September 9, 2004

Mr. David A. Christian
Sr. Vice President and Chief Nuclear Officer
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, Virginia 23060-6711

SUBJECT: SURRY POWER STATION, UNIT 2 - AMERICAN SOCIETY OF MECHANICAL ENGINEERS INSERVICE INSPECTION PROGRAM FOURTH 10-YEAR INTERVAL REQUESTS FOR RELIEF (TAC NOS. MB7762, MB7763, AND MB9528)

Dear Mr. Christian:

By letter dated August 25, 2003, as supplemented by letter dated May 5, 2004, Virginia Electric and Power Company (VEPCO) requested relief from certain American Society of Mechanical Engineers (ASME) requirements for the fourth 10-year Inservice Inspection Interval (ISI) at Surry Power Station, Unit 2. As part of these relief requests, VEPCO stated its intent to use the 1998 Edition through the 2000 Addenda of the ASME Code, Section XI. In its submittal dated May 5, 2004, VEPCO withdrew Relief Requests CMP-001 through -003, and CMP-006.

The Nuclear Regulatory Commission (NRC) staff, with technical assistance from its contractor, Pacific Northwest National Laboratory, has completed its review of Relief Requests CMP-004, CMP-005, SPT-001, SPT-002, and SPT-003. Our evaluations and conclusions are contained in the enclosed Safety Evaluation.

By letter dated August 25, 2003, VEPCO stated it planned to implement the 1998 Edition through the 2000 Addenda of the ASME Code, Section XI for the fourth 10-year ISI that commenced on May 10, 2004. According to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(g)(4)(iv), ISI examination of components and system pressure tests conducted during successive 120-month ISI intervals must comply with the requirements of the latest edition and addenda of the ASME Code, Section XI endorsed by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month ISI interval. The NRC staff has confirmed that the 1998 Edition of the ASME Code, Section XI, inclusive of the 2000 Addenda, is the latest edition of the ASME Code, Section XI endorsed by reference in the 2004 Edition of 10 CFR 50.55a(b)(2). Since the 1998 Edition of the ASME Code, Section XI, inclusive of the 2000 Addenda, is the latest edition of the ASME Code that is endorsed in 10 CFR 50.55a(b), and this edition has been endorsed 12 months prior to the commencement date of the Fourth 10-Year ISI Interval for Surry 2, VEPCO may apply the 1998 edition of the ASME Code, Section XI, inclusive of the 2000 Addenda, to the Fourth 10-Year ISI Interval for Surry 2 without the need for prior NRC staff approval, but subject to the additional limitations on use of this ASME Code Edition as identified in 10 CFR 50.55a(b).

Regarding Relief Request SPT-001, VEPCO requested NRC staff approval to deviate from requiring the erection of temporary scaffolding for examinations of ASME Code Class

components in areas considered inaccessible to direct VT-2 examination methods. The NRC staff determined that erection of temporary scaffolding is an activity that is not within the scope of Section XI of the ASME Code (Section XI) and that acceptable provisions for visual VT-2 examinations of inaccessible ASME Code Class components have been established in Paragraph IWA-5241(b) of ASME, Section XI. The NRC staff therefore concludes that VEPCO's requested relief is unnecessary and that the licensee should continue to apply the requirements of IWA-5421(b) for VT-2 examinations of inaccessible ASME Code Class components.

In addition, the NRC staff has reviewed Relief Requests CMP-004, CMP-005, SPT-002, and SPT-003 and has concluded that complying with the requirements of Section XI of the ASME Code would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The NRC staff has concluded that VEPCO's proposed alternative provides reasonable assurance of structural integrity. Therefore, Relief Requests CMP-004, CMP-005, SPT-002, and SPT-003 are authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the fourth 10-year ISI interval at Surry, Unit 2.

This completes the NRC staff's activities associated with TAC Nos. MB0859, MC0863, MC0864, MC0866, MC0867, and MC0868.

Sincerely,

***/RA/***

Mary Jane Ross-Lee, Acting Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-281

Enclosure: As stated

cc w/encl: See next page

components in areas considered inaccessible to direct VT-2 examination methods. The NRC staff determined that erection of temporary scaffolding is an activity that is not within the scope of Section XI of the ASME Code (Section XI) and that acceptable provisions for visual VT-2 examinations of inaccessible ASME Code Class components have been established in Paragraph IWA-5241(b) of ASME, Section XI. The NRC staff therefore concludes that VEPCO's requested relief is unnecessary and that the licensee should continue to apply the requirements of IWA-5421(b) for VT-2 examinations of inaccessible ASME Code Class components.

In addition, the NRC staff has reviewed Relief Requests CMP-004, CMP-005, SPT-002, and SPT-003 and has concluded that complying with the requirements of Section XI of the ASME Code would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The NRC staff has concluded that VEPCO's proposed alternative provides reasonable assurance of structural integrity. Therefore, Relief Requests CMP-004, CMP-005, SPT-002, and SPT-003 are authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the fourth 10-year ISI interval at Surry, Unit 2.

This completes the NRC staff's activities associated with TAC Nos. MB0859, MC0863, MC0864, MC0866, MC0867, and MC0868.

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**/RA/**
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE FOURTH 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM

SURRY POWER STATION, UNIT 2

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-281

## 1.0 INTRODUCTION

By letter dated August 25, 2003, as supplemented by letter dated May 5, 2004, Virginia Electric and Power Company (the licensee) requested relief from certain American Society of Mechanical Engineers (ASME) Code requirements for the fourth 10-year Inservice Inspection Interval (ISI) at Surry Power Station, Unit 2. The original submittal included Relief Requests CMP-001 through CMP-006 and Relief Requests SPT-001 through SPT-003. Subsequently, by letter dated May 5, 2004, the licensee withdrew Requests for Relief CMP-001, CMP-002, CMP-003, and CMP-006. Additionally, in its submittal dated August 25, 2003, the licensee stated its intent to use the 1998 Edition through the 2000 Addenda of the ASME Code, Section XI.

The Nuclear Regulatory Commission (NRC) staff, with technical assistance from its contractor, Pacific Northwest National Laboratory (PNNL), has completed its review of Relief Requests CMP-004, CMP-005, SPT-001, SPT-002, and SPT-003. Attachment 1 lists each relief request and the status of approval. The NRC staff adopts the evaluations and recommendations for authorizing alternatives contained in the Technical Letter Report (TLR) prepared by PNNL and included as Attachment 2.

## 2.0 REGULATORY EVALUATION

The ISI of the ASME Boiler and Pressure Vessel Code (Code) Class 1, Class 2, and Class 3 components is to be performed in accordance with Section XI of the ASME *Boiler and Pressure Vessel Code* (B&PV Code), and applicable edition and addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g), except where specific relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). As stated in 10 CFR 50.55a(a)(3), alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if the licensee demonstrates that: (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the pre-service examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection (ISI) of Nuclear Power Plant Components," to the extent practical within the

limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The ISI Code of record for the fourth 10-year interval at Surry, Unit 2 is the 1998 Edition through the through the 2000 Addenda. The fourth 10-year ISI interval at Surry, Unit 2 began on May 10, 2004.

## 3.0 TECHNICAL EVALUATION

The NRC staff adopts the evaluations and recommendations for authorizing reliefs contained in the TLR, included as Attachment 2, prepared by PNNL. Attachment 1 lists each Relief Request and the status of approval.

### 3.1 Relief Request CMP-001

Applicable Code Requirements and Components: In Relief Request CMP-001, the licensee sought relief from the volumetric inspection requirements of ASME Code, Section XI, Category B-D, Item B.3.120. The licensee stated that Relief Request CMP-001 was applicable to the inside radius of the pressurizer surge nozzle.

Evaluation Summary: By letter dated May 5, 2004, the licensee withdrew Relief Request CMP-001. The licensee based its decision to withdraw Relief Request No. CMP-001 on its determination that further research and the receipt of additional design data and drawings from the nuclear steam supply system (NSSS) supplier would be needed for processing of this Relief Request.

The review of Relief Request CMP-001 is addressed in Section 3.1 of the TLR, which is provided in Attachment 2.

### 3.2 Relief Request CMP-002

Applicable Code Requirements and Components: In Relief Request CMP-002, the licensee sought relief from the surface examination requirements of ASME Code, Section XI, Category C-G, Item C.6.10. This ASME Code, Section XI inspection item requires that a surface examination be performed on 100 percent of all pump casing welds each ISI interval. The licensee stated that Relief Request CMP-002 was applicable to the pump casing welds associated with the ASME Code Class 2 safety injection (SI) pumps and outside recirculation spray (RS) pumps.

Evaluation Summary: By letter dated May 5, 2004, the licensee withdrew Relief Request CMP-002. After investigating the ASME Code requirements and reviewing the ASME Code, Section XI, IWC-1220 exemption changes, the licensee determined that this relief was not required. The ASME Code-required examinations will be performed upon disassembly of the pumps for maintenance.

The review of Relief Request No. CMP-002 is addressed in Section 3.2 of the TLR, which is provided in Attachment 2.

