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Nuclear Business Unit

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RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
SECOND INTERVAL ISI RELIEF REQUESTS
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354

Gentlemen:

This letter submits Public Service Electric and Gas Company's (PSE&G's) response to the August 20, 1999 NRC request for additional information (RAI) on the Hope Creek Second Interval Inservice Inspection (ISI) relief requests. Attachment 1 provides a response to each of the NRC's questions. Relief Request RR-A4 has been revised in response the NRC questions and is included in Attachment 2. Attachment 3 contains a new relief request that was necessary to address the NRC questions.

Should you have any questions regarding this response, please contact Mr. C. Manges at 856-339-3234.

Sincerely,

G. Salamon
Manager - Licensing

Attachments (3)

A047

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ATTACHMENT 1
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354
RESPONSE TO RAI

The following provides responses to each of the NRC questions/statements contained in the August 20, 1999 request for additional information.

RAI Item (1)

Request for Relief RR-A3 – In accordance with 10CFR50.55a(a)(3)(i) the licensee has proposed the use of IWB-2412(a), IWC-2412(a), and IWD-2412(a) of the 1994 Addenda of ASME Section XI. Title 10 of the Code of Federal Regulations, Section 50.55a(a)(3)(i) requires the applicant to demonstrate that the proposed alternative would provide an acceptable level of quality and safety. In order for this request to be found acceptable, present a discussion that describes how the proposed alternative examination(s) provides an equivalent and acceptable level of quality as compared to the current code requirements.

PSE&G Response:

PSE&G withdraws Relief Request RR-A3. PSE&G does not consider Relief Request RR-A3 to be necessary at this time.

RAI Item (2)

Request for Relief RR-A4 – The licensee has requested relief from the requirements of IWA-5250(a)(2), concerning leakage at bolted connections. The licensee has proposed to adopt the requirements of IWA-5250(a)(2) of the 1990 Addenda. The 1990 Addenda requires that if leakage occurs at a bolted connection, one of the bolts shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100. 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.

IWA-3100 invokes the use of subparagraphs IWB-3000, IWC-3000, IWD-3000 for Class 1, 2, and 3 pressure retaining components, respectively. However, none of these subparagraphs provide an acceptance criteria for VT-3 examinations of bolting. Therefore, the ability to perform a meaningful evaluation on the bolting without an applicable acceptance criteria is questionable. The INEEL staff believes that a VT-1 visual examination utilizing the acceptance criteria defined in IWB-3000 provides a more appropriate method of examination of the subject bolting than a VT-3 visual examination. Similar requests for relief have been approved with the condition that a VT-1 visual examination be performed utilizing the acceptance criteria for VT-1 examinations. Additionally, other licensees who have had this type of relief authorized have included a

detailed and well-defined engineering evaluation of the bolting and the bolted connection when leakage is detected. The evaluation should, at a minimum, considered the following factors: bolting materials, corrosiveness of process fluid leaking, leakage location, leakage history at connection or other system components, visual evidence of corrosion at connection (while connection is assembled), and service age of the bolting materials.

In order for the licensee's proposed alternative to be found acceptable, a specific leakage evaluation procedure is necessary. The leakage evaluation procedure should include the appropriate corrective actions to be taken if an evaluation is inconclusive or identifies bolting degradation at a leaking bolted connection. Discuss the intended action regarding this request for relief.

PSE&G Response:

PSE&G has revised Relief Request RR-A4 (Attachment 2) to include a VT-1 in lieu of a VT-3 visual examination, using the acceptance criteria of IWB-3000 for those required bolting materials examinations in which leakage is identified as described above.

