.	
15	5728.		5096.		8680.	
16	5514.		4878.		8687.	
17	5330.		4725.		8745.	
18	5176.		4640.		8855.	
19	5053.		4625.		9023.	
20	4961.		4684.		9250.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 706

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	10944.	14338.	64.	19.	155.
2	10944.	14706.	272.	82.	131.
3	10944.	15066.	446.	134.	107.
4	10944.	15415.	585.	176.	85.
5	10944.	15749.	693.	208.	63.
6	10944.	16065.	770.	231.	42.
7	10944.	16360.	817.	245.	23.
8	10944.	16634.	836.	251.	4.
9	10944.	16887.	828.	248.	-15.
10	10944.	17117.	794.	238.	-32.
11	10944.	17327.	735.	220.	-49.
12	10944.	17517.	651.	195.	-65.
13	10944.	17691.	544.	163.	-81.
14	10944.	17850.	415.	124.	-96.
15	10944.	17998.	263.	79.	-111.
16	10944.	18140.	89.	27.	-126.
17	10944.	18279.	-105.	-31.	-140.
18	10944.	18421.	-319.	-96.	-154.
19	10944.	18572.	-554.	-166.	-167.
20	10944.	18737.	-807.	-242.	-180.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 706

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.1555E 00	-0.1476E-01	-0.3560E-02
2	0.1607E 00	-0.1450E-01	-0.3517E-02
3	0.1658E 00	-0.1424E-01	-0.3425E-02
4	0.1707E 00	-0.1398E-01	-0.3294E-02
5	0.1754E 00	-0.1373E-01	-0.3132E-02
6	0.1798E 00	-0.1349E-01	-0.2946E-02
7	0.1840E 00	-0.1325E-01	-0.2745E-02
8	0.1878E 00	-0.1301E-01	-0.2535E-02
9	0.1914E 00	-0.1277E-01	-0.2324E-02
10	0.1946E 00	-0.1254E-01	-0.2119E-02
11	0.1976E 00	-0.1231E-01	-0.1925E-02
12	0.2003E 00	-0.1208E-01	-0.1749E-02
13	0.2027E 00	-0.1185E-01	-0.1598E-02
14	0.2050E 00	-0.1163E-01	-0.1476E-02
15	0.2070E 00	-0.1141E-01	-0.1390E-02
16	0.2090E 00	-0.1119E-01	-0.1345E-02
17	0.2110E 00	-0.1097E-01	-0.1346E-02
18	0.2130E 00	-0.1075E-01	-0.1400E-02
19	0.2151E 00	-0.1054E-01	-0.1510E-02
20	0.2174E 00	-0.1032E-01	-0.1681E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 706

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	8338.	10924.	8560.	10991.	8116.	10858.
2	8338.	11204.	9286.	11489.	7390.	10920.
3	8338.	11479.	9890.	11945.	6786.	11013.
4	8338.	11745.	10377.	12357.	6299.	11133.
5	8338.	11999.	10752.	12723.	5924.	11275.
6	8338.	12240.	11020.	13044.	5657.	11435.
7	8338.	12465.	11185.	13319.	5492.	11611.
8	8338.	12674.	11251.	13548.	5426.	11800.
9	8338.	12866.	11223.	13731.	5454.	12001.
10	8338.	13042.	11104.	13871.	5572.	12212.
11	8338.	13201.	10898.	13969.	5779.	12434.
12	8338.	13347.	10607.	14027.	6070.	12666.
13	8338.	13479.	10234.	14047.	6442.	12910.
14	8338.	13600.	9782.	14033.	6894.	13167.
15	8338.	13713.	9253.	13988.	7423.	13439.
16	8338.	13821.	8650.	13914.	8027.	13728.
17	8338.	13927.	7973.	13818.	8703.	14037.
18	8338.	14035.	7226.	13702.	9450.	14369.
19	8338.	14150.	6410.	13572.	10266.	14728.
20	8338.	14276.	5528.	13433.	11149.	15119.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 706 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	10928.		10991.		10858.	
2	11207.		11489.		10920.	
3	11481.		11945.		11013.	
4	11746.		12357.		11133.	
5	12000.		12723.		11275.	
6	12240.		13044.		11435.	
7	12465.		13319.		11611.	
8	12674.		13548.		11800.	
9	12866.		13731.		12001.	
10	13042.		13871.		12212.	
11	13202.		13969.		12434.	
12	13347.		14027.		12666.	
13	13480.		14047.		12910.	
14	13602.		14033.		13167.	
15	13715.		13988.		13439.	
16	13823.		13914.		13728.	
17	13930.		13818.		14037.	
18	14039.		13702.		14369.	
19	14154.		13572.		14728.	
20	14281.		13433.		15119.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 705

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	0.	3343.	0.	-0.	0.
2	19.	3324.	-0.	-0.	0.
3	37.	3306.	-0.	-0.	0.
4	55.	3288.	-0.	-0.	0.
5	73.	3270.	-0.	-0.	0.
6	90.	3253.	-0.	-0.	0.
7	107.	3235.	-0.	-0.	0.
8	124.	3219.	-0.	-0.	0.
9	141.	3202.	-0.	-0.	0.
10	157.	3186.	-0.	-0.	0.
11	173.	3169.	-0.	-0.	0.
12	189.	3154.	-0.	-0.	0.
13	205.	3138.	-0.	-0.	0.
14	220.	3123.	-0.	-0.	0.
15	235.	3108.	-0.	-0.	0.
16	250.	3093.	-0.	-0.	0.
17	264.	3078.	-0.	-0.	0.
18	279.	3064.	-0.	-0.	0.
19	293.	3050.	-0.	-0.	0.
20	307.	3036.	-0.	-0.	0.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 705

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.7427E-01	0.2231E 00	-0.1725E-02
2	-0.6976E-01	0.2227E 00	-0.1722E-02
3	-0.6525E-01	0.2223E 00	-0.1719E-02
4	-0.6076E-01	0.2220E 00	-0.1717E-02
5	-0.5627E-01	0.2217E 00	-0.1714E-02
6	-0.5179E-01	0.2213E 00	-0.1711E-02
7	-0.4731E-01	0.2210E 00	-0.1709E-02
8	-0.4284E-01	0.2207E 00	-0.1706E-02
9	-0.3838E-01	0.2204E 00	-0.1704E-02
10	-0.3392E-01	0.2201E 00	-0.1702E-02
11	-0.2947E-01	0.2198E 00	-0.1699E-02
12	-0.2503E-01	0.2195E 00	-0.1697E-02
13	-0.2059E-01	0.2192E 00	-0.1695E-02
14	-0.1616E-01	0.2189E 00	-0.1693E-02
15	-0.1173E-01	0.2186E 00	-0.1691E-02
16	-0.7313E-02	0.2184E 00	-0.1689E-02
17	-0.2896E-02	0.2181E 00	-0.1687E-02
18	0.1515E-02	0.2179E 00	-0.1685E-02
19	0.5921E-02	0.2177E 00	-0.1683E-02
20	0.1032E-01	0.2174E 00	-0.1681E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 705

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	0.	13371.	0.	13358.	0.	13384.
2	75.	13296.	74.	13283.	75.	13309.
3	148.	13223.	148.	13210.	148.	13236.
4	220.	13151.	220.	13138.	220.	13163.
5	291.	13080.	291.	13067.	291.	13092.
6	361.	13010.	360.	12998.	361.	13023.
7	429.	12941.	429.	12929.	430.	12954.
8	497.	12874.	496.	12862.	497.	12886.
9	563.	12808.	563.	12795.	564.	12820.
10	628.	12742.	628.	12730.	629.	12755.
11	693.	12678.	692.	12666.	693.	12690.
12	756.	12615.	755.	12602.	757.	12627.
13	818.	12552.	817.	12540.	819.	12565.
14	880.	12491.	879.	12479.	880.	12503.
15	940.	12431.	939.	12419.	941.	12443.
16	999.	12371.	998.	12359.	1000.	12383.
17	1058.	12313.	1057.	12301.	1059.	12325.
18	1115.	12255.	1114.	12243.	1116.	12267.
19	1172.	12198.	1171.	12187.	1173.	12210.
20	1228.	12143.	1227.	12131.	1229.	12154.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 705 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	13371.		13358.		13384.	
2	13296.		13283.		13309.	
3	13223.		13210.		13236.	
4	13151.		13138.		13163.	
5	13080.		13067.		13092.	
6	13010.		12998.		13023.	
7	12941.		12929.		12954.	
8	12874.		12862.		12886.	
9	12808.		12795.		12820.	
10	12742.		12730.		12755.	
11	12678.		12666.		12690.	
12	12615.		12602.		12627.	
13	12552.		12540.		12565.	
14	12491.		12479.		12503.	
15	12431.		12419.		12443.	
16	12371.		12359.		12383.	
17	12313.		12301.		12325.	
18	12255.		12243.		12267.	
19	12198.		12187.		12210.	
20	12143.		12131.		12154.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.1.5 80

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 704

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	9877.	164089.	-0.	281.	-2842.
2	10374.	117943.	-12564.	-3514.	-1258.
3	10704.	79083.	-16999.	-4899.	-251.
4	10904.	50127.	-16588.	-4835.	303.
5	11012.	30829.	-13770.	-4042.	537.
6	11063.	19538.	-10168.	-3003.	572.
7	11083.	14146.	-6734.	-2002.	500.
8	11091.	12654.	-3924.	-1177.	385.
9	11098.	13431.	-1871.	-570.	266.
10	11110.	15288.	-519.	-168.	166.
11	11129.	17447.	276.	70.	91.
12	11156.	19452.	685.	194.	43.
13	11189.	21068.	861.	250.	17.
14	11227.	22198.	930.	274.	8.
15	11268.	22805.	975.	290.	8.
16	11310.	22869.	1037.	312.	12.
17	11351.	22362.	1116.	339.	12.
18	11388.	21249.	1163.	357.	1.
19	11421.	19517.	1088.	338.	-28.
20	11445.	17220.	748.	239.	-84.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.1.5.81

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 704

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.2207E 01	-0.3881E-01	0.1022E 00
2	0.1584E 01	-0.4460E-01	0.9311E-01
3	0.1056E 01	-0.4799E-01	0.7369E-01
4	0.6602E 00	-0.4949E-01	0.5206E-01
5	0.3952E 00	-0.4966E-01	0.3270E-01
6	0.2394E 00	-0.4900E-01	0.1754E-01
7	0.1647E 00	-0.4789E-01	0.6912E-02
8	0.1439E 00	-0.4660E-01	0.2596E-03
9	0.1549E 00	-0.4530E-01	-0.3316E-02
10	0.1812E 00	-0.4407E-01	-0.4753E-02
11	0.2120E 00	-0.4295E-01	-0.4851E-02
12	0.2408E 00	-0.4193E-01	-0.4207E-02
13	0.2643E 00	-0.4102E-01	-0.3211E-02
14	0.2809E 00	-0.4017E-01	-0.2071E-02
15	0.2902E 00	-0.3936E-01	-0.8682E-03
16	0.2917E 00	-0.3856E-01	0.3991E-03
17	0.2850E 00	-0.3774E-01	0.1757E-02
18	0.2694E 00	-0.3687E-01	0.3199E-02
19	0.2447E 00	-0.3592E-01	0.4635E-02
20	0.2115E 00	-0.3485E-01	0.5825E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.15.82

