

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8408250080 DDC DATE: 86/08/21 NOTARIZED: YES DOCKET #  
 FACIL: 50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha 05000410  
 AUTH. NAME AUTHOR AFFILIATION  
 MANGAN, C. V. Niagara Mohawk Power Corp.  
 RECIP. NAME RECIPIENT AFFILIATION  
 ADENSAM, E. G. BWR Project Directorate 3'

SUBJECT: Forwards revised tables to Section 3.6A of "Protection Against Dynamic Effects Associated W/Postulated Rupture of Piping." Subscripts inadvertently omitted from tables.

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August 21, 1986  
(NMP2L 0832)

Ms. Elinor G. Adensam, Director  
BWR Project Directorate No. 3  
U.S. Nuclear Regulatory Commission  
7920 Norfolk Avenue  
Washington, DC 20555

Dear Ms. Adensam:

Re: Nine Mile Point Unit 2  
Docket No. 50-410

Niagara Mohawk provided a submittal on "Protection Against Dynamic Effects Associated with the Postulated Rupture of Piping" by a letter dated July 18, 1986.

On these tables, we inadvertently omitted some subscripts in the column heading titled "Pipe Break Stress Limit". Enclosed are the revised tables from Section 3.6A with the subscripts written in.

On tables 3.6A-2 through 3.6A-26, excluding 3.6A-23, 3.6A-12, and 3.6A-25, where "2.4 S (psi)" is stated, should be "2.4 S<sub>m</sub> (psi)", and where "0.8(1.2 S + S)" is stated, it should be "0.8 (1.2 S<sub>h</sub> + S<sub>a</sub>)". On table 3.6A-12 it states on page 1 of 3 "2.4 S<sub>m</sub>" it should be "2.4 S<sub>m</sub>". On pages 2 of 3, 3 of 3, and Table 3.6A-25, all 5 pages, it stated 0.8 (1.2 S<sub>h</sub> + S<sub>a</sub>), it should be "0.8 (1.2 S<sub>h</sub> + S<sub>a</sub>)".

Very truly yours,



C. V. Mangan  
Senior Vice President

RK/ar  
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xc: W. A. Cook, NRC Resident Inspector  
Project File (2)

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UNITED STATES OF AMERICA  
NULCEAR REGULATORY COMMISSION

In the Matter of )  
Niagara Mohawk Power Corporation )  
(Nine Mile Point Unit 2) )

Docket No. 50-410

AFFIDAVIT

C. V. Mangan, being duly sworn, states that he is Senior Vice President of Niagara Mohawk Power Corporation; that he is authorized on the part of said Corporation to sign and file with the Nuclear Regulatory Commission the documents attached hereto; and that all such documents are true and correct to the best of his knowledge, information and belief.

C. V. Mangan

Subscribed and sworn to before me, a Notary Public in and for the State of New York and County of Onondaga, this 21<sup>st</sup> day of August, 1986.

Christine Austin  
Notary Public in and for  
Onondaga County, New York

My Commission expires:  
**CHRISTINE AUSTIN**  
Notary Public in the State of New York  
Qualified in Onondaga Co. No. 4787687  
My Commission Expires March 30, 1987

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TABLE 3.6A-2

## SUMMARY OF STRESSES IN HIGH-ENERGY ASME SAFETY CLASS 1 PIPING

Main Steam System - Inside Containment - North Inner Loop

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>m</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
1	322-0 1/8	72	13-2 3/4	-	-	-	49651	TP	C	1.29
7	318-8 3/4	72	19-3	39434	21105	0.018	49651	IP (elbow)	C	1.30
33	293-5 7/8	13	23-1 3/4	51885	27183	0.0052	49651	IP (elbow)	C	1.31
41	256-6 5/8	7	25.0	-	-	-	49651	TP	C	1.32
										1.34
										1.35
										1.36
										1.37

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break  
 \* = Integral attachment

NOTES: See Figure 3.6A-12 for break locations.

Stresses were calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.6(a) and NB-3653.6(b), respectively. Cumulative usage factors were calculated in accordance with ASME Section III, subarticle NB-3650.



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TABLE 3.6A-3

## SUMMARY OF STRESSES IN HIGH-ENERGY ASME SAFETY CLASS 1 PIPING

## Main Steam System - Inside Containment - North Outer Loop

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>y</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
20	322-0 5/16	108	13-2 7/16	-	-	-	49651	TP	C	2.9 2.10 2.11 2.12
28	299-9 1/2	108	19-3	36845	22340	0.0007	49651	IP (elbow)	C	2.14
72	293-9 1/8	72	23-5 5/8	53288	18057	0.0032	49651	IP (integral attach.)	C	2.15 2.16 2.17
115	256-4 15/16	25	28-8 1/26	-	-	-	49651	TP	C	2.18

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break  
 \* = Integral attachment

NOTES: See Figure 3.6A-12 for break locations.

Stresses were calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.6(a) and NB-3653.6(b), respectively. Cumulative usage factors were calculated in accordance with ASME Section III, subarticle NB-3650.



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TABLE 3.6A-4

## SUMMARY OF STRESSES IN HIGH-ENERGY ASME SAFETY CLASS 1 PIPING

## Main Steam System - Inside Containment - South Inner Loop

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>A</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
1	321-11 78	288	13-1 15/16	-	-	-	49651	TP	C	2.48
13	296-11 15/16	288	13-3 1/16	47613	26539	0.0027	49651	IP (elbow)	C	2.49
33	293-5 7/8	347	23-2 15/16	48465	26876	0.0025	49651	IP (elbow)	C	2.50
41	256-6 5/8	353.3	25-1 1/4	-	-	-	49651	TP	C	2.51

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break  
 \* = Integral attachment

NOTES: See Figure 3.6A-13 for break locations.

Stresses were calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.6(a) and NB-3653.6(b), respectively. Cumulative usage factors were calculated in accordance with ASME Section III, subarticle NB-3650.



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TABLE 3.6A-5

## SUMMARY OF STRESSES IN HIGH-ENERGY ASME SAFETY CLASS 1 PIPING

Main Steam System - Inside Containment - South Outer Loop

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>m</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
20	322-0 1/4	252	13-1 3/4	-	-	-	-	TP	C	3.28
28	299-9 1/2	253	19-3	40236	25069	0.0010	49651	IP (elbow)	C	3.29
66	293-9 1/8	281	23-10	62463	17926	0.0026	49651	IP (integral attach.)	C	3.30
115	256-4 13/16	335	28-8 1/2	-	-	-	-	TP	C	3.31

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break  
 \* = Integral attachment

NOTES: See Figure 3.6A-13 for break locations.