3.3 Relief Request CMP-003

Applicable Code Requirements and Components: In Relief Request CMP-003, the licensee sought relief from the requirements of ASME Code, Section XI, Appendix I, Article I-2000, on fabrication of ultrasonic testing (UT) calibration blocks needed for qualifying UT techniques for ASME Code Class components. The licensee stated that Relief Request CMP-003 was applicable to ultrasonic calibration blocks for vessels greater than 2 inches in thickness, which are not required to be examined in accordance with Appendix VIII of the ASME Code, Section XI. The licensee also stated that Relief Request CMP-003 was applicable to ultrasonic calibration blocks for piping and vessels less than or equal to 2 inches in thickness, which are not required to be examined in accordance with Appendix VIII of the ASME Code, Section XI.

Evaluation Summary: By letter dated May 5, 2004, the licensee withdrew Relief Request CMP-003. The licensee based its decision on its determination that relief from the requirements of ASME Code, Section XI, Appendix I, Article I-2000 was not required.

The review of Relief Request CMP-003 is addressed in Section 3.3 of the TLR, which is provided in Attachment 2.

3.4 Relief Request CMP-004

Applicable Code Requirements and Components: In Relief Request CMP-004, the licensee sought relief from the requirements of ASME Code, Section XI, Subarticle IWA-2600, Paragraph IWA-2620 for placing permanent reference marking systems on ASME Code Class 1 components needing volumetric examination. The licensee stated that Relief Request CMP-004 was applicable to all welds in ASME Code Class 1 and 2 piping, vessels, and components normally examined from their outside surface. The licensee excluded from this relief request all welds in ASME Code Class components that are normally examined from their inside surface using the automated reactor vessel examination tool, including reactor vessel nozzle-to-piping safe end welds.

Evaluation Summary: The ASME Code requires that a reference system be established for welds subject to surface and/or volumetric examinations in order to enhance repeatability and accuracy of inservice examinations throughout the operating life of the plant. However, the construction Codes in effect (late 1960s) during preservice examinations at Surry, Unit 2, did not require this permanent system of reference markers. Imposition of this requirement would place a significant hardship on the licensee due to accessibility and radiation exposure factors. The licensee's alternative includes using isometric drawings to establish the identity of each weld, then permanently marking a reference point on the welds at the time each weld is scheduled for volumetric examination. Therefore, the licensee's alternative will provide reasonable assurance of operational readiness.

Conclusion: The NRC staff concludes that compliance with the ASME Code would result in hardship without a compensating increase in the level of quality and safety, and that the proposed alternative provides reasonable assurance of the operational readiness. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the Fourth 10-year ISI Interval at Surry, Unit 2.

The review of Relief Request CMP-004 is addressed in Section 3.4 of the TLR, which is provided in Attachment 2.

3.5 Relief Request CMP-005

Applicable Code Requirements and Components: The licensee sought relief from the requirements of ASME Code, Section XI, Article IWA-2600 for "Weld Reference Systems," as they pertain to volumetric examinations of ASME Code Class 1 components. The licensee stated that Relief Request CMP-005 was applicable to the pressure-retaining welds in the reactor pressure vessel (RPV) (ASME Code, Section XI, Inspection Category B-A), RPV nozzle area (ASME Code, Section XI, Inspection Category B-D), and the dissimilar metal welds joining the RPV nozzles to the reactor coolant loop piping (ASME Code, Section XI, Inspection Category B-F). The automated RPV examination tool is used to examine the inside surface of RPV welds.

Evaluation Summary: The applicable ASME Code, Section XI requirements mandate that a reference system be established for all RPV welds that are subject to volumetric examinations in order to enhance repeatability and accuracy of ISI examinations throughout the operating life of the plant. To require the licensee to make these permanent markings on the inside surfaces of the RPV would constitute an unusual hardship because making permanent markings on the inside of the RPV would require the licensee to develop new robotic devices solely for this purpose. The licensee has proposed an alternative that includes using the positioning accuracy and repeatability of the automated inspection device in lieu of making permanent markings on the inner clad surface of the RPV welds. The licensee's alternative provides reasonable assurance that the ASME Code-required examination volumes will be obtained, and that repeatability will be maintained. Therefore, the compliance with the requirement to place permanent reference marking on the inside surfaces of these components would not provide a compensating increase in the quality of the RPV examination or enhance operational safety.

Conclusion: The NRC staff concludes that compliance with the applicable ASME Code, Section XI requirement would result in hardship without a compensating increase in the level of quality and safety, and that the proposed alternative provides reasonable assurance of operational readiness. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the Fourth 10-year ISI Interval at Surry, Unit 2.

The review of Relief Request CMP-005 is addressed in Section 3.5 of the TLR, which is provided in Attachment 2.

3.6 Relief Request CMP-006

Applicable Code Requirements and Components: In Relief Request CMP-006, the licensee sought relief from the volumetric examination requirements of the ASME Code, Section XI, Inspection Categories B-B, B-D, and C-A, as they pertain to volumetric examinations of the regenerative heat exchanger welds and nozzles. The licensee stated that Relief Request CMP-006 was applicable to the circumferential head welds, tubesheet-to-shell welds, nozzle-to-vessel welds, nozzle inside radius areas, circumferential head welds, and tubesheet-to-shell welds associated with the Surry, Unit 2 regenerative heat exchanger.

Evaluation Summary: By letter dated May 5, 2004, the licensee withdrew this relief request. The licensee had determined that further research would be needed to address the NRC staff's questions and this would the require the licensee to obtain additional design information on the regenerative heat exchangers from the components' supplier. The licensee indicated that it is currently monitoring the development of an ASME Code Case relative to these examination requirements.

The review of Relief Request CMP-006 is addressed in Section 3.6 of the TLR, which is provided in Attachment 2.

3.7 Relief Request SPT-001

Applicable Code Requirements and Components: In Relief Request SPT-001, the licensee sought relief from the requirements of ASME Code, Section XI, Paragraphs IWB-5220 and IWB-5221 for performance of system leakage tests required under ASME Section XI, Table IWB-2500-1, Inspection Category B-P. These ASME Code paragraphs require that system leakage tests be performed using a visual VT-2 examination prior to plant startup following each refueling outage, at a pressure not less than that corresponding to 100-percent rated reactor power. The maximum direct visual VT-2 examination distance (from the examiner's eye to the surfaces being examined) is not to exceed 6 feet. The licensee stated that Relief Request SPT-001 was applicable to all ASME Code Class 1 pressure-retaining components.

Evaluation Summary: The NRC staff determined that the licensee specifically was requesting approval to perform the visual VT-2 examinations in areas inaccessible for direct visual VT-2 examinations without the need for erection of temporary scaffolding. The NRC staff has determined that erection of scaffolding, either temporary or permanent, is not addressed under the requirements of 10 CFR 50.55a or any of the ASME Code, Section XI requirements invoked under 10 CFR 50.55a. Additionally, ASME Code, Section XI, Paragraph IWA-5240 has provisions for performing visual VT-2 examinations of components that are either blocked by insulating materials or inaccessible to direct VT-2 examinations. Therefore, the NRC staff considers that any decision to erect temporary scaffolding for ISI purposes is beyond the scope of 10 CFR 50.55a or Section XI of the ASME Code.

Conclusion: For system pressure tests on insulated or inaccessible ASME Code Class components, the licensee must continue to comply with the provisions of IWA-5421(b) for VT-2 examinations of inaccessible ASME Code Class components and the provisions of IWA-5422 for VT-2 examinations of insulated ASME Code Class components, unless specific relief has been requested and approved by the NRC staff under the acceptable alternative program provisions of 10 CFR 50.55a(a)(3)(i) or hardship provisions of 10 CFR 50.55a(a)(3)(ii). For the erection of scaffolding, the licensee should, through consultation with the Authorized Nuclear Inservice Inspector, review internal procedures included in their Quality Assurance, Maintenance, or Safety Program documentation for guidance on the erection and use of temporary scaffolding. Therefore, the NRC staff has determined that relief was not required because the erection of scaffolding is not an activity that is within the scope of the Section XI of the ASME Code as invoked by 10 CFR 50.55a.

The review of Relief Request SPT-001 is addressed in Section 3.7 of the TLR, which is provided in Attachment 2.

3.8 Relief Request SPT-002

Applicable Code Requirements and Components: The licensee sought relief from the requirements of the ASME Code, Section XI, Examination Category B-P, Inspection Items B15.50 and B15.70. These inspection items require that the system leakage tests, and associated visual VT-2 examinations, be performed for all ASME Code Class 1 pressure-retaining piping and valves once each refueling outage. The VT-2 examinations are required to be performed under reactor coolant system (RCS) pressurized conditions at the normal operating pressure. The licensee stated that Relief Request SPT-002 was applicable to ASME Code CIass 1 RCS pressure boundary vent, drain, sample, and instrumentation line connections that are less than 1 inch in diameter.

