

# Nebraska Public Power District

COOPER NUCLEAR STATION  
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LQA8200035

December 2, 1982

Mr. Domenic B. Vassallo, Chief  
Operating Reactors Branch #2  
Division of Licensing  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Subject: Response to Request for Further Information on Previous Response to  
Generic Letter 81-04

Reference: 1) Letter, D. B. Vassallo to J. M. Pilant, dated November 8, 1982

Dear Mr. Vassallo:

This letter is in response to Reference 1. Further information in addition to our previous response to Generic Letter 81-04 is provided below.

1. Determining Coolant Inventory Changes

Refer to Attachment A for information requested on determining coolant inventory changes.

2. Augmented Inservice Inspection

NUTECH has completed a study of welds in austenitic stainless steel primary coolant piping at CNS where the SRI is used in conjunction with carbon content of the base metals to determine relative susceptibility of the welds.

This report categorizes a majority of the welds (> 3" diameter) in the Core Spray, Reactor Water Cleanup, Residual Heat Removal and Reactor Recirculation Systems in a highly susceptible region. However, because IGSCC is unconfirmed at CNS (pending the results of analyses being performed on two cracked RWCU samples removed during 1982 outage), the SRI has not been a significant factor in selecting welds for examination.

In view of recent cracking in recirculation systems at several operating BWRs, CNS will examine a selection of welds in a loop of large bore reactor recirculation piping during the 1983 refueling outage. Welds from all ranges of SRI will be examined, with the majority of exams focusing on welds with a SRI > 1.20 without regard to carbon content.

Results will be compared to the findings of the NUTECH study for use in determining future examinations.

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3. Augmented ISI of Nonconforming Nonservice Sensitive Piping

CNS considers all nonconforming austenitic stainless steel primary coolant piping to be service sensitive. Therefore, the Augmented ISI of Nonconforming Nonservice Sensitive Piping is not applicable.

4. Augmented ISI of Nonconforming Service Sensitive Piping

- a. CNS currently uses an ultrasonic examination procedure developed by General Electric for detecting IGSCC indications within the counter bore area, heat affected zone, fusion zone, weld area and base material area within two thicknesses of the weld. This procedure has been in use at CNS since 1980.
- b. General Electric procedure MIGSCC-S752 Rev. 2, "Ultrasonic Examination of Pipe Welds for IGSCC", is available onsite for your review. Important features of this procedure are listed below.
  1. Use of miniature size ( $\frac{1}{4}$ ",  $\frac{1}{2}$ ") transducers.
  2. Use of calibration standards of the same nominal diameter, material type and schedule as pipe being examined.
  3. Use of  $\frac{1}{2}$ " "V" sound path to examine weld and one inch of base material on each accessible side of weld.
  4. Angulated scan motion  $45^{\circ}$  in each direction when scanning both transverse and parallel to the weld.
  5. Grinding or machining to make weld crown flush with adjoining base metal surfaces is performed where necessary to aid in detection of axial cracks.
  6. Use of graphic evaluation of examination data to assist in determination of weld and base metal thickness variations.
  7. Training of UT operators and evaluators in specific application of technique, and providing understanding of IGSCC, is a requirement.
- c. The minimum requirements for those personnel qualified to GE procedure MIGSCC-S752 Rev. 2 are as follows:
  1. All personnel performing, interpreting or evaluating ultrasonic examinations shall be qualified and certified in accordance with SNT-TC-1A (1975 Edition) including Supplement C.
  2. All personnel performing ultrasonic examinations shall be certified to at least a Level IT (trainee). The level IT classification is used by I&SE for personnel who have satisfied all the education, training and examination requirements for

certification as a Level I, but have not yet completed all of the work experience requirements. Level IT's shall work only under the immediate technical direction and supervision of a Level II or III. A Level IT shall not conduct independently any examination, interpret any results of an examination, or write a report or examination results. Level I's shall also be used to perform ultrasonic examinations and shall work under the general technical direction and supervision of a Level II or III.

3. All personnel assigned to interpret and evaluate results with respect to applicable codes, standards, specifications and procedures shall be certified to at least Level II.
  4. All personnel must be trained on actual weld specimens that exhibit IGSCC.
- d. CNS is examining nonconforming service sensitive piping per the guidelines set forth in General Electric's Service Information Letter (SIL) No. 117, Revision 1, March 1976. The extent of examinations recommended by SIL No. 117, Rev. 1 is as follows:

<u>Piping System</u>	<u>Extent of Examination</u>
Recirculation Bypass	100% of welds
Core Spray System	100% of welds
RHR Shutdown Cooling	100% of welds in one loop
Recirculation System	Select welds per ASME Section XI, 1974 Edition, Summer 1975 Addenda. Welds selected to be examined should be completed during the first 80 month period. For the balance of plant service lifetime, examination shall revert to the schedule in ASME Section XI.

Inservice inspection of austenitic stainless steel pipe runs within the reactor coolant boundary that operate with full coolant (RWCU) during normal reactor operation.

These examinations should be conducted in accordance with the schedule specified in ASME Code, Section XI - Subsection IWB, as required by the applicable flow categories B-F and B-J, with the exception that the required examinations be completed during the first 80 month period. After the first 80 month period the examinations shall revert back to the ASME Section schedule.

- e. The inspection intervals for nonconforming service sensitive piping are presented in two parts:

Part 1: Inspections performed to date.

Part 2: Inspection schedule for future examinations in accordance with GE SIL 117, Rev. 1.

Part 1:

Refer to Attachment B for inspections performed to date.

Part 2:

<u>System</u>	<u>Examinations Scheduled</u>
Recirculation Bypass	1984, 1987, 1997, 2007
Core Spray System	1983, 1986, 1989, 1999
RHR Shutdown Cooling connection to recirculation loops A & B	1983, 1993, 2003, 2013
Recirculation Piping	Selection of welds to be examined during 1983 refueling outage based on SRI numbers. (These inspections are above and beyond minimum inspections recommended in GE SIL 117, Rev. 1, in view of recent cracking in recirculation systems at several operating BWRs.)
RWCU	No examinations scheduled for 1983 refueling outage. Future examinations in accordance with ASME Section XI, 1974 w/S75 Addenda requirements.

- f. Refer to Attachment C for the SRI numbers of welded joints in nonconforming service sensitive pipe.

5. Coolant Leakage

The CNS Final Safety Analysis Report (FSAR) establishes the allowable unidentified primary coolant leakage rate at 15 gpm. This is based, with adequate margin for contingencies, on the calculated leakage from a crack large enough to propagate rapidly. However, CNS Technical Specifications limit unidentified primary coolant leakage to 5 gpm, which is a factor of three times more conservative than the allowable limit set by the FSAR.

Mr. Domenic B. Vassallo

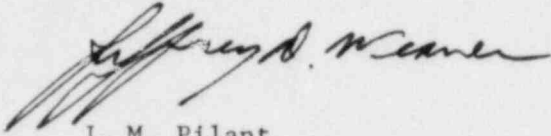
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Plant operating experience has indicated that normal unidentified leakage is less than .5 gpm. The District is confident that the current limit provides sufficient margin for corrective action in the event of a significant primary coolant leak.

Should you have any further questions regarding this response, please contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jeffrey D. Weaver".

J. M. Pilant  
Division Manager of  
Licensing & Quality Assurance

JMP:SSF:1b

ATTACHMENT A

INFORMATION REQUESTED ON LEAK DETECTION SYSTEM

(1)	(2)	(3)	(4)	(5)	(6)	(7)	
Type of System	Is System Operable (yes/no)	Leak Rate Sensitivity (gpm)	Time Required To Achieve Sensitivity (hours)	Is System Functional After SSE (yes/no)	Control Room Indications (alarms) (recorders)	Calibration or Testing During Operation (yes/no)	Documentation Reference for (1) Thru (6)
Drywell equip. and floor drain sump flow recorders	yes	integrator accuracy +2% to +0.5% up to 22.5gpm +0.5% for 22.5gpm to 50gpm	0	yes	alarms and recorders	yes	S.P. 6.2.3.1 S.P. 6.2.3.2
Drywell equip. sump temperature indicator	yes	indication of leakage only	NA	yes	alarms	yes	M.P. 7.5.5.3
3 torus water level indicators and one recorder	yes	indication of leakage only	NA	yes	alarms and recorders	yes	S.P. 6.2.2.8.6
DW internal temperature and torus temperature	yes	indication of leakage only	NA	yes	alarms and recorders	yes	M.P. 7.5.5.2 S.P. 6.2.2.8.4 S.P. 6.2.2.8.5
3 DW and one torus pressure indicator	yes	indication of leakage only	NA	yes	alarms and recorders	yes	S.P. 6.2.2.8.3 S.P. 6.2.2.8.7 S.P. 6.2.2.8.9
Drywell process radiation monitor	yes	indication of leakage only	NA	yes	alarms	yes	S.P. 6.2.3.3

ATTACHMENT B

INSPECTIONS PERFORMED ON NONCONFORMING SERVICE SENSITIVE PIPING

RWCU 21 - 6" Welds (Circum.)