Stresses were calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.6(a) and NB-3653.6(b), respectively. Cumulative usage factors were calculated in accordance with ASME Section III, subarticle NB-3650.



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TABLE 3.6A-6

## SUMMARY OF STRESSES IN HIGH ENERGY NON-ASME SAFETY CLASS 4 PIPING

## Main Steam System - Outside Containment - North Outer Loop

Break Point	Elevation (ft-in)	Location		Stress		Total Additive Stress (psi)	Pipe Break Stress Limit $0.8(1.25S_h + S_A)$ (psi)	Description of Break Points	Break Type	
		X (ft-in)	Z (ft-in)	Eq. 9 (psi)	Eq. 10 (psi)					
131	250-4 5/8	-85-4 7/16	-12-9 7/8	-	-	-	37800	TP	C	1.26
133A	262-0 7/16	-98-6 7/8	-12-2	26317	5575	31892	37800	IP (Int. Att.)	C	1.27
136	294-11 5/16	-113-7 1/2	-10-3	-	-	-	37800	TP	C	1.28
										1.29

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break

NOTES: See Figure 3.6A-14 for break locations.

Stresses were calculated in accordance with Equations 9 and 10 of ASME Section III, paragraph NC-3652.



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TABLE 3.6A-7

## SUMMARY OF STRESSES IN HIGH ENERGY NON-ASME SAFETY CLASS 4 PIPING

## Main Steam System - Outside Containment - North Inner Loop

Break Point	Location			Stress		Total Additive Stress (psi)	Pipe Break Stress Limit $0.8(1.2S_y + S_x)$ (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	X (ft-in)	Z (ft-in)	Eq. 9 (psi)	Eq. 10 (psi)					
121	250-4 5/8	-81-10	-2-11	-	-	-	37800	TP	C	1.25
123A	277-10 7/32	-98-9 9/16	-3-4 3/4	22898	9002	31900	37800	IP (Int. Att.)	C	1.26
126	294-11 5/16	-113-7 1/2	-3-8 7/16	-	-	-	37800	TP	C	1.27
										1.28

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break

NOTES: See Figure 3.6A-14 for break locations.

Stresses were calculated in accordance with Equations 9 and 10 of ASME Section III, paragraph NC-3652.



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TABLE 3.6A-8

SUMMARY OF STRESSES IN HIGH ENERGY NON-ASME SAFETY CLASS 4 PIPING  
Main Steam System - Outside Containment - South Outer Loop

Break Point	Location			Stress		Total Additive Stress (psi)	Pipe Break Stress Limit $0.8(1.2S_y + S_A)$ (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	X (ft-in)	Z (ft-in)	Eq. 9 (psi)	Eq. 10 (psi)					
111	250-1 15/16	-85-7	12-3	-	-	-	37800	TP	C	1.26
113A	261-10 5/16	-98-9 5/8	11-5 5/8	26317	5575	31892	37800	IP (Int. Att.)	C	1.27
116	294-11 5/16	-113-7 1/2	9-3 1/2	-	-	-	37800	TP	C	1.28
										1.29
										1.31
										1.32
										1.33

KEY: IP = Intermediate point  
TP = Terminal point  
C = Circumferential break  
L = Longitudinal break

NOTES: See Figure 3.6A-14 for break locations.

Stresses were calculated in accordance with Equations 9 and 10 of ASME Section III, paragraph NC-3652.



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TABLE 3.6A-9

SUMMARY OF STRESSES IN HIGH ENERGY NON-ASME SAFETY CLASS 4 PIPING  
Main Steam System - Outside Containment - South Inner Loop

Break Point	Elevation (ft-in)	Location		Stress		Total Additive Stress (psi)	Pipe Break Stress Limit $0.8(1.2S_y + S_u)$ (psi)	Description of Break Points	Break Type	
		X (ft-in)	Z (ft-in)	Eq. 9 (psi)	Eq. 10 (psi)					
101	250-4	-85-8 5/16	2-6 1/4	-	-	-	37800	TP	C	1.25
103A	277-9 1/16	-98-10	2-8 1/4	22898	9002	31900	37800	IP (Int. Att.)	C	1.26
106	294-11 5/16	-113-7 1/2	2-9 1/2	-	-	-	37800	TP	C	1.27
										1.28

KEY: IP = Intermediate point  
TP = Terminal point  
C = Circumferential break  
L = Longitudinal break

NOTES: See Figure 3.6A-14 for break locations.

Stresses were calculated in accordance with Equations 9 and 10 of ASME Section III, paragraph NC-3652.



TABLE 3.6A-10

## SUMMARY OF STRESSES IN HIGH-ENERGY ASME SAFETY CLASS 1 PIPING

## Main Steam Vent Line

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>m</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	Radius (ft-in)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
1	341-10 3/16	0	0-0	-	-	-	-	TP	C	1.28
3	342-9	90	0-0	34,164	14,993	.0002	43,440	IP	C	1.29
7	342-9	85	2-0	34,205	17,357	.0002	43,440	IP	C	1.30
20	330-3 5/8	0	15-6 9/16	-	-	-	-	TP	C	1.31
21	330-3 5/8	0	15-6 9/16	-	-	-	-	TP	C	1.33
29	318-3/8	58	17-4 1/4	27,172	16,337	.0001	43,440	IP	C	1.34
32	318-4	27	15-1/2	35,937	20,248	.0099	43,440	IP	C	1.35
35	314-10	69	18-9 3/8	-	-	-	-	TP	C	1.36
37	318-4	27	15-1	35,937	20,248	.0099	43,440	IP	C	1.37
40	307-0	14	17-1/2	-	-	-	-	TP	C	1.38

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break

NOTES: See Figure 3.6A-15 for break locations.

Stresses are calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.6(a) and NB-3653.6(b), respectively. Cumulative usage factors are calculated in accordance with ASME Section III, subarticle NB-3650.