Evaluation Summary: Compliance with the applicable ASME Code, Section XI visual VT-2 examination requirement would mandate that the lines be pressurized to the normal RCS operating pressure by opening the inside and outside isolation valves in the lines prior to commencement of the system leakage test. This defeats the double isolation safety function of the inside and outside isolation valves. The licensee's proposed alternative is to visually exam the isolable portions of the lines that are located downstream of the outside isolation valves during each refueling outage, when the lines are exposed to the ambient atmospheric pressure condition. Since the isolable portions of the subject lines are not normally pressurized to the normal RCS operating pressure, subjecting these segments to an elevated RCS pressure does not provide further evidence to enhance their intended functions; therefore, no compensating increase in quality or safety would be realized. Instead, the licensee's proposed alternative will provide reasonable assurance that the leakage integrity of the subject line segments will be maintained.

Conclusion: The NRC staff concludes that compliance with the applicable ASME Code, Section XI requirement would result in hardship without a compensating increase in the level of quality and safety, and that the proposed alternative provides reasonable assurance of operational readiness. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the Fourth 10-year ISI Interval at Surry, Unit 2.

The review of Relief Request SPT-002 is addressed in Section 3.8 of the TLR, which is provided in Attachment 2.

3.9 Relief Request SPT-003

Applicable Code Requirements and Components: The licensee sought relief from the requirements of ASME Code, Section XI, Examination Category B-P, Inspection Item No. B15.10. These requirements pertain to performing a VT-2 visual examination of the lower RPV head during the system leakage test of ASME Code, Section XI, Paragraph IWB-5220. This inspection requires the system leakage test and associated visual VT-2 examination to be performed on the ASME Code Class 1 RPV once each refueling outage. The VT-2 examinations are required to be performed under RCS pressurized conditions at normal operating pressure. The licensee stated that Relief Request SPT-003 was applicable to the partial penetration welds adjoining the bottom mounted instrumentation nozzle to the lower RPV head.

Evaluation Summary: The subject system leakage tests and visual VT-2 examinations are required to be performed prior to plant startup after each refueling outage, and conducted with the RPV at normal operating pressure. Examiners performing visual examinations must wear full-face respirators with self-contained breathing apparatus and contend with extreme environmental conditions caused by elevated air temperatures and limited circulation in confined regions of containment that exist near the bottom of the RPV. Compliance with the applicable ASME Code, Section XI requirements will subject the visual examiners to the harsh conditions during the test and will not provide a compensating increase in the quality and safety for the plant.

The licensee has proposed to perform bare-metal visual VT-2 examinations of the RPV bottom head and associated bottom-mounted instrumentation (BMI) nozzles each refueling outage, when the RCS is open to atmospheric pressure conditions. These bare-metal visual examinations are considered to be more effective at detection of extremely small leaks (due to the presence of boric acid residue). The alternate bare-metal visual examinations proposed by the licensee are consistent with the NRC staff's recommendations in NRC Bulletin 2003-02 and will provide reasonable assurance of the detection of BMI nozzle leaks prior to challenging the structural integrity of the RPV.

Conclusion: The NRC staff concludes that compliance with the applicable ASME Code, Section XI requirement would result in hardship without a compensating increase in the level of quality and safety, and that the proposed alternative provides reasonable assurance of operational readiness. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the Fourth 10-year ISI Interval at Surry 2.

The review of Relief Request SPT-003 is addressed in Section 3.9 of the TLR, which is provided in Attachment 2.

3.10 Use the 1998 Edition of the ASME Boiler and Pressure Vessel Code, Section XI, Inclusive Through the 2000 Addenda (TAC No. MC0859)

Applicable Code Edition: By letter dated August 25, 2003, the licensee indicated its decision to use the 1998 Edition of the ASME Code, Section XI, inclusive of the 2000 Addenda to the edition. In its supplemental letter dated May 5, 2004, the licensee clarified that the 1998 Edition of the ASME Code, Section XI, inclusive through the 2000 Addenda, has been endorsed by reference in 10 CFR 50.55a of the 2004 Edition of 10 CFR 50.55a, and that relief to use the 1998 Edition of the ASME Code, Section XI, inclusive of the 2000 Addenda, is not required.

Evaluation Summary: The Fourth 10-Year ISI Interval for Surry, Unit 2 commenced on May 10, 2004. According to Paragraph (g)(4)(ii) of 10 CFR 50.55a, ISI examination of components and system pressure tests conducted during successive 120-month ISI intervals must comply with the requirements of the latest edition and addenda of the ASME Code, Section XI endorsed by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month ISI interval. The NRC staff has confirmed that the 1998 Edition of the ASME Code, Section XI, inclusive of the 2000 Addenda, is the latest edition of the ASME Code, Section XI endorsed by reference in Paragraph (b)(2) of the 2004 Edition of 10 CFR 50.55a. Since the 1998 Edition of the ASME Code, Section XI, inclusive of the 2000 Addenda, is the latest edition of the ASME Code endorsed in 10 CFR 50.55a(b) and has been endorsed 12 months prior to the commencement date of the Fourth 10-Year ISI Interval for Surry, Unit 2, the licensee may apply the1998 Edition

of the ASME Code, Section XI, inclusive of the 2000 Addenda, to the Fourth 10-Year ISI Interval for Surry, Unit 2 without the need for prior NRC staff approval, but subject to the additional limitations on use of this ASME Code Edition identified in 10 CFR 50.55a(b).

## 4.0 CONCLUSIONS

The NRC staff adopts the evaluations and recommendations for authorizing alternatives contained in the TLR, included as Attachment 2, prepared by PNNL. Attachment 1 lists each relief request and the status of approval.

The NRC staff reviewed the licensee's submittal for Relief Request CMP-004, CMP-005, SPT-002, and SPT-003. The NRC staff determined that compliance with the ASME Code requirements associated with these relief requests would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. In addition, the alternatives proposed by the licensee provide reasonable assurance of structural integrity of the subject components. Therefore, the NRC staff authorizes Relief Requests CMP-004, CMP-005, SPT-002, and SPT-003 pursuant to provisions of 10 CFR 50.55a(a)(3)(ii) for the Fourth 10-Year ISI Interval for Surry, Unit 2.

The NRC staff reviewed the licensee's submittal for Relief Request SPT-001. The NRC staff determined that relief was not required because the erection of scaffolding is not an activity that is within the scope of the Section XI of the ASME Code, as invoked by 10 CFR 50.55a. For visual examination activities within the scope of Relief Request No. SPT-001, the licensee must continue to comply with the requirements of ASME Code, Section XI, Paragraph IWA-5240 for performing direct visual VT-2 examinations on accessible, inaccessible, and insulated ASME Code Class components during system leakage tests.

The NRC staff has also confirmed that the 1998 Edition of the ASME Code, Section XI, inclusive of the 2000 Addenda, has been endorsed by reference in 10 CFR 50.55a(b)(2) of the 2004 Edition of 10 CFR. As such, the licensee may apply the requirements in the 1998 Edition of the ASME Code, Section XI, inclusive of the 2000 Addenda, to the Fourth 10-Year ISI for Surry, Unit 2.

Attachments:
1. Summary of Relief Requests
2. TLR by PNNL

Principal Contributor: James Medoff, NRR

Date: September 9, 2004

ATTACHMENT 1

**SURRY POWER STATION, UNIT 2**
**Fourth 10-Year ISI Interval**

TABLE 1
**SUMMARY OF RELIEF REQUESTS**

| Relief Request Number | PNNL TLR Sec. | System or Component | Exam. Category | Item No. | Volume or Area to be Examined | Required Method | Licensee Proposed Alternative | Relief Request Disposition |
|---|---|---|---|---|---|---|---|---|
| CMP-001 | 3.1 | PZR surge nozzle | B-D | B3.120 | 100% of inner radius section of pressure retaining nozzles in Class 1 vessels | Volumetric | VT-2 during system leakage tests | Withdrawn by licensee |
| CMP-002 | 3.2 | Class 2 pumps | C-G | C6.10 | 100% of pressure retaining welds in Class 2 pumps and valves | Surface | Perform surface on accessible portions; remote VT-1 on remainder of welds | Withdrawn by licensee |
| CMP-003 | 3.3 | UT calibration blocks | Various | Various | Appendix I, Article I-2000 contains requirements for UT calibration blocks | N/A | Use existing blocks | Withdrawn by licensee |

**SURRY POWER STATION, UNIT 2**
**Fourth 10-Year ISI Interval**

TABLE 1
**SUMMARY OF RELIEF REQUESTS**

| Relief Request Number | PNNL TLR Sec. | System or Component | Exam. Category | Item No. | Volume or Area to be Examined | Required Method | Licensee Proposed Alternative | Relief Request Disposition |
|---|---|---|---|---|---|---|---|---|
| CMP-004 | 3.4 | Piping system welds | All applicable Examination Categories in Table IWB-2500-1 for ASME Code Class 1 piping, vessel, and component welds and Table IWC-2500-1 for ASME Code Class 2 piping, vessel, and component welds | Various | IWA-2600 requires that piping welds be marked to establish a reference system for future examinations | N/A | Use existing reference system developed at Surry | Authorized 10 CFR 50.55a(a)(3)(ii) |
| CMP-005 | 3.5 | RPV welds | B-A<br>B-D<br>B-F | Various | IWA-2600 requires that RPV welds be marked to establish a reference system for future examinations | N/A | Use existing reference system developed at Surry | Authorized 10 CFR 50.55a(a)(3)(ii) |
| CMP-006 | 3.6 | Regen. heat exchanger welds | B-B<br>B-D<br>C-A | Various | 100% of applicable pressure retaining welds in Class 1 and 2 heat exchangers | Volumetric | Perform VT-2 during system pressure tests and leak rate monitoring | Withdrawn by licensee |