1975	2/21	2 for AISI
1976	0/21	0 for AISI
1977	0/21	0 for AISI
1978	3/21	0 for AISI
1979	1/21	1 for AISI
1980	0/21	0 for AISI
1981	0/21	0 for AISI
1982	21/21	21 for AISI

Core Spray 16 - 10" Welds (Circum.)

1975	16/16	0 for AISI
1976	16/16	0 for AISI
1977	0/16	0 for AISI
1978	13/16	12 for AISI
1979	0/16	0 for AISI
1980	14/16	14 for AISI
1981	1/16	1 for AISI
1982	0/16	0 for AISI

Recirc. 24 - 4" Welds (Circum.)

1974	24/24	0 for AISI
1975	4/24	0 for AISI
1976	24/24	4 for AISI
1977	20/24	20 for AISI
1978	20/24	20 for AISI
1979	0/24	0 for AISI
1980	18/24	18 for AISI
1981	20/24	20 for AISI
1982	0/24	0 for AISI

Recirc. 10 - 24" Welds (Circum.)

1975	1/10	0 for AISI
1976	0/10	0 for AISI
1977	0/10	0 for AISI
1978	0/10	0 for AISI
1979	0/10	0 for AISI
1980	1/10	1 for AISI
1981	0/10	0 for AISI
1982	0/10	0 for AISI

ATTACHMENT B

INSPECTIONS PERFORMED ON NONCONFORMING SERVICE SENSITIVE PIPING

Recirc. 50 - 12" Welds (Circum.) - Safe Ends Included

1975	4/50	0 for AISI
1976	4/50	0 for AISI
1977	6/50	6 for AISI
1978	13/50	0 for AISI
1979	0/50	0 for AISI
1980	14/50	9 for AISI
1981	0/50	0 for AISI
1982	0/50	0 for AISI

Recirc. 30 - 12" Welds (Long Seam)

1975	0/30	0 for AISI
1976	0/30	0 for AISI
1977	4/30	4 for AISI
1978	11/30	0 for AISI
1979	0/30	0 for AISI
1980	2/30	2 for AISI
1981	0/30	0 for AISI
1982	0/30	0 for AISI

Recirc. 38 - 28" Welds (Circum.)

1975	5/38	0 for AISI
1976	0/38	0 for AISI
1977	0/38	0 for AISI
1978	0/38	0 for AISI
1979	0/38	0 for AISI
1980	5/38	1 for AISI
1981	0/38	0 for AISI
1982	0/38	0 for AISI

RHR Supply and Return - 7 Welds (20"-24") - Safe Ends Included

1975	6/7	0 for AISI
1976	3/7	0 for AISI
1977	0/7	0 for AISI
1978	0/7	0 for AISI
1979	0/7	0 for AISI
1980	6/7	6 for AISI
1981	0/7	0 for AISI
1982	0/7	0 for AISI



ATTACHMENT C

STRESS RULE INDEX NUMBERS  
FOR NONCONFORMING SERVICE SENSITIVE PIPE

Appendix A

Stress Rule Index Evaluation Summary

S C O R E  
 -- VERSION 1.0.0 --  
 NPPD COOPER-IGSCC OF RECIRCULATION SYSTEM  
 STRESS KULE INDEX EVALUATION - SUMMARY

ISI WELD ID	RRF-BJ-2	RRF-BJ-3	RRF-BJ-4	RRF-BJ-6	RMA-BJ-2
WELD TYPE	SE-P	P-E	E-P	P-SW	SW-HDR
PIPE SIZE	12.00	12.00	12.00	12.00	22.00
NODE NO	8	11	13	14	15
COMP TYPE	TRANS	ELBOWLR	ELBOWLR	TEE	TEE
-----					
B1 / B2	.50/1.00	1.00/3.25	1.00/3.25	1.00/2.40	1.00/2.40
C1 / C2	1.59/1.94	1.25/4.33	1.25/4.33	1.50/3.20	1.50/3.20
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	13222.45	13222.45	13222.45	13222.45	13891.79
SI (DW)	438.93	138.80	278.97	899.88	83.07
SI(THER)	1778.38	1136.55	528.97	2078.59	378.56
PM + PB	7050.15	13673.23	14128.45	15379.17	14090.90
PM+PB+Q+F	33032.11	29800.13	26156.94	40932.68	27660.56
Q + F	25981.96	16126.90	12028.49	25553.51	13569.67
RESI ST	32000.00	32000.00	32000.00	32000.00	28000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
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SRI,PRI	.3779	.7329	.7573	.8244	.7553
SRI,SEC	.8285	.6876	.6291	.8223	.5940
-----					
SRI TOTAL	1.2064	1.4206	1.3864	1.6467	1.3493

S C O R E  
 -- VERSION 1.0.0 --  
 NPPD COOPER-IGSCC OF RECIRCULATION SYSTEM  
 STRESS RULE INDEX EVALUATION - SUMMARY

ISI WELD ID	RMA-BJ-2	RRG-BJ-2	RRG-BJ-3	RRG-BJ-4	RRG-BJ-6
WELD TYPE	SW-HOR	SE-P	P-E	E-P	P-SW
PIPE SIZE	12.00	12.00	12.00	12.00	12.00
NODE NO	15	24	25	27	28
COMP TYPE	TEE	TRANS	ELBOWLR	ELBOWLR	TEE
-----					
B1 / B2	1.00/2.40	.50/1.00	1.00/3.25	1.00/3.25	1.00/2.40
C1 / C2	1.50/3.20	1.59/1.94	1.25/4.33	1.25/4.33	1.50/3.20
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	13222.45	13222.45	13222.45	13222.45	13222.45
SI (DW)	1011.07	317.59	76.77	510.59	972.89
SI(THER)	2368.88	3368.68	1534.38	334.59	2151.74
PM + PB	15645.62	6928.81	13471.76	14880.69	15554.15
PM+PB+Q+F	43242.01	38172.56	32417.46	26447.26	41773.41
Q + F	27596.34	31243.75	18945.70	11566.57	26219.26
RESI ST	32000.00	32000.00	32000.00	32000.00	32000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
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SRI,PRI	.8386	.3714	.7221	.7976	.8337
SRI,SEC	.8515	.4036	.7279	.6225	.8318
-----					
SRI TOTAL	1.6902	1.2750	1.4500	1.4201	1.6656

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S C O R E  
 -- VERSION 1.0.0 --  
 NPPD COOPER-IGSCC OF RECIRCULATION SYSTEM  
 STRESS RULE INDEX EVALUATION - SUMMARY

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ISI WELD ID	RMA-BJ-5	RMA-BJ-5	RRH-BJ-2	RRH-BJ-3	KRH-BJ-4
WELD TYPE	SW-HDR	SW-HDR	SE-P	P-E	E-P
PIPE SIZE	22.00	12.00	12.00	12.00	12.00
NODE NO	29	29	44	45	47
COMP TYPE	TEE	TEE	TRANS	ELBOWLR	ELBOWLR
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B1 / B2	1.00/2.40	1.00/2.40	.50/1.00	1.00/3.25	1.00/3.25
C1 / C2	1.50/3.20	1.50/3.20	1.59/1.94	1.25/4.33	1.25/4.33
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	13891.79	13222.45	13222.45	13222.45	13222.45
SI (DM)	418.10	1118.95	209.15	181.91	444.19
SI(THER)	759.72	2454.17	3473.26	1677.21	622.49
PM + PB	14893.84	15904.21	6820.38	13813.24	14665.04
PM+PB+Q+F	31780.07	44353.10	38159.05	34350.31	28173.71
Q + F	16886.23	28448.89	31338.68	20537.07	13508.67
RESI ST	28000.00	32000.00	32000.00	32000.00	32000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
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SRI,PRI	.7983	.8525	.3656	.7404	.7861
SRI,SEC	.6413	.8637	.9050	.7507	.6502
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SRI TOTAL	1.4397	1.7162	1.2706	1.4911	1.4363

