March 10, 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: NORTH ANNA POWER STATION, UNIT 1 - AMERICAN SOCIETY OF MECHANICAL ENGINEERS INSERVICE INSPECTION PROGRAM THIRD 10-YEAR INTERVAL REQUEST FOR RELIEFS NDE-1, REVISION 1 AND NDE-2, REVISION 1 (TAC NO. MC3317)

Dear Mr. Christian:

By letter dated May 27, 2004, Virginia Electric and Power Company (the licensee) submitted Relief Requests NDE-1, Revision 1 and NDE-2, Revision 1 for the third 10-year Inservice Inspection (ISI) Interval at North Anna Power Station, Unit 1. In these reliefs, the licensee requested to use the 1995 Edition through the 1996 Addenda of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, Paragraph IWC-1223 instead of the 1989 Edition of the ASME Code, Section XI.

The Nuclear Regulatory Commission (NRC) staff has completed its review of Relief Requests NDE-1, Revision 1 and NDE-2, Revision 1 and our evaluations are contained in the enclosed Safety Evaluation. The NRC staff concludes that the use of Paragraph IWC-1223 from the 1995 Edition with the 1996 Addenda of the ASME Code, Section XI may be used in place of the Subarticle IWC-1230 from the 1989 Edition of the ASME Code for the subject welds that are encased or embedded in concrete. Therefore, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g)(4)(iv), the NRC staff approves Relief Requests NDE-1, Revision 1 and NDE-2, Revision 1 for the third 10-year ISI interval at North Anna, Unit 1.

Sincerely,

/RA/

John A. Nakoski, Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-338

Enclosure: As stated

cc w/encl: See next page

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The Nuclear Regulatory Commission (NRC) staff has completed its review of Relief Requests NDE-1, Revision 1 and NDE-2, Revision 1 and our evaluations are contained in the enclosed Safety Evaluation. The NRC staff concludes that the use of Paragraph IWC-1223 from the 1995 Edition with the 1996 Addenda of the ASME Code, Section XI may be used in place of the Subarticle IWC-1230 from the 1989 Edition of the ASME Code for the subject welds that are encased or embedded in concrete. Therefore, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g)(4)(iv), the NRC staff approves Relief Requests NDE-1, Revision 1 and NDE-2, Revision 1 for the third 10-year ISI interval at North Anna, Unit 1.

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John A. Nakoski, Chief, Section 1
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM

NORTH ANNA POWER STATION, UNIT 1

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-338

1.0 INTRODUCTION

By letter dated May 27, 2004, Virginia Electric and Power Company (the licensee) submitted Relief Requests NDE-1, Revision 1 and NDE-2, Revision 1 for the third 10-year Inservice Inspection (ISI) Interval at North Anna Power Station, Unit 1. In these reliefs, the licensee requested to use the 1995 Edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI with the 1996 Addenda, Paragraph IWC-1223, instead of the required 1989 Edition of the ASME Code, Section XI.

For the third 10-year ISI interval, the NRC staff had approved the licensee's requested reliefs for the pump casing welds to the Outside Recirculation Spray Pumps and Low-Head Safety Injection Pumps at North Anna, Unit 1. However, the licensee discovered that the welds identified in these relief requests were not in fact the pump casing welds. As such, the licensee has submitted Revision 1 to NDE-1 and NDE-2 for NRC staff review.

2.0 REGULATORY REQUIREMENTS

The ISI of the ASME Code Class 1, Class 2, and Class 3 components is to 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 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) on the date 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 third 10-year ISI at North Anna, Unit 1 is the 1989 Edition of Section XI of the ASME Code, with no addenda. 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.

As stated in 10 CFR 50.55a(g)(4)(iv), inservice examination of components may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in 10 CFR 50.55a(b) and subject to Commission approval. Portions of editions or addenda may be used provided that all related requirements of the respective editions or addenda are met.

3.0 SAFETY EVALUATION - Relief Request NDE-1, Revision 1

3.1 Identification of Components

The components affected by this request for relief are the Outside Recirculation Spray Pumps.

Component	Drawing Number	Weld Number
1-RS-P-2A	11715-WMKS-RS-P-2A	Pump casing welds*
1-RS-P-2B	11715-WMKS-RS-P-2B	Pump casing welds*

* 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 the ASME Code, Section XI, Table IWC-2500-1, Examination Category C-G, Item Number C6.10, “Pump Casing Welds,” requires a surface examination on 100 percent of the welds in all components in each piping run examined under Examination Category C-F. Footnote (1) of Table IWC-2500-1 states, “In case of multiple pumps and valves of similar design, size, function, and service in a system, the examination of only one pump and one valve among each group of multiple pumps and valves is required.” In addition, Footnote 2 of this table states, “The examination may be performed from either the inside or outside surface of the component.”

3.3 Proposed Alternate Examination

The licensee requested approval to use the 1995 Edition with the 1996 Addenda of the ASME Code, Section XI, Paragraph IWC-1223 in order to perform inspections of Examination Category C-G, Item Number C6.10, pump casting welds on the Outside Recirculation Spray pumps. When the licensee removes a pump for maintenance activities, it intends to perform the ASME Code-required surface examination on 100 percent of the accessible welds in accordance with Table IWC 2500-1, Examination Category C-G, Item Number C6.10. In addition, the licensee intends to comply with the related requirements of the 1995 Edition with the 1996 Addenda of the ASME Code regarding the Examination Category C-G, Item Number C6.10.

