



Portland General Electric Company

February 5, 1981

Trojan Nuclear Plant  
Docket 50-344  
License NPF-1

Director of Nuclear Reactor Regulation  
ATTN: Mr. Robert A. Clark, Chief  
Operating Reactors Branch No. 3  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Sir:

The Second 40-month Inservice Inspection (ISI) Program for the Trojan Nuclear Plant was submitted on December 12, 1979 as part of License Change Application 26. This program has been revised as a result of NRC and internal reviews. The revisions were discussed and agreed to during a meeting with an NRC team headed by George Johnson at the Trojan Nuclear Plant on July 29-31, 1980 and during subsequent telephone conversations with the NRC on January 14 and 28, 1981.

Attachment 1 contains PGE's formal response to the March 18, 1980 NRC letter requesting additional information on the ISI Program. Also included in Attachment 1 are PGE's responses to additional items discussed during the July 29-31, 1980 meeting and subsequent telephone conversations. These resolutions are incorporated in Revision 1 to the Second 40-month Inservice Inspection Program, which is presented as Attachment 2.

It is our understanding that this submittal will complete the information required for the approval of the ISI portion of LCA 26. Please do not hesitate to contact us if you have questions on the above.

Sincerely,

Bart D. Withers  
Vice President  
Nuclear

Attachments

c: Mr. Lynn Frank, Director  
State of Oregon  
Department of Energy

Mr. T. Taylor  
Battelle Northwest

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Attachment 1

PGE Responses to the March 18, 1980 NRC Letter  
Regarding the Second 40-Month Inservice Inspection Program  
and PGE Responses to Additional ISI Items

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A. Responses to NRC Letter Dated March 18, 1980

I. Table 1

1. Please explain the absence of the following categories in Table 1:

Reactor Vessel

B1.1 B-A  
B1.12 B-H

Pressurizer

B2.3 B-E  
B2.5 B-G-1  
B2.6 B-G-1  
B2.7 B-G-1  
B2.8 B-I-2

Steam Generators

B3.2 B-D  
B3.4 B-G-1  
B3.5 B-G-1  
B3.6 B-G-1  
B3.7 B-H  
B3.8 B-I-2

Piping Pressure Boundary

B4.2 B-G-1  
B4.3 B-G-1  
B4.4 B-G-1  
B4.6 B-J

Pumps

B5.4 B-K-1  
B5.6 B-L-1  
B5.7 B-L-2  
B5.9

Valves

B6.1 B-G-1  
B6.2 B-G-1  
B6.3 B-G-1  
B6.4 B-K-1  
B6.6 B-M-1  
B6.7 B-M-2

PGE Response

Reactor Vessel

Item B1.1 The examination of the shell longitudinal and circumferential welds in the core region will be performed at or near the end of the first 10-yr inspection interval.

Item B1.12 The reactor vessel is supported by pads that are integral with the primary nozzles and are excluded from the examination requirements of IWB-2500, Category B-H.

Pressurizer

- Item B2.3 The heater penetrations are not required to be examined during the Second 40-Month ISI Program. The examination will be performed at or near the end of the first 10-yr inspection interval.
- Item B2.5 There are no pressure retaining bolts on the pressurizer that are 2 in. and larger in diameter.
- Item B2.6 See comment for Item B2.5.
- Item B2.7 See comment for Item B2.5.
- Item B2.9 The pressurizer vessel cladding is not required to be examined during the Second 40-Month ISI Program. The examination will be performed at or near the end of the first 10-yr inspection interval.

Steam Generators

- Item B3.2 The steam generator primary nozzles are integrally cast with the vessel channel head and are excluded from the examination requirements of IWB-2500, Category B-D. The Second 40-Month ISI Program will be revised to include a visual examination of the nozzle inner radius from the manway opening, using manual or remote techniques, each time a steam generator ISI tube inspection is performed.
- Item B3.4 There are no pressure retaining bolts on the steam generators that are 2 in. and larger in diameter.
- Item B3.5 See comment for Item B3.4.
- Item B3.6 See comment for Item B3.4.
- Item B3.7 The steam generator supports are integrally cast with the primary channel and are excluded from the examination requirements of IWB-2500, Category B-H.
- Item B3.8 The examination of the steam generator vessel cladding will be performed at or near the end of the first 10-yr inspection interval.

