



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

February 3, 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, UNIT NO. 1, SAFETY EVALUATION OF RELIEF
REQUEST SPT-008 REGARDING PRESSURE TESTING OF SERVICE
WATER BURIED PIPING (TAC NO. ME1244)

Dear Mr. Heacock:

By letter dated May 8, 2009 (ADAMS Accession No. ML0912806030), and supplemented by a second letter dated May 8, 2009 (ADAMS Accession No. ML0912806870), Virginia Electric and Power Company (the licensee), requested the U.S. Nuclear Regulatory Commission (NRC) for authorization for relief (SPT-008) from the pressure-testing requirement regarding repair of buried service water system piping at Surry Power Station, Unit No. 1 (Surry 1) during the fourth 10-year inservice inspection interval.

The NRC staff has reviewed the relief requests. On the basis of the information submitted, the NRC staff concluded that the proposed alternative provided reasonable assurance of structural integrity of the repaired service water system piping and implementation of additional requirements would result in hardship without a compensating increase in the level of quality and safety. Therefore, pursuant to Title 10 of the *Code of Federal Regulations*, Part 50, Section 50.55a(a)(3)(ii), the staff authorized this alternative for the fourth 10-year inservice inspection interval at Surry 1.

The NRC staff provided verbal authorization for granting of relief for SPT-008 on May 8, 2009. The enclosed Safety Evaluation provides the written authorization for granting the relief.

Sincerely,

A handwritten signature in black ink, appearing to read "G. Kulesa", is located below the "Sincerely," text.

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

Docket No. 50-280

Enclosure:
Safety Evaluation

cc w/encl: Distribution via Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST SPT-008

VIRGINIA ELECTRIC AND POWER COMPANY

SURRY POWER STATION, UNIT NO. 1

DOCKET NO. 50-280

1.0 INTRODUCTION

By letter dated May 8, 2009 (ADAMS Accession Number ML091280630), and supplemented by a second letter dated May 8, 2009 (ADAMS Accession Number ML0912806870), Virginia Electric and Power Company (the licensee), requested U.S. Nuclear Regulatory Commission (NRC) for authorization for relief (SPT-008) from the pressure-testing requirement regarding repair of buried service water system piping at Surry Power Station, Unit No. 1 (Surry 1) during the fourth 10-year inservice inspection interval. The licensee has requested approval of this relief request on an expedited basis by May 8, 2009, to support start-up activities during the ongoing refueling outage.

2.0 REGULATORY EVALUATION

The inservice inspection (ISI) of the American Society of Mechanical Engineers, *Boiler and Pressure Vessel Code* (ASME Code), Class 1, 2, and 3 components is to be performed in accordance with Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME Code and applicable editions and addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.55a(g), except where specific written relief has been granted by the Commission.

Pursuant to 10 CFR 50.55a(g)(4), throughout the service life of a pressurized water-cooled nuclear power facility, components which are classified as ASME Code Class 1, 2 and 3 must meet the requirements, except the design and access provisions and preservice examination requirements, set forth in the ASME Code, Section XI, to the extent practical within the limitations of design, geometry and materials of construction of the components. Further these 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 paragraph (b) of 10 CFR 50.55a on the date 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. At Surry 1 the Section XI ASME Code of record for the facility's current fourth 10-year ISI interval is the 1998 Edition with Addenda up to and including the 2000 Addenda.

Enclosure

Section 10 CFR 50.55a(a)(3) allows alternatives to specific requirements of Section XI of the ASME Code, 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. The licensee, in accordance with 10 CFR 50.55a(a)(3), has requested relief STP-008 from certain pressure testing requirements of Section XI of the ASME Code.

3.0 TECHNICAL EVALUATION

3.1 Components for Which Relief Was Requested

ASME Code Class 3, Service Water System Piping component number 30-WS-24-10 of drawing number 11448-CBM-071A

3.2 Regulatory Requirements

Section XI of the ASME Code, 1998 Edition with Addenda up to and including the 2000 Addenda, Section IWA-4540, requires the performance of either a system hydrostatic test per IWA-4540(a)(1) following a repair/replacement activity involving welding. Additionally, per IWA-5244(b), for buried components that are nonisolable, in lieu of a VT-2 examination the system pressure test shall consist of a test to confirm that flow during operation is not impaired.

