



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 17, 2011

Mr. David A. Heacock
President and Chief Nuclear Officer
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: CORRECTION TO SAFETY EVALUATION FOR FOURTH 10-YEAR
INSERVICE INSPECTION INTERVAL REQUESTS FOR RELIEF SPT-004,
REVISION 2, AND SPT-003, REVISION 2 FOR SURRY POWER STATION,
UNIT NOS. 1 AND 2

Dear Mr. Heacock:

By letter dated October 27, 2009 (Agencywide Document Access Management System (ADAMS), Accession No. ML093000352), and supplemented by e-mail from [mailto:gary.d.miller@dom.com] to Karen Cotton dated March 24, 2010 (ADAMS Accession No. ML102660137), Virginia Electric and Power Company (VEPCO, the licensee) submitted requests for relief from certain examination requirements of the American Society of Mechanical Engineers, *Boiler and Pressure Vessel Code* (ASME Code) at the Surry Power Station, Unit Nos. 1 and 2 (Surry Units 1 and 2). In the letter, the licensee requested, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), 50.55a(a)(3)(ii), that the Nuclear Regulatory Commission (NRC) approve Relief Requests (RRs) for SPT-004, Revision 2, and SPT-003, Revision 2, that relate to the examination requirements for the penetrations in the bottom of the reactor vessel for Surry Units 1 and 2, respectively. By letter dated October 26, 2010 (ADAMS Accession No. ML102371171), the NRC approved the RR's; however, the Safety Evaluation (SE) included in the NRC's letter stated that VEPCO had requested, and the NRC approved, the performance of bare-metal VT-2 examinations of the reactor pressure vessel (RPV) bottom mounted instrumentation (BMI) penetrations every refueling outage. It was VEPCO's intent to perform the VT-2 examinations on the exterior of the RPV bottom head insulation for indication of boric acid leakage as permitted by ASME Code, Section X1 and bare-metal visual examinations of the RPV BMI penetrations would be performed every other refueling outage in accordance with code requirements. On November 18, 2010, during a conference call with NRC, VEPCO discussed the approved Surry Units 1 and 2 RR's and the associated NRC SE. During this call, NRC requested additional information. VEPCO responded to the request for additional information by e-mail dated November 19, 2010 (ADAMS Accession No. ML103280015), regarding the hardship associated with the removal of the RPV bottom head insulation to perform a bare metal VT-2 examination of RPV BMI penetrations. A subsequent conference call between the NRC and VEPCO was held on November 23, 2010, in which the NRC verbally stated that performing a VT-2 visual examination every refueling outage on the bottom of the RPV with the insulation installed, in addition to a bare-metal VE visual examination performed on the bottom of the RPV every other refueling outage, provides reasonable assurance of RPV bottom head and BMI penetration area integrity. Therefore, the requests for relief, as originally written in the October 27, 2009, application, were verbally authorized on November 23, 2010, by the NRC.

In a letter dated December 16, 2010 (ADAMS Accession No. ML103570048), VEPCO docketed their e-mail response dated November 19, 2010. The NRC staff evaluated this information and observed that, since the reflective metal insulation is not a tight fit around each of the guide tubes, any leakage that would occur would likely travel down the guide tubes and be identified during the VT-2 visual examination at atmospheric pressure by the examiners. The NRC staff has also determined that the insulation poses a hardship if it were to be removed to complete the VT-2 visual examination. The NRC staff concluded that compliance with the ASME Code requirement to perform a VT-2 visual examination of the lower RPV head when the containment is at sub-atmospheric conditions would result in hardship without a compensating increase in the level of quality and safety. The licensee's proposed alternative of a VT-2 visual examination each refueling outage when the containment is under atmospheric conditions along with a bare-metal visual examination every other outage in accordance with ASME Code Case N-722, provides reasonable assurance of system leakage integrity.

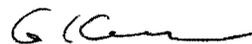
Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the fourth 10-year ISI interval for Surry Units 1 and 2.

