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July 3, 1991

U.S. Nuclear Regulatory Commission  
Mail Station P1-137  
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Grand Gulf Nuclear Station  
Unit 1  
Docket No. 50-416  
License No. NPF-29  
ASME Section XI Relief Request Number I-00010 Revision 4

GNRO-91/00112

Gentlemen:

This submittal requests relief from the requirements of ASME Section XI, in accordance with 10CFR50.55a(g)(5)(iv) and 10CFR50.55a(g)(6)(i). A revision of the previously approved relief request is attached.

Relief Request I-00010 Revision 4 addresses welds which require relief for volumetric and surface examinations. In addition to these new items, notes were added to items previously approved in Revision 3. These notes indicate welds not subject to hydrostatic testing. Changes to Table 1 of the previously approved relief request are summarized in Attachment 1.

Your review and approval of these requests is requested prior to January 1, 1992, in order to allow for planning of the upcoming refueling outage, which is scheduled for April 1992. If additional information is required to support your review, please advise.

Yours truly,

*W. T. Cottle*

WTC/JEO/mtc

attachments: 1. Summary of Revision 4 Changes  
2. Relief Request Number I-00010 Revision 4  
cc: (See Next Page)

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## Summary of Revision 4 Changes - Relief Request 1-00010

"Inservice Examination

of

Pressure Retaining Welds"

<u>Relief Request Revision 4 Item No.</u>	<u>Change Requested</u>	<u>Reason for Change/Comments</u>
8	Correct Description	Item No. 8 pipe size is corrected to 24"
72 & 73	Add Items	Relief is requested to permit partial examination for these welds
3,13,14,15 and 21 & 72	Add Items	Notes were added to indicate that these welds are not subject to hydrostatic testing

Relief Request Number I-00010 Revision 4

"Inservice Examination

of

Pressure Retaining Welds"

Pages Following:

4 Pages	Relief Request - Revision 4
8 Pages	Table 1 Revision 4

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INSERVICE EXAMINATION  
OF  
PRESSURE RETAINING WELDS

- I. Component: Inaccessible portions of ASME Section III, Class 1 and 2 pressure retaining and integral attachment piping welds listed in table 1 (see attached).
- II. Code: These portions of the pressure retaining and integral attachment piping welds were designed and fabricated to ASME Section III, Class 1 and Class 2 requirements. Applicable inservice inspections are to be performed in accordance with the ASME Section XI, 1977 Edition, through and including the Summer 1979 Addenda.
- III. Code Requirements: Class 1 and Class 2 pressure retaining piping welds are required to be volumetrically and surface examined, essentially 100% of the weld, once every ten year interval in accordance with ASME Section XI, Table IWB-2500-1, Category B-J, Table IWC-2500-1, Category C-F. The Class 1 integral attachment welds depicted in table 1 are required to be surface examined once each ten year interval in accordance with ASME Section XI, Table IWB-2500-1, Category B-K-1.
- IV. Information to support the determination that the Code requirements are impractical: Portions of welds that were preservice examined have physical obstructions due to design. Due to this limited accessibility, it is impractical to perform the surface and volumetric examination for 100% of the required examination volume as indicated for the welds listed in Table 1.
- V. Specific Relief Requested: Permission is requested to perform the Code required examinations to the extent described in Table 1.



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- VI. Reasons why relief should be granted: Request for permission to limit the code required examination to the accessible areas should be granted for the following reasons:
1. The inaccessible portions of listed pressure retaining welds were examined by radiography, passed in accordance with ASME Section III, Class 1 and 2 requirements.
  2. The inaccessible portions of the pressure retaining and integral attachment welds were surface examined (magnetic particle or liquid penetrant), passed in accordance with ASME III and/or XI, Class 1 and Class 2 requirements.
  3. The inaccessible portions of listed piping welds will be subject to a system leakage test after each refueling outage for Class 1, and each inspection period for Class 2 in accordance with ASME Section XI requirements.
  4. The inaccessible portions of listed piping welds will be subject to a system hydrostatic test each inspection interval in accordance with ASME Section XI, Class 1 and 2 requirements.
  5. Accessible portions of listed welds will be volumetrically and surface examined each inspection interval in accordance with ASME Section XI. Should indications be found, an engineering evaluation will be made to determine if the inaccessible portions of the listed welds have been affected.

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VI. Reasons why relief should be granted (continued):

6. Leak detection is provided, by way of the leakage detection system with continuous monitoring, for the RHR, RCIC, MS, RWCU, RECIRC and FW systems.

7. The failure of any one of these pressure retaining piping welds would have no adverse effect on plant safety as there is isolation capability and/or shut down capability as part of the plant design.