In a telephone conversation on July 22, 1999 between INEEL, the NRC and PSE&G, the statements associated with a leakage evaluation procedure were discussed. The statements were clarified and the conclusion was that a specific leakage evaluation procedure would need to be provided only if PSE&G, similar to other utilities, wanted to have the ability to evaluate the leaking bolted connection in lieu of removing the required bolting and performing the VT-1. PSE&G, at this time, will comply with IWA-5250(a)(2) of the 1990 Addenda as modified in this RAI response as follows: "If leakage occurs at a bolted connection one of the bolts shall be removed VT-1 examined and evaluated in accordance IWB-3000. The bolt selected shall be the one closest to the source of the leakage. When the removed bolt has evidence of degradation, all remaining bolting in the connection shall be removed, VT-1 examined and evaluated in accordance with IWB-3000."

RAI Item (3)

Request for Relief RR-B1 – This request is for multiple Class 1 welds of various code examination categories. Included are Code Category B-A, Item B1.12 welds. Provide the staff with the status of the augmented reactor pressure vessel (RPV) examinations required by 10CRF50.55a(g)(6)(ii)(A), effective September 8, 1992, and provide a technical discussion of how the regulation was implemented at HCGS. Include in the discussion a description of the approach and any specialized techniques or equipment that were used to complete the required augmented examination. Also, provide the percent of the volume examined for each weld. 10CFR50a(g)(6)(ii)(A)(2) requires essentially 100% of the volume of each weld to be examined. Confirm that "essentially 100%" of each Examination Category B1.10 weld (RPV shell welds) have been examined, or that an alternative has been submitted for staff review pursuant to 10CFR50.55a(g)(6)(ii)(A)(5).

PSE&G Response:

There are a total of twenty Reactor Pressure Vessel (RPV) circumferential and longitudinal welds included in Code Category B-A.

There are a total of five circumferential welds as follows, with four welds being delayed by two refueling outages for examination in accordance with Relief Request RR-B2 (TAC No. M99478)

WinISI Sum#	Component ID	% of Code Coverage	Limitation
100010	RPV1-W4	N/A	N/A (Delayed 2 outages)
100015	RPV1-W5	N/A	N/A (Delayed 2 outages)
100020	RPV1-W6	N/A	N/A (Delayed 2 outages)
100025	RPV1-W7	N/A	N/A (Delayed 2 outages)
100330	RPV1-W8	100%	None

There are a total of fifteen RPV longitudinal weld seams with only three welds that did not achieve essentially 100% examination.

WinISI Sum#	Component ID	% of Code Coverage	Limitation
100040	RPV1-W11-1	94.4	N/A
100045	RPV1-W11-2	92.2	N/A
100050	RPV1-W11-3	95.8	N/A
100055	RPV1-W12-1	92.1	N/A
100060	RPV1-W12-2	79.0	Proximity of the N5B Nozzle.
100065	RPV1-W12-3	78.7	Proximity of a Vessel Stabilizer bracket and the N11D Nozzle and welded Insulation pad.
100066	RPV1-W13-1	92.4	N/A
100067	RPV1-W13-2	89.0	Proximity of the N17B, N16C, & N9A Nozzles.
100068	RPV1-W13-3	95.9	N/A
100070	RPV1-W14-1	95.9	N/A
100075	RPV1-W14-2	92.4	N/A
100080	RPV1-W14-3	95.8	N/A
100085	RPV1-W15-1	100	N/A
100090	RPV1-W15-2	100	N/A
100095	RPV1-W15-3	100	N/A

These welds were examined by automated ultrasonic using General Electric's GERIS 2000 system (0°, 45° T-Scan, 45° P-Scan, 60° T-Scan, 60° P-Scan) supplemented by manual ultrasonic examinations as required to achieve the percentage of Code required coverage identified above.

The three RPV longitudinal welds that did not achieve essentially 100% examination have been removed from the scope of RR-B1. Attachment 3 contains a new relief request, RR-B5, which covers the three longitudinal welds. In addition to providing information supporting PSE&G's determination that the augmented RPV shell weld requirements cannot be completely met, the new relief request includes a basis for concluding that the proposed alternative provides an adequate level of quality and safety in accordance with 10CFR50.55a(g)(6)(ii)(A)(5).