Enclosed are corrected pages 3, 4, and 5 of the SE issued on October 26, 2010, authorizing the licensee's proposed alternative of a VT-2 visual examination each refueling outage when the containment is under atmospheric conditions along with a VE bare-metal visual examination every other outage. There are bars in the margin to show areas changed. The December 16, 2010, letter also documented that the relief is requested for the fourth 10-year in-service inspection (ISI) interval which began on October 14, 2003, and ends on December 13, 2013, for Surry Unit 1 and began on May 10, 2004, and ends on May 9, 2014, for Surry Unit 2.

Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee's proposed alternative described in Relief Requests SPT-004, Revision 2, and SPT-003, Revision 2, and supplemented by letter dated December 16, 2010, for the fourth 10-year ISI interval is authorized for Surry Units 1 and 2, respectively.

If you have any questions, please feel free to contact me at 301-415-6011.

Sincerely,



Gloria Kulesa, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-280 and 50-281

Enclosure:
Corrected Safety Evaluation Pages 3, 4, and 5

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The licensee states that 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 alternative examination would take place. The licensee further states that their proposed alternative examination would be performed under conditions that are safer and allow for a more thorough examination.

The licensee proposes to perform a VT-2 examination for evidence of boric acid leakage/corrosion each refueling outage on the bottom of the RPV when the containment is at atmospheric conditions and the system is depressurized. In addition, the licensee states that it will perform a VE bare-metal visual examination every other outage in accordance with the ASME Code-Case N-722 when the containment is at atmospheric conditions.

In addition to the proposed examination, the licensee states that it will continue to ensure that the surveillance requirements that monitor leakage and radiation levels per its Technical Specifications will be satisfied. 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.

The licensee states that monitoring methods of the station, the VT-2 exam performed every refueling outage at atmospheric conditions and the VE bare-metal visual examination conducted every other outage in accordance with ASME Code Case N-722 provide an acceptable level of quality and safety. Because of the burden and potential safety challenges caused by the sub-atmospheric conditions of the containment, the ASME Code required examinations at the bottom of the RPV during system leakage test results in a hardship without a compensating increase in quality and safety over the proposed alternative. Therefore, the licensee seeks approval of this request for relief in accordance with 10 CFR 50.55a(a)(3)(ii).

4.0 STAFF'S EVALUATION

ASME Code, Section XI, IWB-5220 system leakage tests are performed each refueling outage in accordance with ASME Code, Section XI, Table IWB-2500-1, Examination Category B-P, Item B15.10. System leakage tests are conducted at a test pressure not less than the nominal operating pressure associated with 100% rated reactor pressure. The ASME Code requires that a VT-2 visual examination be conducted by examining the accessible external exposed surfaces of pressure retaining components for evidence of leakage. The VT-2 visual examinations may be performed on bare-metal surfaces or insulation covered surfaces.

The licensee is proposing to perform an alternative inspection method on the same inspection frequency as that required in Table IWB-2500-1. The proposed inspection will look for evidence of boric acid leakage/corrosion, as would be performed under the Code requirements, but while the plant is in a refueling outage and the containment is at atmospheric conditions. The NRC requested additional information by conference call dated November 18, 2010. The licensee

responded to the NRC staff's request for additional information (RAI) by email dated November 19, 2010 (ADAMS Accession No. ML103280015), and by letter dated December 16, 2010 (ADAMS Accession No. ML103570048). The licensee addressed the staff's concern related to performing the VT-2 at atmospheric conditions with insulation in place on the bottom of the reactor vessel. The licensee stated, "The insulation at the bottom of the reactor vessel consists of reflective metal insulation (RMI) that conforms to the shape of the reactor vessel. The RMI has holes where each of the guide tubes exit the bottom of the reactor vessel. The insulation at the very bottom of the reactor vessel is one circular piece approximately six and half feet [sic] in diameter that can be dropped when a direct visual inspection of the reactor vessel bottom is required. The RMI is not a tight fit around each of the guide tubes and the size of the gaps around the tubes vary." The licensee explained that requiring the performance of bare metal VT-2 inspections of the bottom mounted instrumentation (BMI) penetrations would require the removal of this insulation, which incrementally increases the wear and tear on the RMI insulation. Additionally, the licensee stated that removal and reinstallation of the bottom head insulation would result in an additional dose of approximately 0.7 Rem.