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 704

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	7902.	131271.	7901.	132349.	7902.	130192.
2	8299.	94354.	-39947.	80860.	56545.	107849.
3	8563.	63266.	-56713.	44455.	73840.	82077.
4	8723.	40102.	-54975.	21536.	72422.	58668.
5	8810.	24663.	-44066.	9140.	61686.	40186.
6	8851.	15630.	-30196.	4098.	47898.	27163.
7	8867.	11317.	-16993.	3631.	34726.	19004.
8	8873.	10123.	-6196.	5605.	23942.	14641.
9	8878.	10744.	1693.	8555.	16064.	12934.
10	8888.	12230.	6894.	11584.	10881.	12877.
11	8903.	13958.	9965.	14227.	7841.	13688.
12	8925.	15561.	11554.	16307.	6295.	14815.
13	8951.	16854.	12258.	17814.	5644.	15895.
14	8982.	17758.	12553.	18809.	5411.	16708.
15	9014.	18244.	12757.	19358.	5272.	17130.
16	9048.	18295.	13031.	19494.	5065.	17096.
17	9081.	17889.	13365.	19192.	4797.	16587.
18	9111.	16999.	13578.	18371.	4643.	15627.
19	9136.	15613.	13313.	16912.	4960.	14315.
20	9156.	13776.	12030.	14695.	6283.	12856.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.1.5.83

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO 45 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 704 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	132539.	* * *	132349.	* * *	130192.	* * *
2	94620.	* * *	120806.	* * *	107849.	* * *
3	63277.	* * *	101168.	* * *	82077.	* * *
4	40117.	* *	76510.	* * *	72422.	* * *
5	24710.	*	53206.	* *	61686.	* * *
6	15683.		34294.	* *	47898.	* *
7	11357.		20623.	*	34726.	* *
8	10147.		11802.		23942.	*
9	10756.		8555.		16064.	
10	12235.		11584.		12877.	
11	13959.		14227.		13688.	
12	15562.		16307.		14815.	
13	16854.		17814.		15895.	
14	17759.		18809.		16708.	
15	18244.		19358.	*	17130.	
16	18295.		19494.	*	17096.	
17	17889.		19192.		16587.	
18	16999.		18371.		15627.	
19	15614.		16912.		14315.	
20	13777.		14695.		12856.	

INVALID RESULTS (handwritten bracket note for stations 1–20)

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY LOADS

```
BODY NO. 501  BODY TYPE   1  X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = (-0.200000E 01) +  ( 0.0            )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( 0.0          )*Z/H)*X*X
BODY NO. 607  BODY TYPE   4  X = MERIDIAN ANGLE
     PN = (-0.200000E 01) + ( 0.0            )*COS(X)
      + ( 0.0           )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( 0.0          )*Z/H)*X*X
BODY NO. 608  BODY TYPE   4  X = MERIDIAN ANGLE
     PN = (-0.200000E 01) + ( 0.0            )*COS(X)
      + ( 0.0           )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( 0.0          )*Z/H)*X*X
```

IV.1.5.85

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY LOADS

```
BODY NO. 609   BODY TYPE    4   X = MERIDIAN ANGLE
     PN = (-0.200000E 01) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 610   BODY TYPE    4   X = MERIDIAN ANGLE
     PN = (-0.200000E 01) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 611   BODY TYPE    4   X = MERIDIAN ANGLE
     PN = (-0.200000E 01) + ( 0.0          )*COS(X)
       + ( 0.0          )*COS(X)*COS(X)
     PPHI = ( 0.0          )*SIN(X) + ( 0.0          )*SIN(X)*COS(X)
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY LOADS

```
BODY NO. 612  BODY TYPE   4   X = MERIDIAN ANGLE
     PN = (-0.200000E 01) + ( 0.0           )*COS(X)
       + ( 0.0           )*COS(X)*COS(X)
     PPHI = ( 0.0           )*SIN(X) + ( 0.0           )*SIN(X)*COS(X)
     T = ( 0.0            + ( 0.0           )*Z/H)
      + ( 0.0             + ( 0.0           )*Z/H)*X
      + ( 0.0             + ( 0.0           )*Z/H)*X*X
BODY NO. 613  BODY TYPE   4   X = MERIDIAN ANGLE
     PN = (-0.200000E 01) + ( 0.0           )*COS(X)
       + ( 0.0           )*COS(X)*COS(X)
     PPHI = ( 0.0           )*SIN(X) + ( 0.0           )*SIN(X)*COS(X)
     T = ( 0.0            + ( 0.0           )*Z/H)
      + ( 0.0             + ( 0.0           )*Z/H)*X
      + ( 0.0             + ( 0.0           )*Z/H)*X*X
BODY NO. 614  BODY TYPE   4   X = MERIDIAN ANGLE
     PN = (-0.200000E 01) + ( 0.0           )*COS(X)
       + ( 0.0           )*COS(X)*COS(X)
     PPHI = ( 0.0           )*SIN(X) + ( 0.0           )*SIN(X)*COS(X)
     T = ( 0.0            + ( 0.0           )*Z/H)
      + ( 0.0             + ( 0.0           )*Z/H)*X
      + ( 0.0             + ( 0.0           )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY LOADS

```
BODY NO. 700   BODY TYPE   3   X = RADIUS
     PN = ( 0.200000E 01) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 701   BODY TYPE   1   X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = (-0.200000E 01) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 708   BODY TYPE   1   X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = ( 0.0          ) + ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY LOADS

```
BODY NO. 702   BODY TYPE   6   X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = (-0.200000E 01) +  ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 706   BODY TYPE   1   X = DISANCE ALONG MERIDIAN FROM 'A' EDGE
     PN = (-0.200000E 01) +  ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
BODY NO. 705   BODY TYPE   3   X = RADIUS
     PN = ( 0.0          ) +  ( 0.0          )*X
     PPHI = ( 0.0          ) + ( 0.0          )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0          + ( 0.0          )*Z/H)*X
      + ( 0.0          + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY LOADS

```
BODY NO. 704  BODY TYPE   6  X=DISTANCE ALONG MERIDIAN FROM SMALL END
     PN = (-0.200000E 01) + ( 0.0           )*X
     PPHI = ( 0.0          ) + ( 0.0           )*X
     T = ( 0.0          + ( 0.0          )*Z/H)
      + ( 0.0           + ( 0.0          )*Z/H)*X
      + ( 0.0           + ( 0.0          )*Z/H)*X*X
```

HANFORD NO. 2 CONTAINMENT VESSEL

ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION

VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS
CIRCUMFERENTIAL LINE LOADS

NODE	R-DIR.	Z-DIR.	MOMENT
510	0.0	0.0	0.0
706	0.0	0.0	0.0
707	0.0	0.0	0.0
505	0.0	0.0	0.0
607	0.0	0.0	0.0
608	0.0	0.0	0.0
609	0.0	0.0	0.0
610	0.0	0.0	0.0
611	0.0	0.0	0.0
612	0.0	0.0	0.0
613	0.0	0.0	0.0
614	0.0	0.0	0.0
615	0.0	0.0	0.0
700	0.0	0.0	0.0
701	-0.300000E 03	-0.350000E 03	-0.170000E 04
708	0.0	0.0	0.0
702	0.0	0.0	0.0
703	0.0	0.0	0.0
704	0.0	0.0	0.0
705	0.0	-0.456822E 03	0.0

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.1.5.91

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

NODE NO.	NODE DISPLACEMENTS R OR R' DIR.	Z OR Z' DIR.	ROTATION	OBLIQUE AXIS ANGLE
510	-0.109137E-01	0.0	-0.734016E-05	0.0
706	-0.805110E-02	-0.128763E-02	0.203463E-03	0.0
707	-0.826044E-02	0.895000E-02	0.208790E-03	0.0
505	0.271456E-02	-0.180156E-02	0.547714E-03	0.0
607	0.271480E-02	-0.178444E-02	0.547714E-03	0.0
608	0.894824E-02	-0.200540E-02	0.286137E-03	0.0
609	0.750595E-02	-0.247589E-02	-0.626444E-03	0.0
610	-0.108333E-01	-0.460491E-02	-0.226675E-02	0.0
611	-0.532956E-01	-0.105362E-01	-0.410036E-02	0.0
612	-0.628331E-01	-0.117504E-01	0.150614E-02	0.0
613	-0.433307E-01	-0.742934E-02	0.228058E-02	0.0
614	-0.238723E-01	-0.267254E-02	0.169065E-02	0.0
615	-0.132273E-01	0.175818E-03	0.522058E-03	0.0
700	-0.538266E-01	-0.164023E 00	-0.160641E-01	0.0
701	0.368715E-01	-0.164125E 00	-0.184390E-01	0.0
708	0.103607E 00	-0.163972E 00	-0.183994E-01	0.0
702	-0.131060E-01	-0.247971E-03	0.522058E-03	0.0
703	-0.539530E-02	0.190798E-02	-0.848443E-04	0.0
704	-0.537550E-02	0.183917E-02	-0.848443E-04	0.0
705	-0.937641E-01	-0.238347E-01	-0.453925E-02	0.0

IV.1.5.92

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

NODE NO.	REACTION LOADS R OR R' DIR.	Z OR Z' DIR.	MOMENT	OBLIQUE AXIS ANGLE
510	0.0	0.829692E 03	0.0	0.0

IV.1.5.93

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 501

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-830.	-821.	-33.	-10.	-2.
2	-830.	-885.	-41.	-12.	-1.
3	-830.	-937.	-42.	-13.	0.
4	-830.	-978.	-39.	-12.	1.
5	-830.	-1008.	-34.	-10.	1.
6	-830.	-1029.	-28.	-8.	1.
7	-830.	-1042.	-21.	-6.	1.
8	-830.	-1050.	-16.	-5.	1.
9	-830.	-1053.	-11.	-3.	1.
10	-830.	-1053.	-7.	-2.	1.
11	-830.	-1051.	-4.	-1.	1.
12	-830.	-1048.	-2.	-0.	0.
13	-830.	-1045.	-0.	-0.	0.
14	-830.	-1041.	1.	0.	0.
15	-830.	-1038.	1.	0.	0.
16	-830.	-1035.	1.	0.	-0.
17	-830.	-1032.	1.	0.	-0.
18	-830.	-1030.	0.	0.	-0.
19	-830.	-1027.	0.	0.	-0.
20	-830.	-1025.	0.	0.	0.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 501

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	-0.8051E-02	0.1288E-02	0.2035E-03
2	-0.8943E-02	0.1214E-02	0.1728E-03
3	-0.9680E-02	0.1142E-02	0.1386E-03
4	-0.1026E-01	0.1072E-02	0.1053E-03
5	-0.1068E-01	0.1003E-02	0.7531E-04
6	-0.1098E-01	0.9354E-03	0.5004E-04
7	-0.1116E-01	0.8684E-03	0.2991E-04
8	-0.1127E-01	0.8018E-03	0.1474E-04
9	-0.1131E-01	0.7354E-03	0.3960E-05
10	-0.1131E-01	0.6691E-03	-0.3151E-05
11	-0.1128E-01	0.6027E-03	-0.7388E-05
12	-0.1124E-01	0.5362E-03	-0.9509E-05
13	-0.1120E-01	0.4696E-03	-0.1019E-04
14	-0.1115E-01	0.4029E-03	-0.9989E-05
15	-0.1110E-01	0.3360E-03	-0.9356E-05
16	-0.1106E-01	0.2690E-03	-0.8615E-05
17	-0.1102E-01	0.2019E-03	-0.7979E-05
18	-0.1098E-01	0.1347E-03	-0.7559E-05
19	-0.1095E-01	0.6740E-04	-0.7372E-05
20	-0.1091E-01	-0.9313E-09	-0.7340E-05

IV.1.5.95

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 501

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-632.	-626.	-747.	-660.	-517.	-591.
2	-632.	-674.	-774.	-716.	-491.	-631.
3	-632.	-714.	-778.	-758.	-486.	-670.
4	-632.	-745.	-768.	-786.	-496.	-704.
5	-632.	-768.	-750.	-803.	-514.	-733.
6	-632.	-784.	-729.	-813.	-536.	-755.
7	-632.	-794.	-707.	-817.	-557.	-772.
8	-632.	-800.	-687.	-816.	-577.	-783.
9	-632.	-802.	-670.	-813.	-595.	-791.
10	-632.	-802.	-656.	-809.	-609.	-795.
11	-632.	-801.	-645.	-805.	-619.	-797.
12	-632.	-798.	-638.	-800.	-627.	-797.
13	-632.	-796.	-633.	-796.	-631.	-796.
14	-632.	-793.	-630.	-793.	-634.	-794.
15	-632.	-791.	-629.	-790.	-635.	-792.
16	-632.	-789.	-629.	-788.	-635.	-789.
17	-632.	-786.	-630.	-786.	-634.	-787.
18	-632.	-784.	-631.	-784.	-633.	-785.
19	-632.	-783.	-632.	-782.	-633.	-783.
20	-632.	-781.	-632.	-781.	-632.	-781.