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TABLE 3.6A-11

SUMMARY OF STRESSES IN HIGH ENERGY ASME SAFETY CLASS 1 PIPING  
Main Steam System - SRV (Inside Containment)

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>m</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
1A	293-10 7/8	93	23-6 3/8	---	---	---	---	TP	C	1.20
1B	296-9	93	23-6 3/8	---	---	---	---	TP	C	1.21
2A	293-10 7/8	87	23-10 1/8	---	---	---	---	TP	C	1.23
2B	296-9	87	23-10 1/8	---	---	---	---	TP	C	1.24
3A	293-10 7/8	81.5	24-1 5/16	---	---	---	---	TP	C	1.26
3B	296-9	81.5	24-1 5/16	---	---	---	---	TP	C	1.27
4A	293-10 7/8	75.6	24-4 3/8	---	---	---	---	TP	C	1.29
4B	296-9	75.6	24-4 3/8	---	---	---	---	TP	C	1.30
5A	293-10 7/8	70	24-6 13/16	---	---	---	---	TP	C	1.32
5B	296-8 1/2	70	24-6 13/16	---	---	---	---	TP	C	1.33
6A	293-6 1/4	37.5	19-9 1/8	---	---	---	---	TP	C	1.35
6B	296-6 1/8	37.5	19-9 1/8	---	---	---	---	TP	C	1.36
7A	293-6 1/4	29	20-3 3/4	---	---	---	---	TP	C	1.38
7B	296-5 3/4	29	20-3 3/4	---	---	---	---	TP	C	1.39
8A	293-6 1/4	22	14-2	---	---	---	---	TP	C	1.41
8B	296-5 7/16	22	14-2	---	---	---	---	TP	C	1.42
9A	293-6 1/4	15	11-4 3/4	---	---	---	---	TP	C	1.44
9B	296-5 1/8	15	11-4 3/4	---	---	---	---	TP	C	1.45
10A	293-6 1/4	322.5	19-9 1/8	---	---	---	---	TP	C	1.47
10B	296-6 1/8	322.5	19-9 1/8	---	---	---	---	TP	C	1.48
11A	293-6 1/4	330.5	20-3 3/4	---	---	---	---	TP	C	1.50
11B	296-5 3/4	330.5	20-3 3/4	---	---	---	---	TP	C	1.51
12A	293-6 1/4	338	14-2	---	---	---	---	TP	C	1.53
12B	296-5 7/16	338	14-2	---	---	---	---	TP	C	1.54
13A	293-6 1/4	344.5	11-4 3/4	---	---	---	---	TP	C	1.56
13B	296-5 1/8	344.5	11-4 3/4	---	---	---	---	TP	C	1.57
14A	293-10 7/8	266.5	23-6 3/8	---	---	---	---	TP	C	2.1

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TABLE 3.6A-11

SUMMARY OF STRESSES IN HIGH ENERGY ASME SAFETY CLASS 1 PIPING  
Main Steam System - SRV (Inside Containment)

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>v</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
14B	296-8 7/8	266.5	23-6 3/8	---	---	---	---	TP	C	2.2
15A	293-10 7/8	273	23-10 1/8	---	---	---	---	TP	C	2.4
15B	296-8 1/2	273	23-10 1/8	---	---	---	---	TP	C	2.5
16A	293-10 7/8	278.5	24-1 5/16	---	---	---	---	TP	C	2.7
16B	296-8 3/16	278.5	24-1 5/16	---	---	---	---	TP	C	2.8
17A	293-8 15/16	284	24-4 3/8	---	---	---	---	TP	C	2.10
17B	296-7 7/8	284	24-4 3/8	---	---	---	---	TP	C	2.11
18A	293-8 15/16	290	24-6 13/16	---	---	---	---	TP	C	2.13
18B	296-7 9/16	290	24-6 13/16	---	---	---	---	TP	C	2.14

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break

NOTES: See Figures 3.6A-16 and 17 for break locations.

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TABLE 3.6A-13

SUMMARY OF STRESSES IN HIGH-ENERGY ASME SAFETY CLASS 1 PIPING  
 Feedwater System - Inside Containment - South Loop

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>A</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
1	309-1 1/8	210	13-5 5/16	-	-	-	43,440	TP	C	1.29
5	309-1 1/8	270	13-5 5/8	-	-	-	43,440	TP	C	1.30
11	309-1 1/8	330	13-5 7/8	-	-	-	43,440	TP	C	1.31
14B	308-0 5/8	309	18-4	64,552	17,901	.0881	43,440	IP*	C	1.32
18	292-8	340	32-0 7/8	79,813	37,893	.1996	43,440	IP	C,L	1.34
20	266-3 3/4	345.5	31-2 1/2	-	-	-	-	TP	C	1.35
										1.36
										1.37
										1.38
										1.39

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break  
 \* = Integral attachment

NOTES: See Figure 3.6A-20 for break locations.

Stresses were calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.6(a) and NB-3653.6(b), respectively. Cumulative usage factors were calculated in accordance with ASME Section III, subarticle NB-3650.

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TABLE 3.6A-14

## SUMMARY OF STRESSES IN HIGH-ENERGY ASME SAFETY CLASS 1 PIPING

## Feedwater System - Inside Containment - North Loop

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>m</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
21	309-1 1/8	150	13-5 7/16	-	-	-	43,440	TP	C	2.11
25	309-1 1/8	90	13-6 3/16	-	-	-	-	TP	C	2.12
36	292-8	19	32-0 7/8	86,520	41,131	.2955	43,440	IP	C,L	2.13
30	309-1 1/8	30	13-6 5/16	-	-	-	43,440	TP	C	2.14
338	307-7 5/16	45.5	18-1	64,552	17,901	.0881	43,440	IP*	C	2.16
38	266-3 3/4	14.5	31-2 1/2	-	-	-	43,440	TP	C	2.17
										2.18
										2.19
										2.20
										2.21

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break  
 \* = Integral attachment

NOTES: See Figure 3.6A-19 for break locations.

Stresses were calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.6(a) and NB-3653.6(b), respectively. Cumulative usage factors were calculated in accordance with ASME Section III, subarticle NB-3650.

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TABLE 3.6A-15

## SUMMARY OF STRESSES IN HIGH-ENERGY NON-ASME SAFETY CLASS 4 PIPING

## Feedwater System - Outside Containment - North Loop

Break Point	Location			Stress		Total Additive Stress (psi)	Pipe Break Stress Limit $0.8(1.2 S_h + S_w)$ (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	X (ft-in)	Z (ft-in)	Eq. 9 (psi)	Eq. 10 (psi)					
21	257-0	-83-5	-7-9	-	-	-	32400	TP	C	1.27
23	260-0	-118-0	-7-9	7950	3136	11086	32400	IP	C	1.28
26	269-10	-118-0	14-3 7/8	8195	5707	13902	32400	IP	C	1.29
32	269-10	-124-0	-19- 11 1/8	-	-	-	32400	TP	C	1.30
										1.32
										1.33
										1.34
										1.35
										1.36

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break

NOTES: See Figure 3.6A-21 for break locations.