8. The calculated maximum piping stresses and usage factor at the integral attachments on the piping, including consideration of the local pipe wall stresses, have been determined in the class 1 stress report and are equal to the following:

a) Primary plus secondary (equation 10): 32,775 psi ( $1.72 S_m$ ),

b) usage factor is 0.0442.

Circumferential and longitudinal welds in piping with stress levels below  $2.4 S_m$  and usage factors below 0.4 are excluded from ISI examinations, in accordance with Table IWB-250C-1 Category B-J.

9. Examinations at GGNS of category B-J, B-K-1 and C-F welds have not identified any flaws or evidence of service induced degradation.

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- VII. Alternate testing: All the welds identified in Table 1 will be inspected twice by volumetric or surface examination, as applicable, during the 10 year interval as discussed in GGNS Safety Evaluation Report, Supplement #2.
- VIII. NRC discussion statement.  
(revision 3) :
- "The staff has reviewed the information submitted which supports the licensee's conclusion that the Section XI ASME Code requirements are impractical for the piping welds identified in Table 1 due to inaccessibility of portions of the welds. Compliance to the Code requirements would require the redesign and refabrication of the piping system to eliminate physical obstructions due to pipe supports, pipe fittings, and components. The proposed alternative limited volumetric examinations, along with the Section XI ASME Code surface examinations and the hydrostatic tests, ensure an acceptable level of inservice structural integrity. The licensee concludes, and the staff agrees, that relief should be granted as requested in Relief Request No. I-00010, Revision 3 and the alternative testing imposed." (Reference MAEC-90/0261)



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TABLE 1

ITEM NO	SYSTEM NO	WELD NO	ISO NO	PIPE SIZE	COMPONENT	EXAMINABLE VOLUMETRIC AREA	TYPE SCAN	EXAMINABLE SURFACE AREA	CLASS	WELD TYPE	REASON FOR LIMITATIONS
1	E12	G014-FW-44	RH-8-8	6"	VALVE TO ELBOW	55%	T	100%	1	CIRC	ELBOW RADIUS
2	B21	G9-C1-B-L/B	MS-11-8	28"	ELBOW SEAM	38%	T	38%	1	LONG	PIPE RESTRAINT
3*	E51	G004-8-8-1	RI-8-2	6"	ELBOW TO ELBOW	70%	T	70%	2	CIRC	ELBOW RADIUS
4	B21	G11-D1-B-L/B	MS-11-11	28"	ELBOW SEAM	38%	T	38%	1	LONG	PIPE RESTRAINT
5	B21	G8-A1-B-L/B	MS-11-2	28"	ELBOW SEAM	38%	T	38%	1	LONG	PIPE RESTRAINT
6	B21	G030-FW-23	FW-8-2	24"	VALVE TO PIPE	93%	T	100%	1	CIRC	SOCK-O-LET
7	B21	G030-FW-36	FW-8-4	24"	VALVE TO PIPE	93%	T	100%	1	CIRC	SOCK-O-LET
8	B21	G026-FW-17	FW-11-7	24"	PIPE TO TEE	93%	T	100%	1	CIRC	SOCK-O-LET
9	B21	G001-W4	MS-11-3	28"	VALVE TO PIPE	82%	T	100%	1	CIRC	PIPE RESTRAINT
10	B21	G001-W4	MS-11-9	28"	VALVE TO ELBOW	82%	T	100%	1	CIRC	PIPE RESTRAINT
11	B21	G9-C1-B-L/A	MS-11-8	28"	ELBOW SEAM	38%	T	38%	1	LONG	PIPE RESTRAINT
DELETED											

\*Under the rules of IWC-5210(a), this weld is not subject to system hydrostatic testing. Item 4 under "Reasons why relief should be granted" does not apply to this weld.

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13*	E51	G004-7-8-4	RI-8-1	10"	REDUCER TO TEE	71%	T	100%	2	CIRC	TEE
14*	E51	G004-7-8-9	RI-8-1	10"	REDUCER TO TEE	71%	T	100%	2	CIRC	TEE
15*	E51	G004-7-8-8	RI-8-1	10"	REDUCER TO TEE	71%	T	100%	2	CIRC	TEE
16	B33	G024-W2	RR-11-19	4"	ELBOW TO TEE	62%	T	100%	1	CIRC	TEE
17	G33	G002-W179	CU-8-7	4"	ELBOW TO FITT.	63%	T	NA	1	CIRC	ELBOW RADIUS
18	B21	G11-D1-B-L/A	MS-11-11	28"	ELBOW SEAM	38%	T	38%	1	LONG	PIPE RESTRAINT
19	B21	G001-W9	MS-11-12	28"	VALVE TO PIPE	82%	T	100%	1	CIRC	PIPE RESTRAINT
20	B21	G8-A1-B-L/A	MS-11-2	28"	ELBOW SEAM	38%	T	38%	1	LONG	PIPE RESTRAINT
21*	E51	G001-W1	RI-8-12	6"	VALVE TO ELBOW	73%	T	100%	2	CIRC	ELBOW RADIUS
22	E51	G001-W40	RI-11-4	6"	VALVE TO ELBOW	73%	T	100%	1	CIRC	ELBOW RADIUS
23	B33	G001-W5	RR-11-2	24"	ELBOW TO PUMP	73% see note 1	T	100%	1	CIRC	PUMP
24	B33	G001-W6	RR-11-2	24"	PIPE TO PUMP	58% see note 1	T	100%	1	CIRC	PUMP