**SURRY POWER STATION, UNIT 2**
**Fourth 10-Year ISI Interval**

TABLE 1
**SUMMARY OF RELIEF REQUESTS**

| Relief Request Number | PNNL TLR Sec. | System or Component | Exam. Category | Item No. | Volume or Area to be Examined | Required Method | Licensee Proposed Alternative | Relief Request Disposition |
|---|---|---|---|---|---|---|---|---|
| SPT-001 | 3.7 | All Class 1 components | B-P | Various | Pressure retaining Class 1 components | Visual VT-2 | Perform system pressure tests of accessible areas at sub-atmospheric level in containment with no additional scaffolding | Relief not required |
| SPT-002 | 3.8 | All Class 1 components | B-P | B15.50<br>B15.70 | Isolable Class 1 small-bore vent and drain piping that is normally closed | Visual VT-2 | Visually examine for evidence of leakage during each refueling outage | Authorized<br>10 CFR 50.55a(a)(3)(ii) |
| SPT-003, Rev. 1 | 3.9 | RPV lower head penetrations | B-P | B15.10 | RPV lower head including partial penetration welds at bottom-mounted instrument (BMI) lines | Visual VT-2 | Perform bare metal visual for evidence of leakage or wastage during each refueling outage at atmospheric levels | Authorized<br>10 CFR 50.55a(a)(3)(ii) |

**TECHNICAL LETTER REPORT**
**ON THE FOURTH 10-YEAR INTERVAL INSERVICE INSPECTION**
**REQUESTS FOR RELIEF**
**FOR**
**VIRGINIA ELECTRIC AND POWER COMPANY**
**SURRY POWER STATION, UNIT 2**
**DOCKET NUMBER: 50-281**

## 1.0 INTRODUCTION

By letter dated August 5, 2003, the licensee, Virginia Electric and Power Company (Dominion), submitted requests for relief from requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, *Rules for Inservice Inspection of Nuclear Power Plant Components*. In response to an NRC Request for Additional Information, the licensee provided clarification and component drawings in a letter dated May 5, 2004. These requests were submitted as part of the inservice inspection (ISI) program for the fourth 10-year inservice inspection (ISI) interval at Surry Power Station, Unit 2 (Surry 2). The Pacific Northwest National Laboratory (PNNL) has evaluated the subject requests for relief in the following section.

## 2.0 REGULATORY REQUIREMENTS

Inservice inspection of the ASME Code Class 1, 2, and 3 components is to be performed in accordance with Section XI of the ASME *Boiler and Pressure Vessel Code* (B&PV Code), and applicable addenda, as required by 10 CFR 50.55a(g), except where specific relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). The regulation at 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the U.S. Nuclear Regulatory Commission (NRC), if the licensee demonstrates that (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection (ISI) of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code, which was incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The code of record for the Surry 2 fourth 10-year interval inservice inspection program, which began on May 10, 2004, is the 1998 Edition of Section XI of the ASME Boiler and Pressure Vessel Code, up to and including the 2000 Addenda.

## 3.0 EVALUATION

The information provided by Virginia Electric and Power Company in support of the requests for relief from Code requirements has been evaluated and the bases for disposition are documented below.

### 3.1 Request for Relief CMP-001, Examination Category B-D, Item B3.120, Full Penetration Welded Nozzles in Vessels, Pressurizer Surge Nozzle Inside Radius Section

Note: As a result of an NRC request for additional information, Request for Relief CMP-001 was withdrawn by the licensee in a letter dated May 5, 2004. The licensee stated the following:

We [Dominion] request that Relief Request CMP-001 be withdrawn at this time with the intent of resubmitting a revised relief request in the near future after completion of further research and the receipt of additional design data and drawings from the NSSS supplier.

### 3.2 Request for Relief CMP-002, Examination Category C-G, Item C6.10, Pressure Retaining Welds in Pumps and Valves, Pump Casing Welds

Note: As a result of an NRC request for additional information, Request for Relief CMP-002 was withdrawn by the licensee in a letter dated May 5, 2004. The licensee stated the following:

We [Dominion] request that Relief Request CMP-002 be withdrawn. Upon further investigation of Code requirements for this Category C-G inspection, and review of IWC-1220 Code exemption changes, this relief is not required. The Code-required examinations will be performed upon disassembly of the pumps for maintenance.

### 3.3 Request for Relief CMP-003, Appendix I, Article I-2000, Calibration Blocks for Ultrasonic Examination

Note: As a result of an NRC request for additional information, Request for Relief CMP-003 was withdrawn by the licensee in a letter dated May 5, 2004. The licensee stated the following:

This relief request is being withdrawn based on the NRC's previous response to a similar relief request for North Anna Unit 2. In the safety evaluation included in the letter dated June 12, 2002, for the North Anna Unit 2 relief request, the NRC stated that, "the ASME Code already provides a means of considering the use of alternative calibration blocks under the provisions of IWA-2240. Thus, the licensee's implementation of IWA-2240 regarding the application of alternative calibration blocks obviate the need for this relief request."

3.4 Request for Relief CMP-004, IWA-2600, Weld Reference System

Code Requirement: IWA-2600 requires that a reference system be established for welds and other areas that are subject to surface and volumetric examination requirements. The system should permit permanent identification (marking) of each weld, location of weld center-lines, and designate regular intervals along the length of each weld. In addition, for piping and vessels, mandatory Appendix III, Paragraph III-4300 further states that welds subject to ultrasonic examinations shall be marked once before or during the preservice examination to establish appropriate reference points for inservice examination.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee has proposed an alternative to the Code reference system requirements on the basis that Code requirements constitute a hardship with no compensating increase in quality or safety.

Licensee's Basis for Relief Request (as stated):

The original construction codes used at Surry Power Station dated from the late 1960's and did not require that a weld reference system be established. Establishment of a weld reference system cannot be practically attained within the scope and schedule of existing outages. During the third inservice inspection interval, the implementation of this Section XI Code requirement was also considered to be impractical and a request for relief was submitted (SR-006 of the third inservice inspection interval ISI Program). The alternative provisions proposed in this request for relief are consistent with those proposed and accepted by the NRC for the third inservice inspection interval (Reference: NRC letter dated 08/30/95, TAC No. M89085). Consistent with the commitments made in the third inservice inspection interval, this alternative reference system was established within the plant on those welds examined as part of the third inservice inspection interval. Continued use of the alternative reference system is reasonable because it provides an acceptable level of quality and safety. To reject the alternative reference system already in use would require the plant to establish either the system required by the Section XI Code in IWA-2600 or some other alternative system yet to be developed. In either case, significant effort would be expended to achieve compliance with the requirements of IWA-2600 (or as modified) without any justifiable gain in quality or safety.

In response to the NRC RAI, further information was provided by the licensee in a letter dated May 5, 2004:

IWA-2220, "Piping," refers to the requirements in III-4300. III-4300, "Reference System," in the 1999 Addenda states "Circumferential and longitudinal welds requiring volumetric examination shall be marked once before or during the preservice examination to establish a reference." The original construction code at Surry did not require preservice marking. Rather than attempting to go back and stamp every Section XI weld in the plant (approximately 6000 welds), which would be a considerable hardship, Surry is instead marking the welds when performing the first inspection requirement and has been doing so since the beginning of the third inservice inspection

interval. With the exception of weld additions due to code changes and updates, the weld population to be inspected should be appropriately marked at this time. However, weld selections are sometimes exchanged for other suitable choices due to changes in exposure control, accessibility or implementation of new programs such as the Risk-Informed Inservice Inspection program. Thus, the possibility exists that an unmarked weld may be encountered. At this point in the program, marking all welds in the ISI population at this point before an inspection requirement becomes due would not provide any additional, useful information and would create a significant and unnecessary burden of labor and radiation exposure to obtain information for weld locations that may never require examination.

Surry is required by procedure to mark reference points upon inspection and establish the datum point during preservice examination for new welds. A permanent datum point is denoted by the capital letter "T", with the cross of the "T" located at the zero reference point with the leg of the "T" lying on the weld centerline pointing in the 7 direction. Four scans made for UT examination are denoted as follows: 2-downstream of weld, 5-upstream of weld, 7-clockwise to system flow and 8-counterclockwise to system flow. The location of indications is reported with relation to the datum point or other identifiable reference point.