Stresses were calculated in accordance with Equations 9 and 10 of ASME Section III, paragraph NC-3652.

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TABLE 3.6A-16

## SUMMARY OF STRESSES IN HIGH-ENERGY NON-ASME SAFETY CLASS 4 PIPING

Feedwater System - Outside Containment - South Loop

Break Point	Location			Stress		Total Additive Stress (psi)	Pipe Break Stress Limit 0.8(1.2 S <sub>y</sub> + S <sub>t</sub> ) (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	X (ft-in)	Z (ft-in)	Eq. 9 (psi)	Eq. 10 (psi)					
1	257-0	-83- 5 3/16	7-9.	-	-	-	32400	TP	C	2.6 2.7 2.8 2.9
6	266-6	-118- 0 1/4	29-8 1/4	8952	4715	13667	32400	IP (elbow)	C	2.11 2.12 2.13 2.14
8	268- 8 11/16	-124- 8 9/16	32-8 1/4	8434	5716	14150	32400	IP (elbow)	C	2.15 2.16
12	269-8	-127- 6 3/4	15-0 11/16	-	-	-	32400	TP	C	2.17 2.18

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break

NOTES: See Figure 3.6A-21 for break locations.

Stresses were calculated in accordance with Equations 9 and 10 of ASME Section III, paragraph NC-3652.

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TABLE 3.6A-17

## SUMMARY OF STRESSES IN HIGH ENERGY ASME SAFETY CLASS 1 PIPING

## Reactor Core Isolation Cooling

## Inside Containment

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>p</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
1	302-2	111	19.7					TP	C	1.37
3	302-0 5/16	137.5	26.02	58699	41847	0.0371	43363	IP	C	1.39
9	263-8 1/4	196	29.38	69689	49820	0.0559	52659	IP	C	1.41
12	263-7 5/16	185	31.1					TP	C	1.43

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break

NOTES: See Figures 3.6A-22 and 3.6A-23 for break locations.

Stresses were calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.6 (a) and NB-3653.6 (b), respectively. Cumulative usage factors were calculated in accordance with ASME Section III, subarticle NB-3650.

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TABLE 3.6A-17

## SUMMARY OF STRESSES IN HIGH-ENERGY ASME SAFETY CLASS 1 PIPING

## Reactor Core Isolation Cooling Reactor Head Spray

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>w</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	Radius (ft-in)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
1	341-8	360	4-0	-	-	-	-	TP	C	1.35
2	342-1 1/2	360	4-0	98,151	30,273	0.2094	43,440	IP	C,L	1.36
4	342-10 1/2	349	4-10 3/4	92,647	28,717	0.1673	43,440	IP	C,L	1.37
5	342-10 1/2	345	5-3	90,152	29,491	0.1588	43,440	IP	C,L	1.38
6	342-10 1/2	340	6-1 7/8	87,442	33,089	0.1117	43,440	IP	C,L	1.39
11	338-9 1/16	330	9-3 3/4	-	-	-	-	TP	C	1.40

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break

NOTES: See Figure 3.6A-23 for break locations.

Stresses are calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.6(a) and NB-3653.6(b), respectively. Cumulative usage factors are calculated in accordance with ASME Section III, subarticle NB-3650.

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TABLE 3.6A-18

SUMMARY OF STRESSES IN HIGH-ENERGY ASME SAFETY CLASS 2 PIPING  
 Reactor Core Isolation Cooling and RHS - Outside Containment

Break Point	Location			Stress		Total Additive Stress (psi)	Pipe Break Stress Limit 0.8(1.2 S <sub>h</sub> +S <sub>u</sub> ) (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	X (ft-in)	Z (ft-in)	Eq. 9 (psi)	Eq. 10 (psi)					
10	257-2 7/8	54-3 3/4	4-9	-	-	-	32400	TP (elbow)	C	1.27
12	255-11	60-6 1/8	9-0	6373	6561	12934	32400	IP (elbow)	C	1.28
17	240-9 1/4	55-0 3/8	9-8 7/16	7741	8548	16289	32400	IP (elbow)	C	1.29
48	234-0	51- 10 15/16	26-5	-	-	-	32400	TP (valve)	C	1.30
60	233-6 1/2	47-11 3/8	-36-3 7/8	-	-	-	32400	TP (valve)	C	1.32
72	234-0	55-4 1/2	7-8 5/8	-	-	-	32400	TP (tee)	C	1.33
278	191-7 1/2	55- 2 11/16	-2-6	13996	12367	26363	32400	IP (int attach)	C	1.34
63A	190-8 7/8	51- 10 3/16	-3- 11 15/16	15668	11406	27074	32400	IP (int attach)	C	1.35
68	187-11 1/8	51- 10 3/16	-8- 5 15/16	-	-	-	32400	TP (valve)	C	1.36
										1.37
										1.38
										1.39
										1.40
										1.41
										1.42
										1.43
										1.44

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break

NOTES: See Figure 3.6A-24 for break locations.

Stresses were calculated in accordance with Equations 9 and 10 of ASME Section III, paragraph NC-3652.