IV.1.5.96

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 501   DESIGN STRESS INTENSITY =   19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	632.		747.		591.	
2	674.		774.		631.	
3	714.		778.		670.	
4	745.		786.		704.	
5	768.		803.		733.	
6	784.		813.		755.	
7	794.		817.		772.	
8	800.		816.		783.	
9	802.		813.		791.	
10	802.		809.		795.	
11	801.		805.		797.	
12	798.		800.		797.	
13	796.		796.		796.	
14	793.		793.		794.	
15	791.		790.		792.	
16	789.		788.		789.	
17	786.		786.		787.	
18	784.		784.		785.	
19	783.		782.		783.	
20	781.		781.		781.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.1.5 97

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 607

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-831.	357.	227.	68.	-23.
2	-831.	342.	211.	63.	-23.
3	-831.	327.	195.	59.	-22.
4	-831.	310.	180.	54.	-21.
5	-831.	291.	165.	50.	-21.
6	-830.	272.	151.	45.	-20.
7	-830.	252.	138.	41.	-19.
8	-830.	231.	124.	37.	-19.
9	-830.	209.	112.	34.	-18.
10	-830.	186.	99.	30.	-18.
11	-830.	162.	87.	26.	-17.
12	-830.	139.	75.	23.	-17.
13	-830.	114.	64.	19.	-16.
14	-830.	89.	53.	16.	-16.
15	-830.	64.	42.	13.	-15.
16	-830.	38.	31.	9.	-15.
17	-830.	13.	21.	6.	-15.
18	-830.	-13.	11.	3.	-14.
19	-830.	-39.	1.	0.	-14.
20	-830.	-65.	-9.	-3.	-14.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 607

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.8878E-02	0.2294E-02	0.2861E-03
2	0.8670E-02	0.2263E-02	0.3167E-03
3	0.8442E-02	0.2233E-02	0.3451E-03
4	0.8194E-02	0.2203E-02	0.3713E-03
5	0.7928E-02	0.2174E-02	0.3955E-03
6	0.7647E-02	0.2145E-02	0.4177E-03
7	0.7350E-02	0.2116E-02	0.4379E-03
8	0.7040E-02	0.2089E-02	0.4562E-03
9	0.6718E-02	0.2061E-02	0.4727E-03
10	0.6385E-02	0.2035E-02	0.4875E-03
11	0.6042E-02	0.2008E-02	0.5005E-03
12	0.5691E-02	0.1983E-02	0.5119E-03
13	0.5332E-02	0.1958E-02	0.5216E-03
14	0.4967E-02	0.1934E-02	0.5298E-03
15	0.4596E-02	0.1910E-02	0.5364E-03
16	0.4222E-02	0.1887E-02	0.5415E-03
17	0.3844E-02	0.1865E-02	0.5452E-03
18	0.3465E-02	0.1843E-02	0.5474E-03
19	0.3084E-02	0.1823E-02	0.5483E-03
20	0.2703E-02	0.1802E-02	0.5477E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 607

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-665.	285.	205.	547.	-1535.	24.
2	-665.	274.	144.	517.	-1473.	31.
3	-665.	261.	84.	486.	-1413.	36.
4	-664.	248.	26.	455.	-1355.	40.
5	-664.	233.	-30.	424.	-1299.	42.
6	-664.	218.	-84.	392.	-1245.	43.
7	-664.	202.	-136.	360.	-1193.	43.
8	-664.	185.	-187.	328.	-1142.	41.
9	-664.	167.	-236.	296.	-1092.	38.
10	-664.	149.	-284.	263.	-1045.	34.
11	-664.	130.	-330.	231.	-998.	29.
12	-664.	111.	-375.	198.	-953.	24.
13	-664.	91.	-419.	165.	-909.	17.
14	-664.	71.	-461.	132.	-867.	10.
15	-664.	51.	-503.	100.	-825.	2.
16	-664.	31.	-543.	67.	-785.	-6.
17	-664.	10.	-583.	35.	-745.	-14.
18	-664.	-11.	-622.	2.	-706.	-23.
19	-664.	-31.	-660.	-30.	-668.	-33.
20	-664.	-52.	-698.	-62.	-630.	-42.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 607   DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	951.		547.		1559.	
2	940.		517.		1504.	
3	927.		486.		1450.	
4	913.		455.		1395.	
5	899.		454.		1342.	
6	883.		476.		1288.	
7	867.		496.		1235.	
8	850.		515.		1183.	
9	832.		532.		1131.	
10	814.		547.		1079.	
11	795.		561.		1028.	
12	776.		573.		977.	
13	756.		584.		927.	
14	736.		594.		877.	
15	716.		602.		828.	
16	695.		610.		785.	
17	674.		618.		745.	
18	665.		624.		706.	
19	665.		660.		668.	
20	665.		698.		630.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 608

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-833.	259.	493.	147.	-27.
2	-833.	287.	474.	142.	-27.
3	-833.	312.	456.	136.	-26.
4	-833.	333.	438.	131.	-25.
5	-833.	352.	420.	126.	-24.
6	-833.	368.	403.	121.	-24.
7	-833.	382.	387.	116.	-23.
8	-832.	393.	371.	111.	-22.
9	-832.	401.	356.	107.	-21.
10	-832.	407.	341.	102.	-21.
11	-832.	411.	327.	98.	-20.
12	-832.	412.	314.	94.	-19.
13	-832.	412.	301.	90.	-18.
14	-832.	409.	289.	87.	-17.
15	-832.	405.	277.	83.	-16.
16	-831.	399.	266.	80.	-16.
17	-831.	391.	255.	77.	-15.
18	-831.	381.	245.	74.	-14.
19	-831.	370.	236.	71.	-13.
20	-831.	357.	227.	68.	-12.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 608

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.7311E-02	0.3004E-02	-0.6264E-03
2	0.7728E-02	0.2976E-02	-0.5588E-03
3	0.8099E-02	0.2946E-02	-0.4936E-03
4	0.8426E-02	0.2917E-02	-0.4310E-03
5	0.8710E-02	0.2886E-02	-0.3709E-03
6	0.8952E-02	0.2855E-02	-0.3133E-03
7	0.9155E-02	0.2824E-02	-0.2579E-03
8	0.9320E-02	0.2793E-02	-0.2048E-03
9	0.9448E-02	0.2761E-02	-0.1538E-03
10	0.9542E-02	0.2729E-02	-0.1050E-03
11	0.9602E-02	0.2697E-02	-0.5817E-04
12	0.9631E-02	0.2665E-02	-0.1326E-04
13	0.9628E-02	0.2632E-02	0.2980E-04
14	0.9596E-02	0.2600E-02	0.7109E-04
15	0.9536E-02	0.2568E-02	0.1107E-03
16	0.9448E-02	0.2536E-02	0.1487E-03
17	0.9335E-02	0.2504E-02	0.1851E-03
18	0.9196E-02	0.2473E-02	0.2201E-03
19	0.9033E-02	0.2442E-02	0.2538E-03
20	0.8848E-02	0.2411E-02	0.2861E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 608

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-667.	207.	1226.	774.	-2559.	-359.
2	-667.	230.	1154.	774.	-2487.	-315.
3	-667.	249.	1083.	773.	-2416.	-274.
4	-666.	267.	1015.	770.	-2347.	-237.
5	-666.	282.	948.	765.	-2280.	-202.
6	-666.	295.	883.	759.	-2215.	-169.
7	-666.	305.	820.	751.	-2153.	-140.
8	-666.	314.	760.	741.	-2092.	-113.
9	-666.	321.	702.	731.	-2033.	-89.
10	-666.	325.	645.	719.	-1977.	-68.
11	-666.	328.	592.	706.	-1923.	-49.
12	-666.	330.	540.	691.	-1871.	-32.
13	-665.	329.	490.	676.	-1821.	-17.
14	-665.	327.	443.	660.	-1774.	-5.
15	-665.	324.	398.	643.	-1728.	5.
16	-665.	319.	355.	625.	-1685.	12.
17	-665.	312.	314.	607.	-1645.	18.
18	-665.	305.	276.	587.	-1606.	22.
19	-665.	296.	240.	567.	-1569.	24.
20	-665.	285.	205.	547.	-1535.	24.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 608   DESIGN STRESS INTENSITY =   19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	876.		1226.		2559.	
2	898.		1154.		2487.	
3	917.		1083.		2416.	
4	935.		1015.		2347.	
5	949.		948.		2280.	
6	962.		883.		2215.	
7	973.		820.		2153.	
8	981.		760.		2092.	
9	988.		731.		2033.	
10	992.		719.		1977.	
11	995.		706.		1923.	
12	996.		691.		1871.	
13	995.		676.		1821.	
14	993.		660.		1774.	
15	990.		643.		1733.	
16	985.		625.		1698.	
17	978.		607.		1663.	
18	970.		587.		1628.	
19	961.		567.		1593.	
20	951.		547.		1559.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 609

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-836.	-987.	738.	219.	-15.
2	-836.	-883.	727.	216.	-16.
3	-836.	-783.	715.	213.	-17.
4	-836.	-688.	703.	209.	-18.
5	-835.	-597.	691.	205.	-18.
6	-835.	-512.	677.	202.	-19.
7	-835.	-430.	664.	198.	-19.
8	-835.	-353.	650.	194.	-19.
9	-835.	-281.	637.	190.	-20.
10	-835.	-212.	623.	186.	-20.
11	-835.	-148.	609.	182.	-20.
12	-835.	-88.	595.	178.	-20.
13	-835.	-32.	582.	174.	-19.
14	-835.	21.	568.	170.	-19.
15	-834.	69.	555.	166.	-19.
16	-834.	114.	542.	162.	-18.
17	-834.	156.	529.	158.	-18.
18	-834.	193.	517.	154.	-17.
19	-834.	228.	505.	151.	-17.
20	-834.	259.	493.	147.	-16.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 609