Piping Pressure Boundary

- Item B4.2 The piping pressure boundary does not contain any pressure retaining bolts that are 2 in. and larger in diameter.

Item B4.3 See comment on Item B4.2.

Item B4.4 See comment on Item B4.2.

Item B4.6 A portion of the branch connection welds were examined during the First 40-Month Program, and the remaining portion will be examined at or near the end of the first 10-yr inspection interval.

#### Pumps

Item B5.4 The Reactor Coolant Pump support brackets are integrally cast with the pump casing and are excluded from the examination requirements of IWB-2500, Category B-K-1.

Item B5.6 The Reactor Coolant Pump pressure retaining welds in the pump casings will be examined at or near the end of the first 10-yr inspection interval.

Item B5.7 The Reactor Coolant Pump internal pressure boundary surfaces will be examined at or near the end of the first 10-yr inspection interval.

Item B5.9 The Reactor Coolant Pumps do not contain any pressure retaining bolts smaller than 2 in. in diameter.

#### Valves

Item B6.1 Valves in the Class 1 Systems do not contain any pressure retaining bolts that are 2 in. and larger in diameter.

Item B6.2 See comment for Item B6.1.

Item B6.3 See comment for Item B6.1.

Item B6.4 There are no integrally welded supports on valves.

Item B6.6 There are no pressure retaining welds in Class 1 valve bodies.

Item B6.7 The required examination of the internal pressure boundary surfaces in valves will be performed at or near the end of the first 10-yr inspection interval.

II. Table 2

1. Please explain the absence of the following categories in Table 2:

<u>Letdown Heat Exchanger</u>	<u>Excess Letdown Heat Exchanger</u>
Cl.2 C-B Cl.3 C-C Cl.4 C-D	Cl.2 C-B Cl.3 C-C
<u>Regenerative Heat Exchanger</u>	<u>Seal Water Heat Exchanger</u>
Cl.2 C-B Cl.3 C-C Cl.4 C-D	Cl.2 C-B Cl.3 C-C Cl.4 C-D
<u>Steam Generator</u>	<u>Reactor Coolant Filter and Seal Water Return Filter</u>
Cl.3 C-C	Cl.4 C-D
<u>Volume Control Tank</u>	<u>Charging Pump Stabilizer Separator</u>
Cl.2 C-B	Cl.2 C-B Cl.3 C-C Cl.4 C-D
<u>Piping Systems</u>	<u>Pumps</u>
C2.3 C-F, C-G	C3.3 C-E-1 C3.4 C-E-2
<u>Valves</u>	
C4.1 C-F, C-G C4.3 C-E-1	

PGE Response

Letdown Heat Exchanger

- Item Cl.2 The inlet and outlet nozzles are 3-in. nominal diameter and are exempted from the examination requirements of IWC-2520 as per IWC-1220(d).
- Item Cl.3 The integrally welded supports are on the shell (Class 3) side of the vessel.
- Item Cl.4 There are no pressure retaining bolts exceeding 1 in. in diameter.

Excess Letdown Heat Exchanger

- Item Cl.2 The inlet and outlet nozzles are 3-in. nominal diameter and are exempted from the examination requirements of IWC-2520 as per IWC-1220(d).
- Item Cl.3 There are no integrally welded supports on this vessel.

Regenerative Heat Exchanger

- Item Cl.2 The inlet and outlet nozzles are 3-in. nominal diameter and are exempted from the examination requirements of IWC-2520 as per IWC-1220(d).
- Item Cl.3 There are no integrally welded supports on this vessel.
- Item Cl.4 There are no pressure retaining bolts on this vessel.

Seal Water Heat Exchanger

- Item Cl.2 The inlet and outlet nozzles are 2-in. nominal diameter and are exempted from the examination requirements of IWC-2520 as per IWC-1220(d).
- Item Cl.3 The integrally welded supports are located on the shell (Class 3) side of the vessel.
- Item Cl.4 There are no pressure retaining bolts exceeding 1 in. in diameter.

Steam Generators

- Item Cl.3 There are no integrally welded supports on the steam generators.

Reactor Coolant Filter

- Item Cl.4 There are no pressure retaining bolts exceeding 1 in. in diameter.

Seal Water Return Filter

- Item Cl.4 There are no pressure retaining bolts exceeding 1 in. in diameter.