3.3 Proposed Alternatives

The licensee requested an alternative per 10 CFR 50.55a(a)(3)(ii) to the hydrostatic test requirements of IWA-4540(a)(1) and the visual VT-2 examination requirements of IWA5244(b). The licensee's proposed alternative is to not perform the required system pressure test that would confirm that flow during operation is not impaired.

3.4 Licensee's Basis

The licensee states that the subject buried service water system piping is encased in concrete. If leakage occurs, the concrete would act as a barrier to minimize leakage. The overall condition of the 48- and 30-inch service water piping was visually inspected during the current outage through a detailed internal inspection. Areas requiring weld or coating repair were identified and repaired. The repaired area was satisfactorily inspected by a quality inspector and a magnetic particle examination was performed. The magnetic particle exam exceeds the original Construction Code requirements for this piping. The repaired area was also coated with ARC 855 (Epoxy coating) to prevent future degradation. Furthermore, Dominion's Foreign Material Exclusion Program was followed to ensure that pipe cleanliness was maintained. Also, the condition of the piping is monitored periodically as part of an approved Preventive Maintenance Program.

The Code-required testing is considered unnecessary given the proposed alternative. Therefore, approval of this alternative is requested in accordance with 10 CFR 50.55a(a)(3)(ii).

3.5 Staff's Evaluation

The NRC staff's review of this request was based on 10 CFR 50.55a(a)(3)(ii) which states that:

Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The specific regulatory requirements for which relief is requested are defined in Subarticle IWA-5244(b) of Section XI of the ASME Code of Record for the fourth 10-year inservice inspection interval for Surry 1. Due to the repaired piping being incased in concrete, IWA-5244(b) applies to buried piping that is not accessible for an outside diameter VT-2 visual examination. As an acceptable pressure test, IWA-5244(b) would require, for the component for which relief is requested, "a test to confirm that flow during operation is not impaired."

The licensee performed a through-wall repair of a small area defect in the piping wall of the component for which relief is requested. This repair would require a pressure test to ensure the effectiveness of the repair. However, the licensee has identified that in order to line up the system to perform a pressure test, even to the limited requirements of IWA-5244(b), the evolution would require significant realigning of the system. Additionally, the pressure test would require use of service water through two of the Recirculation Spray Heat Exchangers. These heat exchangers are required to be maintained in a clean and dry condition during normal operation to ensure that they are capable of performing their design basis function in the event of a design basis accident. Consequently, at least two of the heat exchangers would have to be disassembled, cleaned, drained and reassembled. The licensee clarified in their second letter, Serial Number 09-306A, that performance of this task was estimated to take 96 hours with 90% of the time in an area with a general area dose rate of 25 mREM per hour with an average of eight craft personnel to perform the task.

Given that the code requirement is only to perform "a test to confirm that flow during operation is not impaired," the staff finds that unplanned system realignment and fouling of two safety significant heat exchangers which would require thorough cleaning in a radiation area prior to startup to constitute a hardship or unusual difficulty.

The licensee stated that the original defect was a 3/16-inch pit in an area of 3 by 5-inches of general corrosion due to localized coating failure. While attempting to repair the pit, the 0.5-inch nominal wall thickness pipe was burned through, forcing a full through-wall repair and the pressure test in accordance with IWA-5244(b). The repair weld was non-destructively examined with a visual inspection performed by a Licensee's Quality Inspector and a final magnetic particle examination was performed satisfactorily following surface preparation. The corrosion resistant coating was reapplied to the area to address the root cause of the pitting. Finally with an understanding that the operating pressure of the line is approximately 15 psig, the staff finds that requiring an additional system pressure test just to ensure flow through the concrete-incased 30-inch line would provide minimal additional safety margin.

As such, the NRC staff finds that the licensee's proposed alternative of SPT-008 provides reasonable assurance of structural integrity of the subject component. Therefore, given the staff's acceptance of the licensee's hardship, the staff finds that compliance with the specified ASME

Code required pressure test would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

4.0 CONCLUSION

As set forth above, the NRC staff determines that compliance with the specified ASME Code required pressure test would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(ii). Therefore, the NRC staff authorizes SPT-008 at Surry 1 during the current fourth 10-year ISI interval.

All other 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.

Principle Contributor: Jay Collins, NRR/DCI

Date: February 3, 2010

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/RA/

Gloria J. Kulesa, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
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