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	-0.1127E-01	0.3386E-02	-0.2267E-02
2	-0.9722E-02	0.3389E-02	-0.2164E-02
3	-0.8241E-02	0.3389E-02	-0.2063E-02
4	-0.6830E-02	0.3387E-02	-0.1964E-02
5	-0.5487E-02	0.3383E-02	-0.1866E-02
6	-0.4212E-02	0.3376E-02	-0.1770E-02
7	-0.3004E-02	0.3367E-02	-0.1676E-02
8	-0.1860E-02	0.3356E-02	-0.1584E-02
9	-0.7811E-03	0.3343E-02	-0.1494E-02
10	0.2358E-03	0.3328E-02	-0.1405E-02
11	0.1192E-02	0.3311E-02	-0.1319E-02
12	0.2089E-02	0.3293E-02	-0.1235E-02
13	0.2927E-02	0.3273E-02	-0.1152E-02
14	0.3708E-02	0.3252E-02	-0.1072E-02
15	0.4433E-02	0.3229E-02	-0.9929E-03
16	0.5104E-02	0.3206E-02	-0.9161E-03
17	0.5723E-02	0.3181E-02	-0.8411E-03
18	0.6289E-02	0.3155E-02	-0.7678E-03
19	0.6804E-02	0.3128E-02	-0.6963E-03
20	0.7270E-02	0.3100E-02	-0.6264E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

IV.1.5.107

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 609

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-668.	-790.	2166.	52.	-3503.	-1632.
2	-668.	-706.	2124.	124.	-3461.	-1536.
3	-668.	-626.	2079.	190.	-3416.	-1443.
4	-668.	-550.	2032.	253.	-3369.	-1353.
5	-668.	-478.	1983.	311.	-3320.	-1267.
6	-668.	-409.	1933.	365.	-3270.	-1183.
7	-668.	-344.	1882.	415.	-3218.	-1103.
8	-668.	-283.	1829.	461.	-3166.	-1027.
9	-668.	-225.	1777.	504.	-3113.	-953.
10	-668.	-170.	1724.	543.	-3060.	-883.
11	-668.	-119.	1671.	579.	-3007.	-816.
12	-668.	-70.	1618.	611.	-2954.	-752.
13	-668.	-25.	1566.	641.	-2901.	-692.
14	-668.	17.	1514.	668.	-2849.	-635.
15	-668.	55.	1463.	691.	-2798.	-581.
16	-667.	91.	1413.	713.	-2748.	-530.
17	-667.	124.	1364.	731.	-2698.	-482.
18	-667.	155.	1316.	748.	-2651.	-438.
19	-667.	182.	1270.	761.	-2604.	-397.
20	-667.	207.	1226.	773.	-2560.	-359.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 609 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	790.		2166.		3503.	
2	707.		2124.		3461.	
3	670.		2079.		3416.	
4	670.		2032.		3369.	
5	670.		1983.		3320.	
6	670.		1933.		3270.	
7	670.		1882.		3218.	
8	670.		1829.		3166.	
9	670.		1777.		3113.	
10	670.		1724.		3060.	
11	670.		1671.		3007.	
12	669.		1618.		2954.	
13	669.		1566.		2901.	
14	685.		1514.		2849.	
15	724.		1463.		2798.	
16	760.		1413.		2748.	
17	792.		1364.		2698.	
18	823.		1316.		2651.	
19	850.		1270.		2604.	
20	875.		1226.		2560.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2. PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 610

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-830.	-3886.	519.	150.	50.
2	-821.	-3694.	552.	160.	45.
3	-831.	-3505.	582.	170.	40.
4	-832.	-3320.	609.	178.	36.
5	-832.	-3140.	632.	185.	32.
6	-833.	-2964.	653.	191.	28.
7	-833.	-2792.	671.	197.	24.
8	-834.	-2624.	687.	202.	21.
9	-834.	-2461.	701.	206.	18.
10	-834.	-2303.	712.	210.	15.
11	-835.	-2149.	721.	213.	12.
12	-835.	-2001.	729.	215.	10.
13	-835.	-1857.	735.	217.	7.
14	-835.	-1718.	739.	218.	5.
15	-835.	-1584.	742.	219.	3.
16	-835.	-1455.	743.	220.	1.
17	-836.	-1330.	743.	220.	-0.
18	-836.	-1211.	744.	220.	-2.
19	-836.	-1097.	741.	220.	-3.
20	-836.	-987.	738.	219.	-4.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 610

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.5427E-01	0.2502E-02	-0.4100E-02
2	-0.5143E-01	0.2580E-02	-0.4025E-02
3	-0.4864E-01	0.2652E-02	-0.3945E-02
4	-0.4590E-01	0.2720E-02	-0.3862E-02
5	-0.4323E-01	0.2783E-02	-0.3774E-02
6	-0.4062E-01	0.2841E-02	-0.3684E-02
7	-0.3807E-01	0.2895E-02	-0.3591E-02
8	-0.3559E-01	0.2945E-02	-0.3496E-02
9	-0.3318E-01	0.2990E-02	-0.3398E-02
10	-0.3083E-01	0.3030E-02	-0.3299E-02
11	-0.2856E-01	0.3067E-02	-0.3199E-02
12	-0.2635E-01	0.3100E-02	-0.3097E-02
13	-0.2422E-01	0.3129E-02	-0.2994E-02
14	-0.2216E-01	0.3155E-02	-0.2891E-02
15	-0.2017E-01	0.3176E-02	-0.2787E-02
16	-0.1825E-01	0.3195E-02	-0.2683E-02
17	-0.1641E-01	0.3210E-02	-0.2579E-02
18	-0.1464E-01	0.3222E-02	-0.2475E-02
19	-0.1294E-01	0.3230E-02	-0.2371E-02
20	-0.1132E-01	0.3236E-02	-0.2267E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 610

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-664.	-3109.	1330.	-2531.	-2658.	-3686.
2	-665.	-2955.	1457.	-2339.	-2786.	-3571.
3	-665.	-2804.	1570.	-2153.	-2900.	-3455.
4	-665.	-2656.	1672.	-1974.	-3003.	-3339.
5	-666.	-2512.	1762.	-1802.	-3094.	-3222.
6	-666.	-2371.	1842.	-1636.	-3174.	-3105.
7	-667.	-2233.	1911.	-1477.	-3245.	-2989.
8	-667.	-2099.	1972.	-1324.	-3306.	-2874.
9	-667.	-1969.	2023.	-1178.	-3358.	-2760.
10	-667.	-1842.	2066.	-1037.	-3401.	-2647.
11	-668.	-1719.	2102.	-903.	-3437.	-2536.
12	-668.	-1600.	2131.	-775.	-3466.	-2426.
13	-668.	-1485.	2153.	-653.	-3489.	-2318.
14	-668.	-1374.	2169.	-536.	-3505.	-2212.
15	-668.	-1267.	2179.	-425.	-3516.	-2109.
16	-668.	-1164.	2185.	-319.	-3522.	-2008.
17	-668.	-1064.	2186.	-219.	-3523.	-1909.
18	-669.	-969.	2183.	-124.	-3520.	-1814.
19	-669.	-877.	2176.	-34.	-3513.	-1721.
20	-669.	-790.	2166.	51.	-3503.	-1631.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 610   DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	3114.		3862.		3686.	NODE 611
2	2959.		3796.		3571.	
3	2808.		3723.		3455.	
4	2659.		3646.		3339.	
5	2514.		3564.		3222.	
6	2373.		3478.		3174.	
7	2235.		3388.		3245.	
8	2100.		3296.		3306.	
9	1970.		3201.		3358.	
10	1843.		3104.		3401.	
11	1720.		3005.		3437.	
12	1601.		2906.		3466.	
13	1486.		2805.		3489.	
14	1374.		2705.		3505.	
15	1267.		2604.		3516.	
16	1164.		2504.		3522.	
17	1064.		2405.		3523.	
18	969.		2307.		3520.	
19	877.		2210.		3513.	
20	790.		2166.		3503.	NODE 610

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 611

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-545.	-4471.	-939.	-279.	-141.
2	-546.	-4538.	-1039.	-310.	-146.
3	-547.	-4597.	-1143.	-341.	-152.
4	-547.	-4650.	-1251.	-374.	-157.
5	-548.	-4694.	-1363.	-408.	-163.
6	-549.	-4729.	-1479.	-443.	-169.
7	-550.	-4754.	-1598.	-479.	-174.
8	-551.	-4769.	-1722.	-516.	-180.
9	-551.	-4773.	-1849.	-555.	-186.
10	-552.	-4764.	-1981.	-595.	-192.
11	-553.	-4742.	-2117.	-636.	-197.
12	-554.	-4707.	-2256.	-678.	-203.
13	-554.	-4656.	-2399.	-722.	-209.
14	-555.	-4590.	-2547.	-766.	-214.
15	-556.	-4507.	-2698.	-812.	-220.
16	-556.	-4406.	-2853.	-859.	-225.
17	-557.	-4286.	-3011.	-907.	-230.
18	-557.	-4147.	-3173.	-957.	-235.
19	-558.	-3987.	-3339.	-1007.	-240.
20	-558.	-3804.	-3508.	-1058.	-244.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 611

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.6392E-01	-0.2006E-03	0.1506E-02
2	-0.6493E-01	-0.9751E-04	0.1368E-02
3	-0.6583E-01	0.7250E-05	0.1215E-02
4	-0.6663E-01	0.1135E-03	0.1047E-02
5	-0.6730E-01	0.2210E-03	0.8638E-03
6	-0.6784E-01	0.3295E-03	0.6648E-03
7	-0.6823E-01	0.4388E-03	0.4494E-03
8	-0.6846E-01	0.5487E-03	0.2169E-03
9	-0.6853E-01	0.6588E-03	-0.3310E-04
10	-0.6842E-01	0.7688E-03	-0.3012E-03
11	-0.6811E-01	0.8785E-03	-0.5883E-03
12	-0.6760E-01	0.9874E-03	-0.8944E-03
13	-0.6686E-01	0.1095E-02	-0.1220E-02
14	-0.6589E-01	0.1202E-02	-0.1566E-02
15	-0.6467E-01	0.1306E-02	-0.1934E-02
16	-0.6318E-01	0.1408E-02	-0.2322E-02
17	-0.6142E-01	0.1507E-02	-0.2732E-02
18	-0.5936E-01	0.1603E-02	-0.3165E-02
19	-0.5699E-01	0.1694E-02	-0.3621E-02
20	-0.5430E-01	0.1782E-02	-0.4100E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 611

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-436.	-3577.	-4043.	-4649.	3171.	-2504.
2	-437.	-3630.	-4428.	-4819.	3555.	-2441.
3	-437.	-3678.	-4828.	-4988.	3954.	-2368.
4	-438.	-3720.	-5243.	-5155.	4367.	-2285.
5	-439.	-3755.	-5673.	-5320.	4795.	-2190.
6	-439.	-3783.	-6117.	-5482.	5239.	-2084.
7	-440.	-3803.	-6577.	-5642.	5697.	-1965.
8	-441.	-3815.	-7052.	-5798.	6171.	-1833.
9	-441.	-3818.	-7543.	-5949.	6660.	-1687.
10	-442.	-3811.	-8048.	-6095.	7165.	-1527.
11	-442.	-3794.	-8570.	-6235.	7685.	-1352.
12	-443.	-3765.	-9106.	-6369.	8220.	-1161.
13	-443.	-3725.	-9657.	-6496.	8770.	-954.
14	-444.	-3672.	-10224.	-6615.	9335.	-729.
15	-445.	-3605.	-10804.	-6724.	9915.	-486.
16	-445.	-3525.	-11400.	-6824.	10510.	-225.
17	-445.	-3429.	-12009.	-6913.	11118.	55.
18	-446.	-3318.	-12631.	-6991.	11740.	356.
19	-446.	-3189.	-13267.	-7056.	12375.	677.
20	-447.	-3044.	-13916.	-7107.	13022.	1020.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 611 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3	
1	3635.		4649.		5675.		NODE 612
2	3692.		4819.		5996.		
3	3744.		4988.		6322.		
4	3790.		5243.		6652.		
5	3830.		5673.		6986.		
6	3862.		6117.		7323.		
7	3887.		6577.		7662.		
8	3904.		7052.		8004.		
9	3911.		7543.		8348.		
10	3909.		8048.		8692.		
11	3897.		8570.		9037.		
12	3873.		9106.		9381.		
13	3837.		9657.		9724.		
14	3789.		10224.		10064.		
15	3728.		10804.		10402.		
16	3652.		11400.		10735.		
17	3561.		12009.		11118.		
18	3454.		12631.		11740.		
19	3330.		13267.		12375.		
20	3189.		13916.		13022.		NODE 611