\*Under the rules of IWC-5210(a), this weld is not subject to system hydrostatic testing. Item 4 under "Reasons why relief should be granted" does not apply to this weld.

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25	B33	G001-W8	RR-11-3	24"	VALVE TO PIPE	50% see note 2	T	100%	1	CIRC	VALVE
26	B33	G001-W28	RR-11-9	24"	ELBOW TO PUMP	62% see note 1	T	100%	1	CIRC	PUMP
27	B33	G001-W29	RR-11-9	24"	PUMP TO PIPE	61% see note 1	T	100%	1	CIRC	PUMP
28	B33	G001-W31	RR-11-10	24"	VALVE TO PIPE	50% see note 1&2	T	100%	1	CIRC	VALVE
29	B33	G5-B1-B	RR-11-9	4"/24"	SWEEP TO PIPE	59% see note 1	T	100%	1	BRANCH	SWEEP-O-LET
30	B33	G5-B1-E	RR-11-9	4"/24"	SWEEP TO PIPE	63% see note 1	T	100%	1	BRANCH	SWEEP-O-LET
31	B33	G023-W37	RR-11-15	20"	TEE TO PIPE	65% see note 1	T	100%	1	CIRC	TEE
32	B33	G024-W8	RR-11-16	4"	PIPE TO SWEEP	50% see note 2	T	100%	1	CIRC	SWEEP-O-LET
33	B33	G024-W27	RR-11-17	4"	PIPE TO SWEEP	50% see note 2	T	100%	1	CIRC	SWEEP-O-LET
34	B33	G10-B1-L	RR-11-11	12"/16"	SWEEP TO PIPE	50% see note 3	P	100%	1	BRANCH	SWEEP-O-LET
35	B33	G10-B1-K	RR-11-11	12"/16"	SWEEP TO PIPE	50% see note 3	P	100%	1	BRANCH	SWEEP-O-LET
36	B33	G10-B1-J	RR-11-11	12"/16"	SWEEP TO PIPE	50% see note 3	P	100%	1	BRANCH	SWEEP-O-LET

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37	B33	G10-B1-H	RR-11-11	12"/16"	SWEEP TO PIPE	50% see note 3	P	100%	1	BRANCH	SWEEP-O-LET
38	B33	G10-B1-G	RR-11-11	12"/16"	SWEEP TO PIPE	50% see note 3	P	100%	1	BRANCH	SWEEP-O-LET
39	B33	G10-B1-F	RR-11-11	12"/16"	SWEEP TO PIPE	50% see note 3	P	100%	1	BRANCH	SWEEP-O-LET
40	B33	G001-W34	RR-11-11	24"	PIPE TO CROSS	50% see note 3	P	100%	1	CIRC	CROSS
41	B33	G10-B1-A	RR-11-11	16"	PIPE TO CROSS	50% see note 3	P	100%	1	CIRC	CROSS
42	B33	G10-B1-B	RR-11-11	16"	PIPE TO CROSS	50% see note 3	P	100%	1	CIRC	CROSS
43	B21	G8-A1-C	MS-11-2	8"/28"	SWEEP TO PIPE	100%	T	98%	1	BRANCH	PIPE SUPPORT
44	B21	G026-W36	FW-11-2	24"	PIPE TO VALVE	95%	T	100%	1	CIRC	PIPE SUPPORT
45	B21	G8-A1-L,M,N,P	MS-11-2	28"	LUGS TO PIPE	N/A	N/A	49%	1	INT ATT	PIPE RESTRAINT
46	B21	G10-B1-L,M,N,P	MS-11-5	28"	LUGS TO PIPE	N/A	N/A	49%	1	INT ATT	PIPE RESTRAINT
47	B21	G9-C1-L,M,N,P	MS-11-8	28"	LUGS TO PIPE	N/A	N/A	49%	1	INT ATT	PIPE RESTRAINT
48	B21	G11-D1-L,M,N,P	MS-11-11	28"	LUGS TO PIPE	N/A	N/A	49%	1	INT ATT	PIPE RESTRAINT