ISI WELD ID	RRH-BJ-6	RMA-BJ-7	RRJ-BJ-2	RRJ-BJ-3	RRJ-BJ-4
WELD TYPE	P-RED	RED-CR	SE-P	P-E	E-P
PIPE SIZE	12.00	28.00	12.00	12.00	12.00
NODE NO	48	49	64	65	67
COMP TYPE	REDUCER	REDUCER	TRANS	ELBOWLR	ELBOWLR
<hr/>					
B1 / B2	1.00/1.00	1.00/1.00	.50/1.00	1.00/3.25	1.00/3.25
C1 / C2	2.47/4.00	2.47/4.00	1.59/1.94	1.25/4.33	1.25/4.33
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	13222.45	14177.12	13222.45	13222.45	13222.45
SI(DW)	391.20	26.54	711.58	398.60	96.71
SI(THER)	4040.95	465.62	2098.76	1104.99	877.36
PM + PB	13613.65	14203.65	7322.81	14516.99	13543.03
PM+PB+Q+F	71127.47	45573.32	35107.37	31579.20	27467.38
Q + F	57513.83	31369.67	27784.57	17062.22	13924.36
RESI ST	32000.00	27000.00	32000.00	32000.00	32000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
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SRI,PRI	.7297	.7613	.3925	.7781	.7259
SRI,SEC	1.2790	.8340	.8542	.7010	.6562
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SRI TOTAL	2.0087	1.5953	1.2467	1.4791	1.3821

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S C O R E  
 -- VERSION 1.0.0 --  
 NPPD COOPER-IGSCC OF RECIRCULATION SYSTEM  
 STRESS RULE INDEX EVALUATION - SUMMARY

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ISI WELD ID	RRJ-BJ-6	RMA-BJ-10	RMA-BJ-10	RMA-BJ-10	RRK-BJ-2
WELD TYPE	P-SW	SW-HDR	SW-HDR	SW-HDR	SE-P
PIPE SIZE	12.00	12.00	22.00	22.00	12.00
NODE NO	68	69	91	91	84
COMP TYPE	TEE	TEE	TEE	TEE	TRANS
-----					
B1 / B2	1.00/2.40	1.00/2.40	1.00/2.40	1.00/2.40	.50/1.00
C1 / C2	1.50/3.20	1.50/3.20	1.50/3.20	1.50/3.20	1.59/1.94
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	13222.45	13222.45	13891.79	13891.79	13222.45
SI(DW)	36.33	68.06	74.57	189.04	162.85
SI(THER)	2610.91	2999.35	792.28	348.72	1510.47
PM + PB	13309.52	13385.57	14070.52	14344.87	6774.07
PM+PB+Q+F	39027.43	41444.31	29991.39	28098.46	31128.50
Q + F	25717.91	28058.74	15920.87	13753.59	24354.43
RESI ST	32000.00	32000.00	28000.00	28000.00	32000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
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SRI,PRI	.7134	.7175	.7542	.7689	.3631
SRI,SEC	.8247	.8581	.6275	.5966	.8052
-----					
SRI TOTAL	1.5381	1.5756	1.3818	1.3655	1.1683

S C O R E  
 -- VERSION 1.0.0 --  
 NPPD COOPER-IGSCC OF RECIRCULATION SYSTEM  
 STRESS RULE INDEX EVALUATION - SUMMARY

ISI WELD ID	RRK-BJ-3	RRK-BJ-4	RRK-BJ-6	RMA-BJ-13	RMA-BJ-13
WELD TYPE	P-E	E-P	P-SW	SW-HDR	SW-HDR
PIPE SIZE	12.00	12.00	12.00	12.00	22.00
NODE NO	85	87	88	89	89
COMP TYPE	ELBQWLR	ELBQWLR	TEE	TEE	TEE
<hr/>					
B1 / B2	1.00/3.25	1.00/3.25	1.00/2.40	1.00/2.40	1.00/2.40
C1 / C2	1.25/4.33	1.25/4.33	1.50/3.20	1.50/3.20	1.50/3.20
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	13222.45	13222.45	13222.45	13222.45	13891.79
SI(DW)	277.60	186.49	82.95	125.53	51.68
SI(THER)	386.63	1361.26	2196.95	2538.25	468.53
PM + PB	14124.01	13828.10	13421.26	13523.32	14015.66
PM+PB+Q+F	25036.80	31923.27	36914.49	39122.61	27997.50
Q + F	10912.79	18095.18	23493.23	25599.29	13981.84
RESI ST	32000.00	32000.00	32000.00	32000.00	28000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
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SRI,PRI	.7571	.7412	.7194	.7249	.7513
SRI,SEC	.6131	.7158	.7929	.8230	.5998
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SRI TOTAL	1.3702	1.4570	1.5123	1.5479	1.3511



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S C O R E  
 -- VERSION 1.0.0 --  
 NPPD COOPER-IGSCC OF RECIRCULATION SYSTEM  
 STRESS RULE INDEX EVALUATION - SUMMARY

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ISI WELD ID	RMA-BJ-6	RMA-BJ-9	RMA-BJ-8	RPA-BJ-2	RPA-BJ-3
WELD TYPE	HDR-CR	HDR-CR	P-CR	SE-P	P-E
PIPE SIZE	22.00	22.00	28.00	28.00	28.00
NGDE NO	37	94	96	143	144
COMP TYPE	TEE	TEE	TEE	TRANS	ELBOWLR
-----					
B1 / B2	1.00/2.43	1.00/2.43	1.00/2.43	.50/1.00	1.00/3.55
C1 / C2	1.50/3.24	1.50/3.24	1.50/3.24	1.50/1.74	1.24/4.73
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	13891.79	13891.79	14177.12	14047.79	14047.79
SI (DW)	452.36	155.64	530.19	411.31	405.68
SI(THER)	233.02	1115.06	578.49	102.20	155.73
PM + PB	14991.48	14270.15	15466.00	7435.20	15486.86
PM+PB+Q+F	29004.00	32418.89	31987.26	26822.17	25633.38
Q + F	14012.52	18148.74	16521.26	19386.97	10146.51
RESI ST	28000.00	28000.00	27000.00	27000.00	27000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
-----					
SRI,PRI	.8036	.7649	.8290	.3985	.8301
SRI,S.T	.6003	.6594	.6218	.6628	.5308
-----					
SRI TOTAL	1.4039	1.4243	1.4508	1.0613	1.3609

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ISI WELD ID	RPA-BJ-4	RPA-BJ-5	RPA-BJ-7	RPA-BJ-13	RPA-BJ-15
WELD TYPE	P-E	P-T	T-P	P-E	F-V
PIPE SIZE	28.00	28.00	28.00	28.00	28.00
NODE NO	146	147	171	173	175
COMP TYPE	ELBOWLR	TEE	TEE	ELBOWLR	ELBOWLR
<hr/>					
B1 / B2	1.00/3.55	1.00/2.60	1.00/2.60	1.00/3.55	1.00/3.55
C1 / C2	1.24/4.73	1.50/3.46	1.50/3.46	1.24/4.73	1.24/4.73
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI (PRES)	14047.79	14047.79	14047.79	14047.79	14047.79
SI (DW)	433.94	245.56	153.99	160.36	100.33
SI (THER)	416.82	507.87	753.50	238.74	148.06
PM + PB	15587.13	14685.58	14447.74	14616.64	14403.69
PM+PB+Q+F	28096.83	29982.56	30942.86	24251.54	22968.46
Q + F	12509.70	15296.98	16495.12	9634.91	8564.78
RESI ST	27000.00	27000.00	27000.00	27000.00	27000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
<hr/>					
SRI, PRI	.8355	.7872	.7744	.7835	.7721
SRI, SEC	.5645	.6043	.6215	.5234	.5082
<hr/>					
SRI TOTAL	1.4000	1.3915	1.3959	1.3069	1.2802

STRESS RULE INDEX EVALUATION - SUMMARY

ISI WELD ID	RPA-BJ-17	RPA-BJ-23	RPA-BJ-24	RPA-BJ-25	RPA-BJ-27A
WELD TYPE	V-P	P-E	E-PUMP	P-PUMP	WOL-P
PIPE SIZE	28.00	28.00	28.00	28.00	4.00
NODE NO	176	178	180	181	139
COMP TYPE	TRANS	ELBOWSR	ELBOWSR	TRANS	TEE
<hr/>					
B1 / B2	.50/1.00	1.00/4.65	1.00/4.65	.50/1.00	1.00/2.43
C1 / C2	1.50/1.74	1.47/6.20	1.47/6.20	1.48/1.71	1.50/3.24
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	14047.79	14047.79	14047.79	14177.12	8505.93
SI (DW)	213.24	251.98	163.23	2566.42	1655.05
SI(THER)	139.26	216.83	71.58	332.71	8593.50
PM + PB	7237.14	15219.21	14806.64	9654.98	12529.31
PM+PB+Q+F	26317.26	29945.58	27334.75	34045.34	75104.15
Q + F	19080.12	14726.37	12528.11	24390.36	62574.85
RESI ST	27000.00	27000.00	27000.00	27000.00	45000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	27500.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	27931000.00
<hr/>					
SRI,PRI	.3879	.8158	.7937	.5175	.4556
SRI,SEC	.6584	.5962	.5648	.7343	1.2905
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SRI TOTAL	1.0463	1.4120	1.3585	1.2518	1.7461