Volume Control Tank

- Item Cl.2 The inlet and outlet nozzles are 4-, 3-, and 1-in. nominal diameter and are exempted from the examination requirements of IWC-2520 as per IWC-1220(d).

### Charging Pump Stabilizer Separator

- Item C1.2 The nozzles are 2-in. nominal diameter and are exempted from the examination requirements of IWC-2520 as per IWC-1220(d).
- Item C1.3 The integrally welded support is not required to to be examined during the Second 40-Month ISI Program. The examination was performed during the first 40 months.
- Item C1.4 There are no pressure retaining bolts on this vessel.

### Piping Systems

- Item C2.3 There are no branch connection weld joints in piping systems which circulate reactor coolant, or in systems which circulate other than reactor coolant.

### Pumps

- Item C3.3 There are no integrally welded supports on the RHR pumps. A portion of the integrally welded supports on the Centrifugal Charging Pumps were examined during the First 40-Month ISI Program. The remaining integrally welded supports will be examined at or near the end of the first 10-yr inspection interval. The examinations will be equivalent to having performed 100 percent of the required examinations in one of the multiple streams of the system.
- Item C3.4 A portion of the support components for the RHR pumps and Centrifugal Charging pumps were examined during the First 40-Month ISI Program. The remaining support components will be examined at or near the end of the first 10-year inspection interval. The examinations will be equivalent to having performed 100 percent of the required examinations in one of the multiple streams of the system.

### Valves

- Item C4.1 There are no Class 2 valves with pressure retaining welds in valve bodies.
- Item C4.3 There are no Class 2 valves with integrally welded supports.

### III. ASME Section XI Exemptions

1. Paragraph IWC-1220(c) of the 1974 Edition permits the exemption from examination of ECCS components provided that the control of fluid chemistry is verified through periodic sampling. The control of fluid chemistry is intended to minimize corrosive effects, particularly stress corrosion. The "chemistry control" provision was deleted from the 1977 Edition of Section XI because practical evaluation, review and acceptance standards were not defined.

It is the position of the staff that the exemption described in IWC-1220(c) is not an acceptable basis for exempting ECCS components from inservice examination; therefore, the inservice program should be revised to include components exempted under IWC-1220(c).

#### PGE Response

The Second 40-Month ISI Program has been revised to delete reference to Paragraph IWC-1220(c) of ASME Section XI. This will require an augmented inspection program that includes examination of additional piping system welds in the ECC systems. The ISI program is being reviewed and any additional examinations will be identified as a revision to the Second 40-Month ISI Program.

2. What criteria was used by Portland General Electric to determine maximum permissible line breaks for exemption of components under IWB-1220(b)(1)?

#### PGE Response

Maximum permissible line breaks for exemption of components under IWB-1220(b)(1) are 1/2-in. nominal diameter for liquid lines and 3/4-in. nominal diameter for vapor lines. The exempted components are classified Quality Group B (Class 2) in accordance with footnote 2 of 10 CFR 50.55a and Paragraph C.1 of Regulatory Guide 1.26.

### IV. Requests for Relief

1. Relief 4.1.1. The staff has taken the following position concerning the adoption of Appendix III:
  - Indication 50 percent of DAC or greater shall be recorded.
  - An indication 100 percent of DAC or greater shall be evaluated by a Level II or Level III examiner to the extent necessary to determine the size, shape, identity, and location of the reflector.



- \* Any non-geometric indication, 20 percent of DAC or greater, discovered during the ultrasonic (UT) examination shall be recorded and investigated by a Level II or Level III examiner to the extent necessary to determine the shape, identity, and location of the reflector.

PGE Response

- \* Non-geometric indications 50 percent of DAC or greater shall be recorded.
  - \* Any indication 100 percent of DAC or greater shall be investigated by a Level II or Level III examiner to the extent necessary to determine the size, shape, identity, and location of the reflector.
  - \* Any non-geometric indication, 20 percent of DAC or greater, discovered during the ultrasonic (UT) examination shall be investigated by a Level II or Level III examiner to the extent necessary to determine the shape, identity, and location of the reflector.
  - \* The owner shall evaluate the results of each examination and test as noted in IWA-1400(i).
2. Relief 4.2.4. What is the maximum permissible line break with normal reactor make-up? If this weld cannot be examined, will another weld be examined in its place?

