



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

October 26, 2010

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: SURRY POWER STATION, UNITS 1 AND 2, SAFETY EVALUATION FOR
FOURTH 10-YEAR INSERVICE INSPECTION INTERVAL REQUESTS
FOR RELIEF SPT-004, REVISION 2, AND SPT-003, REVISION 2
(TAC NOS. ME2593 AND ME2594)

Dear Mr. Heacock:

By letter dated October 27, 2009 (Agencywide Document Access Management System (ADAMS) Accession No. ML093000352), and email from [mail to: gary.d.miller@dom.com] to Karen Cotton dated March 24, 2010 (ADAMS Accession No. ML102660137), Virginia Electric and Power Company (the licensee) submitted requests for relief from certain examination requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code at the Surry Power Station, 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 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 Units 1 and 2, respectively. The relief is requested for the fourth 10-year inservice inspection (ISI) interval which began on October 14, 2003, and ends on December 13, 2013, for Unit 1 and began on May 10, 2004, and ends on May 9, 2014, for Unit 2.

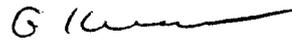
In addition to the requests for relief, the licensee's letter dated October 27, 2009, notified the NRC of a change in a commitment prior to implementation. Bare-metal visual examinations of the bottom mounted instrumentation (BMI) penetration nozzles on the reactor pressure vessel (RPV) have been performed every refueling outage since 2003, and these examinations have not identified any evidence of leakage. Therefore, the licensee is revising the examination frequency associated with the visual examination of the BMI penetration nozzles on the RPV lower head. The examinations will be performed consistent with the frequency required by 10 CFR 50.55a(g)(6)(ii)(E).

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The NRC staff has reviewed the licensee's submittal and determined that conducting a Code-required VT-2 examination of the RPV lower lead when the containment is at sub-atmospheric conditions would result in hardship without a compensating increase in the level of quality and safety. 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, for the fourth 10-year ISI interval is authorized for Surry Power Station, Units 1 and 2.

Sincerely,



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

Docket Nos. 50-280 and 50-281

Enclosure: Safety Evaluation

cc w/encl: Distribution via Listserv



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOURTH 10-YEAR INSERVICE INSPECTION INTERVAL

RELIEF REQUESTS SPT-004, REVISION 2 AND SPT-003, REVISION 2

SURRY POWER STATION UNIT NOS. 1 AND 2

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NUMBERS: 50-280 AND 50-281

1.0 INTRODUCTION

By letter dated October 27, 2009 (Agencywide Document Access Management System (ADAMS) Accession No. ML093000352), and email from [mailto: gary.d.miller@dom.com] to Karen Cotton dated March 24, 2010 (ADAMS Accession No. ML102660137), Virginia Electric and Power Company (the licensee) submitted requests for relief from certain examination requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) at the Surry Power Station, Units 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, the Commission) approve Relief Requests SPT-004, Revision 2, and SPT-003, Revision 2, that relate to the examination requirements for the penetrations in the bottom of the reactor pressure vessel (RPV) for Surry Units 1 and 2, respectively. The relief is requested for the fourth 10-year inservice inspection (ISI) interval which began on October 14, 2003, and ends on December 13, 2013, for Unit 1 and began on May 10, 2004, and ends on May 9, 2014, for Unit 2.

2.0 REGULATORY EVALUATION

It specifies in 10 CFR 50.55a(g), that an ISI of nuclear power plant components shall be performed in accordance with the requirements of the ASME Code, Section XI, except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). Section 50.55a(g)(6)(i) states that the Commission may grant such relief and may impose such alternative requirements as it determines is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest, given the consideration of the burden upon the licensee. 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (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 preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice

ENCLOSURE

Inspection 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 an ISI 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 applicable ASME Code, Section XI, of record for the fourth 10-year ISI interval at Surry Units 1 and 2, is the 1998 Edition through the 2000 Addenda.

The information provided by the licensee in support of the Relief Request has been evaluated by the NRC staff and the bases for disposition are documented below.

3.0 TECHNICAL EVALUATION

3.1 Applicable Code Edition and Addenda

The code of record for the fourth 10-year ISI program at Surry Units 1 and 2, is the ASME Code, Section XI, 1998 Edition through the 2000 Addenda. The fourth 10-year ISI interval for Surry Units 1 and 2, began on October 14, 2003, and ends on December 13, 2013, (Unit 1) and began on May 10, 2004, and ends on May 9, 2014, (Unit 2).

3.2 Component(s) for Which Relief is Requested

In ASME Section XI, 1998 Edition through the 2000 Addenda, Examination Category B-P, Item B15.10, Class 1, Pressure Retaining Boundary, Reactor Vessel, Partial Penetration Welds at the Bottom of the Reactor Vessel.

3.3 Applicable Code Requirement

In ASME Section XI, 1998 Edition through the 2000 Addenda, Examination Category B-P, Item B15.10, Class 1, requires a visual examination (VT-2) during system leakage testing of the pressure retaining boundary of the reactor vessel prior to start-up following reactor fueling outage.

3.4 Licensee Proposed Alternative and Basis for Use

The licensee states that to meet the ASME Code, Section XI, pressure and temperature requirements for the system leakage test of the RPV, the Surry Units 1 and 2, reactor containments are required to be at sub-atmospheric pressure. Station administration procedures require that self-contained breathing apparatus must be worn for containment entries under these conditions. This requirement significantly complicates the VT-2 examination of the bottom of the RPV 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 the physical constraints, the examiner must contend with extreme environmental conditions, such as: elevated air temperature due to reactor coolant at temperatures above 500 °F and limited air circulation in the vessel cubicle. Also, the limited capacity of the breathing apparatus further encumbers the performance of the examination.

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 bare-metal 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 bare-metal visual examination (VE) 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 (TSs) 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 Surry Units 1 and 2, conducts a VT-2 examination at every refueling outage at atmospheric conditions and a bare-metal VE is conducted every other outage in accordance with ASME Code Case N-722 to 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 EVALUATION

In 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 examination be conducted by examining the accessible external exposed surfaces of pressure retaining components for evidence of leakage. The VT-2 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, that would be performed under the Code requirements, but while the plant is in a refueling outage and the containment is at atmospheric conditions. In addition, the licensee states that it will perform a bare-metal VE every other outage in accordance with the ASME Code-Case N-722 when the containment is at atmospheric conditions. Furthermore, in addition to the proposed VT-2 examination performed every outage as well as bare-metal VE 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 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. 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 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 bare-metal VT-2 examination when the containment is under atmospheric conditions, 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

D. Heacock

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The NRC staff has reviewed the licensee's submittal and determined that conducting a Code-required VT-2 examination of the RPV lower lead when the containment is at sub-atmospheric conditions would result in hardship without a compensating increase in the level of quality and safety. 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, for the fourth 10-year ISI interval is authorized for Surry Power Station, Units 1 and 2.

Sincerely,

/RA/

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

Docket Nos. 50-280 and 50-281

Enclosure: Safety Evaluation

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*transmitted by memo dated 6/25/10

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