RAI Item (4)

Request for Relief RR-B3 – Code Case N-547, as written, has not been considered acceptable by the staff. However, authorization to use Code Case N-547 has been approved when the following is performed: 1) The licensee replaces the bolting with new material after disassembly, and/or 2) the licensee commits to performing a VT-1 visual inspection on any bolting to be re-used.

The staff believes that when CRD bolting is replaced with used bolting, a visual examination (VT-1) should be performed to verify that the condition of the CRD bolting is acceptable. Mishandling of the bolting during removal can result in galling of threads, bending, and other damage that may reduce the reliability of the bolting. Additionally, when the CRD bolting is being replaced with new bolting, the staff believes that a quality receipt inspection will provide an acceptable verification of the bolting integrity. Therefore, in order for this request to be found acceptable, provide a commitment to: 1) replace the bolting with new material, and/or 2) perform a VT-1 visual inspection on any bolting to be re-used.

PSE&G Response:

After discussions with the NRC, PSE&G withdraws Relief Request RR-B3. PSE&G does not consider Code Case N-547 with the changes to be beneficial.

RAI Item (5)

Request for Relief RR-C3 – The Licensee has proposed to conduct the Appendix J testing at the peak calculated containment pressure and will use procedures and techniques capable of detecting and locating through-wall leakage in the containment isolation valves (CIV's) and the pipe segments between the CIV's.

Appendix J, Option A – Prescriptive Requirements, requires that three Type A tests be performed at approximately equal intervals during the 10-year ISI interval, with the third test being done while shut down for the 10-year plant ISI. Option A also requires Type B and C tests be performed during each refueling outage, but in no case at intervals greater than 2 years. This is more frequent than the periodic pressure tests required by ASME Section XI.

Appendix J, Option B – Performance Based Requirements, allows a licensee to perform Type A, B, and C tests at frequencies related to the safety significance and historical performance of the system's isolation capabilities. This could, in effect, allow only one test to be performed during the 10-year ISI interval. However, the staff's position, as stated in Regulatory Guide 1.163 *Performance-based Containment Leak-Test Program,* is that the licensee is to establish test intervals of no greater than 60 months for Type C tests because of uncertainties (particularly unquantified leakage rates for test failures, repetitive/common mode failures, and aging effects) in historical Type C component performance data. While this 5-year limit results in an increased time between testing over that required by Section XI (40 months), it is believed that Appendix J tests are more appropriate and provide reasonable assurance of the continued operability of containment penetrations. Therefore, the staff believes that the test frequencies associated with Appendix J, Option A (Type A, B, or C) or Option B (Type C) Tests are commensurate with the Code-required pressure test frequencies.

The licensee has not stated the Option (A or B), or the Type (A, B, or C) that will be used at HCGS in conjunction with this Code Case. Provided the Appendix J option and type of test that will be used. Additionally, provide information stating the examination frequency if Option B is used.

PSE&G Response:

PSE&G withdraws Relief Request RR-C3. Code Case N-522 was approved in accordance with Regulatory Guide 1.147 (May, 1999).

ATTACHMENT 2
HOPE CREEK GENERATING STATION
ISI PROGRAM
RELIEF REQUEST RR-A4, CHANGE 2

RELIEF REQUEST RR-A4

NRC Approved (Yes or No):_____ Date _____

COMPONENT DESCRIPTION:

Adoption of Paragraph IWA-5250(a)(2) of the Addenda through 1990 ASME Section XI with modifications regarding visual examination requirements.

ASME CODE CLASS:

ASME Section XI Class 1, 2, & 3

ASME EXAMINATION REQUIREMENTS:

Paragraph IWA-5250(a)(2) of the 1989 Edition requires that 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.

BASIS FOR RELIEF:

Pursuant to 10CFR50.55a(a)(3)(i), relief is requested to adopt paragraph IWA-5250(a)(2), of the Addenda through 1990 ASME Section XI with modifications included to address NRC concerns.