Licensee's Proposed Alternative Examination (as stated):

SPS 2 will use weld isometrics drawings (the WMKS series) to provide a detailed identification of location of each weld requiring examination as part of the fourth inservice inspection interval. For any weld volumetrically examined as part of the fourth inservice inspection interval that did not require volumetric examination as part of the third inservice inspection interval, the proposed alternative reference system will establish a permanent reference point indicating a zero point and direction of examination. The volumetric examination of welds examined in the third interval will use the points of reference established in the third inservice inspection interval, which are consistent with the stated proposal for the fourth inservice inspection interval.

Where surface examination is specified, Section XI requires that 100% of the selected weld or area be examined. Unlike the performance of a volumetric examination, there is no need to indicate the direction of examination (or scan) to assure uniformity in reporting results. In these cases no marks are placed on the weld or area. In some cases, only a portion of a weld may be examined as part of a period examination. This usually involves a large weld that is divided into thirds, with 1/3 being done each period. In these cases, the weld is required to have both a surface and volumetric examination. Therefore, a reference point is marked on the weld to assist with the volumetric examination.

Welds accepted for continued service that contain volumetric indications accepted under the criteria of IWX-3500 or IWX-3600 shall be marked to ensure the relocation of the indication, using appropriate reference marks. All reference marks will be permanently fixed on the weld.

The location of accepted surface indications is documented on a map of the weld or surface that permits accurate identification of areas on the examination surface. The map contains sufficient indicators (e.g., reference points, orientation, and/or proximity to other welds) to positively identify the weld or area in question and the examination starting point. The starting point of the map is determined from the instructions provided for determining the location of the zero reference point associated with a volumetric examination. The examination record will provide information as to the location of the surface indication on the weld examination map.

Evaluation: The Code requires that a reference system be established for welds subject to surface and/or volumetric examinations in order to enhance repeatability and accuracy of inservice examinations throughout the operating life of the plant. The reference system is normally established prior to, or during, the performance of preservice examinations, typically using low-stress stamps to permanently mark the outside surface of each weld subject to examination. However, the construction Code in effect (late 1960s) during preservice examinations at Surry 2 did not require this permanent system of reference markers. At the present time, for Surry 2 to conform to the current Code requirement would be a major effort that would entail removal/re-installation of all insulation, erection of scaffolding, and performing other necessary preparations in order to mark all Class 1, 2 and 3 system welds. The marking of welds would be required, regardless of whether a particular weld was scheduled for examination during the current interval. Imposition of this requirement would place a significant hardship on the licensee, due to accessibility and radiation exposure factors.

Dominion has proposed to perform an alternative to the Code requirement that includes using isometric drawings to establish the identity of each weld, then permanently marking a reference point on the welds, at the time each weld is scheduled for volumetric examination. In fact, most of the welds scheduled for examination during the fourth interval have been marked during the previous inservice inspection interval, as this alternative was authorized for the third interval through an NRC Safety Evaluation Report dated August 30, 1995, and the Code requires that examinations be performed on the same welds during each successive interval. However, several new weld examinations may be identified in the fourth interval due to the implementation of a risk-informed inservice inspection program for piping. The licensee's alternative provides measures for identifying previously accepted indications so that these may be appropriately monitored. The licensee's alternative will provide reasonable assurance that the traceability of welds, and subsequently, the repeatability of examinations, will be maintained during the fourth interval inservice inspection.

To require Dominion to mark all Class 1, 2, and 3 welds at Surry 2, regardless of whether the welds are scheduled for examination, presents a significant hardship with no compensating increase in quality or safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), it is recommended that the licensee's alternative be authorized.

3.5 Request for Relief CMP-005, IWA-2600 Weld Reference System, Automated Reactor Pressure Vessel Examinations

Code Requirement: IWA-2600 requires that a reference system be established for welds and other areas that are subject to surface and volumetric examination requirements. The system should permit permanent identification (marking) of each weld, location of weld center-lines, and designate regular intervals along the length of each weld. In addition, for piping and vessels, mandatory Appendix III, Paragraph III-4300 further states that welds subject to ultrasonic examinations shall be marked once before or during the preservice examination to establish appropriate reference points for inservice examination.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee has proposed an alternative to the Code reference system requirements for the reactor pressure vessel on the basis that Code requirements constitute a hardship with no compensating increase in quality or safety.

Licensee's Basis for Relief Request (as stated):

The original construction requirements of the Surry Power Station did not require establishing a reference system for the reactor vessel and associated dissimilar metal welds as now required by IWA-2600. An automated examination tool now accomplishes these examinations. The automated examination tool establishes its reference point using an existing zero reference on the reactor vessel. This point allows the device to repeat examination locations without the necessity of any other reference systems. The tool determines its location by the use of an electronic encoder system, which provides for sufficient repeatability. Electronic encoding systems have been in use for the reactor vessel examinations performed for Dominion and the industry for over a decade. Dominion has not identified any concern regarding the use of the system from its staff, the vendor, the ANII, or the regulator. Additionally, Dominion is unaware of an industry concern with this type of location/reference system. It is Dominion's position that the electronic referencing system used by the automated reactor vessel examination tool provides an acceptable level of quality and safety. This alternative system can locate welds with sufficient repeatability for future examinations. Therefore, it will satisfy the objectives of IWA-2600.

The examinations performed by the automatic tool are conducted from the inside of the reactor vessel. Establishing the reference system required by IWA-2600 on the inside of an operational reactor vessel is a significant hardship that will provide no increase in quality or safety.

In response to the NRC RAI, further information was provided by the licensee in a letter dated May 5, 2004:

A. The code requirement for which the alternative is proposed is IWA-2620. Due to the extreme high dos involved in performing NSE inspections on the reactor vessel, an automated tool will be utilized that permits examination personnel to monitor work from a remote location. This advanced ultrasonic examination technology does not have the

capability of permanently marking the welds. However, a repeatable reference system will be established for the examinations using permanent vessel landmarks, such as numbered reactor vessel bolt holes and known equipment setup orientation. The response to Item B below provides additional detail.

B. Our presently secured contractor, who will be performing our reactor vessel ten-year inspection on Surry Unit 1 during the Fall 2004 refueling outage using the automated tool, provided the information below. Dominion expects as good or better accuracy and tolerances in future 10-year inspections.

**Position Accuracy**

The positional accuracy of the tool by design is specified as ± 6.35mm. This accuracy was demonstrated to be within ± 6mm in series of dry and wet tests. This accuracy is sufficient to ensure the proper placement of the probe package on the component surface and to meet the required tolerances on defect location.

To provide this positioning accuracy during the inspection process, a pre-examination calibration process is conducted. The pre-examination calibration process for each robot includes an axis zeroing step in the equipment check-out procedure and in-vessel environmental check. The intent of these checks is to ensure that the nozzle azimuth and radial position from the vessel centerline as specified in the robot controller are consistent with the actual vessel. This is essentially a calibration of the pre-site vessel and robot model to the actual vessel conditions. This calibration is repeated every time the robot arm is re-installed and after trouble-shooting of the robot controller has occurred.

Known landmarks, within the reactor vessel and on the manipulator, are used to establish the in-vessel environment check. For the upper robot and the Zone 1 and Zone 2 scans of the nozzle to safe end weld, a nozzle azimuthal reference includes the top dead center of the nozzle. Redial position references include the corner of an outlet nozzle protrusion and the center of an inlet nozzle inner radius.

**Positioning Repeatability**

The positional repeatability of the tool by design is specified as ± 6.35mm/ This repeatability was demonstrated to be with ± 6mm in a series of dry and wet tests. This accuracy is sufficient to re-locate a detected flaw and to re-scan a specified region of the reactor vessel.

To provide this repeatability accuracy during the inspection process, a pre-examination calibration process for each robot includes an axis zeroing step in the equipment check-out procedure and an in-vessel environmental check. The intent of these checks is to ensure that the nozzle azimuth and radial position from the vessel centerline as specified in the robot controller are consistent with the actual vessel. This is essentially a calibration of the pre-site vessel and robot model to the actual vessel conditions. This calibration is repeated every time the robot arm is re-installed and after trouble-shooting of the robot controller has occurred.

C. As discussed above the positioning accuracy and repeatability of the vessel inspection tool is very good and would support use of Code Case N-613-1 reduced volume examinations. Dominion has not determined at this time if use of Code Case N-613-1 will be necessary in the fourth inspection interval. A request to use this Code Case would be separately submitted later, if determined necessary, or its use would be made in accordance with regulatory requirements if the Code Case is subsequently included in Regulatory Guide 1.147.

Licensee's Proposed Alternative Examination (as stated):

The automated reactor vessel examination tool will continue to establish its reference system based upon the existing zero reference and the electronic encoding system designed into the tool. No other system is planned or deemed necessary.

Evaluation: The Code requires that a reference system be established for reactor pressure vessel (RPV) welds subject to volumetric examinations in order to enhance repeatability and accuracy of inservice examinations throughout the operating life of the plant. The reference system is normally established prior to, or during, the performance of preservice examinations, typically using low-stress stamps to permanently mark the examination surface of each weld. However, the construction Codes in effect (late 1960s) during preservice examinations at Surry 2 did not require this permanent system of reference markers. The examination of RPV welds is normally conducted from the inner surfaces of the welds using remote inspection devices. These robotic systems are designed to provide location accuracy and repeatability for RPV weld examinations, based on design and fabrication drawings, thus permanent markers on the welds are not required for positioning the devices. To require the licensee to make these permanent markings on the inside surfaces of the RPV would be a considerably unusual difficulty.