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ISI WELD ID	RPA-BJ-27	RPA-BJ-27	RPA-BJ-28	RPA-BJ-29	RPA-BJ-30
WELD TYPE	BPC	BPC	P-V	V-E	E-P
PIPE SIZE	28.00	28.00	28.00	28.00	28.00
NODE NO	129	192	124	123	121
COMP TYPE	TEE	TEE	TRANS	ELBOWLR	ELBOWLR
<hr/>					
B1 / B2	1.00/2.43	1.00/2.43	.50/1.00	1.00/3.33	1.00/3.33
C1 / C2	1.50/3.24	1.50/3.24	1.48/1.71	1.24/4.44	1.24/4.44
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	14177.12	14177.12	14177.12	14177.12	14177.12
SI (DW)	138.12	132.15	133.08	136.03	69.13
SI(THER)	277.70	335.75	290.18	386.18	178.21
PM + PB	14512.89	14498.37	7221.64	14630.15	14407.36
PM+PB+Q+F	27944.85	28248.71	26427.86	25247.62	23050.61
Q + F	13431.96	13750.34	19206.23	10617.47	8643.25
RESI ST	27000.00	27000.00	27000.00	27000.00	27000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
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SRI,PRI	.7779	.7771	.3871	.7842	.7723
SRI,SEC	.5777	.5822	.6602	.5375	.5093
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SRI TOTAL	1.3556	1.3594	1.0473	1.3217	1.2815

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ISI WELD ID	RPA-BJ-27L	RPA-BJ-27L	RPA-BJ-36	RPA-BJ-38	RPA-BJ-27K
WELD TYPE	BPC	BPC	P-T	P-T	WOL-P
PIPE SIZE	28.00	28.00	28.00	24.00	4.00
NODE NO	119	119	115	111	119
COMP TYPE	TEE	TEE	TEE	TEE	TEE
<hr/>					
B1 / B2	1.00/2.43	1.00/2.43	1.00/2.43	1.00/2.43	1.00/2.43
C1 / C2	1.50/3.24	1.50/3.24	1.50/3.24	1.50/3.24	1.50/3.24
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	14177.12	14177.12	14177.12	13753.72	8505.93
SI (DW)	106.73	115.43	369.68	0.00	2208.11
SI(THER)	159.68	110.99	259.77	1550.42	8798.25
PM + PB	14436.58	14457.71	15075.81	13753.72	13873.79
PM+PB+Q+F	27073.12	26839.78	29191.29	33802.39	79525.47
Q + F	12636.54	12382.07	14115.48	20048.67	65651.68
RESI ST	27000.00	27000.00	27000.00	27500.00	45000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	27500.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	27931000.00
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SRI,PRI	.7738	.7750	.8081	.7372	.5045
SRI,SEC	.5663	.5627	.5875	.6794	1.3274
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SRI TOTAL	1.3402	1.3377	1.3956	1.4166	1.8319

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ISI WELD ID	RPA-BJ-271	RPA-BJ-27I	RPA-BJ-27H	RPA-BJ-27F	RPA-BJ-27E
WELD TYPE	E-P	P-E	P-V	P-T	P-T
PIPE SIZE	4.00	4.00	4.00	4.00	4.00
NODE NO	1321	132	133	134	1361
COMP TYPE	ELBOWLR	ELBOWLR	TRANS	TEE	TEE
-----					
B1 / B2	1.00/2.43	1.00/2.43	.50/1.00	1.00/1.69	1.00/1.69
C1 / C2	1.27/3.24	1.27/3.24	1.76/2.10	1.50/2.26	1.50/2.26
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	8505.93	8505.93	8505.93	8505.93	8505.93
SI(DW)	331.01	331.01	2340.59	943.29	0.00
SI(THER)	740.16	4498.18	6352.91	10316.00	0.00
PM + PB	9310.75	9310.75	6593.56	10102.58	8505.93
PM+PB+Q+F	19168.74	41098.02	50798.86	61049.65	15310.68
Q + F	9858.00	31787.27	44205.31	50947.07	6804.75
RESI ST	45000.00	45000.00	45000.00	45000.00	45000.00
YIELD ST	27500.00	27500.00	27500.00	27500.00	27500.00
MDD. ELA.	27931000.00	27931000.00	27931000.00	27931000.00	27931000.00
-----					
SRI,PRI	.3386	.3386	.2398	.3674	.3093
SRI,SEC	.6581	.9211	1.0701	1.1510	.6214
-----					
SRI TOTAL	.9966	1.2597	1.3099	1.5183	.9307

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ISI WELD ID	RPA-BJ-27D	RPA-BJ-27C	RPA-BJ-27B	RMB-BJ-1	RMB-BJ-14
WELD TYPE	P-T	P-E	E-P	C-CAP	C-CAP
PIPE SIZE	4.00	4.00	4.00	22.00	22.00
NODE NO	136	138	1381		
COMP TYPE	TEE	ELBOWLR	ELBOWLR	CPIPE	CPIPE
<hr/>					
B1 / B2	1.00/1.69	1.00/2.43	1.00/2.43	1.00/1.13	1.00/1.13
C1 / C2	1.50/2.26	1.27/3.24	1.27/3.24	1.03/1.50	1.03/1.50
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	8505.93	8505.93	8505.93	13891.79	13891.79
SI (DW)	7.05	468.12	468.12	0.00	0.00
SI(THER)	11289.85	3367.23	3510.88	0.00	0.00
PM + PB	8517.88	9644.11	9644.11	13891.79	13891.79
PM+PB+Q+F	61202.43	35298.66	36136.90	17172.87	17172.87
Q + F	52684.56	25654.55	26492.79	3281.08	3281.08
RESI ST	45000.00	45000.00	45000.00	28000.00	28000.00
YIELD ST	27500.00	27500.00	18656.00	18656.00	18656.00
MOD. ELA.	27931000.00	27931000.00	25666000.00	25666000.00	25666000.00
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SRI,PRI	.3097	.3507	.5169	.7446	.7446
SRI,SEC	1.1718	.8476	1.0215	.4469	.4469
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SRI TOTAL	1.4816	1.1983	1.5384	1.1916	1.1916

ISI WELD ID	RRE-BJ-2	RRE-BJ-3	RRE-BJ-4	RRE-BJ-6	RMB-BJ-13
WELD TYPE	SE-P	P-E	P-E	P-SW	SW-HDR
PIPE SIZE	12.00	12.00	12.00	12.00	12.00
NODE NO	178	181	183	184	185
COMP TYPE	TRANS	ELBOWLR	ELBOWLR	TEE	TEE
<hr/>					
B1 / B2	.50/1.00	1.00/3.25	1.00/3.25	1.00/2.40	1.00/2.40
C1 / C2	1.59/1.94	1.25/4.33	1.25/4.33	1.50/3.20	1.50/3.20
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	13222.45	13222.45	13222.45	13222.45	13222.45
SI(DW)	242.76	219.20	253.23	128.92	190.15
SI(THER)	1640.15	943.86	495.31	2150.44	2451.33
PM + PB	6853.98	13934.36	14044.86	13531.42	13678.17
PM+PB+Q+F	31861.92	28924.93	25693.94	36911.34	38994.27
Q + F	25007.94	14990.57	11649.08	23379.92	25316.10
RESI ST	32000.00	32000.00	32000.00	32000.00	32000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
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SRI,PRI	.3674	.7469	.7528	.7253	.7332
SRI,SEC	.8145	.6714	.6237	.7913	.8189
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SRI TOTAL	1.1819	1.4183	1.3765	1.5166	1.5521



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ISI WELD ID	RMB-BJ-13	RRD-BJ-2	RRD-BJ-3	RRD-BJ-4	RRD-BJ-6
WELD TYPE	SW-HDR	SE-P	P-E	P-E	P-SW
PIPE SIZE	22.00	12.00	12.00	12.00	12.00
MODE NO	185	194	195	197	198
COMP TYPE	TEE	TRANS	ELBOWLR	ELBOWLR	TEE
-----					
B1 / B2	1.00/2.40	.50/1.00	1.00/3.25	1.00/3.25	1.00/2.40
C1 / C2	1.50/3.20	1.59/1.94	1.25/4.33	1.25/4.33	1.50/3.20
V1 / V2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	13891.79	13222.45	13222.45	13222.45	13222.45
SI(DW)	54.43	537.36	443.04	84.43	79.73
SI(THER)	452.07	2561.43	1262.04	417.23	2219.40
PM + PB	14022.25	7148.59	14661.30	13496.64	13413.55
PM+PB+Q+F	27918.63	36116.77	33149.59	23769.62	37025.15
Q + F	13896.38	28968.19	18488.29	10272.98	23611.60
RESI ST	28000.00	32000.00	32000.00	32000.00	32000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
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SRI,PRI	.7516	.3832	.7859	.7234	.7190
SRI,SEC	.5986	.8711	.7214	.6040	.7946
-----					
SRI TOTAL	1.3502	1.2543	1.5073	1.3275	1.5136