The proposed alternative requirement is included in a published revision of ASME Section XI as a corrective measure for leakage at a bolted connection. The modified requirement is as follows: "If leakage occurs at a bolted connection, one of the bolts shall be removed, VT-1 examined, and evaluated in accordance with IWB-3000. The bolt selected shall be the one closest to the source of the leakage. When the removed bolt has evidence of degradation, all remaining bolting in the connection shall be removed, VT-1 examined and evaluated in accordance with IWB-3000."

The objective of the original and revised Code requirement is to detect degradation of the fastener that has resulted in leakage of the joint. The Code is not attempting to address component alignment or gasket problems associated with a leaking flanged connection. The examination method is VT-1, which is conducted to determine the condition of the part, component, or surface examined, including such conditions as cracks, wear, corrosion, erosion, or physical damage on the surfaces of the part or components.

RELIEF REQUEST RR-A4 (cont'd)

BASIS FOR RELIEF: (cont'd)

The ASME council decided in the 1990 Addenda to accept a sample of bolts, with the provision for sample expansion, instead of a visual examination of all bolts after the detection of leakage. The current revision of the Code was published after due consideration of the acceptance standards for the number of degraded bolts that could be present before significant safety problem would exist.

Based on the information identified above, a conclusion has been reached that requirements published in Paragraph IWA-5250(a)(2) in the 1990 Addenda of ASME Section XI as modified in this relief request would be capable of detecting a significant safety problem and, therefore provide an acceptable level of quality and safety pursuant to 10CFR50.55a(a)(3)(i)

ALTERNATIVE EXAMINATION:

Adopt paragraph IWA-5250(a)(2), of the Addenda through 1990 ASME Section XI, as modified in this relief request.

ATTACHMENT 3
HOPE CREEK GENERATING STATION
ISI PROGRAM
RELIEF REQUEST RR-B5, CHANGE 2

RELIEF REQUEST RR-B5

NRC Approved (Yes or No):_____ Date _____

COMPONENT DESCRIPTION:

Class 1 Component Limitations under Code Category B-A, and Item No. B1.12, identified during the first inspection interval

ASME CODE CLASS:

ASME Section XI Class 1

ASME SECTION XI EXAMINATION REQUIREMENTS:

For the Hope Creek Generating Station, surface and volumetric examinations shall be conducted in accordance with ASME B&PV Code, 1989 Edition, Article IWB-2500.

BASIS FOR RELIEF:

Pursuant to 10CFR50.55a(g)(ii)(A)(5), relief is requested from performing the inservice examination for the inaccessible portions of the examination areas under Code Category B-A, Item B1.12 identified as follows:

WinISI Sum#	Component ID	% of Code	Limitation Coverage
100060	RPV1-W12-2	79.0	Proximity of the N5B Nozzle.
100065	RPV1-W12-3	78.7	Proximity of a Vessel Stabilizer bracket and the N11D Nozzle and welded Insulation pad.
100067	RPV1-W13-2	89.0	Proximity of the N17B, N16C, & N9A Nozzles.

These three longitudinal weld seams were examined by automated ultrasonic using General Electric's GERIS 2000 system (0°, 45° T-Scan, 45° P-Scan, 60° T-Scan, 60° P-Scan) supplemented by manual ultrasonic examinations to achieve the percentage of Code required coverage identified above. These welds had in-field physical obstructions / limitations inhibiting the performance of essentially 100% of the examination volume.

RELIEF REQUEST RR-B5 (cont'd)

There are a total of fifteen (15) RPV longitudinal weld seams (Code Category B-A, Item No. B1.12), with a total weld volume of 747 square inches. The combined total weld volume that was examined on all 15 welds was 694 square inches representing 92.9%. In addition, only one of the three welds (W-13-2) has any of its length in the beltline region (approximately 36 inches of its total length of 117 inches).

ALTERNATIVE EXAMINATION:

The conclusion is that performing a total of 92.9% of the Code required volume for all 15 welds, provides adequate means of ensuring that flaws will be discovered in essentially 100% of the weld volume of all Category B-A, Item No. B1.12 welds, and this alternative therefore provides an adequate level of quality and safety.