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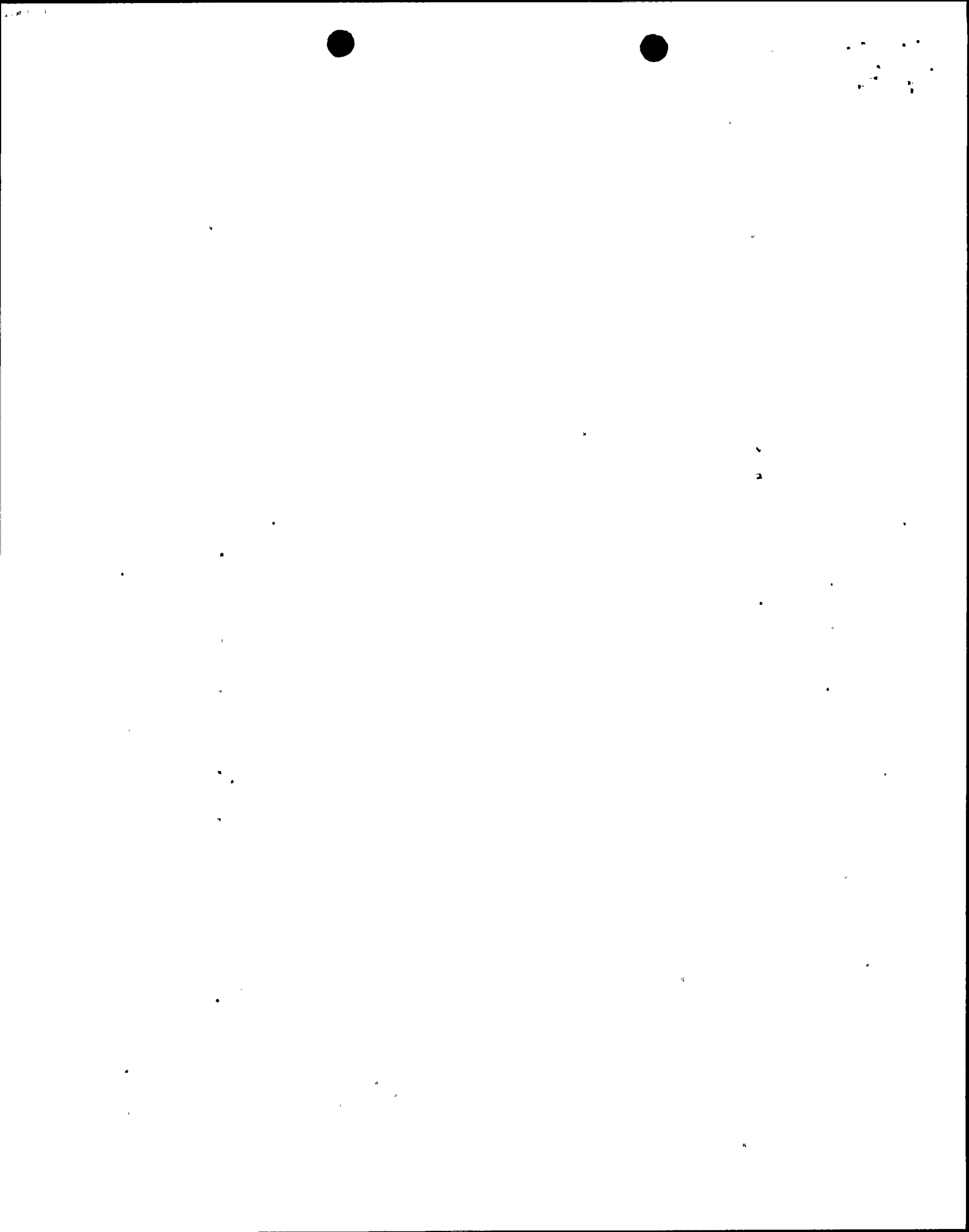


TABLE 3.6A-19

SUMMARY OF STRESSES IN HIGH ENERGY ASME SAFETY CLASS 1 PIPING  
High-Pressure Core Spray - Inside Containment

Break Point	Location		r (ft-in)	Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S. (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)		Eq. 10 (psi)	Eq. 12 or 13 (psi)					
1	307-11 1/8	240	13-6 1/2	-	-	-	43440	TP	C	1.36
3A	307-11 1/8	240	17-0 1/2	90393	40642	0.312	43440	IP(Integral Att.)	C,L	1.37
6	307-11 1/8	236.5	19-3 3/4	108390	36899	0.7002	43440	IP	C,L	1.38
7	307-11 1/8	231	21-5 1/4	90901	34877	0.2279	43440	IP	C,L	1.39
10	307-11 1/8	217.5	27-10 7/8	-	-	-	43440	TP	C	1.40

KEY: IP = Intermediate point  
TP = Terminal point  
C = Circumferential break  
L = Longitudinal break

NOTES: See Figure 3.6A-25 for break locations.

Stresses were calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.6 (a) and NB-3653.6 (b), respectively. Cumulative usage factors were calculated in accordance with ASME Section III, subarticle NB-3650.

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TABLE 3.6A-20

## SUMMARY OF STRESSES IN HIGH ENERGY ASME SAFETY CLASS 1 PIPING

Low-Pressure Core Spray - Inside Containment

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>u</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
1	307-11 1/4	120	13-6 15/16	-	-	-	42480	TP	C	1.34
5	307-11 1/8	120	22-9 1/2	88214	41958	0.0555	42480	IP	C	1.35
8	307-11 1/8	130	27-2 1/8	-	-	-	42480	TP	C	1.36

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break

NOTES: See Figure 3.6A-26 for break locations.

Stresses were calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.6 (a) and NB-3653.6 (b), respectively. Cumulative usage factors were calculated in accordance with ASME Section III, subarticle NB-3650.

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TABLE 3.6A-21

**SUMMARY OF STRESSES IN HIGH ENERGY ASME SAFETY CLASS 1 PIPING**  
**Residual Heat Removal System - Shutdown Mode - Inside Containment**

Break Point	Elevation (ft-in)	Location		Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>u</sub> (psi)	Description of Break Points	Break Type	
		Azimuth (deg)	r (ft-in)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
1	266-10 7/8	270	20-9 1/4	-	-	-	-	TP	C	1.36
5	262-6	270	22-10	64927	38088	0.0646	42,000	IP (valve)	C	1.37
8	255-1	270	26-7	-	-	-	42,000	TP	C	1.38
10	271-1 7/8	182	21-7 15/16	-	-	-	-	TP	C	1.39
18	257-6	182	24-3 1/2	63007	28392	0.0175	42,000	IP (elbow)	C	1.40
20	256-0	174	24-6	-	-	-	42,000	TP	C	1.41
30	266-10 7/8	90	20-9 1/4	-	-	-	-	TP	C	1.42
37	261-10	90	22-10	61454	36362	0.0580	42,000	IP (valve)	C	1.43
42	255-1	90	26-7	-	-	-	42,000	TP	C	1.44

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break

NOTES: See Figure 3.6A-27 for break locations.

Stresses were calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.1 and NB-3653.6 (a) or NB-3653.6 (b), respectively. Cumulative usage factors were calculated in accordance with ASME Section III, subarticle NB-3650.