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ISI WELD ID	RMB-BJ-10	RMB-BJ-10	RRC-BJ-2	RRC-BJ-3	RRC-BJ-4
WELD TYPE	SW-HDR	SW-HDR	SE-P	P-E	E-P
PIPE SIZE	12.00	22.00	12.00	12.00	12.00
NODE NO	199	199	214	215	217
COMP TYPE	TEE	TEE	TRANS	ELBOWLR	ELBOWLR
<hr/>					
B1 / B2	1.00/2.40	1.00/2.40	.50/1.00	1.00/3.25	1.00/3.25
C1 / C2	1.50/3.20	1.50/3.20	1.59/1.94	1.25/4.33	1.25/4.33
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	13222.45	13891.79	13222.45	13222.45	13222.45
SI (DW)	103.76	90.83	413.40	168.32	355.31
SI(THER)	2520.42	821.84	3310.14	1635.55	585.75
PM + PB	13471.13	14109.49	7024.62	13769.10	14376.39
PM+PB+Q+F	38894.78	30254.94	38303.00	33919.69	27194.57
Q + F	25423.65	16145.44	31278.37	20150.59	12818.18
RESI ST	32000.00	28000.00	32000.00	32000.00	32000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
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SRI,PRI	.7221	.7563	.3765	.7381	.7706
SRI,SEC	.8205	.6308	.9041	.7451	.6404
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SRI TOTAL	1.5426	1.3871	1.2807	1.4832	1.4110

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ISI WELD ID	RRC-BJ-6	RMB-BJ-7	RMB-BJ-7	RMB-BJ-9	RMB-BJ-6
WELD TYPE	P-RED	RED-CR	RED-CR	HDR-CR	HDR-CR
PIPE SIZE	12.00	28.00	28.00	22.00	22.00
NODE NO	218	219	219	207	272
COMP TYPE	REDUCER	REDUCER	TEE	TEE	TEE
<hr/>					
B1 / B2	1.00/1.00	1.00/1.00	1.00/2.43	1.00/2.43	1.00/2.43
C1 / C2	2.47/4.00	2.47/4.00	1.50/3.24	1.50/3.24	1.50/3.24
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	13222.45	14177.12	14177.12	13891.79	13891.79
SI(DW)	304.25	17.07	17.07	162.32	458.65
SI(THER)	4202.89	484.66	484.66	425.90	1092.48
PM + PB	13526.70	14194.18	14218.60	14286.39	15006.75
PM+PB+Q+F	71667.81	45642.27	28446.04	28437.09	34054.99
Q + F	58141.11	31448.09	14227.44	14150.71	19048.24
RESI ST	32000.00	27000.00	27000.00	28000.00	28000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
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SRI,PRI	.7251	.7608	.7621	.7658	.8044
SRI,SEC	1.2880	.8351	.5891	.6023	.6722
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SRI TOTAL	2.0130	1.5960	1.3512	1.3680	1.4766

ISI WELD ID	RPB-BJ-42	RRB-BJ-2	RRB-BJ-3	RRB-BJ-4	RRB-BJ-6
WELD TYPE	P-CR	SE-P	P-E	P-E	P-SW
PIPE SIZE	28.00	12.00	12.00	12.00	12.00
NODE NO	277	234	235	237	238
COMP TYPE	TEE	TRANS	ELBOWLR	ELBOWLR	TEE
-----					
B1 / B2	1.00/2.43	.50/1.00	1.00/3.25	1.00/3.25	1.00/2.40
C1 / C2	1.50/3.24	1.59/1.94	1.25/4.33	1.25/4.33	1.50/3.20
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	14177.12	13222.45	13222.45	13222.45	13222.45
SI(DW)	502.84	1157.77	91.58	467.27	953.36
SI(THER)	636.74	2570.15	1292.98	823.29	2698.59
PM + PB	15399.51	7759.00	13519.86	14740.00	15507.34
PM+PB+Q+F	32167.53	38318.32	30651.34	29918.72	44806.54
Q + F	16768.01	30549.32	17152.48	15178.71	29299.20
RESI ST	27000.00	32000.00	32000.00	32000.00	32000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
-----					
SRI,PRI	.8254	.4164	.7247	.7901	.8312
SRI,SEC	.6254	.8937	.7020	.6741	.8759
-----					
SRI TOTAL	1.4508	1.3101	1.4267	1.4642	1.7071

S C O R E  
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 NPPD COOPER-IGSCC OF RECIRCULATION SYSTEM  
 STRESS RULE INDEX EVALUATION - SUMMARY

ISI WELD ID	RMB-BJ-5	RMB-BJ-5	RMB-BJ-5	RRA-BJ-2	RRA-BJ-3
WELD TYPE	SW-HDR	SW-HDR	SW-HDR	SE-P	P-E
PIPE SIZE	12.00	22.00	22.00	12.00	12.00
NODE NO	239	269	269	254	255
COMP TYPE	TEE	TEE	TEE	TRANS	ELBOWLR
-----					
B1 / B2	1.00/2.40	1.00/2.40	1.00/2.40	.50/1.00	1.00/3.25
C1 / C2	1.50/3.20	1.50/3.20	1.50/3.20	1.59/1.94	1.25/4.33
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	13222.45	13891.79	13891.79	13222.45	13222.45
SI(DW)	1079.35	215.07	541.79	411.20	67.33
SI(THER)	3099.38	429.93	748.07	1334.37	685.24
PM + PB	15809.32	14407.24	15190.29	7022.42	13441.11
PM+PB+Q+F	47836.68	28715.25	32424.54	31381.34	25725.33
Q + F	32027.36	14308.01	17234.25	24358.92	12284.22
RESI ST	32000.00	28000.00	28000.00	32000.00	32000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
-----					
SRI,PRI	.8474	.7723	.8142	.3764	.7205
SRI,SEC	.9148	.6045	.6463	.8053	.6327
-----					
SRI TOTAL	1.7622	1.3768	1.4605	1.1817	1.3532

NUTECH

S C O R E  
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 NPPD COOPER-IGSCC OF RECIRCULATION SYSTEM  
 STRESS RULE INDEX EVALUATION - SUMMARY

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ISI WELD ID	RRA-BJ-4	RRA-BJ-6	RMB-BJ-2	RMB-BJ-2	RMB-BJ-1
WELD TYPE	P-E	P-SW	SW-HDR	SW-HDR	C-CAP
PIPE SIZE	12.00	12.00	12.00	22.00	22.00
NODE NO	257	258	259	259	
COMP TYPE	ELBOWLR	TEE	TEE	TEE	CPIPE
<hr/>					
B1 / B2	1.00/3.25	1.00/2.40	1.00/2.40	1.00/2.40	1.00/1.13
C1 / C2	1.27/4.33	1.50/3.20	1.50/3.20	1.50/3.20	1.03/1.50
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	13222.45	13222.45	13222.45	13891.79	13891.79
SI(DW)	310.10	872.44	984.18	159.34	0.00
SI(THER)	1466.39	2480.91	2871.47	516.37	0.00
PM + PB	14229.54	15313.42	15581.22	14273.69	13891.79
PM+PB+Q+F	33706.17	43089.05	45978.26	28891.96	17172.87
Q + F	19476.63	27775.62	30397.04	14618.27	3281.08
RESI ST	32000.00	32000.00	32000.00	28000.00	28000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
<hr/>					
SRI,PRI	.7627	.8208	.8352	.7651	.7446
SRI,SEC	.7355	.8541	.8915	.6089	.4469
<hr/>					
SRI TOTAL	1.4982	1.6749	1.7267	1.3740	1.1916

ISI WELD ID	RMB-BJ-14	RPB-BJ-2	RPB-BJ-3	RPB-BJ-4	RPB-BJ-5
WELD TYPE	C-CAP	SE-P	P-E	P-E	P-P
PIPE SIZE	22.00	28.00	28.00	28.00	28.00
NODE NO		324	325	327	328
COMP TYPE	CPIPE	TRANS	ELBOWLR	ELBOWLR	PIPE
-----					
B1 / B2	1.00/1.13	.50/1.00	1.00/3.55	1.00/3.55	.50/1.00
C1 / C2	1.03/1.50	1.50/1.74	1.24/4.73	1.24/4.73	1.10/1.00
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	13891.79	14047.79	14047.79	14047.79	14047.79
SI(DW)	0.00	480.57	473.75	475.85	171.45
SI(THER)	0.00	379.35	339.19	164.44	88.78
PM + PB	13891.79	7504.47	15728.33	15735.79	7195.35
PM+PB+Q+F	17172.87	27908.57	27774.83	26304.97	19011.49
Q + F	3281.08	20404.10	12046.51	10569.18	11816.15
RESI ST	28000.00	27000.00	27000.00	27000.00	27000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
-----					
SRI,PRI	.7446	.4023	.8431	.8435	.3857
SRI,SEC	.4469	.6773	.5579	.5368	.5546
-----					
SRI TOTAL	1.1916	1.0796	1.4010	1.3803	.9403