In addition to the VT-2 visual examination conducted every outage, the licensee states that it will perform a VE bare-metal visual examination every other outage in accordance with ASME Code-Case N-722 when the containment is at atmospheric conditions. Furthermore, in addition to the proposed VT-2 visual examination performed every outage as well as VE bare-metal visual examinations performed every other outage, the licensee states that it will continue to ensure that the surveillance requirements that monitor leakage and radiation levels per its TSs will be satisfied. Lastly, the incore sump room has a level alarm in the control room requiring operator action. The NRC staff has determined that in the event of a leak, these actions would identify any integrity concerns associated with this area.

The NRC staff agrees that the environment in containment during a system leakage test makes inspecting the lower RPV head penetrations very difficult. The licensee's proposed alternative would allow inspectors to perform an inspection in an environment where they are not encumbered by high temperatures and sub-atmospheric conditions that would be present while the plant is at nominal operating temperature thus allowing time for a more thorough inspection. Performing the Code-required inspection would result in a hardship for the licensee without a compensating increase in the level of quality and safety. Additionally, the NRC staff agrees that, since the RMI insulation is not a tight fit around each of the guide tubes, any leakage that would occur during the VT-2 examination at atmospheric pressure would likely travel down the guide tubes and be identified by the examiners. Thus, removing insulation resulting in additional wear and tear on the RMI insulation and an additional outage dose of approximately 0.7 Rem, would result in hardship for the licensee without a compensating increase in the level of quality and safety. The NRC staff has determined that the proposed alternative examination provides reasonable assurance of system leakage integrity and, thus, an acceptable level of quality and safety.

5.0 CONCLUSION

The NRC staff concludes that compliance with the ASME Code requirement to perform a VT-2 visual examination of the lower RPV head when the containment is at sub-atmospheric conditions would result in hardship without a compensating increase in the level of quality and

safety. The licensee's proposed alternative of a VT-2 visual examination each refueling outage when the containment is under atmospheric conditions along with a VE bare-metal visual examination every other outage in accordance with ASME Code Case N-722, provides reasonable assurance of system leakage integrity. Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the fourth 10-year ISI interval for Surry Units 1 and 2.

All other ASME Code, Section XI requirements for which relief was not specifically requested and approved in this relief request remain applicable, including third party review by the Authorized Nuclear Inservice Inspector.

Principal Contribution: Carol A. Nove, NRR/DCI

Date of Issuance: October 26, 2010

In a letter dated December 16, 2010 (ADAMS Accession No. ML103570048), VEPCO docketed their e-mail response dated November 19, 2010. The NRC staff evaluated this information and observed that, since the reflective metal insulation is not a tight fit around each of the guide tubes, any leakage that would occur would likely travel down the guide tubes and be identified during the VT-2 visual examination at atmospheric pressure by the examiners. The NRC staff has also determined that the insulation poses a hardship if it were to be removed to complete the VT-2 visual examination. The NRC staff concluded that compliance with the ASME Code requirement to perform a VT-2 visual examination of the lower RPV head when the containment is at sub-atmospheric conditions would result in hardship without a compensating increase in the level of quality and safety. The licensee's proposed alternative of a VT-2 visual examination each refueling outage when the containment is under atmospheric conditions along with a bare-metal visual examination every other outage in accordance with ASME Code Case N-722, provides reasonable assurance of system leakage integrity.

Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the fourth 10-year ISI interval for Surry Units 1 and 2.

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Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee's proposed alternative described in Relief Requests SPT-004, Revision 2, and SPT-003, Revision 2, and supplemented by letter dated December 16, 2010, for the fourth 10-year ISI interval is authorized for Surry Units 1 and 2 respectively.

If you have any questions, please feel free to contact me at 301-415-6011.

Sincerely,

/RA/

Gloria Kulesa, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-280 and 50-281

Enclosure:
Corrected Safety Evaluation Pages 3, 4, and 5

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