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 612

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-535.	-3143.	46.	18.	-72.
2	-535.	-3221.	8.	7.	-75.
3	-536.	-3298.	-31.	-5.	-78.
4	-536.	-3376.	-71.	-17.	-80.
5	-537.	-3454.	-113.	-30.	-83.
6	-538.	-3531.	-157.	-43.	-86.
7	-538.	-3607.	-201.	-56.	-89.
8	-539.	-3683.	-248.	-70.	-92.
9	-539.	-3758.	-296.	-85.	-96.
10	-540.	-3832.	-346.	-100.	-99.
11	-540.	-3905.	-397.	-115.	-102.
12	-541.	-3976.	-450.	-131.	-105.
13	-542.	-4045.	-505.	-148.	-109.
14	-542.	-4113.	-561.	-165.	-112.
15	-543.	-4179.	-619.	-182.	-116.
16	-544.	-4243.	-680.	-201.	-120.
17	-544.	-4304.	-742.	-219.	-123.
18	-545.	-4363.	-806.	-239.	-127.
19	-545.	-4418.	-871.	-259.	-131.
20	-546.	-4471.	-939.	-279.	-135.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 612

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	-0.4391E-01	-0.2130E-02	0.2281E-02
2	-0.4508E-01	-0.2080E-02	0.2283E-02
3	-0.4625E-01	-0.2028E-02	0.2282E-02
4	-0.4742E-01	-0.1975E-02	0.2277E-02
5	-0.4859E-01	-0.1921E-02	0.2267E-02
6	-0.4975E-01	-0.1865E-02	0.2253E-02
7	-0.5090E-01	-0.1807E-02	0.2234E-02
8	-0.5204E-01	-0.1748E-02	0.2211E-02
9	-0.5317E-01	-0.1688E-02	0.2183E-02
10	-0.5428E-01	-0.1626E-02	0.2150E-02
11	-0.5537E-01	-0.1563E-02	0.2112E-02
12	-0.5644E-01	-0.1499E-02	0.2069E-02
13	-0.5749E-01	-0.1433E-02	0.2020E-02
14	-0.5851E-01	-0.1366E-02	0.1965E-02
15	-0.5951E-01	-0.1297E-02	0.1904E-02
16	-0.6047E-01	-0.1227E-02	0.1837E-02
17	-0.6139E-01	-0.1156E-02	0.1764E-02
18	-0.6227E-01	-0.1084E-02	0.1685E-02
19	-0.6312E-01	-0.1011E-02	0.1599E-02
20	-0.6392E-01	-0.9371E-03	0.1506E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 612

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-428.	-2514.	-252.	-2444.	-604.	-2584.
2	-428.	-2576.	-397.	-2550.	-460.	-2603.
3	-429.	-2639.	-547.	-2658.	-310.	-2620.
4	-429.	-2701.	-703.	-2766.	-155.	-2636.
5	-430.	-2763.	-864.	-2877.	5.	-2649.
6	-430.	-2825.	-1031.	-2989.	171.	-2661.
7	-430.	-2886.	-1204.	-3102.	343.	-2670.
8	-431.	-2947.	-1383.	-3216.	521.	-2677.
9	-431.	-3007.	-1568.	-3332.	705.	-2681.
10	-432.	-3066.	-1759.	-3448.	895.	-2683.
11	-432.	-3124.	-1956.	-3566.	1092.	-2682.
12	-433.	-3181.	-2160.	-3684.	1295.	-2677.
13	-433.	-3236.	-2371.	-3803.	1504.	-2669.
14	-434.	-3291.	-2589.	-3923.	1721.	-2658.
15	-434.	-3343.	-2813.	-4044.	1944.	-2643.
16	-435.	-3394.	-3044.	-4164.	2175.	-2624.
17	-435.	-3443.	-3283.	-4285.	2413.	-2601.
18	-436.	-3490.	-3529.	-4406.	2657.	-2574.
19	-436.	-3535.	-3782.	-4528.	2910.	-2542.
20	-437.	-3577.	-4043.	-4649.	3170.	-2505.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 612   DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	2531.		2444.		2584.	
2	2595.		2550.		2603.	
3	2658.		2658.		2620.	
4	2722.		2766.		2636.	
5	2785.		2877.		2654.	
6	2848.		2989.		2832.	
7	2911.		3102.		3013.	
8	2973.		3216.		3198.	
9	3035.		3332.		3386.	
10	3096.		3448.		3578.	
11	3156.		3566.		3773.	
12	3215.		3684.		3972.	
13	3273.		3803.		4174.	
14	3329.		3923.		4379.	
15	3384.		4044.		4587.	
16	3437.		4164.		4799.	
17	3489.		4285.		5014.	
18	3538.		4406.		5231.	
19	3585.		4528.		5452.	
20	3630.		4649.		5675.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 613

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-528.	-1809.	505.	155.	-31.
2	-528.	-1867.	488.	150.	-33.
3	-529.	-1928.	471.	145.	-34.
4	-529.	-1990.	454.	140.	-35.
5	-529.	-2053.	435.	135.	-37.
6	-530.	-2118.	416.	129.	-38.
7	-530.	-2184.	396.	123.	-40.
8	-530.	-2252.	375.	117.	-42.
9	-531.	-2321.	353.	110.	-43.
10	-531.	-2392.	330.	104.	-45.
11	-531.	-2463.	307.	96.	-47.
12	-532.	-2536.	282.	89.	-49.
13	-532.	-2609.	257.	81.	-51.
14	-533.	-2684.	230.	74.	-53.
15	-533.	-2759.	202.	65.	-55.
16	-534.	-2835.	173.	57.	-57.
17	-534.	-2911.	143.	48.	-60.
18	-535.	-2988.	112.	38.	-62.
19	-535.	-3065.	80.	29.	-65.
20	-536.	-3143.	46.	18.	-67.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 613

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	-0.2380E-01	-0.3239E-02	0.1691E-02
2	-0.2468E-01	-0.3215E-02	0.1741E-02
3	-0.2559E-01	-0.3190E-02	0.1791E-02
4	-0.2652E-01	-0.3163E-02	0.1838E-02
5	-0.2748E-01	-0.3136E-02	0.1883E-02
6	-0.2846E-01	-0.3107E-02	0.1927E-02
7	-0.2946E-01	-0.3077E-02	0.1968E-02
8	-0.3048E-01	-0.3045E-02	0.2008E-02
9	-0.3152E-01	-0.3012E-02	0.2045E-02
10	-0.3258E-01	-0.2978E-02	0.2080E-02
11	-0.3365E-01	-0.2943E-02	0.2112E-02
12	-0.3474E-01	-0.2906E-02	0.2142E-02
13	-0.3585E-01	-0.2868E-02	0.2170E-02
14	-0.3697E-01	-0.2828E-02	0.2194E-02
15	-0.3810E-01	-0.2787E-02	0.2216E-02
16	-0.3924E-01	-0.2745E-02	0.2236E-02
17	-0.4040E-01	-0.2701E-02	0.2252E-02
18	-0.4156E-01	-0.2655E-02	0.2265E-02
19	-0.4272E-01	-0.2608E-02	0.2274E-02
20	-0.4389E-01	-0.2560E-02	0.2281E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 613

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-422.	-1447.	1516.	-851.	-2361.	-2043.
2	-423.	-1494.	1453.	-917.	-2298.	-2071.
3	-423.	-1542.	1387.	-984.	-2233.	-2100.
4	-423.	-1592.	1318.	-1054.	-2165.	-2129.
5	-423.	-1642.	1247.	-1126.	-2094.	-2159.
6	-424.	-1694.	1173.	-1199.	-2020.	-2189.
7	-424.	-1748.	1096.	-1276.	-1943.	-2220.
8	-424.	-1802.	1015.	-1354.	-1863.	-2250.
9	-424.	-1857.	931.	-1434.	-1780.	-2280.
10	-425.	-1913.	844.	-1516.	-1693.	-2311.
11	-425.	-1970.	753.	-1600.	-1603.	-2341.
12	-425.	-2029.	658.	-1686.	-1509.	-2371.
13	-426.	-2087.	559.	-1774.	-1411.	-2400.
14	-426.	-2147.	457.	-1864.	-1309.	-2429.
15	-427.	-2207.	350.	-1956.	-1203.	-2458.
16	-427.	-2268.	239.	-2050.	-1093.	-2485.
17	-427.	-2329.	123.	-2146.	-978.	-2512.
18	-428.	-2390.	3.	-2243.	-858.	-2537.
19	-428.	-2452.	-122.	-2343.	-734.	-2562.
20	-429.	-2514.	-252.	-2444.	-605.	-2585.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 613 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	1450.		2367.		2361.	
2	1497.		2369.		2298.	
3	1546.		2371.		2233.	
4	1596.		2372.		2165.	
5	1647.		2373.		2159.	
6	1699.		2372.		2189.	
7	1753.		2371.		2220.	
8	1808.		2369.		2250.	
9	1863.		2365.		2280.	
10	1920.		2360.		2311.	
11	1978.		2353.		2341.	
12	2037.		2344.		2371.	
13	2096.		2334.		2400.	
14	2156.		2321.		2429.	
15	2217.		2306.		2458.	
16	2279.		2289.		2485.	
17	2341.		2269.		2512.	
18	2403.		2246.		2537.	
19	2466.		2343.		2562.	
20	2529.		2444.		2585.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 614

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-524.	-1076.	671.	203.	-10.
2	-524.	-1095.	666.	201.	-11.
3	-525.	-1117.	660.	200.	-11.
4	-525.	-1140.	654.	198.	-12.
5	-525.	-1166.	648.	196.	-12.
6	-525.	-1194.	641.	194.	-13.
7	-525.	-1224.	634.	193.	-14.
8	-525.	-1257.	627.	190.	-14.
9	-526.	-1291.	619.	188.	-15.
10	-526.	-1328.	611.	186.	-16.
11	-526.	-1367.	603.	184.	-17.
12	-526.	-1408.	594.	181.	-18.
13	-526.	-1452.	584.	178.	-18.
14	-527.	-1497.	575.	176.	-19.
15	-527.	-1544.	564.	173.	-20.
16	-527.	-1593.	554.	169.	-21.
17	-527.	-1644.	542.	166.	-23.
18	-528.	-1697.	530.	163.	-24.
19	-528.	-1752.	518.	159.	-25.
20	-528.	-1809.	505.	155.	-26.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 614

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.1268E-01	-0.3764E-02	0.5221E-03
2	-0.1297E-01	-0.3754E-02	0.5905E-03
3	-0.1329E-01	-0.3744E-02	0.6585E-03
4	-0.1365E-01	-0.3734E-02	0.7258E-03
5	-0.1404E-01	-0.3723E-02	0.7925E-03
6	-0.1447E-01	-0.3711E-02	0.8585E-03
7	-0.1493E-01	-0.3699E-02	0.9239E-03
8	-0.1542E-01	-0.3687E-02	0.9885E-03
9	-0.1595E-01	-0.3673E-02	0.1052E-02
10	-0.1651E-01	-0.3659E-02	0.1115E-02
11	-0.1710E-01	-0.3645E-02	0.1177E-02
12	-0.1772E-01	-0.3629E-02	0.1239E-02
13	-0.1837E-01	-0.3613E-02	0.1299E-02
14	-0.1906E-01	-0.3596E-02	0.1358E-02
15	-0.1977E-01	-0.3578E-02	0.1417E-02
16	-0.2051E-01	-0.3559E-02	0.1474E-02
17	-0.2128E-01	-0.3539E-02	0.1530E-02
18	-0.2209E-01	-0.3518E-02	0.1585E-02
19	-0.2291E-01	-0.3496E-02	0.1638E-02
20	-0.2377E-01	-0.3473E-02	0.1691E-02