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 STRESS RILE INDEX EVALUATION - SUMMARY

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ISI WELD ID	RPB-BJ-6	RPB-BJ-10	RPB-BJ-12	RPB-BJ-14	RPB-BJ-20
WELD TYPE	P-P	P-E	E-V	V-P	P-E
PIPE SIZE	28.00	28.00	28.00	28.00	28.00
NCDE NO	3281	329	331	332	334
COMP TYPE	PIPE	ELBOWLR	ELBOWLR	TRANS	ELBOWSR
<hr/>					
B1 / B2	.50/1.00	1.00/3.55	1.00/3.55	.50/1.00	1.00/4.65
C1 / C2	1.10/1.00	1.24/4.73	1.24/4.73	1.50/1.74	1.47/6.20
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	14047.79	14047.79	14047.79	14047.79	14047.79
SI(DW)	171.45	191.23	238.75	188.68	207.80
SI(THER)	88.78	89.19	235.51	217.01	211.21
PM + PB	7195.35	14726.15	14894.73	7212.57	15013.84
PM+PB+Q+F	19011.49	23241.21	24891.53	26484.06	29389.97
Q + F	11816.15	8515.06	9996.80	19271.49	14376.13
RESI ST	27000.00	27000.00	27000.00	27000.00	27000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
<hr/>					
SRI,PRI	.3857	.7894	.7984	.3866	.8048
SRI,SEC	.5546	.5074	.5286	.6611	.5912
<hr/>					
SRI TOTAL	.9403	1.2968	1.3270	1.0477	1.3960



ISI WELD ID	RPB-BJ-21	RPB-BJ-24	RPB-BJ-25A	RPB-BJ-25	RPB-BJ-25
WELD TYPE	E-PUMP	P-PUMP	P-WOL	P-WOL	P-WOL
PIPE SIZE	28.00	28.00	4.00	28.00	28.00
NODE NO	340	341	319	352	309
COMP TYPE	ELBOWSR	TRANS	TEE	TEE	TEE
-----					
B1 / B2	1.00/4.65	.50/3.00	1.00/2.43	1.00/2.43	1.00/2.43
C1 / C2	1.47/6.20	1.48/1.71	1.50/3.24	1.50/3.24	1.50/3.24
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	14047.79	14177.12	8505.93	14177.12	14177.12
SI (DW)	213.92	1924.13	1703.97	111.38	118.82
SI(THER)	150.46	163.95	8481.21	141.34	160.10
PM + PB	15042.30	9012.69	12648.25	14447.88	14465.96
PM+PB+Q+F	28780.39	31550.00	74734.44	26993.27	27146.11
Q + F	13738.09	22537.32	62086.19	12545.39	12680.16
RESI ST	27000.00	27000.00	45000.00	27000.00	27000.00
YIELD ST	18656.00	18656.00	27500.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	27931000.00	25666000.00	25666000.00
-----					
SRI,PRI	.8063	.4831	.4059	.7744	.7754
SRI,SEC	.5821	.7078	1.2846	.5650	.5670
-----					
SRI TOTAL	1.3884	1.1909	1.7445	1.3395	1.3424

ISI WELD ID	RPB-BJ-27	RPB-BJ-30	RPB-BJ-31	RPB-BJ-25M	RPB-BJ-25M
WELD TYPE	P-V	V-E	E-P	BPC	BPC
PIPE SIZE	28.00	28.00	28.00	28.00	28.00
NODE NO	306	305	301	299	299
COMP TYPE	TRANS	ELBOWLR	ELBOWLR	TEE	TEE
-----					
B1 / B2	.50/1.00	1.00/3.33	1.00/3.33	1.00/2.43	1.00/2.43
C1 / C2	1.48/1.71	1.24/4.44	1.24/4.44	1.50/3.24	1.50/3.24
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	14177.12	14177.12	14177.12	14177.12	14177.12
SI(DW)	109.03	113.67	43.55	45.49	129.93
SI(THER)	166.54	191.70	134.15	147.87	100.91
PM + PB	7197.59	14555.70	14322.17	14287.71	14492.97
PM+PB+Q+F	25973.47	23514.45	22494.00	26646.99	26865.61
Q + F	18775.88	8958.75	8171.83	12359.27	12372.64
RESI ST	27000.00	27000.00	27000.00	27000.00	27000.00
YIELD ST	18656.00	18656.00	18656.00	18656.00	18656.00
MOD. ELA.	25666000.00	25666000.00	25666000.00	25666000.00	25666000.00
-----					
SRI,PR	.3858	.7802	.7677	.7659	.7769
SRI,SEC	.6541	.5138	.5025	.5624	.5626
-----					
SRI TOTAL	1.0399	1.2940	1.2702	1.3282	1.3394

\* NUTECH

S C O R E  
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STRESS RULE INDEX EVALUATION - SUMMARY

ISI WELD ID	RPB-BJ-36	RPB-BJ-38	RPB-BJ-25L	RPB-BJ-25K	RPB-BJ-25J
WELD TYPE	P-T	P-T	WOL-P	P-E	P-E
PIPE SIZE	28.00	24.00	4.00	4.00	4.00
NODE NO	295	292	299	3121	312
COMP TYPE	TEE	TEE	TEE	ELBOWLR	ELBOWLR
-----					
B1 / B2	1.00/2.43	1.00/2.43	1.00/2.43	1.00/2.43	1.00/2.43
C1 / C2	1.50/3.24	1.50/3.24	1.50/3.24	1.27/3.24	1.27/3.24
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	14177.12	13753.72	8505.93	8505.93	8505.93
SI (DW)	363.11	0.00	2208.11	331.01	331.01
SI(THER)	112.95	1496.31	8481.21	702.18	4267.49
PM + PB	15059.82	13753.72	13873.79	9310.75	9310.75
PM+PB+Q+F	28296.28	33486.70	77675.72	18947.10	39751.86
Q + F	13236.46	19732.98	63801.94	9636.36	30441.11
RESI ST	27000.00	27500.00	45000.00	45000.00	45000.00
YIELD ST	18656.00	18656.00	27500.00	27500.00	27500.00
MOD. ELA.	25666000.00	25666000.00	27931000.00	27931000.00	27931000.00
-----					
SRI,PRI	.8072	.7372	.5045	.3386	.3386
SRI,SEC	.5749	.6749	1.3052	.6554	.9050
-----					
SRI TOTAL	1.3821	1.4121	1.8097	.9940	1.2436

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 \* NUTECH  
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S C O R E  
 -- VERSION 1.0.0 --  
 NPPD COOPER-IGSCC OF RECIRCULATION SYSTEM  
 STRESS RULE INDEX EVALUATION - SUMMARY

\*  
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ISI WELD ID	RPB-BJ-25I	RPB-BJ-25H	RPB-BJ-25E	RPB-BJ-25F	RPB-BJ-25C
WELD TYPE	P-V	V-T	P-T	P-T	P-E
PIPE SIZE	4.00	4.00	4.00	4.00	4.00
NODE NO	313	314	316	3161	318
COMP TYPE	TRANS	TEE	TEE	TEE	ELBOWLK
-----					
B1 / B2	.50/1.00	1.00/1.69	1.00/1.69	1.00/1.69	1.00/2.43
C1 / C2	1.76/2.10	1.50/2.26	1.50/2.26	1.50/2.26	1.27/3.24
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	8505.93	8505.93	8505.93	8505.93	8505.93
SI(DW)	2340.59	943.29	1177.35	0.00	468.12
SI(THER)	6352.91	10082.53	11016.59	0.00	3367.23
PM + PB	6593.56	10102.58	10498.76	8505.93	9644.11
PM+PB+Q+F	50798.86	60101.19	64846.48	15310.68	35298.66
Q + F	44205.31	49998.60	54347.72	6804.75	25654.55
RESI ST	45000.00	45000.00	45000.00	45000.00	45000.00
YIELD ST	27500.00	27500.00	27500.00	27500.00	27500.00
MOD. ELA-	27931000.00	27931000.00	27931000.00	27931000.00	27931000.00
-----					
SRI,PRI	.2398	.3674	.3818	.3093	.3507
SRI,SEC	1.0701	1.1396	1.1918	.6214	.8476
-----					
SRI TOTAL	1.3099	1.5070	1.5735	.9307	1.1983

ISI	RPB-BJ-25B
WELD ID	
WELD TYPE	P-E
PIPE SIZE	4.00
NODE NO	3181
COMP TYPE	ELBOWLR
-----	
B1 / B2	1.00/2.43
C1 / C2	1.27/3.24
K1 / K2	1.20/1.80
SI(PRES)	8505.93
SI(DW)	468.12
SI(THER)	3510.88
PM + PB	9644.11
PM+PB+Q+F	36136.90
Q + F	26492.79
RESI ST	45000.00
YIELD ST	27500.00
MOD. ELA.	27931000.00
-----	
SRI,PRI	.3507
SRI,SEC	.8576
-----	
SRI TOTAL	1.2083