PGE Response

The maximum permissible line break information is given in the response to comment No. 2 under ASME Section XI Exceptions. The alternate component will be randomly selected for examination as one of the 25 percent of welds to be examined under Category B-J. The weld will be examined during system hydrostatic pressure tests in accordance with the requirements of IWB-5000.

3. Relief 4.2.5. If the 3-in. weld on line RC-2501-10-1 cannot be examined, will another weld be examined in its place?

PGE Response

This weld was examined during the 1977 outage. Based on IWB-2500, Category B-J, only 25 percent of the welds need be examined during the 10-yr inspection interval. This weld will not be eligible for reexamination until all welds have been examined.

4. Relief 4.2.7. Is there a scheduled or routine maintenance on Reactor Coolant Pumps?

PGE Response

Scheduled maintenance on Reactor Coolant Pumps, which requires disassembly of the pump, complies with the requirements of IWB-2500. As a minimum, one of the four Reactor Coolant Pumps is to be disassembled each 10-yr inspection interval.

5. Relief 4.2.8. Has a dual beam refracted L-wave technique been attempted or considered as an examination for the regenerative heat exchanger?

PGE Response

Refracted L-wave techniques have been attempted, but adequate resolution cannot be obtained due to the relatively low wall thickness.

6. Relief 4.2.9. Have higher beam angles ( $>45^\circ$ ) been attempted or considered in the examination of the thin-walled vessels?

PGE Response

The use of higher beam angles ( $>45^\circ$ ) would not reduce the problem of "flooding" the material with sound.

7. Relief 4.2.11. Please furnish drawings and/or details to show the inaccessibility of these welds.

PGE Response

The two welds were omitted from the preservice inspection program and alternative welds were examined. These welds would not require examination during inservice inspections unless the requirements of IWC-2430 came into effect. Drawings are attached which show the as-built condition of weld accessibility.

8. Relief 4.2.12. Please furnish drawings and/or details on the location of pump casing welds.

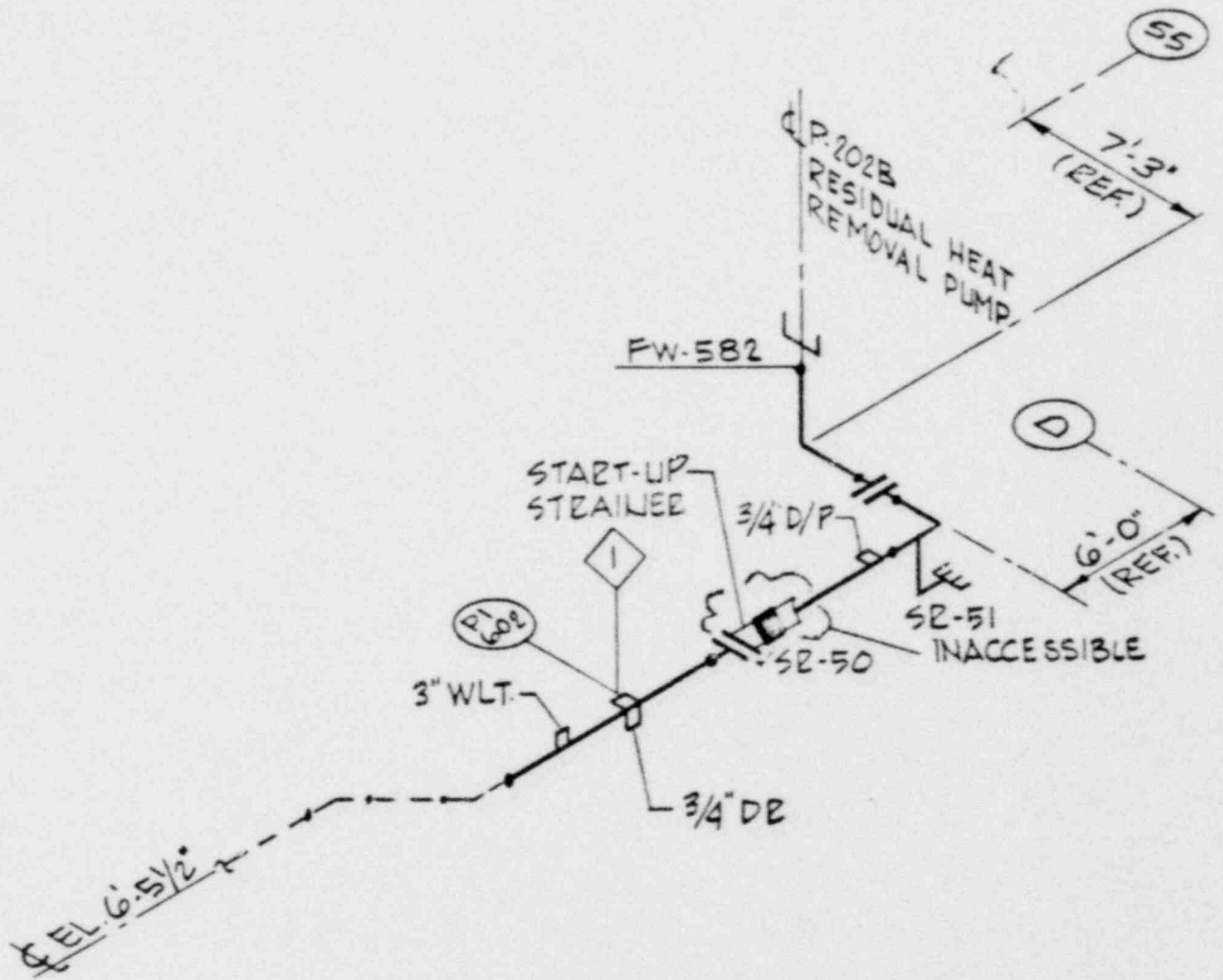
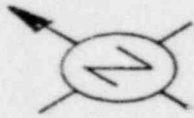
PGE Response