The licensee has proposed an alternative that includes using the positioning accuracy and repeatability of the automated inspection device in lieu of making permanent markings on the inner clad surface of the RPV welds. The error tolerance for positioning the remote device is reported to be approximately 6 millimeters (0.25-inch), and the device is calibrated prior to, and checked after, the examinations are performed. This positional tolerance provides reasonable assurance that the Code-required examination volumes will be obtained, and that repeatability will be maintained.

To make permanent markings on the inside of the RPV would require the licensee to develop new robotic devices solely for this purpose. This would not provide a compensating increase in the quality of the RPV examination or enhance operational safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), it is recommended that the licensee's proposal, to use the existing robotic inspection system's positional capabilities as an alternative to permanently marking the RPV welds, be authorized.

3.6 Request for Relief CMP-006, Examination Categories B-B, B-D, and C-A, Pressure Retaining Welds on the Regenerative Heat Exchanger

Note: As a result of an NRC request for additional information, Request for Relief CMP-006 was withdrawn by the licensee in a letter dated May 5, 2004. The licensee stated the following:

Revision of this relief request to address the NRC's questions will require further research and will likely require Dominion to contact the heat exchanger manufacturer to obtain more detailed design information. In addition, Dominion is currently monitoring the development of a Code Case relative to this issue. Consequently, we request that Relief Request CMP-006 be withdrawn at this time with the intent of submitting a revised relief request at a later date.

3.7 Request for Relief SPT-001, Examination Category B-P, System Leakage Tests for Class 1 Pressure Retaining Components

Code Requirement: Table IWB-2500-1, Examination Category B-P, requires that all Class 1 pressure-retaining components be subjected to a system leakage test. The Code (IWB-5220 and IWB-5221) requires that these tests be performed prior to plant start-up following each refueling outage at a pressure not less than that corresponding to 100% rated reactor power. A visual VT-2 examination is specified during these tests to detect evidence of component leakage. The maximum direct visual VT-2 examination distance (from the examiner's eye to the surfaces being examined) is not to exceed six feet.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee has proposed an alternative to the Code-required direct visual VT-2 examination for certain areas and portions of Class 1 components within containment.

Licensee's Basis for Relief Request (as stated):

The Class 1 system leakage test is performed at the end of a refueling outage as part of the startup process. The SPS 2 design takes advantage of sub-atmospheric pressures within containment to mitigate the consequences of certain accident scenarios. The plant's Technical Specifications require sub--atmospheric conditions to exist within containment at the system leakage test conditions required by IWB-5221(a) for the Class 1 leakage test. The sub-atmospheric requirements create conditions that require the use of self-contained breathing apparatus (SCBA) with full-face respirators by anyone required to be in the containment.

The VT-2 visual examination procedure has been demonstrated using no visual aids to a distance of nine feet nine inches using a visual card that complies with the 1998 Edition, 2000 Addenda of the ASME Code. We have evaluated additional remote monitoring equipment and determined they are not practical for inspectors wearing full-face respirators and SCBA. The use of binoculars or a telescope is not feasible because the eyepiece cannot directly be placed to the inspector's eye.

It would be necessary to erect scaffolding to access, within six feet, all surfaces that require examination within the maximum distance requirements of IWA-2212(b). The use of scaffolding would only be allowed in containment during unit operation if it has been designed and erected to withstand the design seismic event without causing damage to safety related equipment. The installation of the scaffolding at the end of one outage, and then disassembly at the beginning of the next refueling outage only to start the installation process over at the end of that outage is impractical.

To leave the scaffolding in place until the Class 1 system leakage test is completed and then remove it before proceeding with startup is also impractical. Because of the sub-atmospheric containment, it would be necessary to either bring the reactor coolant system back to less than or equal to 350°F and 450 psig; or alternatively, attempt to remove the scaffolding while contending with the sub-atmospheric conditions. The latter would involve personnel using self-contained breathing apparatus. It is doubtful this would be successful; but regardless of the potential of success, it would be an unreasonable burden for the personnel involved.

In response to the NRC RAI, further clarification was provided by the licensee in a letter dated May 5, 2004:

A. Dominion will comply with the direct VT-2 maximum distance if 6 feet in accordance table IWA-2210-1. The distance from 6 feet to 9 feet - 9 inches was qualified as a remote visual examination with out Authorized Nuclear Inservice Inspector (ANII) using no visual aids per IWA-2210(c). (Note: the examination is performed using air masks preventing the use of binoculars and other such equipment). The qualification made use of a near-distance vision test chart per IWA-2210(b) and a light meter verifying 15 foot-candles. The relief request only pointed out that the examiner could effectively examine out to 9 feet, 9 inches using direct and remote means. The concern is that to meet the direct or remote criteria while wearing air masks, the installation of temporary scaffolding would be required in some instances.

B. As noted in the respond to 8.A above, Dominion is not proposing to establish a new maximum distance for VT-2 examinations.

C.(a) and (b)

Station drawings 11548-FM-1E, F and G are provided in Enclosure 1[1] as references to aid the discussion of distances from the Class 1 components to the examiner. The Class 1 components are primarily located within containment, which is sub-atmospheric during the Class 1 system leakage test. Systems that include Class 1 components are reactor coolant, safety injection, charging, sampling, and residual heat removal. The locations where temporary scaffolding would be needed for a direct VT-2 exams are the containment basement, the containment loop room, the pressurizer (bottom location), the pressurizer (upper location ), an average 5 feet eye distance from floor combined with the 6' direct visual requirement.

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[1]1 Licensee's drawings are not included in this report.

The containment basement floor is located at elevation -27’7" (drawings 1E, 1F, and 1G). The pipe support racks are located between elevations -18’7" and - 6’5" (drawings 1E, 1F, and 1G with elevations listed on 1E.) The components being examined are almost entirely located in the pipe racks or the basement overhead. As such, these components for the most part would exceed the 6 feet direct visual criteria for a VT-2 exam. The affected components are associated with the reactor coolant, safety injection, charging, sampling, and residual heat removal systems. In the aggregate, the estimated inaccessibility of these components is >90%.

The containment loop rooms are located between elevations -3’6" and gratings located at 16’0" and 20’0" (drawing 1E, 1F, and 1G). Limitations exist when examining the components from above (i.e., from the grating) in the reactor coolant pump cubicle due to distance and obstructions and also in meeting the 6 feet direct VT-2 examination requirement from below in the loop room. The affected components include portions of the steam generator, reactor coolant pump, and piping components associated with the reactor coolant, safety injection, charging, and sampling systems. In the aggregate, the estimated inaccessibility of these components is >50%.

The pressurizer (upper portion, drawing 1E) is located between elevations 47’4" and 68’0". Additionally, safety valve and power operated relief valve piping and level instrumentation are located in this area. A ladder exists in this area allowing access to the top of the pressurizer; however, the sub-atmospheric conditions and personnel safety concerns preclude the use of the ladder during the system leakage test. The piping is located at the top of the pressurizer and would exceed the 6 feet direct visual VT-2 examination requirement. Approximately, on-third of the pressurizer exceeds the 6 feet visual VT-2 requirement resulting in an estimated inaccessibility of >33%.

The reactor vessel head is examined from the 46’ foot elevation level during the system leakage test, The reactor head is located between elevations 18’4" (drawing 1F) and 23’7" (drawing 1E). The examination vantage point is not directly in-line with the vessel head from the 47’ level; consequently, the exam must be performed at an angle and approximately 25 to 30 feet from the head. Therefore, reactor vessel head inaccessibility is 100%.

It should be noted that the areas discussed above would be examined indirectly looking for leakage at low points of vertical runs and on the floor beneath, in addition to the extended visual exams discussed above. Additionally, the reactor vessel head receives augmented examinations as directed by recently imposed NRC requirements.

(c) The 10 minute (uninsulated) and 4-hour (insulated) hold times will be applied prior to performing the visual VT-2 examinations.

Licensee’s Proposed Alternative Examination (as stated):

Dominion requests approval in accordance with 10 CFR 50.55a(a)(3)(ii) for SPS 2 to perform the Class 1 system leakage test without the erection of temporary scaffolding to satisfy the examination requirements of IWA-2212(b). As an alternative, existing permanent structures, platforms or ladders will be used to the extent practical to gain

access to the surface to be examined. The required visual examination will be performed from the access afforded by these structures, ladders or platforms to the extent practical. Any examination surface that cannot be accessed per the requirements of Table 2210-1 or to the maximum qualified distance will be considered "inaccessible". As such the surrounding area (including floor areas or accessible equipment surfaces located underneath the inaccessible components) will be examined for leakage as required by IWA-5241(b) or IWA-5242(b).