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 614

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-419.	-861.	2159.	-83.	-2997.	-1639.
2	-420.	-876.	2138.	-104.	-2977.	-1649.
3	-420.	-893.	2116.	-126.	-2955.	-1660.
4	-420.	-912.	2092.	-152.	-2932.	-1672.
5	-420.	-933.	2068.	-179.	-2908.	-1686.
6	-420.	-955.	2042.	-208.	-2882.	-1702.
7	-420.	-979.	2016.	-240.	-2856.	-1719.
8	-420.	-1005.	1987.	-274.	-2828.	-1737.
9	-420.	-1033.	1958.	-310.	-2798.	-1756.
10	-421.	-1063.	1926.	-348.	-2768.	-1777.
11	-421.	-1094.	1894.	-389.	-2735.	-1799.
12	-421.	-1127.	1859.	-431.	-2701.	-1822.
13	-421.	-1161.	1823.	-476.	-2666.	-1846.
14	-421.	-1198.	1786.	-523.	-2628.	-1872.
15	-421.	-1235.	1746.	-572.	-2589.	-1898.
16	-422.	-1275.	1704.	-624.	-2547.	-1926.
17	-422.	-1316.	1660.	-677.	-2504.	-1954.
18	-422.	-1358.	1614.	-733.	-2459.	-1983.
19	-422.	-1402.	1566.	-791.	-2411.	-2013.
20	-423.	-1447.	1516.	-851.	-2361.	-2043.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 614   DESIGN STRESS INTENSITY =   19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	861.		2241.		2997.	
2	877.		2241.		2977.	
3	894.		2242.		2955.	
4	913.		2244.		2932.	
5	933.		2247.		2908.	
6	956.		2251.		2882.	
7	980.		2256.		2856.	
8	1006.		2261.		2828.	
9	1034.		2268.		2798.	
10	1064.		2275.		2768.	
11	1095.		2283.		2735.	
12	1128.		2291.		2701.	
13	1162.		2300.		2666.	
14	1199.		2309.		2628.	
15	1237.		2318.		2589.	
16	1276.		2328.		2547.	
17	1317.		2338.		2504.	
18	1360.		2347.		2459.	
19	1404.		2357.		2411.	
20	1449.		2366.		2361.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 700

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	332.	-2725.	-149.	-106.	351.
2	328.	-2721.	83.	-37.	349.
3	324.	-2717.	314.	33.	347.
4	320.	-2713.	543.	102.	345.
5	316.	-2709.	771.	172.	343.
6	312.	-2705.	998.	241.	342.
7	308.	-2701.	1223.	310.	340.
8	304.	-2697.	1447.	379.	338.
9	300.	-2693.	1670.	448.	336.
10	296.	-2689.	1891.	516.	335.
11	292.	-2685.	2111.	585.	333.
12	288.	-2681.	2329.	653.	331.
13	284.	-2677.	2546.	721.	329.
14	280.	-2673.	2762.	789.	328.
15	276.	-2670.	2976.	857.	326.
16	273.	-2666.	3189.	924.	324.
17	269.	-2662.	3400.	992.	322.
18	265.	-2658.	3611.	1059.	321.
19	261.	-2654.	3820.	1126.	319.
20	257.	-2650.	4027.	1193.	317.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 700

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.1640E 00	-0.5383E-01	-0.1606E-01
2	-0.1533E 00	-0.5380E-01	-0.1607E-01
3	-0.1427E 00	-0.5377E-01	-0.1600E-01
4	-0.1321E 00	-0.5374E-01	-0.1586E-01
5	-0.1216E 00	-0.5371E-01	-0.1564E-01
6	-0.1113E 00	-0.5368E-01	-0.1536E-01
7	-0.1013E 00	-0.5365E-01	-0.1500E-01
8	-0.9142E-01	-0.5363E-01	-0.1457E-01
9	-0.8190E-01	-0.5360E-01	-0.1408E-01
10	-0.7274E-01	-0.5357E-01	-0.1351E-01
11	-0.6397E-01	-0.5354E-01	-0.1287E-01
12	-0.5565E-01	-0.5351E-01	-0.1217E-01
13	-0.4782E-01	-0.5349E-01	-0.1139E-01
14	-0.4053E-01	-0.5346E-01	-0.1055E-01
15	-0.3382E-01	-0.5343E-01	-0.9643E-02
16	-0.2773E-01	-0.5340E-01	-0.8667E-02
17	-0.2232E-01	-0.5338E-01	-0.7624E-02
18	-0.1762E-01	-0.5335E-01	-0.6515E-02
19	-0.1368E-01	-0.5332E-01	-0.5341E-02
20	-0.1054E-01	-0.5330E-01	-0.4100E-02

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 700

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI.	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	354.	-2907.	-665.	-3633.	1373.	-2181.
2	350.	-2902.	916.	-3152.	-216.	-2653.
3	345.	-2898.	2488.	-2673.	-1797.	-3124.
4	341.	-2894.	4050.	-2194.	-3367.	-3593.
5	337.	-2889.	5602.	-1717.	-4929.	-4062.
6	333.	-2885.	7145.	-1240.	-6480.	-4530.
7	328.	-2881.	8679.	-765.	-8022.	-4997.
8	324.	-2877.	10203.	-290.	-9555.	-5463.
9	320.	-2873.	11718.	183.	-11078.	-5928.
10	316.	-2868.	13223.	655.	-12592.	-6392.
11	311.	-2864.	14719.	1126.	-14096.	-6855.
12	307.	-2860.	16206.	1596.	-15591.	-7316.
13	303.	-2856.	17683.	2065.	-17077.	-7777.
14	299.	-2852.	19151.	2533.	-18553.	-8237.
15	295.	-2848.	20610.	3000.	-20021.	-8695.
16	291.	-2843.	22060.	3466.	-21478.	-9153.
17	287.	-2839.	23500.	3930.	-22927.	-9609.
18	283.	-2835.	24932.	4394.	-24366.	-10064.
19	279.	-2831.	26354.	4856.	-25797.	-10518.
20	275.	-2827.	27767.	5317.	-27218.	-10972.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 700 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	3672.		3633.		3554.	
2	3662.		4068.		2653.	
3	3652.		5160.		3124.	
4	3642.		6244.		3593.	
5	3633.		7319.		4929.	
6	3623.		8385.		6480.	
7	3613.		9444.		8022.	
8	3603.		10493.		9555.	
9	3594.		11718.		11078.	
10	3584.		13223.		12592.	
11	3575.		14719.		14096.	
12	3565.		16206.		15591.	
13	3556.		17683.		17077.	
14	3546.		19151.		18553.	
15	3537.		20610.	*	20021.	*
16	3527.		22060.	*	21478.	*
17	3518.		23500.	*	22927.	*
18	3508.		24932.	*	24366.	*
19	3499.		26354.	*	25797.	*
20	3490.		27767.	*	27218.	*

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 701

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	352.	-2531.	150.	45.	-332.
2	352.	-2307.	55.	17.	-333.
3	352.	-2083.	-39.	-12.	-333.
4	352.	-1859.	-134.	-40.	-334.
5	352.	-1636.	-230.	-69.	-334.
6	352.	-1411.	-325.	-97.	-335.
7	352.	-1186.	-420.	-126.	-335.
8	352.	-959.	-515.	-155.	-335.
9	352.	-732.	-611.	-183.	-335.
10	352.	-503.	-706.	-212.	-335.
11	352.	-273.	-801.	-240.	-334.
12	352.	-40.	-896.	-269.	-334.
13	352.	194.	-991.	-297.	-333.
14	352.	431.	-1086.	-326.	-332.
15	352.	670.	-1180.	-354.	-332.
16	352.	912.	-1274.	-382.	-331.
17	352.	1157.	-1368.	-410.	-329.
18	352.	1405.	-1462.	-439.	-328.
19	352.	1657.	-1555.	-466.	-327.
20	352.	1912.	-1648.	-494.	-325.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 701

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.5383E-01	0.1640E 00	-0.1606E-01
2	-0.4926E-01	0.1640E 00	-0.1605E-01
3	-0.4469E-01	0.1640E 00	-0.1605E-01
4	-0.4013E-01	0.1641E 00	-0.1606E-01
5	-0.3555E-01	0.1641E 00	-0.1609E-01
6	-0.3097E-01	0.1641E 00	-0.1614E-01
7	-0.2637E-01	0.1641E 00	-0.1620E-01
8	-0.2175E-01	0.1641E 00	-0.1628E-01
9	-0.1711E-01	0.1641E 00	-0.1637E-01
10	-0.1243E-01	0.1641E 00	-0.1648E-01
11	-0.7726E-02	0.1641E 00	-0.1660E-01
12	-0.2982E-02	0.1641E 00	-0.1675E-01
13	0.1805E-02	0.1641E 00	-0.1690E-01
14	0.6637E-02	0.1641E 00	-0.1707E-01
15	0.1152E-01	0.1641E 00	-0.1726E-01
16	0.1646E-01	0.1641E 00	-0.1747E-01
17	0.2146E-01	0.1641E 00	-0.1769E-01
18	0.2653E-01	0.1641E 00	-0.1792E-01
19	0.3166E-01	0.1641E 00	-0.1817E-01
20	0.3687E-01	0.1641E 00	-0.1844E-01

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 701

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	403.	-2892.	1578.	-2540.	-772.	-3245.
2	403.	-2636.	836.	-2506.	-31.	-2767.
3	403.	-2381.	94.	-2474.	712.	-2288.
4	403.	-2125.	-651.	-2441.	1456.	-1809.
5	403.	-1869.	-1396.	-2409.	2201.	-1330.
6	403.	-1613.	-2142.	-2376.	2948.	-849.
7	403.	-1355.	-2889.	-2342.	3694.	-368.
8	403.	-1097.	-3636.	-2308.	4441.	115.
9	403.	-837.	-4383.	-2272.	5188.	599.
10	403.	-575.	-5129.	-2234.	5934.	1084.
11	403.	-312.	-5875.	-2195.	6681.	1572.
12	403.	-46.	-6620.	-2153.	7425.	2061.
13	403.	222.	-7364.	-2108.	8169.	2552.
14	403.	492.	-8106.	-2060.	8911.	3045.
15	403.	766.	-8846.	-2009.	9652.	3540.
16	403.	1042.	-9585.	-1954.	10390.	4038.
17	403.	1322.	-10320.	-1895.	11126.	4539.
18	403.	1606.	-11053.	-1831.	11859.	5043.
19	403.	1893.	-11784.	-1763.	12589.	5549.
20	403.	2185.	-12510.	-1689.	13315.	6059.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 701   DESIGN STRESS INTENSITY =   19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	3697.		4117.		3245.	
2	3443.		3343.		2767.	
3	3188.		2567.		3000.	
4	2933.		2441.		3265.	
5	2678.		2409.		3531.	
6	2422.		2376.		3797.	
7	2165.		2889.		4062.	
8	1906.		3636.		4441.	
9	1646.		4383.		5188.	
10	1384.		5129.		5934.	
11	1215.		5875.		6681.	
12	1213.		6620.		7425.	
13	1211.		7364.		8169.	
14	1209.		8106.		8911.	
15	1206.		8846.		9652.	
16	1442.		9585.		10390.	
17	1721.		10320.		11126.	
18	2002.		11053.		11859.	
19	2287.		11784.		12589.	
20	2576.		12510.		13315.	