STRESS RULE INDEX EVALUATION FOR CORE SPRAY - LOOP A

STRESS RULE INDEX EVALUATION - SUMMARY

ISI WELD ID	CSA-BJ-2	CSA-BJ-3	CSA-BJ-4	CSA-BJ-5	CSA-BJ-6
WELD TYPE	SE-P	P-E	E-P	P-E	E-P
PIPE SIZE	10.00	10.00	10.00	10.00	10.00
NODE NO	1	5	10	15	20
COMP TYPE	TRANS	ELBOWLR	ELBOWLK	ELBOWLR	ELBOWLR
-----					
B1 / B2	.50/1.00	1.00/2.97	1.00/2.97	1.00/2.97	1.00/2.97
C1 / C2	1.59/1.95	1.26/3.96	1.26/3.96	1.26/3.96	1.26/3.96
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	9410.77	9410.77	9410.77	9410.77	9410.77
SI(DW)	1499.08	1499.08	1499.08	1499.08	1499.08
SI(THER)	770.28	401.05	679.50	499.64	325.82
PM + PB	6204.47	13864.74	13864.74	13864.74	13864.74
PM+PB+Q+F	25916.07	27732.02	29717.60	28435.03	27195.59
Q + F	19711.60	13867.26	15852.85	14570.29	13330.85
RESI ST	33500.00	33500.00	33500.00	33500.00	33500.00
YIELD ST	18800.00	18800.00	18800.00	18800.00	18800.00
MOD. ELA.	25750000.00	25750000.00	25750000.00	25750000.00	25750000.00
-----					
SRI,PRI	.3300	.7375	.7375	.7375	.7375
SRI,SEC	.7569	.6738	.7020	.6838	.6662
-----					
SRI TOTAL	1.0869	1.4113	1.4395	1.4213	1.4036

STRESS RULE INDEX EVALUATION FOR CORE SPRAY - LOOP A

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STRESS RULE INDEX EVALUATION - SUMMARY

ISI WELD ID	CSA-BJ-9	CSA-BJ-10	CSA-	CSA-BF-12
WELD TYPE	P-E	E-P	P-SOCKOLET	P-P
PIPE SIZE	10.00	10.00	10.00	10.00
NODE NO	35	40	45	50
COMP TYPE	ELBOWSK	ELBOWSR	TEE	PIPE
-----				
B1 / B2	1.00/3.89	1.00/3.89	1.00/2.10	.50/1.00
C1 / C2	1.52/5.14	1.52/5.14	1.50/2.80	1.10/1.00
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	9410.77	9410.77	9410.77	9410.77
SI(DW)	1499.08	1499.08	1499.08	1499.08
SI(THER)	1365.01	1326.68	1228.72	1070.52
PM + Pd	15247.91	15247.91	12562.46	6204.47
PM+Pd+Q+F	43883.70	43525.44	30703.31	17047.51
Q + F	28635.79	28277.53	18140.85	10843.04
RESI ST	33500.00	33500.00	33500.00	33500.00
YIELD ST	18800.00	18800.00	18800.00	18800.00
MOD. ELA.	25750000.00	25750000.00	25750000.00	25750000.00
-----				
SRI,PRI	.8111	.8111	.6682	.3300
SRI,SIC	.8834	.8788	.7346	.6308
-----				
SRI TOTAL	1.6949	1.6898	1.4028	.9608

S C O R E  
 -- VERSION 1.0.0 --  
 STRESS RULE INDEX EVALUATION FOR COKE SPRAY - LOOP B  
 STRESS RULE INDEX EVALUATION - SUMMARY

ISI WELO ID	CSB-BJ-2	CSB-BJ-3	CSB-BJ-4	CSB-BJ-5	CSB-BJ-6
WELD TYPE	SE-P	P-E	E-P	P-E	E-P
PIPE SIZE	10.00	10.00	10.00	10.00	10.00
NODE NO	1	5	10	15	20
COMP TYPE	TRANS	ELBOWLR	ELBOWLR	ELBOWLR	ELBOWLR
<hr/>					
B1 / B2	.50/1.00	1.00/2.97	1.00/2.97	1.00/2.97	1.00/2.97
C1 / C2	1.54/1.95	1.26/3.96	1.26/3.96	1.26/3.96	1.26/3.96
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	9410.77	9410.77	9410.77	9410.77	9410.77
SI(DW)	1499.08	1499.08	1499.08	1499.08	1499.08
SI(THER)	775.53	397.89	671.74	489.10	314.76
PM + PB	6204.47	13864.74	13864.74	13864.74	13864.74
PM+PB+Q+F	25934.44	27709.48	29662.27	28359.89	27116.76
Q + F	19729.97	13844.74	15797.53	14495.14	13252.02
RESI ST	33500.00	33500.00	33500.00	33500.00	33500.00
YIELD ST	18800.00	18800.00	18800.00	18800.00	18800.00
MOD. ELA.	25750000.00	25750000.00	25750000.00	25750000.00	25750000.00
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SRI,PRI	.3300	.7375	.7375	.7375	.7375
SRI,SEC	.7572	.6735	.7012	.6827	.6650
<hr/>					
SRI TOTAL	1.0872	1.4110	1.4387	1.4202	1.4025



STRESS RULE INDEX EVALUATION - SUMMARY

ISI WELD ID	CSB-BJ-9	CSB-BJ-10	CSB-	CSB-BF-12
WELD TYPE	P-E	E-P	P-SOCKOLET	P-P
PIPE SIZE	10.00	10.00	10.00	10.00
NODE NO	35	40	45	50
COMP TYPE	ELBOWSR	ELBOWSR	TEE	PIPE
<hr/>				
B1 / B2	1.00/3.89	1.00/3.89	1.00/2.10	.50/1.00
C1 / C2	1.52/5.19	1.52/5.19	1.50/2.80	1.10/1.00
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	9410.77	9410.77	9410.77	9410.77
SI (DW)	1499.08	1499.08	1499.08	1499.08
SI(THER)	1396.92	1353.94	1254.66	1096.88
PM + PB	15247.91	15247.91	12562.46	6204.47
PM+PB+Q+F	44181.84	43780.19	30834.21	17094.96
Q + F	28933.93	28532.28	18271.75	10890.49
RESI ST	33500.00	33500.00	33500.00	33500.00
YIELD ST	18800.00	18800.00	18800.00	18800.00
MOD. ELA.	25750000.00	25750000.00	25750000.00	25750000.00
<hr/>				
SRI,PRI	.8111	.8111	.6682	.3300
SRI,SEC	.8881	.8824	.7364	.6314
<hr/>				
SRI TOTAL	1.6992	1.6935	1.4047	.9615

STRESS RULE INDEX EVALUATION - SUMMARY

ISI WELD ID	CWA-BJ-1	CWA-BJ-2	CWA-BJ-3	CWA-BJ-4	CWA-BJ-5
WELD TYPE	P-ELBOW/ET	P-P	P-P	P-E	E-P
PIPE SIZE	6.00	6.00	6.00	6.00	6.00
NODE NO	375	5	10	10	15
COMP TYPE	TEE	PIPE	PIPE	ELBOWLR	ELBOWLR
B1 / B2	1.00/2.21	.50/1.00	.50/1.00	1.00/2.67	1.00/2.67
C1 / C2	1.50/2.94	1.10/1.00	1.10/1.00	1.26/3.56	1.26/3.56
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	7821.18	7821.18	7821.18	7821.18	7821.18
SI (DW)	1500.40	1500.40	1500.40	1500.40	1500.40
SI(THER)	17800.73	12845.44	10697.41	10697.41	16499.20
PM + PB	11133.77	5410.99	5410.99	11827.79	11827.79
PM+PB+Q+F	116349.72	36146.46	32280.02	90021.06	127203.97
Q + F	105215.95	30735.47	26869.03	78193.27	115376.18
WESI ST	39000.00	39000.00	39000.00	39000.00	39000.00
YIELD ST	18860.00	18860.00	18860.00	18860.00	18860.00
MOD. ELA.	25785000.00	25785000.00	25785000.00	25785000.00	25785000.00
SRI, PRI	.5903	.2869	.2869	.6271	.6271
SRI, SEC	2.0476	.9901	.9352	1.6640	2.1919
SRI TOTAL	2.6380	1.2770	1.2221	2.2911	2.8190

