

May 12, 2005

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 INTERVAL THIRD 10-YEAR INTERVAL RELIEF REQUEST SR-38 (TAC NO. MC6662)

Dear Mr. Christian:

By letter dated April 11, 2005, Virginia Electric and Power Company (VEPCO) requested relief from certain American Society of Mechanical Engineers, Section XI Code inservice inspection interval (ISI) examination requirements for the recirculation spray and safety injection pump casing welds at Surry Power Station, Unit 2. In its submittal, VEPCO had requested approval of Revised Relief Request SR-38. The Nuclear Regulatory Commission (NRC) staff has completed its review of this relief request, and the NRC staff's evaluation and conclusion are contained in the enclosed Safety Evaluation.

The NRC staff has reviewed Revised Relief Request SR-38 and concludes that VEPCO's proposed alternative provides an acceptable level of quality and safety. Therefore, Revised Relief Request SR-38 is authorized pursuant to Title 10 of the *Code of Federal Regulations* Section 50.55a(a)(3)(i) for the third 10-year ISI interval at Surry, Unit 2.

Sincerely,

/RA LOlshan for/

John A. Nakoski, 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

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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 April 11, 2005, Virginia Electric and Power Company (the licensee) submitted Relief Request SR-38 for the recirculation spray (RS) and safety injection (SI) pumps at Surry Power Station (Surry), Unit 2. The licensee had requested to use the flaw acceptance requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI Table IWB-3514-2, "Allowable Planner Flaws," for the austenitic stainless steel pump casing welds located on the RS and SI pumps. This request was for the remainder of the third 10-year inservice inspection interval (ISI).

The third 10-year ISI interval began on May 10, 1994, and ended May 9, 2004, for all but the selected examinations. For the selected examinations, the third 10-year ISI interval with the one year extension permitted by ASME Code is scheduled to end May 9, 2005.

2.0 REGULATORY REQUIREMENTS

The ISI of ASME Code Class 1, Class 2, and Class 3 components shall be performed in accordance with Section XI of the ASME 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 written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). As stated, in part, in 10 CFR 50.55a(a)(3), alternatives to the requirements of paragraph (g) may be used, when authorized by the 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 pre-service examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice 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 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) twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein.

Enclosure

The components (including supports) may meet the requirements set forth in subsequent

editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Commission approval. The Code of Record for Surry, Unit 2 for the third 10-year ISI is the 1989 Edition of Section XI of the ASME Code, with no addenda.

3.0 SAFETY EVALUATION - Relief Request SR-38

3.1 Identification of Components

The components affected by this request for relief are:

Component	Drawing Number	Weld Number
2-RS-P-2A	11548-WMKS-RS-P-2A	Pump casing weld*
2-RS-P-2B	11548-WMKS-RS-P-2B	Pump casing weld*
2-SI-P-1A	11548-WMKS-SI-P-1A	Pump casing weld*
2-SI-P-1B	11548-WMKS-SI-P-1B	Pump casing weld*

* Welds will be visually identified and assigned weld numbers upon inspection. The drawings will be changed accordingly.

3.2 Code Requirements

The 1989 Edition of Section XI of the ASME Code, Table IWC-2500-1, Examination Category C-G, Item Number C6.10, "Pump Casing Welds," require a surface examination on 100 percent of the pump casing welds.

For Category C-G welds, Table IWC-2500-1 requires the use of acceptance standard IWC-3515. In the reference Code, IWC-3515, "Standards for Examination Category C-G, Pressure Retaining Welds in Pumps and Valves," states that the standards are in the course of preparation and the standards of IWB-3518, "Standards for Examination Category B-L-1 and B-M-1, Pressure Retaining Welds in Pump Casings and Valve Bodies," may be applied. IWB-3518 states that the size of allowable planar flaws shall not exceed the limits in Tables IWB-3518-1 and IWB3518-2 as applicable. Table IWB-3518-2, "Allowable Planar Flaws," is applicable for austenitic stainless steel material with a thickness range of 2 inches or greater.

3.3 Proposed Alternative

The licensee proposed using the 1989 Edition of the ASME Code, Section XI, Table IWB-3514-2, "Allowable Planar Flaws," as an alternative to the evaluation requirements of Table IWC-2500-1 for examination of category C-G pump column casings of the subject welds.

3.4 Licensee's Basis for Relief (As stated):

The pumps specified in this relief request are vertical, two-stage, centrifugal pumps with an extended shaft and casing that allow suction from the containment sump. This pump casing extends subgrade for more than 40 feet. The pump column consists of bolted flange sections made from austenitic stainless steel pipe. Circumferential welds exist at the pipe to flange locations. Verification of longitudinal welds cannot be made, but will be determined when the pump is disassembled and inspected.

The inspection standard specified in the Code for Class 1 and Class 2 pump casing welds, Table IWB-3518-2, is only for 2 inches or greater thickness. Dominion believes the pump columns were manufactured from schedule 40 pipe, which gives a nominal wall thickness of 0.365-inches. Therefore, the figures in Table IWB-3518-2 do not apply. However, the standards for austenitic piping provided in Table IWB-3514-2 are appropriate.

3.5 NRC Staff Evaluation

The ASME Code, Section XI, Examination Category C-G requires that pump casing welds receive a surface examination each interval. The acceptance standard is IWC-3515. IWC-3515 states that IWB-3518 may be used.

The NRC staff reviewed IWB-3518 and determined that the surface examination acceptance criterion was inappropriate for the subject pump casing design. IWB-3518 is for wall thicknesses 2 inches and greater. The licensee believes that the subject low head SI pump casing and RS pump casings are manufactured from stainless steel, 0.365-inch walled, pipe segments that are welded to bolting flanges. The licensee proposed using Table IWB-3514-2 since it applies to stainless steel pipe welds. In Table IWB-3514-2, the allowable flaw length for inservice examination using a surface method for a component having a thickness of 0.312 inch or less is 0.2 inches. For a 1.0-inch thick component, the allowable flaw length is 0.25 inches. For the pump casing with a wall thickness of 0.365 inches, the flaw length is interpolated from the above data to be 0.2039 inches. However, Footnote 1 in Table IWB-3514-2 specifies that the method of IWA-3200(c) be applied when rounding significant digits to the interpolation. Thus, the interpolated flaw length of 0.2039 inches is rounded down to 0.2 inches. For a given component thickness, the shorter the allowable flaw length, the more conservative the criterion. The licensee will be using a more conservative allowable flaw length; therefore, the NRC staff considers that the licensee's proposed alternative provides an acceptable level of quality and safety.

4.0 CONCLUSION

Based on the above review, the NRC staff concluded that the proposed alternative to use Table IWB-3514-2 acceptance criteria for surface examinations performed on the subject low head SI pump casings and RS pump casings will provide an acceptable level of safety and quality. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the NRC staff authorizes the use of the proposed alternative SR-38 at Surry, Unit 2 for the third 10-year ISI, which is scheduled to end May 9, 2005.

All other requirements of the ASME Code requirements for which relief has not been specifically requested remain applicable, including third party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: D. Naujock

Date: May 12, 2005

Surry Power Station, Units 1 & 2

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