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49	B33	G001W27	RR-11-9	24"	PIPE TO VALVE	50% see note 1	T	100%	1	CIRC	VALVE
50	B33	G001W33	RR-11-10	24"	VALVE TO PIPE	50% see note 1	T	100%	1	CIRC	VALVE
51	B33	G10-A1-A	RR-11-4	16"	CROSS TO PIPE	50% see note 3	P	100%	1	CIRC	CROSS
52	B33	G10-A1-B	RR-11-4	16"	CROSS TO PIPE	50% see note 3	P	100%	1	CIRC	CROSS
53	B33	G6-B1-C	RR-11-9	4"/24"	PIPE TO SWEEP	50% see note 1	T	100%	1	BRANCH	SWEEP
54	B33	G10-A1-F	RR-11-4	16"/12"	PIPE TO SWEEP	50% see note 3	P	100%	1	BRANCH	SWEEP
55	B33	G10-A1-G	RR-11-4	16"/12"	PIPE TO SWEEP	50% see note 3	P	100%	1	BRANCH	SWEEP
56	B33	G10-A1-H	RR-11-4	16"/12"	PIPE TO SWEEP	50% see note 3	P	100%	1	BRANCH	SWEEP
57	B33	G10-A1-J	RR-11-4	16"/12"	PIPE TO SWEEP	50% see note 3	P	100%	1	BRANCH	SWEEP
58	B33	G10-A1-K	RR-11-4	16"/12"	PIPE TO SWEEP	50% see note 3	P	100%	1	BRANCH	SWEEP
59	B33	G10-A1-L	RR-11-4	16"/12"	PIPE TO SWEEP	50% see note 3	P	100%	1	BRANCH	SWEEP
60	B33	G001W4	RR-11-2	24"	VALVE TO PIPE	50% see note 1	T	100%	1	CIRC	VALVE



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TABLE 1

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61	B33	G001W9	RR-11-3	24"	PIPE TO VALVE	50% see note 1	T	100%	1	CIRC	VALVE
62	B33	G001W10	RR-11-3	24"	VALVE TO PIPE	50% see note 1	T	100%	1	CIRC	VALVE
63	B33	G6-A1-C	RR-11-2	4"/4"	PIPE TO SWEEP	50% see note 1	T	100%	1	BRANCH	SWEEP
64	B33	G5-A1-C	RR-11-2	4"/24"	PIPE TO SWEEP	50% see note 1	T	100%	1	BRANCH	SWEEP
65	B33	G5-A1-B	RR-11-2	4"/24"	PIPE TO SWEEP	50% see note 1	T	100%	1	BRANCH	SWEEP
66	B21	G11-D1-C	MS-11-11	28"/10"	PIPE TO SWEEP	57%	T	97%	1	BRANCH	HANGER
67	B21	G10-B1-C	MS-11-5	28"/10"	PIPE TO SWEEP	71%	T	100%	1	BRANCH	HANGER
68	B21	G10-B1-E	MS-11-5	28"/10"	PIPE TO SWEEP	71%	T	85%	1	BRANCH	HANGER
69	B21	G10-B1-F	MS-11-5	28"/10"	PIPE TO SWEEP	78%	T	100%	1	BRANCH	HANGER
70	B21	G10-B1-H	MS-11-5	28"/10"	PIPE TO SWEEP	78%	T	100%	1	BRANCH	HANGER
71	B21	G10-B1-G	MS-11-5	28"/10"	PIPE TO SWEEP	78%	T	100%	1	BRANCH	HANGER
72*	E51	G004W18	RI-8-21	6"	VALVE TO PIPE	83.18%	T	100%	2	CIRC	PIPE RESTRAINT

\*Under the rules of IWC-5210(a), this weld is not subject to system hydrostatic testing. Item 4 under "Reasons why relief should be granted" does not apply to this weld.

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## TABLE 1

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TABLE 1

LEGEND:

P = SCAN PARALLEL TO THE WELD

T = SCAN TANGENT (PERPENDICULAR) TO THE WELD

NOTES:

1. In addition to the "T" scan limitation, these welds are augmented by the requirements of NUREG 0313 and therefore are examined with a parallel scan that is not required by ASME Section XI. The parallel scan is limited to one side of the weld (50%) due to the fittings being joined by the weld.
2. 100% coverage was obtained in one direction only, using refracted longitudinal wave.
3. The "P" scan is performed for compliance with NUREG 0313. 100% of ASME Section XI coverage is obtained without limitation.