Evaluation: During Code-required system leakage tests, direct visual VT-2 examinations are performed to detect evidence of component leakage. In practice, the examinations are conducted by viewing the accessible surfaces of all pressurized components, after sufficient hold times have been attained. The licensee performs the required visual VT-2 examinations at nominal operating pressure during the return to power sequence following each refueling outage, which requires that containment to be at sub-atmospheric conditions. This means that visual VT-2 examiners are required to wear self-contained breathing apparatus with full-face respirators to perform the examinations. This negates the use of remote visual methods (i.e., using binoculars or telescopes). The visual VT-2 examinations are required to be performed by qualified examiners, using procedures that specify necessary parameters, such as lighting, distance and visual acuity requirements, for conducting direct visual examinations.

Certain areas within containment are not designed to allow access for examination personnel to meet the specified parameters for conducting direct visual VT-2 examinations on all components. The licensee has provided details of these areas with percentages of components expected to be obtained during the direct visual examinations (in the licensee's basis paragraphs above). A method typically used to gain access to components for inservice inspection, maintenance, or other activities, is to erect temporary scaffolding. Since the visual VT-2 examinations at Surry 2 must be performed during the return to power sequence at sub-atmospheric conditions, it would be a significant hardship to erect temporary scaffolding solely for the purpose of these visual VT-2 examinations. Further, the temporary scaffolding would probably not meet seismic design specifications, and would be required to be removed prior to normal plant operation; scaffold removal activities would also have to be performed under sub-atmospheric conditions.

The ASME Code provides guidance for performing visual VT-2 examinations for components considered "inaccessible" in IWA-5240 Visual Examination. Paragraph IWA-5241(b) (for non-insulated components) states:

For components whose external surfaces are inaccessible for direct VT-2 visual examination, only the examination of the surrounding area (including floor areas or equipment surfaces located underneath the components) for evidence of leakage shall be required.

In addition, with the exception of bolting, insulated components also have provisions for access difficulties, as stated in IWA-5242(a) and (b):

For other [than bolted] components, a VT-2 visual examination may be conducted without the removal of insulation by examining the accessible and exposed surfaces and joints of insulation. Essentially vertical surfaces of insulation need only be examined at the lowest elevation where leakage may be detectable. Essentially horizontal surfaces of insulation shall be examined at each insulation joint.

When examining insulated components, the examination of the surrounding area (including floor areas or equipment surfaces located underneath the components) for evidence of leakage, or other areas to which such leakage may be channeled, shall be required.

The licensee has requested that NRC authorize an alternative to perform the direct visual VT-2 examinations without using temporary scaffolding. However, the use of scaffolding, either temporary or permanent, is not addressed by 10 CFR 50.55a or Section XI of the ASME Code, and NRC Staff may only authorize alternatives for requirements specified under paragraphs (c), (d), (e), (f), (g), or (h) of the regulations. Because guidance to address inaccessible conditions for visual VT-2 examinations exists within the Code, the Staff has determined that the licensee's proposed alternative is not required. Furthermore, it is the Staff's opinion that the use of temporary scaffolding for inservice inspection purposes is beyond the scope of 10 CFR 50.55a, nor is the Staff obligated to establish a position with regard to the use of temporary scaffolding at operating nuclear power facilities. The licensee should, through consultation with the Authorized Nuclear Inservice Inspector, review internal procedures included in their Quality Assurance, Maintenance, or Safety Program documentation for guidance on the erection and use of temporary scaffolding.

3.8 Request for Relief SPT-002, Examination Category B-P, System Leakage Tests for Class 1 Small Diameter Vent and Drain Piping

Code Requirement: Examination Category B-P, Items B15.50 and B15.70, require system leakage tests, and associated visual VT-2 examinations, for all Class 1 pressure retaining piping and valves. The pressure test boundary is required to extend to all Class 1 pressure retaining components within the system boundary.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee has proposed an alternative to the Code-required system pressure tests for Class 1 small diameter vent, drain, and test connection piping and valves shown in Table 3.8.

| Table 3.8 - Vent, Drain and Test Connection Piping | | |
|---|---|---|
| Piping Segment | Description | Function |
| 1 | 2-RC-154 on 3/4” line | Vent |
| 2 | 2-RC-48 on 3/4” line to blank flange | High point vent |
| 3 | 2-RC-80 on 3/4” line to blank flange | High point vent |
| 4 | 2-RC-156 on 3/4” line | Stand pipe vent |
| 5 | 3/4” line between 2-RC-104 and 2-RC-173 | Stand pipe |
| 6 | 1” line between 2-RC-36, 2-RC-186, 2-RC-FNG-545A | Reactor vessel vent |
| 7 | 3/4” line between 2-RC-105, 2-RC-106 and 2-RC-157 | Vessel level stand pipe |
| 8 | 3/4” line downstream of 2-RC-106 | Test connection |
| 9 | 3/4” line downstream of 2-RC-103 | Test connection |
| 10 | 3/4” line between 2-RC-170 and 2-RC-138 | Stand pipe vent to PZR |
| 11 | 3/4” line between 2-SI-411 and 2-SI-412 | Test connection |
| 12 | 3/4” line between 2-SI-414 and 2-SI-415 | Test connection |
| 13 | 3/4” line between 2-SI-417 and 2-SI-418 | Test connection |

Licensee’s Basis for Relief Request (as stated):

These piping segments are equipped with either two valves, or a valve and end cap that provide for double isolation of the reactor coolant system (RCS) pressure boundary. For each pipe segment, the inboard (i.e. closer to the primary loop piping) or first isolation valve is maintained closed during normal operation; thus, the piping outboard of the first isolation valve is not normally pressurized. The proposed alternative provides an acceptable level of safety and quality based on the following:

1. ASME Section XI Code, 1998 Edition with addenda up to and including the 2000 Addenda, paragraph IWA-4540, provides the requirements for hydrostatic pressure testing of piping and components after repairs by welding to the pressure boundary. IWA-4540(b)(6) excludes component connections, piping, and associated valves that are 1 inch nominal pipe size and smaller from the hydrostatic test. Visual examination of these 1 inch diameter RCS vent/drain/sampling connections once each 10-year interval is unwarranted

considering that a repair weld on the same connections is exempted by the ASME XI Code.

2. The non-isolable portion of the RCS vent and drain connections will be pressurized and visually examined as required. Only the isolable portion of these small diameter vent and drain connections will not be pressurized.

3. These piping connections are typically socket welds that received a surface examination after installation.

4. The piping and valves are nominally heavy wall. These piping components and associated piping are near the free end of a cantilever configuration (stub end isolated by either a valve or a flange). There is no brace or support for this portion of the pipe. Consequently, this portion does not experience any thermal loading.

5. This portion of the line is isolated during normal operation and does not experience pressure loading unless there is a leak at the first isolation valve.

6. The valves do not have an extension operator, so the rotational accelerations at the valve do not produce significant stress.

7. The stresses toward the free end of the cantilever due to other types of loading are only a small fraction of the applicable Code allowable.

The Technical Specifications (TS) require RCS leakage monitoring during normal operation. Should any of the TS leakage limits be exceeded, then SPS 2 is required to identify the source of the leakage and restore the RCS boundary.

During the 1998 North Anna Unit 1 refueling outage, similar piping segments were pressurized by the connection of a test rig. The dose associated with this testing was 1.5 man-rem. It is expected that conditions at SPS Unit 2 would yield comparable exposure results if the testing were performed.

In response to the NRC RAI, further clarification was provided by the licensee in a letter dated May 5, 2004:

To test the configurations included in the table [Table 3.8] above, an operator would need to open the normally closed valve after reaching test pressure and temperature or reconfigure the valve closed if left open during the test pressurization at the start. In either case the operator would be changing the valve position while the reactor coolant system was in a high temperature (>500°F) and high-pressure condition (>2200 psig) with the associated hazards. The test is also performed while the containment is sub-atmospheric, which would require the operator to wear a self-contained breathing apparatus. The test requires valves manipulations under the associated elevated containment air temperature and humidity conditions.

Licensee's Proposed Alternative Examination (as stated):

As an alternative to the Section XI requirement that once per interval a system leakage test be performed on the normally isolated portions of the subject CIass 1 RCS pressure boundary vent, drain, sample, and instrumentation connections, the following is proposed:

1. The RCS vent, drain, instrumentation, and sample connections will be visually examined for leakage and any evidence of past leakage, with the isolation valves in the normally closed position each refueling outage during the ASME Section XI Class 1 System Leakage Test (IWB-5220).

2. During operation the RCS will be monitored for leakage and radiation levels in accordance with the requirements of the applicable Technical Specifications.

3. These alternative provisions will only be applied to the inservice testing performed to meet the requirements of Category B-P.

