

CATEGORY 1

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SUBJECT: Requests approval of Relief Request No. RRPT-7 to ISI
 Pressure Test Program for Susquehanna Units 1 & 2.

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U.S. Nuclear Regulatory Commission
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**SUSQUEHANNA STEAM ELECTRIC STATION
REQUEST FOR APPROVAL OF RELIEF REQUEST
NO. RRPT-7 FOR THE ISI PRESSURE TEST
PROGRAM FOR UNITS 1 AND 2
PLA-4553**

FILE R41-2

Docket Nos. 50-387
and 50-388

Pennsylvania Power & Light Company requests the approval of Relief Request No. RRPT-7 to the ISI Pressure Test Program for Susquehanna Units 1 and 2. Relief Request No. RRPT-7 requests relief for ASME Section XI Class 1 incore instrument flange-to-housing bolted connections with leakage identified during pressure testing from:

The 1989 Edition of ASME Code Section XI paragraph IWA-5250(a)(2), stating:

“The source of leakages detected during the conduct of a system pressure test shall be located and evaluated by the Owner for corrective measures as follows: ... ‘If leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100.’”

In lieu of this requirement, Pennsylvania Power & Light Company proposes to do the following alternate provisions:

If leakage occurs at an incore instrument flange-to-housing bolted connection, one of the bolts shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100. The bolt selected shall be the one closest to the source of leakage. The same bolt shall be removed no more frequently than once each 40 month ASME Code Period. When the removed bolt has evidence of degradation, all remaining bolting in the connection shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100. All VT-3 visual examinations shall be completed prior to the return to service of the unit.

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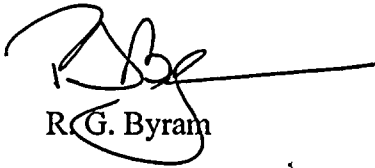
This relief is justified based upon the following:

- Periodic VT-3 visual examination of a sample of the bolts provides assurance that any degradation of the bolts is identified at an early stage.
- Any water leaking from any incore instrument flange-to-housing bolted connection is reactor coolant and has reduced potential for inducing corrosion of this bolting. Any corrosion would occur at a comparatively slow rate.
- Removal of bolts individually for VT-3 visual examination and disturbance of the seal at the incore instrument flange-to-housing bolted connection could necessitate the complete disassembly of the connection for replacement of the metallic O ring in the flange. This additional metallic O ring replacement operation beneath the reactor vessel contradicts the need to keep personnel radiation exposure As Low As Reasonably Achievable.
- Removal, VT-3 visual examination, and reinstallation of all 4 bolts in any incore instrument flange exhibiting leakage or seepage would result in a minimum expenditure of 0.6 man-REM per flange under the optimum condition of holding the flange in position - if breaking of the flange were not necessary.
- Leakage from an incore instrument flange-to-housing bolted connection detected during the system pressure test generally decreases and stops during startup when the vessel reaches operating temperature and pressure, due to the design of the special coated metallic O ring pressurizing gasket used in this connection.
- Should significant leakage from this bolted connection persist, it would be detected by the leakage collection system (drywell sump) serving this equipment, be investigated, and be corrected, in accordance with plant Technical Specification 3.4.3.2.
- In the 1992 and later editions of ASME Code Section XI, paragraph IWA-5250(a)(2) has been improved to state, "If leakage occurs at a bolted connection, one of the bolts shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100. The bolt selected shall be the one closest to the source of leakage. When the removed bolt has evidence of degradation, all remaining bolting in the connection shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100." Although not yet endorsed by the NRC, this updated requirement indicates the future direction of the industry.

Pennsylvania Power and Light Company requests that this relief be approved by March 12, 1997, so that the relief can be used during the Unit 2 Eighth Refueling Outage.

If you have any questions, please call, Mr. C. T. Coddington at (610) 774-7531.