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TABLE 3.6A-22

SUMMARY OF STRESSES IN HIGH ENERGY ASME SAFETY CLASS 1 PIPING  
Residual Heat Removal System (LPCI Mode) - Inside Containment

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>u</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
1	299-0 3/8	45	13,375	-	-	-	43,440	TP	C	1.28
7	299-0 3/8	46	17.75	35,580	22,638	0.0039	43,440	IP (elbow)	C	1.29
13	311-0	51	19.87	76,085	34,510	0.0207	43,440	IP (HCV line)	C	1.30
19	316-9	57	20.93	77,906	32,954	0.0239	43,440	TP	C	1.31
33	299-0 3/8	135	13.375	-	-	-	42,480	TP	C	1.33
35	299-0 3/8	315	13.375	-	-	-	43,440	TP	C	1.34
39	299-0 3/8	314	17.25	37,787	21,670	0.0014	43,440	IP (elbow)	C	1.35
47	310-2	306	20.72	72,524	32,673	0.0154	43,440	TP (HCV line)	C	1.36
53	315-6	312	21.2	-	-	-	43,440	TP	C	1.37
55	311-8	147	18.6	79,653	40,390	0.0379	42,480	IP (valve)	C	1.38
56	311-8	178	17.25	51,142	31,412	0.003	42,480	IP (elbow)	C	1.39
60	293-2 7/8	208	20.87	-	-	-	42,480	TP (valve)	C	1.40
										1.41
										1.42
										1.43
										1.44

KEY: IP = Intermediate point  
TP = Terminal point  
C = Circumferential break  
L = Longitudinal break

NOTES: See Figure 3.6A-28 for break locations.  
Stresses are calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.6 (a) and NB-3653.6 (b), respectively. Cumulative usage factors were calculated in accordance with ASME Section III, subarticle NB-3650.

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**Nine Mile Point Unit 2 FSAR**

**TABLE 3.6A-23**

**SUMMARY OF STRESSES IN HIGH ENERGY ASME SAFETY CLASS 1 PIPING.  
Reactor Recirculation Piping System (RCS)**

**See Section 3.6B**



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TABLE 3.6A-24

SUMMARY OF STRESSES IN HIGH-ENERGY ASME SAFETY CLASS 1 PIPING  
Reactor Water Cleanup System - Inside Containment

Break Point	Location		Radius (ft)	Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>2</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in.)	Azimuth (deg)		Eq. 10 (psi)	Eq. 12 or 13 (psi)					
1	266'-0"	0°	0.0'	-	-	-	-	TP	C	1.31
228	242'-0"	191°	27.5'	-	-	-	-	TP	C	1.32
23	245'-3"	186°	28.2'	68,852	49,381	.1014	42,480	IP	C,L	1.33
243	245'-3"	185°	28.8'	68,852	49,381	.1014	42,480	IP	C,L	1.34
244	245'-3"	185°	27.7'	68,852	49,381	.1014	42,480	IP	C,L	1.35
24	245'-3"	185°	37.0'	-	-	-	-	TP	C	1.36
44	244'-0"	193°	22.9'	57,688	42,648	.0084	42,480	IP	C,L	1.37
55	247'-5"	153°	22.0'	61,109	34,579	.4436	32,940	IP	C,L	1.38
52	247'-5"	152°	21.4'	52,999	34,475	.0192	32,940	IP	C,L	1.39
53	248'-9"	151°	21.1'	-	-	-	-	TP	C	1.40
54	247'-9"	151°	21.1'	52,999	34,475	.0192	32,940	IP	C,L	1.41
56	247'-1"	151°	21.1'	52,999	34,475	.0192	32,940	IP	C,L	1.42
66	244'-5"	155°	20.2'	-	-	-	-	TP	C	1.43
411	247'-5"	334°	20.1'	57,827	31,770	.1789	32,940	IP	C,L	1.44
42	248'-9"	331°	21.1'	-	-	-	-	TP	C	1.45
422	244'-5"	334°	22.4'	-	-	-	-	TP	C	1.46

KEY: IP = Intermediate point  
TP = Terminal point  
C = Circumferential break  
L = Longitudinal break

NOTES: See Figures 3.6A-31 through 33 for break locations.

Stresses are calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.6 (a) and NB-3653.6 (b), respectively. Cumulative usage factors are calculated in accordance with ASME Section III, subarticle NB-3650.



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TABLE 3.6A-26

SUMMARY OF STRESSES IN HIGH-ENERGY ASME SAFETY CLASS 1 PIPING  
Standby Liquid Control - Inside Containment

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>m</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	Radius (ft-in)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
1	307-11 3/16	236.5	17-0 1/2	-	-	-	42,787	TP	C	1.34
7	307-11 3/16	228	17-3 11/16	139,108	37,069	0.3143	42,787	IP	C	1.35
9	307-11 3/16	226	17-6 1/4	-	-	-	42,787	TP	C	1.36

KEY: IP = Intermediate point  
TP = Terminal point  
C = Circumferential break  
L = Longitudinal break

NOTES: See Figure 3.6A-42 for break locations.

Stresses were calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NC-3653.6(a) and NB-3653.6(b), respectively. Cumulative usage factors were calculated in accordance with ASME Section III, subarticle NB-3650.



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TABLE 3.6A-25

SUMMARY OF STRESSES IN HIGH ENERGY ASME SAFETY CLASS 3 PIPING  
 Reactor Water Cleanup System - Outside Containment

Break Point	Location			Stress		Total Additive Stress (psi)	Pipe Break Stress Limit 0.8 (1.25S <sub>H</sub> +S <sub>a</sub> ) (psi) <sup>a</sup>	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 9 (psi)	Eq. 10 (psi)					
902	332-0	191	47-11	-	-	-	-	TE	C	3.8
912	329-10	194	45-6	-	-	-	-	TE	C	3.9
931	334-0	204	44-10	7,314	14,064	21,378	32,400	IP	C	3.10
915	338-6	192	41-10	9,130	8,766	17,897	32,400	IP	C	3.11
922	335-6	198	42-11	-	-	-	-	TE	C	3.12
938	343-0	230	45-0	-	-	-	-	TE	C	3.13
954	338-6	211	53-5	-	-	-	-	TE	C	3.14
967	332-0	212	55-8	-	-	-	-	TE	C	3.15
974	329-10	212	52-1	-	-	-	-	TE	C	3.16
981C	335-6	210	47-5	-	-	-	-	TE	C	3.17

KEY: TP = Terminal point  
 TE = Terminal end  
 C = Circumferential  
 IP = Intermediate point  
 L = Longitudinal

NOTES: For break locations, see Figures 3.6A-34 to 41

Stresses are calculated in accordance with Equations 9 and 10 of ASME Section III, paragraph NC-3650.