Evaluation: The Code requires that system leakage tests be performed during each refueling outage to include all Class 1 components within the RCS system boundary. The licensee has proposed an alternative to the system leakage test requirements for the subject small-bore line segments. The line segments include vent, drain and test connection piping less than 1-inch NPS in diameter and several normally-closed, manually operated valves connected to primary RCS components. Under normal plant operating conditions the subject line segments would see RCS temperatures and pressures only if leak-by occurs from the inboard valve. In order for the licensee to perform the Code-required test, it would be necessary to manually open the inboard valves to pressurize the line segments. Pressurization by this method would defeat the RCS double isolation and may cause safety concerns for the personnel performing the examination duties.

Typical line/valve configurations are in close proximity to primary RCS components. Manual actuation (opening and closing) of these valves is estimated to expose plant personnel to as much as 1.5 man-rem. In addition, the actuation would have to be performed at RCS normal operating pressure, which would require operators to perform these activities while wearing self-contained breathing apparatus because of the sub-atmospheric containment environment. Therefore, the Code requirement to perform the system leakage tests by exercising the normally closed valves to pressurize these small line segments places a significant hardship on the licensee.

The licensee's proposed alternative is to visually examine the subject RCS vent, drain, and instrumentation connections, and associated valves, with the isolation valves in the normally closed position during each refueling outage. The visual VT-2 examinations will be performed in conjunction with the full Class 1 system leakage tests. Any evidence of leakage should be detected during these examinations, providing the licensee ample opportunity to correct any deficiencies that may be observed. The licensee's proposed alternative will provide reasonable assurance that the leakage integrity of the subject line segments will be maintained.

The subject pipe segments are designed for vent, drain and test functions, and do not typically experience extended primary system operating pressures during their normal periods of operation. Subjecting these segments to an elevated RCS pressure does not provide further evidence to enhance their intended functions, therefore, no compensating increase in quality or safety would be realized.

Based on the evaluation above it has been determined that the Code requirement to perform system leakage tests on the subject small-bore line segments at Surry 2 is difficult to achieve. Imposition of the Code requirement on the licensee would cause a significant hardship that would not be compensated by an increase in quality and safety. Therefore, it is recommended that the licensee's proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

3.9 Request for Relief SPT-003, Revision 1, Examination Category B-P, System Leakage Tests for Pressure Retaining Partial Penetration Welds on the Reactor Pressure Vessel, Bottom Mounted Instrumentation Nozzles

Code Requirement: Examination Category B-P, Item B15.10, requires that a system leakage test, and associated visual VT-2 examination, be performed on the pressure retaining boundary of the reactor pressure vessel (RPV) prior to plant start-up at the end of each refueling outage.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee has proposed an alternative to the Code-required system leakage test, and associated VT-2 visual examination, for the bottom head of the RPV, including partial penetration welds located at bottom mounted instrumentation (BMI) nozzles.

Licensee's Basis for Relief Request (as stated):

To meet the Section XI pressure and temperature requirements for the system leakage test of the reactor vessel, the SPS 2 reactor containment is required to be at sub-atmospheric pressure. Station administrative procedures require that self-contained breathing apparatus must be worn for containment entries under these conditions. This requirement significantly complicates the visual (VT-2) examination of the bottom of the reactor vessel during testing. Access to the bottom of the reactor vessel requires the examiner to descend several levels by ladder and navigate the entrance leading to the reactor vessel. In addition to these physical constraints, the examiner must contend with extreme environmental conditions: elevated air temperatures due to reactor coolant at temperatures above 500 degrees F, and limited air circulation in the vessel cubicle. Also, the limited capacity of the breathing apparatus further encumbers the performance of the examination.

These factors increase the safety hazard associated with the examination. As a minimum, the examiner is forced to perform the examination under considerable physical burden. To place the examiner under this increased risk and burden is not justifiable. This combination of conditions does not exist during the refueling outage when the proposed alternate examination would take place. The proposed alternate

examination would be performed under conditions that are safer and allow for a more thorough examination.

In response to the NRC RAI, further clarification was provided by the licensee in a letter dated May 5, 2004:

In a letter dated September 22, 2003 (Serial No. 03-459), Dominion responded to NRC Bulletin 2003-02. "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity" for Surry Units 1 and 2. The response for Surry Unit 2 that was provided in Attachment 1 of the submittal was the required thirty-day response for units that had a scheduled Fall 2003 outage. In summary, Dominion's response for Surry Unit 2 included a commitment to perform a 360-degree, bare-metal visual examination of the fifty lower reactor pressure vessel (RPV) head bottom-mounted instrumentation (BMI) penetration nozzles during the Surry Unit 2 Fall 2003 refueling outage. This inspection was performed during the refueling outage with no indication of boric acid leakage detected at any of the BMI nozzles nor was any indication of head wastage observed. These results, and the inspection techniques used, are documented in Dominion's letter to the NRC dated January 30, 2004 (Serial No. 03-459B). If evidence of boric acid deposits had been identified on any of the BMI penetration nozzles, the finding would have been entered into the corrective action program for tracking, cause determination and disposition/resolution of the condition.

Licensee's Proposed Alternative Examination (as stated):

Technical Specifications have surveillance requirements that monitor leakage and radiation levels. The applicable Technical Specification requirements will be satisfied through the fourth inservice inspection interval. Furthermore, the incore sump room has a level alarm in the control room requiring operator action. In the event of a leak, these actions would identify any integrity concerns associated with this area. A bare-metal VT-2 visual examination for evidence of boric acid leakage/corrosion will be conducted each refueling outage on the bottom of the reactor vessel when the containment is at atmospheric conditions.

The bare-metal visual examinations for the BMI penetration nozzles discussed above will allow the examiner to perform a much more thorough and effective examination versus the specified Code examination, which would require the visual inspection to be performed while wearing a full face, self-contained breathing apparatus due to sub-atmospheric conditions.

Evaluation: The Code requires that system leakage tests, and associated VT-2 visual examinations, be performed on exterior surfaces of the RPV pressure retaining boundary. These tests are required to be performed prior to plant start-up after each refueling outage, and conducted with the RPV at normal operating pressure. To achieve this pressure, the licensee uses reactor coolant pumps and pressurizer heaters to bring the entire system up to normal operating temperature. This operation is typically performed during the return to power sequence and requires that the containment be at sub-atmospheric conditions. Examiners must wear full face respirators with self-contained breathing apparatus and contend with extreme

environmental conditions caused by elevated air temperatures and limited circulation in confined regions of containment that exist near the bottom of the RPV. The safety hazards and physical burdens that are incurred during these examinations place a considerable hardship on the licensee.

Because of recent industry findings of leakage at bottom mounted instrumentation (BMI) nozzles, the Staff issued NRC Bulletin 2003-02, “Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity.” In response, Surry 2 performed a bare-metal visual examination during Fall 2003 to detect evidence of boric acid deposits and/or carbon steel wastage that may indicate BMI penetrations were leaking. The bare-metal visual examinations are performed with RPV lower head insulation removed to allow direct inspection of the BMI penetration regions. No indication of BMI leakage was observed. The bare metal VT-2 visual examinations must be performed at cold shutdown so that the RPV bottom head insulation can be removed and a normal atmosphere exists within containment.

The licensee's proposed alternative is to conduct bare metal VT-2 visual examinations during each refueling outage during cold shutdown when atmospheric conditions exist in containment and the insulation on the RPV bottom head can be removed, in lieu of standard VT-2 performed during the return to power sequence with the RCS at normal operating pressure and temperature. It is expected that initial leak rates from PWR BMI nozzles will be extremely low due to the design and size of these RPV penetrations, and that the only indication of leakage may be the presence of boric acid residue at the tube-to-head penetrations. For this reason, the bare metal VT-2 visual examination has been tentatively approved by NRC for BMI penetrations.

To subject VT-2 visual examiners to the harsh conditions found during normal operating pressure will not provide a compensating increase in the quality of the examination, nor will safety be enhanced. In fact, the bare metal visual examination is considered to be more effective at detection of extremely small leaks (due to the presence of boric acid residue) than a standard VT-2 visual examination conducted at normal operating pressure to detect low levels of leaking primary coolant with the RPV bottom head insulation in-place. The bare metal visual examinations proposed by the licensee, performed during each refueling outage, will provide reasonable assurance of the detection of BMI nozzle leaks prior to challenging the structural integrity of the RPV.

Performing the Code-required system leak test on BMI nozzles at normal operating pressure places a significant hardship on the licensee with no compensating increase in quality or safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), it is recommended that the licensee's alternative be authorized.

## 4.0 CONCLUSIONS

PNNL reviewed the licensee's submittal, and for Requests for Relief CMP-004, CMP-005, SPT-002 and SPT-003, Revision 1, it has been shown that compliance with the Code requirements would result in a hardship or unusual difficulty without a compensating increase in level of quality and safety. The alternatives proposed by the licensee provide reasonable assurance of the continued structural integrity of the subject components. Therefore, for these requests, it is

recommended that the licensee's alternatives be authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the fourth interval inservice inspection.

Based on the NRC's Request for Additional Information, the licensee withdrew Requests for Relief CMP-001, CMP-002, CMP-003, and CMP-006. In addition, for Request for Relief SPT-001, it has been determined that relief is not required and the licensee should follow existing Code rules for performing direct visual VT-2 examinations during system leakage tests.

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