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ISI WELD ID	CWA-BJ-7	CWA-BJ-8	CWA-BJ-9	CWA-BJ-10	CWA-BJ-11
WELD TYPE	P-E	E-P	P-E	E-P	P-E
PIPE SIZE	6.00	6.00	6.00	6.00	6.00
NODE NO	25	30	35	40	45
COMP TYPE	ELBOWLR	ELBOWLR	FLBOWLR	ELBOWLR	ELBOWLR
-----					
B1 / B2	1.00/2.67	1.00/2.67	1.00/2.67	1.00/2.67	1.00/2.67
C1 / C2	1.26/3.56	1.26/3.56	1.26/3.56	1.26/3.56	1.26/3.56
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	7821.18	7821.18	7821.18	7821.18	7821.18
SI(DW)	1500.40	1500.40	1500.40	1500.40	1500.40
SI(THER)	2178.66	2278.88	1529.90	2684.88	2069.03
PM + PB	11827.79	11827.79	11827.79	11827.79	11827.79
PM+PB+Q+F	35425.48	36067.79	31267.63	38669.74	34722.88
Q + F	23597.69	24240.00	19439.84	26841.95	22895.08
RESI ST	39000.00	39000.00	39000.00	39000.00	39000.00
YIELD ST	18860.00	18860.00	18860.00	18860.00	18860.00
MOD. ELA.	25785000.00	25785000.00	25785000.00	25785000.00	25785000.00
-----					
SRI,PRI	.6271	.6271	.6271	.6271	.6271
SRI,SEC	.8888	.8979	.8298	.9349	.8788
-----					
SRI TOTAL	1.5159	1.5250	1.4569	1.5620	1.5060

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ISI WELD ID	CWA-BJ-12	CWA-BJ-13	CWA-	CWA-BJ-15	CWA-BJ-16
WELD TYPE	E-V	V-P	P-SOCKOLET	P-E	E-P
PIPE SIZE	6.00	6.00	6.00	6.00	6.00
NODE NO	50	55	60	65	70
COMP TYPE	ELBOWLR	TRANS	TEE	ELBOWLR	ELBOWLR
<hr/>					
B1 / B2	1.00/2.67	.50/1.00	1.00/1.87	1.00/2.67	1.00/2.67
C1 / C2	1.26/3.56	1.67/2.10	1.50/2.49	1.26/3.56	1.26/3.56
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	7821.18	7821.18	7821.18	7821.18	7821.18
SI (DW)	1500.40	1500.40	1500.40	1500.40	1500.40
SI(THER)	1905.22	4409.53	5312.86	6905.95	7668.03
PM + PB	11827.79	5410.99	10625.88	11827.79	11827.79
PM+PB+Q+F	33673.04	38027.53	44644.63	65722.09	70606.14
Q + F	21845.24	32616.55	34018.75	53894.29	58778.34
REST ST	39000.00	39000.00	39000.00	39000.00	39000.00
YIELD ST	18860.00	18860.00	18860.00	18860.00	18860.00
MOD. ELA.	25785000.00	25785000.00	25785000.00	25785000.00	25785000.00
<hr/>					
SRI,PRI	.6271	.2869	.5634	.6271	.6271
SRI,SEC	.8639	1.0168	1.0368	1.3190	1.3883
<hr/>					
SRI TOTAL	1.4910	1.3038	1.6002	1.9461	2.0154

STRESS RULE INDEX EVALUATION - SUMMARY

ISI WELD ID	CWA-BK1-18	CWA-BJ-19	CWA-BJ-20	CWA-BJ-21	CWA-BJ-22
WELD TYPE	P-SOCKET	P-E	E-E	E-V	V-P
PIPE SIZE	6.00	6.00	6.00	6.00	6.00
NODE NO	75	80	85	95	100
COMP TYPE	TEE	ELBOWLR	ELBOWLR	ELBOWLR	TRANS
-----					
B1 / B2	1.00/1.87	1.00/2.67	1.00/2.67	1.00/2.67	.50/1.00
C1 / C2	1.50/2.49	1.26/3.56	1.26/3.56	1.26/3.56	1.67/2.10
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	7821.18	7821.18	7821.18	7821.18	7821.18
SI(DW)	1500.40	1500.40	1500.40	1500.40	1500.40
SI(THER)	7482.68	5991.53	5850.89	4754.15	3831.66
PM + PB	10625.88	11827.79	11827.79	11827.79	5410.99
PM+PB+Q+F	54379.13	59861.67	58960.30	51931.43	35843.16
Q + F	43753.25	48033.88	47132.51	40103.64	30432.17
RESI ST	39000.00	39000.00	39000.00	39000.00	39000.00
YIELD ST	18860.00	18860.00	18860.00	18860.00	18860.00
MOD. ELA.	25785000.00	25785000.00	25785000.00	25785000.00	25785000.00
-----					
SRI,PRI	.5634	.6271	.6271	.6271	.2869
SRI,SEC	1.1750	1.2358	1.2230	1.1232	.9850
-----					
SRI TOTAL	1.7384	1.8629	1.8501	1.7503	1.2727

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ISI WELD ID	CWA-BJ-23	CWA-BJ-25	CWA-	CWA-BJ-27	
WELD TYPE	P-P	P-E	E-SOCKOLET	E-SE	E-E
PIPE SIZE	6.00	6.00	6.00	6.00	20.00
NODE NO	105	115	120	120	380
COMP TYPE	PIPE	ELBOWSR	TEE	ELBOWSR	ELBOWSR
-----					
B1 / B2	.50/1.00	1.00/3.50	1.00/1.87	1.00/3.50	1.00/3.91
C1 / C2	1.10/1.00	1.53/4.67	1.50/2.49	1.53/4.67	1.45/5.21
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI(PRES)	7821.18	7821.18	7821.18	7821.18	11154.22
SI(DW)	1500.40	1500.40	1500.40	1500.40	1499.82
SI(THER)	3555.21	4193.59	5632.27	5632.27	2795.45
PM + PB	5410.99	13072.04	10625.88	13072.04	17013.48
PM+PB+Q+F	19424.05	62214.63	46077.58	74298.28	59693.57
Q + F	14013.06	49142.59	35451.69	61226.24	42680.09
RESI ST	39000.00	39000.00	39000.00	39000.00	28500.00
YIELD ST	18860.00	18860.00	18860.00	18860.00	18800.00
MOD. ELA.	25785000.00	25785000.00	25785000.00	25785000.00	25750000.00
-----					
SRI,PRI	.2869	.6931	.5634	.6931	.9050
SRI,SEC	.7527	1.2515	1.0571	1.4231	1.0125
-----					
SRI TOTAL	1.0396	1.9446	1.6205	2.1162	1.9175

STRESS RULE INDEX EVALUATION - SUMMARY

ISI WELD ID	E-P	E-P	P-T	V-P	P-T
WELD TYPE	E-P	E-P	P-T	V-P	P-T
PIPE SIZE	20.00	20.00	20.00	24.00	24.00
MODE NO	385	395	400	109	110
COMP TYPE	ELBOWSR	ELBOWSR	TEE	TRANS	TEE
-----					
B1 / B2	1.00/3.91	1.00/3.91	1.00/2.60	.50/1.00	1.00/2.43
C1 / C2	1.45/5.21	1.45/5.21	1.50/3.46	1.49/1.74	1.50/3.24
K1 / K2	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80	1.20/1.80
SI (PRES)	11154.22	11154.22	11154.22	12415.05	12415.05
SI (DW)	1499.82	1499.82	1499.82	1559.03	1559.03
SI (THER)	0.00	1484.61	1670.86	1816.73	1662.22
PM + PB	17013.48	17013.48	15049.73	7766.56	16205.02
PM+PB+Q+F	33483.64	47403.24	39842.25	32772.83	41140.95
Q + F	16470.16	30389.76	24792.52	25006.27	24935.93
RESI ST	28500.00	28500.00	28500.00	27500.00	27500.00
YIELD ST	18800.00	18800.00	18800.00	18800.00	18800.00
MOD. ELA.	25750000.00	25750000.00	25750000.00	25750000.00	25750000.00
-----					
SRI, PRI	.9050	.9050	.8005	.4131	.8620
SRI, SEC	.6397	.8377	.7581	.7469	.7459
-----					
SRI TOTAL	1.5447	1.7427	1.5586	1.1600	1.6079

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ISI WELD ID	V-P	P-T
WELD TYPE		
PIPE SIZE	24.00	24.00
NODE NO	290	291
COMP TYPE	TRANS	TEE
-----		
B1 / B2	.50/1.00	1.00/2.43
C1 / C2	1.49/1.74	1.50/3.24
K1 / K2	1.20/1.80	1.20/1.80
SI(PRES)	12415.05	12415.05
SI(DW)	1559.03	1559.03
SI(THER)	1442.96	1472.51
PM + PB	7766.56	16205.02
PM+PB+Q+F	31603.27	40034.15
Q + F	23836.71	23829.12
RESI ST	27500.00	27500.00
YIELD ST	18800.00	18800.00
MOD. ELA.	25750000.00	25750000.00
-----		
SRI,PRI	.4131	.8620
SKI,SEC	.7303	.7301
-----		
SRI TOTAL	1.1434	1.5921