$13315 \times \frac{2005}{1700} = 15704$

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 708

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	2.	1806.	52.	16.	-25.
2	2.	1979.	48.	14.	-24.
3	2.	2151.	43.	13.	-24.
4	2.	2323.	39.	12.	-23.
5	2.	2495.	35.	10.	-22.
6	2.	2667.	31.	9.	-21.
7	2.	2839.	27.	8.	-20.
8	2.	3012.	23.	7.	-19.
9	2.	3184.	20.	6.	-17.
10	2.	3356.	16.	5.	-16.
11	2.	3528.	13.	4.	-15.
12	2.	3699.	11.	3.	-13.
13	2.	3871.	8.	2.	-12.
14	2.	4043.	6.	2.	-10.
15	2.	4215.	4.	1.	-9.
16	2.	4387.	3.	1.	-7.
17	2.	4559.	1.	0.	-6.
18	2.	4731.	1.	0.	-4.
19	2.	4903.	0.	0.	-2.
20	2.	5075.	-0.	0.	-0.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 708

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	0.3687E-01	0.1641E 00	-0.1844E-01
2	0.4039E-01	0.1641E 00	-0.1843E-01
3	0.4390E-01	0.1641E 00	-0.1843E-01
4	0.4742E-01	0.1641E 00	-0.1842E-01
5	0.5094E-01	0.1641E 00	-0.1842E-01
6	0.5445E-01	0.1641E 00	-0.1842E-01
7	0.5796E-01	0.1641E 00	-0.1841E-01
8	0.6147E-01	0.1641E 00	-0.1841E-01
9	0.6499E-01	0.1641E 00	-0.1841E-01
10	0.6850E-01	0.1641E 00	-0.1840E-01
11	0.7201E-01	0.1641E 00	-0.1840E-01
12	0.7552E-01	0.1641E 00	-0.1840E-01
13	0.7903E-01	0.1640E 00	-0.1840E-01
14	0.8254E-01	0.1640E 00	-0.1840E-01
15	0.8605E-01	0.1640E 00	-0.1840E-01
16	0.8956E-01	0.1640E 00	-0.1840E-01
17	0.9307E-01	0.1640E 00	-0.1840E-01
18	0.9658E-01	0.1640E 00	-0.1840E-01
19	0.1001E 00	0.1640E 00	-0.1840E-01
20	0.1036E 00	0.1640E 00	-0.1840E-01

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 708

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	3.	2065.	414.	2188.	-408.	1941.
2	3.	2261.	377.	2374.	-372.	2149.
3	3.	2458.	342.	2560.	-336.	2357.
4	3.	2655.	307.	2746.	-302.	2564.
5	3.	2852.	275.	2933.	-270.	2771.
6	3.	3048.	243.	3120.	-237.	2977.
7	3.	3245.	212.	3308.	-206.	3182.
8	3.	3442.	184.	3496.	-179.	3388.
9	3.	3638.	157.	3684.	-152.	3592.
10	3.	3835.	131.	3874.	-126.	3797.
11	3.	4032.	108.	4063.	-103.	4000.
12	3.	4228.	88.	4253.	-83.	4203.
13	3.	4424.	68.	4444.	-63.	4405.
14	3.	4621.	51.	4635.	-46.	4606.
15	3.	4818.	36.	4828.	-31.	4807.
16	3.	5014.	25.	5020.	-20.	5007.
17	3.	5210.	14.	5214.	-9.	5206.
18	3.	5407.	8.	5409.	-3.	5405.
19	3.	5604.	4.	5604.	1.	5603.
20	3.	5800.	1.	5800.	4.	5800.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 708   DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	2106.		2188.		2350.	
2	2302.		2374.		2521.	
3	2497.		2560.		2693.	
4	2693.		2746.		2866.	
5	2888.		2933.		3040.	
6	3083.		3120.		3214.	
7	3278.		3308.		3389.	
8	3472.		3496.		3566.	
9	3667.		3684.		3745.	
10	3861.		3874.		3922.	
11	4056.		4063.		4103.	
12	4250.		4253.		4286.	
13	4444.		4444.		4467.	
14	4638.		4635.		4652.	
15	4832.		4828.		4838.	
16	5025.		5020.		5027.	
17	5219.		5214.		5215.	
18	5412.		5409.		5408.	
19	5606.		5604.		5603.	
20	5800.		5800.		5800.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 702

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-504.	-1052.	568.	168.	17.
2	-505.	-1024.	607.	180.	17.
3	-505.	-1004.	645.	192.	17.
4	-506.	-992.	683.	204.	17.
5	-507.	-989.	722.	217.	17.
6	-507.	-996.	761.	229.	17.
7	-508.	-1012.	800.	242.	18.
8	-509.	-1038.	839.	255.	18.
9	-509.	-1075.	878.	267.	17.
10	-510.	-1123.	917.	280.	17.
11	-511.	-1182.	955.	292.	17.
12	-512.	-1253.	991.	304.	16.
13	-513.	-1337.	1024.	316.	15.
14	-514.	-1433.	1055.	326.	13.
15	-515.	-1543.	1082.	335.	11.
16	-516.	-1666.	1103.	343.	9.
17	-518.	-1802.	1118.	349.	6.
18	-520.	-1952.	1126.	352.	2.
19	-522.	-2116.	1124.	353.	-2.
20	-524.	-2294.	1112.	351.	-7.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 702

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	-0.4658E-02	-0.3323E-02	-0.8484E-04
2	-0.4488E-02	-0.3328E-02	-0.6414E-04
3	-0.4366E-02	-0.3334E-02	-0.4209E-04
4	-0.4297E-02	-0.3340E-02	-0.1870E-04
5	-0.4282E-02	-0.3346E-02	0.6049E-05
6	-0.4325E-02	-0.3351E-02	0.3214E-04
7	-0.4430E-02	-0.3357E-02	0.5961E-04
8	-0.4598E-02	-0.3363E-02	0.8844E-04
9	-0.4834E-02	-0.3368E-02	0.1186E-03
10	-0.5140E-02	-0.3373E-02	0.1502E-03
11	-0.5520E-02	-0.3378E-02	0.1831E-03
12	-0.5976E-02	-0.3382E-02	0.2173E-03
13	-0.6512E-02	-0.3385E-02	0.2526E-03
14	-0.7129E-02	-0.3388E-02	0.2892E-03
15	-0.7831E-02	-0.3390E-02	0.3267E-03
16	-0.8619E-02	-0.3391E-02	0.3650E-03
17	-0.9496E-02	-0.3391E-02	0.4040E-03
18	-0.1046E-01	-0.3390E-02	0.4434E-03
19	-0.1152E-01	-0.3387E-02	0.4828E-03
20	-0.1266E-01	-0.3383E-02	0.5221E-03

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 702

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-172.	-358.	223.	-242.	-567.	-475.
2	-172.	-349.	250.	-224.	-594.	-474.
3	-172.	-342.	276.	-208.	-620.	-475.
4	-172.	-338.	303.	-196.	-647.	-480.
5	-172.	-337.	330.	-186.	-674.	-488.
6	-173.	-339.	356.	-180.	-702.	-498.
7	-173.	-344.	383.	-176.	-729.	-513.
8	-173.	-353.	410.	-176.	-757.	-530.
9	-173.	-366.	437.	-180.	-784.	-552.
10	-174.	-382.	464.	-187.	-811.	-577.
11	-174.	-402.	490.	-199.	-838.	-606.
12	-174.	-427.	515.	-215.	-863.	-638.
13	-175.	-455.	538.	-236.	-887.	-675.
14	-175.	-488.	559.	-261.	-908.	-715.
15	-175.	-525.	577.	-292.	-927.	-758.
16	-176.	-567.	591.	-329.	-943.	-805.
17	-176.	-614.	601.	-371.	-954.	-856.
18	-177.	-665.	606.	-420.	-960.	-910.
19	-178.	-720.	604.	-475.	-959.	-966.
20	-178.	-781.	595.	-537.	-952.	-1025.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 702 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE		OUTSIDE SURFACE		INSIDE SURFACE	
	SI	T1T2T3	SI	T1T2T3	SI	T1T2T3
1	359.		465.		567.	
2	349.		474.		594.	
3	342.		485.		620.	
4	338.		499.		647.	
5	337.		516.		674.	
6	339.		536.		702.	
7	345.		560.		729.	
8	354.		587.		757.	
9	366.		617.		784.	
10	383.		651.		811.	
11	403.		689.		838.	
12	427.		730.		863.	
13	455.		773.		887.	
14	488.		820.		908.	
15	525.		869.		927.	
16	567.		920.		943.	
17	614.		972.		954.	
18	665.		1026.		960.	
19	720.		1079.		966.	
20	781.		1132.		1025.	

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 706

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-830.	-56.	17.	5.	-19.
2	-830.	-113.	-9.	-3.	-17.
3	-830.	-170.	-32.	-10.	-14.
4	-830.	-226.	-51.	-15.	-12.
5	-830.	-280.	-67.	-20.	-10.
6	-830.	-333.	-79.	-24.	-8.
7	-830.	-384.	-89.	-27.	-6.
8	-830.	-432.	-96.	-29.	-4.
9	-830.	-478.	-100.	-30.	-2.
10	-830.	-521.	-102.	-31.	-1.
11	-830.	-562.	-103.	-31.	1.
12	-830.	-600.	-101.	-30.	2.
13	-830.	-635.	-97.	-29.	3.
14	-830.	-668.	-92.	-28.	4.
15	-830.	-698.	-85.	-26.	5.
16	-830.	-726.	-77.	-23.	6.
17	-830.	-752.	-68.	-20.	7.
18	-830.	-777.	-57.	-17.	8.
19	-830.	-800.	-46.	-14.	8.
20	-830.	-821.	-33.	-10.	9.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 706

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.2715E-02	0.1802E-02	0.5477E-03
2	0.1913E-02	0.1769E-02	0.5486E-03
3	0.1115E-02	0.1738E-02	0.5433E-03
4	0.3285E-03	0.1707E-02	0.5328E-03
5	-0.4392E-03	0.1677E-02	0.5179E-03
6	-0.1182E-02	0.1648E-02	0.4994E-03
7	-0.1897E-02	0.1619E-02	0.4781E-03
8	-0.2578E-02	0.1591E-02	0.4547E-03
9	-0.3224E-02	0.1563E-02	0.4299E-03
10	-0.3833E-02	0.1536E-02	0.4042E-03
11	-0.4405E-02	0.1509E-02	0.3783E-03
12	-0.4938E-02	0.1483E-02	0.3525E-03
13	-0.5435E-02	0.1458E-02	0.3274E-03
14	-0.5895E-02	0.1432E-02	0.3035E-03
15	-0.6322E-02	0.1407E-02	0.2811E-03
16	-0.6717E-02	0.1383E-02	0.2605E-03
17	-0.7084E-02	0.1359E-02	0.2422E-03
18	-0.7426E-02	0.1335E-02	0.2264E-03
19	-0.7747E-02	0.1311E-02	0.2134E-03
20	-0.8051E-02	0.1288E-02	0.2035E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 706