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TABLE 3.6A-25

SUMMARY OF STRESSES IN HIGH ENERGY ASME SAFETY CLASS 3 PIPING  
 Reactor Water Cleanup System - Outside Containment

Break Point	Location			Stress		Total Additive Stress (psi)	Pipe Break Stress Limit 0.8 (1.2S <sub>H</sub> +S <sub>G</sub> ) (psi) <sup>h</sup> &	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 9 (psi)	Eq. 10 (psi)					
706	334-2	178	34-1	-	-	-	-	TE	C	2.26
706C	324-2	178	36-11	11,471	1,434	12,905	32,400	IP	C	2.27
707	322-6	178	39-9	-	-	-	-	TE	C	2.28
708	334-2	154	38-0	-	-	-	-	TE	C	2.29
708C	324-2	156	40-6	11,912	3,067	14,979	32,400	IP	C	2.30
709	322-6	157	43-2	-	-	-	-	TE	C	2.31
750	343-0	152	39-3	-	-	-	-	TE	C	2.32
765	338-6	161	48-8	-	-	-	-	TE	C	2.33
778	332-0	158	50-9	-	-	-	-	TE	C	2.34
788	329-10	159	47-0	-	-	-	-	TE	C	2.35
802	335-6	161	43-10	-	-	-	-	TE	C	2.36
804	338-6	165	42-6	8,673	3,739	12,412	32,400	IP	C	2.37
809	332-0	166	42-3	8,881	2,259	11,140	32,400	IP	C	2.38
1000A	322-11	262	41-5	-	-	-	-	TE	C	2.39
813	343-0	181	34-7	-	-	-	-	TE	C	2.40
829	338-6	182	46-0	-	-	-	-	TE	C	3.2
842	332-0	181	47-0	-	-	-	-	TE	C	3.3
849	329-10	179	44-0	-	-	-	-	TE	C	3.4
859	335-6	179	41-6	-	-	-	-	TE	C	3.5
874	343-0	196	36-0	-	-	-	-	TE	C	3.6
890	338-6	195	47-5	-	-	-	-	TE	C	3.7

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TABLE 3 6A-25

## SUMMARY OF STRESSES IN HIGH ENERGY ASME SAFETY CLASS 3 PIPING

## Reactor Water Cleanup System - Outside Containment

Break Point	Location			Stress		Total Additive Stress (psi)	Pipe Break Stress Limit 0.8 (1.25S <sub>H</sub> +S <sub>G</sub> ) (psi) <sup>a</sup>	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 9 (psi)	Eq. 10 (psi)					
512	337-8	174	35-4	-	-	-	-	TE	C	2.5
542	331-0	171	33-7	-	-	-	-	TE	C	2.6
546	334-0	185	33-1	8,949	13,203	22,152	32,400	IP	C	2.7
552	334-0	176	45-0	-	-	-	-	TE	C	2.8
574	330-0	179	44-1	-	-	-	-	TE	C	2.9
575	337-8	202	37-10	-	-	-	-	TE	C	2.10
605	331-0	202	35-11	-	-	-	-	TE	C	2.11
610	334-0	194	34-0	7,269	12,028	19,297	32,400	IP	C	2.12
616	334-0	197	46-11	-	-	-	-	TE	C	2.13
638	330-3	194	45-6	-	-	-	-	TE	C	2.14
639	337-8	215	43-0	-	-	-	-	TE	C	2.15
669	331-0	213	39-10	-	-	-	-	TE	C	2.16
673	334-0	223	45-2	7,774	13,750	21,524	32,400	IP	C	2.17
679	334-0	208	50-8	-	-	-	-	TE	C	2.18
701	330-3	212	52-1	-	-	-	-	TE	C	2.19
702	334-2	219	43-7	-	-	-	-	TE	C	2.20
702C	324-2	216	45-11	11,535	1,434	12,969	32,400	IP	C	2.21
703	322-6	214	48-2	-	-	-	-	TE	C	2.22
704	334-2	199	36-0	-	-	-	-	TE	C	2.23
704C	324-2	198	38-9	11,535	1,434	12,969	32,400	IP	C	2.24
705	322-6	196	41-5	-	-	-	-	TE	C	2.25

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TABLE 3.6A-25

SUMMARY OF STRESSES IN HIGH ENERGY ASME SAFETY CLASS 3 PIPING  
Reactor Water Cleanup System - Outside Containment

Break Point	Location			Stress		Total Additive Stress (psi)	Pipe Break Stress Limit 0.8 (1.25S <sub>H</sub> +S <sub>G</sub> ) (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 9 (psi)	Eq. 10 (psi)					
304	310-6 3/8	284	54-9 3/4	-	-	-	-	TE	C	1.42
312	309-0	288	48-3 11/16	5,529	5,881	11,409	32,400	IP	C	1.43
315	310-0	281	45-9 11/16	5,921	6,255	12,176	32,400	IP	C	1.44
327	314-7 5/8	287	43-5 7/8	-	-	-	-	TE	C	1.45
328	310-0	284	54-10	-	-	-	-	TE	C	1.46
333	308-5	264	51-1	5,227	4,475	9,702	32,400	IP	C	1.47
343	310-0	287	43-6	-	-	-	-	TE	C	1.48
357	308-9	275	44-2	5,998	4,074	10,072	32,400	IP	C	1.49
374A	308-9	259	44-9	-	-	-	-	TE	C	1.50
423A	322-10	239	39-9	-	-	-	-	TE	C	1.51
1014A	322-11	240	38-0	-	-	-	-	TE	C	1.52
393	318-6	245	36-11	11,315	1,235	12,550	32,400	IP	C	1.53
413	313-6	282	34-3	-	-	-	-	TE	C	1.54
416A	316-0	279	32-11	20,308	3,733	24,041	32,400	IP	C	1.55
419	316-0	283	32-3	-	-	-	-	TE	C	1.56
450	337-8	151	40-0	-	-	-	-	TE	C	1.57
430A	322-10	262	42-8	-	-	-	-	TE	C	1.58
479	331-0	159	35-6	-	-	-	-	TE	C	2.1
484	334-0	150	38-1	6,168	11,589	17,757	32,400	IP	C	2.2
490	334-0	163	46-10	-	-	-	-	TE	C	2.3
511	330-3	160	47-0	-	-	-	-	TE	C	2.4