Very truly yours,



R.G. Byram

Attachment

copy: NRC Region I
Mr. K. Jenison, NRC Sr. Resident Inspector
Mr. C. Poslusny, NRC Sr. Project Manager

RELIEF REQUEST RRPT-7

I. RELIEF REQUEST APPLICABILITY

- A. Units: 1 and 2
B. Code Examination Category: N/A
C. Code Item Number: N/A
D. Code Reference: ASME Section XI (1989 Edition), Paragraph IWA-5250(a)(2), Corrective Measures

II. IDENTIFICATION OF COMPONENTS

ASME Section XI Class 1 incore instrument flange-to-housing bolted connections with leakage identified during pressure testing. This bolting is as specified in Table IWB-2500-1, Examination Category B-G-2, Item Number B7.10.

III. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

The 1989 Edition of ASME Code Section XI paragraph IWA-5250(a)(2), stating:

“The source of leakages detected during the conduct of a system pressure test shall be located and evaluated by the Owner for corrective measures as follows: ... ‘If leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100.’”

IV. BASIS FOR RELIEF

While leakage from an incore instrument flange-to-housing bolted connection might eventually cause some degradation of the bolting, periodic VT-3 visual examination of a sample of the bolts provides assurance that any degradation of the bolts is identified at an early stage.

Any water leaking from any incore instrument flange-to-housing bolted connection is reactor coolant, which, due to its high purity, has reduced potential for inducing corrosion of this bolting. Any corrosion would occur at a comparatively slow rate.

The removal of bolts individually for VT-3 visual examination and disturbance of the seal at the incore instrument flange-to-housing bolted connection could necessitate the complete disassembly of the connection for replacement of the metallic O ring in the flange. With the reactor head on (following completion of the ASME Class 1 System Leakage or Hydrostatic

test), the reactor would have to be disassembled to allow replacement of the metallic O ring in the flange. Removal of all bolting from this leaking connection beneath a reactor vessel loaded with fuel could force extensive disassembly of the reactor vessel, with resultant additional wear and tear on reactor components. The prevention of uncontrolled draining of reactor coolant out through a disassembled flange would require removal of the reactor vessel head, removal of fuel bundles adjacent to the incore instrument, removal of the incore instrument itself, and insertion of a plug into the top of the incore instrument guide tube. This limits the inventory loss to the coolant between the plug and the flange. Thus, significant loss of contaminated reactor coolant would be created by the act of removing the bolting, breaking the flange, and replacing the metallic O ring in the flange. Creating the possibility of this additional metallic O ring replacement operation beneath the reactor vessel contradicts the need to keep personnel radiation exposure As Low As Reasonably Achievable.

Removal, VT-3 visual examination, and reinstallation of all 4 bolts in any incore instrument flange exhibiting leakage or seepage would result in a minimum expenditure of 0.6 man-REM per flange under the optimum condition of holding the flange in position - if breaking of the flange were not necessary. The hardship of this personnel radiation exposure is without any compensating increase in nuclear safety because the incore instrument flange-to-housing bolted connection is designed with safety margin.

As the ASME Class 1 system pressure test is performed at cold conditions and for only a brief period, leakage observed from an incore instrument flange-to-housing bolted connection is not representative of its condition during an extended period at rated temperature and pressure. Leakage from the incore instrument flange-to-housing bolted connection during the system pressure test generally decreases and stops with vessel heatup at operating pressure, due to the design of the special coated metallic O ring pressurizing gasket used in this connection.

Should significant leakage from this bolted connection persist, it would be detected by the leakage collection system (drywell sump) serving this equipment, be investigated, and be corrected, in accordance with plant Technical Specification 3.4.3.2.

In the 1992 and later editions of ASME Code Section XI, paragraph IWA-5250(a)(2) has been improved to state, "If leakage occurs at a bolted connection, one of the bolts shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100. The bolt selected shall be the one closest to the source of leakage. When the removed bolt has evidence of degradation, all remaining bolting in the connection shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100." Although not yet endorsed by the NRC, this updated requirement indicates the future direction of the industry.

V. ALTERNATE PROVISIONS

The source of leakage detected during the conduct of a system pressure test shall be located and evaluated by the Owner for corrective measures as follows:

If leakage occurs at an incore instrument flange-to-housing bolted connection, one of the bolts shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100. The bolt selected shall be the one closest to the source of leakage. The same bolt shall be removed no more frequently than once each 40 month ASME Code Period. When the removed bolt has evidence of degradation, all remaining bolting in the connection shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100. All VT-3 visual examinations shall be completed prior to the return to service of the unit.



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