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-632.	-43.	-573.	-25.	-692.	-60.
2	-632.	-86.	-665.	-96.	-600.	-76.
3	-632.	-129.	-743.	-163.	-521.	-96.
4	-632.	-172.	-809.	-225.	-455.	-119.
5	-632.	-213.	-864.	-283.	-400.	-144.
6	-632.	-254.	-908.	-336.	-357.	-171.
7	-632.	-292.	-941.	-385.	-323.	-200.
8	-632.	-329.	-966.	-429.	-299.	-229.
9	-632.	-364.	-981.	-469.	-283.	-259.
10	-632.	-397.	-989.	-504.	-275.	-290.
11	-632.	-428.	-990.	-535.	-275.	-321.
12	-632.	-457.	-983.	-562.	-281.	-352.
13	-632.	-484.	-971.	-585.	-294.	-382.
14	-632.	-509.	-952.	-605.	-312.	-413.
15	-632.	-532.	-929.	-621.	-335.	-443.
16	-632.	-553.	-901.	-634.	-364.	-473.
17	-632.	-573.	-868.	-644.	-396.	-503.
18	-632.	-592.	-831.	-651.	-433.	-532.
19	-632.	-609.	-791.	-657.	-473.	-562.
20	-632.	-626.	-747.	-660.	-517.	-591.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 706 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	634.		573.		692.	
2	633.		665.		600.	
3	633.		743.		521.	
4	633.		809.		455.	
5	633.		864.		400.	
6	632.		908.		357.	
7	632.		941.		323.	
8	632.		966.		299.	
9	632.		981.		283.	
10	632.		989.		290.	
11	632.		990.		321.	
12	632.		983.		352.	
13	632.		971.		382.	
14	632.		952.		413.	
15	632.		929.		443.	
16	632.		901.		473.	
17	632.		868.		503.	
18	632.		831.		532.	
19	632.		791.		562.	
20	632.		747.		591.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 705

STATION	STRESS RESULTANTS N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	0.	-124.	-0.	0.	-0.
2	-1.	-123.	0.	0.	-0.
3	-1.	-122.	0.	0.	-0.
4	-2.	-122.	0.	0.	-0.
5	-3.	-121.	0.	0.	-0.
6	-3.	-120.	0.	0.	-0.
7	-4.	-120.	0.	0.	-0.
8	-5.	-119.	0.	0.	-0.
9	-5.	-119.	0.	0.	-0.
10	-6.	-118.	0.	0.	-0.
11	-6.	-117.	0.	0.	-0.
12	-7.	-117.	0.	0.	-0.
13	-8.	-116.	0.	0.	-0.
14	-8.	-116.	0.	0.	-0.
15	-9.	-115.	0.	0.	-0.
16	-9.	-115.	0.	0.	-0.
17	-10.	-114.	0.	0.	-0.
18	-10.	-113.	0.	0.	-0.
19	-11.	-113.	0.	0.	-0.
20	-11.	-112.	0.	0.	-0.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 705

STATION	DISPLACEMENTS NORMAL	TANGENTIAL	ROTATION
1	0.8950E-02	-0.8260E-02	0.2088E-03
2	0.8404E-02	-0.8247E-02	0.2084E-03
3	0.7859E-02	-0.8233E-02	0.2081E-03
4	0.7315E-02	-0.8220E-02	0.2078E-03
5	0.6772E-02	-0.8207E-02	0.2074E-03
6	0.6229E-02	-0.8195E-02	0.2071E-03
7	0.5688E-02	-0.8183E-02	0.2068E-03
8	0.5147E-02	-0.8171E-02	0.2065E-03
9	0.4607E-02	-0.8159E-02	0.2062E-03
10	0.4068E-02	-0.8148E-02	0.2059E-03
11	0.3529E-02	-0.8137E-02	0.2057E-03
12	0.2991E-02	-0.8127E-02	0.2054E-03
13	0.2454E-02	-0.8116E-02	0.2051E-03
14	0.1918E-02	-0.8106E-02	0.2049E-03
15	0.1382E-02	-0.8096E-02	0.2046E-03
16	0.8468E-03	-0.8087E-02	0.2044E-03
17	0.3122E-03	-0.8077E-02	0.2041E-03
18	-0.2216E-03	-0.8068E-02	0.2039E-03
19	-0.7549E-03	-0.8060E-02	0.2037E-03
20	-0.1288E-02	-0.8051E-02	0.2035E-03

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 705

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	0.	-495.	0.	-494.	0.	-497.
2	-3.	-492.	-3.	-491.	-3.	-494.
3	-5.	-490.	-5.	-488.	-5.	-491.
4	-8.	-487.	-8.	-485.	-8.	-488.
5	-11.	-484.	-11.	-483.	-11.	-486.
6	-13.	-482.	-13.	-480.	-13.	-483.
7	-16.	-479.	-16.	-478.	-16.	-481.
8	-18.	-477.	-18.	-475.	-18.	-478.
9	-21.	-474.	-21.	-473.	-21.	-476.
10	-23.	-472.	-23.	-470.	-23.	-473.
11	-26.	-469.	-26.	-468.	-26.	-471.
12	-28.	-467.	-28.	-466.	-28.	-469.
13	-30.	-465.	-30.	-463.	-30.	-466.
14	-33.	-463.	-32.	-461.	-33.	-464.
15	-35.	-460.	-35.	-459.	-35.	-462.
16	-37.	-458.	-37.	-457.	-37.	-460.
17	-39.	-456.	-39.	-454.	-39.	-457.
18	-41.	-454.	-41.	-452.	-41.	-455.
19	-43.	-452.	-43.	-450.	-44.	-453.
20	-45.	-450.	-45.	-448.	-46.	-451.

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 705 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	495.		494.		497.	
2	492.		491.		494.	
3	490.		488.		491.	
4	487.		485.		488.	
5	484.		483.		486.	
6	482.		480.		483.	
7	479.		478.		481.	
8	477.		475.		478.	
9	474.		473.		476.	
10	472.		470.		473.	
11	469.		468.		471.	
12	467.		466.		469.	
13	465.		463.		466.	
14	463.		461.		464.	
15	460.		459.		462.	
16	458.		457.		460.	
17	456.		454.		457.	
18	454.		452.		455.	
19	452.		450.		453.	
20	450.		448.		451.	

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 704

STATION	STRESS RESULTANTS				
	N-PHI	N-THETA	M-PHI	M-THETA	Q-PHI
1	-439.	-7290.	0.	-12.	126.
2	-461.	-5240.	558.	156.	56.
3	-476.	-3515.	756.	218.	11.
4	-485.	-2229.	738.	215.	-13.
5	-489.	-1374.	613.	180.	-24.
6	-492.	-874.	452.	134.	-25.
7	-493.	-637.	299.	89.	-22.
8	-493.	-573.	173.	52.	-17.
9	-493.	-609.	80.	24.	-12.
10	-494.	-691.	16.	5.	-8.
11	-495.	-782.	-23.	-6.	-5.
12	-496.	-861.	-46.	-13.	-3.
13	-497.	-914.	-57.	-17.	-1.
14	-499.	-935.	-63.	-19.	-0.
15	-501.	-921.	-63.	-19.	0.
16	-502.	-874.	-56.	-17.	2.
17	-503.	-796.	-39.	-12.	4.
18	-504.	-699.	-5.	-2.	7.
19	-505.	-601.	53.	15.	12.
20	-505.	-534.	143.	43.	17.

PITTSBURGH-DES.MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 704

STATION	DISPLACEMENTS NORMAL	DISPLACEMENTS TANGENTIAL	ROTATION
1	-0.9670E-01	-0.3018E-02	-0.4539E-02
2	-0.6901E-01	-0.2761E-02	-0.4135E-02
3	-0.4556E-01	-0.2610E-02	-0.3272E-02
4	-0.2800E-01	-0.2543E-02	-0.2310E-02
5	-0.1625E-01	-0.2536E-02	-0.1449E-02
6	-0.9354E-02	-0.2565E-02	-0.7743E-03
7	-0.6067E-02	-0.2614E-02	-0.3016E-03
8	-0.5179E-02	-0.2670E-02	-0.6957E-05
9	-0.5688E-02	-0.2728E-02	0.1488E-03
10	-0.6847E-02	-0.2782E-02	0.2062E-03
11	-0.8151E-02	-0.2831E-02	0.1996E-03
12	-0.9282E-02	-0.2876E-02	0.1548E-03
13	-0.1006E-01	-0.2918E-02	0.8885E-04
14	-0.1038E-01	-0.2957E-02	0.1249E-04
15	-0.1021E-01	-0.2997E-02	-0.6698E-04
16	-0.9544E-02	-0.3039E-02	-0.1424E-03
17	-0.8444E-02	-0.3084E-02	-0.2034E-03
18	-0.7048E-02	-0.3135E-02	-0.2328E-03
19	-0.5631E-02	-0.3191E-02	-0.2051E-03
20	-0.4658E-02	-0.3251E-02	-0.8484E-04

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 704

STATION	MEMBRANE STRESSES		MEMBRANE + BENDING ON EXTREME FIBERS			
			OUTSIDE FIBERS		INSIDE FIBERS	
	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA	SIG-PHI	SIG-THETA
1	-351.	-5832.	-351.	-5880.	-351.	-5784.
2	-369.	-4192.	1776.	-3592.	-2513.	-4792.
3	-381.	-2812.	2522.	-1975.	-3283.	-3648.
4	-388.	-1784.	2445.	-958.	-3221.	-2609.
5	-392.	-1099.	1961.	-408.	-2744.	-1790.
6	-393.	-699.	1344.	-186.	-2131.	-1212.
7	-394.	-510.	754.	-168.	-1543.	-851.
8	-394.	-458.	270.	-259.	-1058.	-657.
9	-395.	-487.	-89.	-394.	-700.	-580.
10	-395.	-553.	-332.	-532.	-458.	-573.
11	-396.	-626.	-484.	-650.	-308.	-601.
12	-397.	-689.	-572.	-739.	-222.	-638.
13	-398.	-731.	-618.	-796.	-178.	-666.
14	-399.	-748.	-640.	-820.	-159.	-676.
15	-400.	-737.	-641.	-810.	-160.	-664.
16	-402.	-699.	-616.	-765.	-187.	-633.
17	-403.	-637.	-551.	-684.	-254.	-590.
18	-403.	-559.	-422.	-567.	-384.	-551.
19	-404.	-481.	-200.	-422.	-608.	-540.
20	-404.	-427.	145.	-263.	-953.	-591.

PITTSBURGH-DES MOINES STEEL COMPANY AXISYMMETRIC SHELL PROGRAM AX2

HANFORD NO. 2 CONTAINMENT VESSEL
ANALYSIS OF DRYWELL-SUPPRESSION CHAMBER TRANSITION REGION
VESSEL SUBJECTED TO -2 PSI INTERNAL PRESSURE PLUS LOCA SEAL LOADS

BODY NO. 704 DESIGN STRESS INTENSITY = 19300.

STATION	MID-SURFACE SI	MID-SURFACE T1T2T3	OUTSIDE SURFACE SI	OUTSIDE SURFACE T1T2T3	INSIDE SURFACE SI	INSIDE SURFACE T1T2T3
1	5888.		5880.		5784.	
2	4204.		5368.		4792.	
3	2812.		4497.		3648.	
4	1784.		3403.		3221.	
5	1101.		2369.		2744.	
6	702.		1530.		2131.	
7	511.		923.		1543.	
8	459.		529.		1058.	
9	488.		394.		700.	
10	553.		532.		573.	
11	626.		650.		601.	
12	689.		739.		638.	
13	731.		796.		666.	
14	748.		820.		676.	
15	737.		810.		664.	
16	699.		765.		633.	
17	637.		684.		590.	
18	559.		567.		551.	
19	481.		422.		608.	
20	428.		409.		953.	