A drawing showing the location of the charging pump casing weld is attached.


B. Response to Additional Items

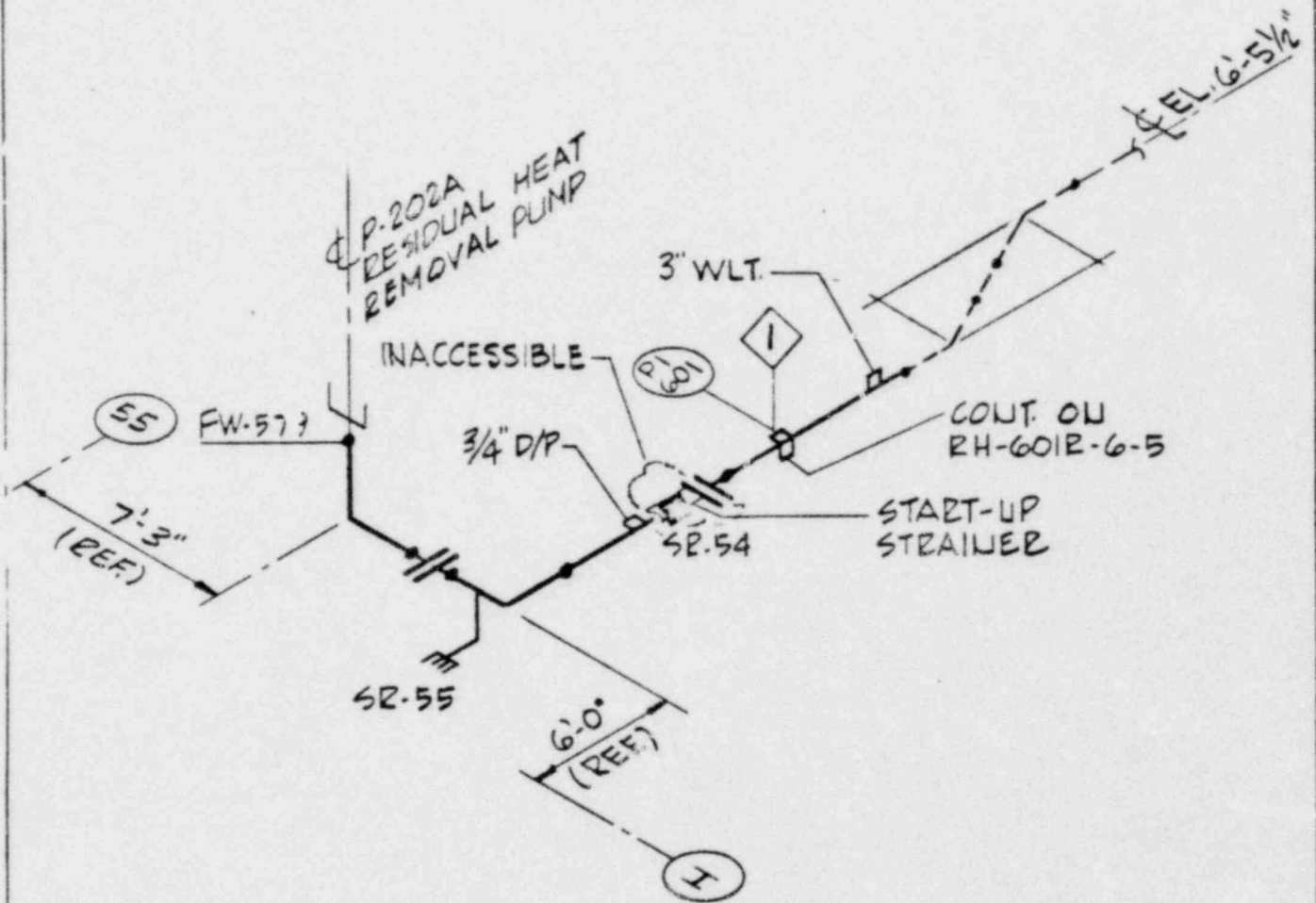
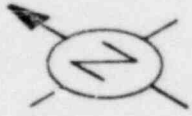
During the meeting with the NRC on July 29-31, 1980 and telephone conversations in January 1981, discussions were held on additional relief requests and other changes to the program which delete items/components that are not required by ASME Section XI or the Plant Technical Specifications. Our responses to these items are:

9. Relief 4.1.1. This relief will be revised to state that:  
"The owner shall evaluate the results of each examination and test as noted in IWA-1400(i)."
10. Relief 4.1.2. This relief will be revised to state that:  
"As the specific limitations become known for a given weld, they will be identified in the Second 40-Month ISI Program by revision."
11. Relief 4.1.3. Reference to ASME Section V, Paragraph T-434.1.1 will be added to the description of the calibration blocks that are to be used, in lieu of the requirements noted in ASME Section XI, Paragraph I-3121.
12. Relief 4.1.4. This relief will be revised to state that:  
"As the specific limitations become known for a given component, system or portion of systems, they will be identified in the Second 40-Month Program by revision."
13. Relief 4.2.15. This relief is added to state the proposed program for examination of the nozzle inner radius on the inlet and outlet nozzles on the steam generator.
14. Piping Pressure Boundary. Item B4.10 was changed to show total support components as 418 rather than 422. The quantity of support components to be examined was changed to 140 rather than 141. These changes reflect the actual number of support components and the number of these components that are to be examined during the Second 40 Months.
15. Pumps P-201A, B, C, and D. Item B5.1 was changed to delete a surface examination as this examination is not required and cannot be performed while the seal housing bolting is in place.
16. KHR Heat Exchanger E-212A and B. Items C1.1 and C1.4 were revised to show that the examinations are to be applied to one heat exchanger to utilize the multiple stream concept as described in IWC-2411 of ASME Section XI. This change will have the added benefit of keeping radiation exposures as low as reasonably achievable.
17. Piping Systems. Item C2.6 was changed to 32 rather than 33 supports. This reflects the actual quantity of supports that are to be examined during the Second 40 Months.




Reference: 14" RH-601R-5-2 Residual Heat Removal Suction from Steam Generator

NO.	DATE	REVISIONS	BY: PEG	CHK.	ENGR.	APPR.
SCALE:		DESIGNER:	DRAWN BY: PEG	CHIEF ENGR.		
			JOB NO.		DRAWING NUMBER	
			Relief Request 4.2.11		REV	



Reference: 14" RH-601R-5-2 Residual Heat Removal Suction from Steam Generator

NO		DATE		REVISIONS				BY <i>Peg</i>	CHK.	ENGR.	A 2R
SCALE		DESIGNER		DRAWN BY <i>Peg</i>				CHIEF ENGR.			
		Relief Request 4.2.11				JOB NO		DRAWING NUMBER		REV.	

CENTRIFUGAL CHARGING PUMP