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TABLE 3. 6A-25

## SUMMARY OF STRESSES IN HIGH ENERGY ASME SAFETY CLASS 3 PIPING

## Reactor Water Cleanup System - Outside Containment

Break Point	Location			Stress		Total Additive Stress (psi)	Pipe Break Stress Limit 0.8 (1.25S <sub>H</sub> +S <sub>a</sub> ) (psi) <sup>1/2</sup> ~	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 9 (psi)	Eq. 10 (psi)					
1	245-3	185	60-0	-	-	-	-	TE	C	1.21
5	243-0	185	60-6	6,087	11,008	17,095	32,400	IP	C	1.22
7A	242-0	185	57-6	13,157	4,417	17,574	32,400	IP	C	1.23
13A	238-9	179	53-2	-	-	-	-	TE	C	1.24
51	218-6	158	58-0	-	-	-	-	TE	C	1.25
52	232-2	167	57-7	10,965	11,057	22,022	32,400	IP	C	1.26
68	219-7	169	60-10	9,837	7,805	17,643	32,400	IP	C	1.27
77	218-6	174	58-3	-	-	-	-	TE	C	1.28
78	218-6	173	57-6	-	-	-	-	TE	C	1.29
102	230-8	164	57-8	5,280	22,662	27,942	32,400	IP	C	1.30
103	218-6	157	57-1	-	-	-	-	TE	C	1.31
98A	223-11	164	55-0	19,438	12,293	31,731	32,400	IP	C	1.32
139A	237-9	178	51-10	-	-	-	-	TE	C	1.33
173A	313-9	255	56-9	18,639	6,638	26,227	32,400	IP	C	1.34
180	314-9	284	54-10	-	-	-	-	TE	C	1.35
204	315-5	282	54-4	-	-	-	-	TE	C	1.36
228	316-10	299	39-8	11,257	13,705	24,962	32,400	IP	C	1.37
231A	316-9	11	34-5	-	-	-	-	TE	C	1.38
234A	283-0	36	40-7	17,047	1,620	18,667	32,400	IP	C	1.39
235A	310-10	19	48-6	18,997	2,337	21,334	32,400	IP	C	1.40
262	263-0	17	47-11	-	-	-	-	TE	C	1.41

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TABLE 3.6A-12 (Cont)

Break Point	Location			Stress		Total Additive Stress (psi)	Pipe Break Stress Limit $0.8 (1.25S_H + S_G)$ (psi) <sup>1</sup>	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 9 (psi)	Eq. 10 (psi)					
200*	248-11 5/16	352	93-2 3/4	-	-	-	32400	TP	C	3.15
203*	246-7 3/16	352	93-2 3/4	-	-	-	32400	IP	C,L	3.17
204	246-1 11/16	352	93-2 3/4	-	-	-	32400	TP	C	3.19
207	245-8 1/4	353	93-0 13/16	9916	23939	33855	32400	IP	C	3.21
306A	241-6 15/16	358	101-5	-	-	-	32400	TP	C	3.23
313	241-2	349	70-6	-	-	-	32400	TP	C	3.25

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break

NOTES: See Figure 3.6A-18 for break locations.

Stresses were calculated in accordance with Equations 9 and 10 of ASME Section III, paragraph MC-3652, except the breaks marked \*, since stresses are not available. These breaks are postulated at welded junctions to comply with the requirements of Regulatory Guide 1.46.



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TABLE 3.6A-12 (Cont)

Break Point	Location			Stress		Total Additive Stress (psi)	Pipe Break Stress Limit 0.8 (1.25S <sub>h</sub> +S <sub>d</sub> ) (psi) <sup>h</sup>	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 9 (psi)	Eq. 10 (psi)					
50*	248-11 5/16	8	93-2 3/4	-	-	-	32400	TP	C	2.27
53*	246-7 3/16	8	93-2 3/4	-	-	-	32400	IP	C,L	2.29
54	246-1 11/16	8	93-2 3/4	-	-	-	32400	TP	C	2.31
57	245-8 1/4	7	93-0 13/16	10402	21240	31642	32400	IP	C	2.33
100*	248-11 3/4	2	92-5 1/16	-	-	-	32400	TP	C	2.35
103*	246-7 5/8	2	92-5 1/16	-	-	-	32400	IP	C,L	2.37
104	246-2 1/8	2	92-5 1/16	-	-	-	32400	TP	C	2.50
107	245-8 1/4	3	92-5 5/8	9985	20810	30796	32400	IP	C	2.52
150*	248-11 3/4	358	92-5 1/16	-	-	-	32400	TP	C	2.54
153*	246-7 5/8	358	92-5 1/16	-	-	-	32400	IP	C,L	2.56
154	246-2 1/8	358	92-5 1/16	-	-	-	32400	TP	C	2.58
157	245-8 1/4	357	92-5 5/8	10475	22932	33407	32400	IP	C	3.2

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break

NOTES: See Figure-3.6A-18 for break locations.

Stresses were calculated in accordance with Equations 9 and 10 of ASME Section III, paragraph MC-3652, except the breaks marked \*, since stresses are not available. These breaks are postulated at welded junctions to comply with the requirements of Regulatory Guide 1.46.

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TABLE 3.6A-12

## SUMMARY OF STRESSES IN HIGH ENERGY NON-ASME SAFETY CLASS 4 PIPING

## MAIN STEAM DRAINS - INSIDE CONTAINMENT

Break Point	Location			Maximum Stress Range		Cumulative Usage Factor	Pipe Break Stress Limit 2.4 S <sub>m</sub> (psi)	Description of Break Points	Break Type	
	Elevation (ft-in)	Azimuth (deg)	r (ft-in)	Eq. 10 (psi)	Eq. 12 or 13 (psi)					
1	250-3 7/8	337	32-5 3/8	-	-	-	43363	TP	C	1.36
13	248-11 3/16	17	24-5 1/16	80529	34134	0.1200	43363	IP	C	1.38
14	248-10 9/16	19	24-8 11/16	82920	35954	0.1415	43363	IP	C	1.40
15	248-10 1/2	21	24-7 5/16	-	-	-	43363	TP	C	2.3
16	250-3 5/8	355	33-0 1/2	-	-	-	43363	TP	C	2.5
23	250-3 5/8	5	33-0 5/8	-	-	-	43363	TP	C	2.7
30	250-3 7/8	23	32-5 3/4	-	-	-	43363	TP	C	2.9
40	263-1 5/8	185	33-4 1/8	-	-	-	43363	TP	C	2.11
45	261-9 3/4	182	31-11	-	-	-	43363	TP	C	2.13

KEY: IP = Intermediate point  
 TP = Terminal point  
 C = Circumferential break  
 L = Longitudinal break

NOTES: See Figure 3.6A-18 for break locations.

Stresses were calculated in accordance with Equations 10 and 12 or 13 of ASME Section III, subparagraphs NB-3653.6(a) and NB-3653.6(b), respectively. Cumulative usage factors were calculated in accordance with ASME Section III, subarticle NB-3650.

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