3.4 Licensee's Basis for Relief

In the 1995 Edition of the ASME Section XI Code, paragraph IWC-1223 in section IWC-1220, "Components Exempt From Examination" was changed to read "Welds or portions of welds that are inaccessible due to being encased in concrete, buried underground, located inside a penetration, or encapsulated by guard pipe" in the definition of "Inaccessible Welds."

The pumps in question are vertical, two-stage, centrifugal pumps with an extended shaft and casing that allows suction from the containment sump. This pump casing extends subgrade for more than 40 feet. The pump column consists of bolted flange sections of pipe. Circumferential welds exist at the pipe to flange locations. The pump is suspended in a suction can container, which renders the welds inaccessible while the pump is in operational standby. Only when the pump is pulled out of the suction can do the pressure retaining casing welds become accessible.

The 1995-96 edition of the ASME Section XI Code requires that a surface examination is performed when the pump is removed from the suction can for maintenance; thus, allowing accessibility to the welds. The 1995-96 edition of the code does not require disassembly of the pump for the sole purpose of performing the code specified surface examination. To remove the pumps for North Anna Unit 1 only to perform the Section XI examination is inconsistent with the requirements of the later code edition which governs Unit 2 and would be considered an unnecessary burden.

3.5 NRC Staff Evaluation

As stated in 10 CFR 50.55a(g)(4)(iv), inservice examination of components and system pressure test may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in 10 CFR 50.55a(b) and subject to Commission approval. Portions of editions or addenda may be used provided that all related requirements of the respective editions or addenda are met.

The ISI Code of record for the subject welds is the 1989 Edition of the ASME Code, Section XI, Examination Category C-G, Item Number C6.10 and Subarticle IWC-1220, "Components Exempt for Examination." The 1989 Edition of the ASME Code, Subarticles IWC-1220 and IWC-1230, "Concrete Encased Components," do not address the inaccessibility of the subject pumps. By letter dated May 27, 2004, the licensee stated that these pumps are vertical two-stage centrifugal pumps with an extended shaft and casing that allow suction from the containment sump. This pump casing extends more than 40 feet. The pump column consists of bolted flange sections of pipe, and circumferential welds exist at the pipe-to-flange locations. The licensee stated that the pump is suspended in a suction can container that renders the welds inaccessible while the pump is in operational standby. The subject welds are part of the associated pump casings that are embedded within the concrete building structure. This concrete embedment makes the welds inaccessible from the outside. In order to satisfy the 1989 Edition of the ASME Code examination requirement, the licensee stated that the pump would have to be pulled out of the suction can in order for the pressure-retaining casing welds to become accessible.

The 1995 Edition with the 1996 Addenda of the ASME Section XI Code recognized the difficulties associated with the removal of the components with parts that are subgrade and expanded Subarticle IWC-1220 to include inaccessible welds in Paragraph IWC-1223. The 1995 Edition with the 1996 Addenda of the ASME Code Section XI requires that a surface examination be performed when the pump is removed from the suction can for maintenance, thus allowing accessibility to the welds.

Before implementing Paragraph IWC-1223, the licensee must determine that all related requirements are met. In its letter dated May 27, 2004, the licensee stated that all related requirements of the 1995 Edition with the 1996 Addenda of the ASME Code, Section XI will be met without specifically identifying any related requirements. Therefore, the NRC staff only considered ASME Code changes to the 1989 Edition, Subarticles IWC-1220 and IWC-1230. Subarticle IWC-1230 is not in the 1995 Edition with the 1996 Addenda of the ASME Code. Instead, Subarticle IWC-1230 requirements were included in Paragraph IWC-1223 in the 1995 Edition with the 1996 Addenda of the ASME Code.

The criterion in Paragraph IWC-1223 identifies inaccessible welds as: "Welds or portions of welds that are inaccessible due to being encased in concrete, buried underground, located inside a penetration, or encapsulated by guard pipe." The criterion in Paragraph IWC-1223 applies to the subject welds because the pump casing extends subgrade for more than 40 feet and these welds are enclosed in a concrete well that would necessitate disassembly in order to perform the required examination. The NRC staff has referenced the 1995 Edition with the 1996 Addenda of the ASME Code in the CFR without taking exception to Paragraph IWC-1223. Therefore, the use of Paragraph IWC-1223, 1995 Edition with the 1996 Addenda of the ASME Code, Section XI for the subject welds may be used as a stand-alone requirement for ISI examinations when used in lieu of Subarticle IWC-1230, 1989 Edition of the ASME Code, Section XI.

3.6 Conclusion

Based on the above review, the NRC staff concludes that the use of Paragraph IWC-1223 from the 1995 Edition with the 1996 Addenda of the ASME Code may be used in place of the Subarticle IWC-1230 from the 1989 Edition of the ASME Code for the subject welds that are encased or embedded in concrete. Therefore, pursuant to 10 CFR 50.55a(g)(4)(iv), the NRC staff authorizes the use of the 1995 Edition with the 1996 Addenda of the ASME Code, Section XI, Paragraph IWC-1223 for the subject welds.

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.

4.0 SAFETY EVALUATION - Relief Request NDE-2, Revision 1

4.1 Identification of Components

The components affected by this relief request are the Low-Head Safety Injection Pumps.

Component	Drawing Number	Weld Number
1-SI-P-1A	11715-WMKS-SI-P-1A	Pump casing welds*
1-SI-P-1B	11715-WMKS-SI-P-1B	Pump casing welds*

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

4.2 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," requires a surface examination on 100 percent of the welds in all components in each piping run examined under Examination Category C-F. Footnote (1) of Table IWC-2500-1 states, "In case of multiple pumps and valves of similar design, size, function, and service in a system, the examination of only one pump and one valve among each group of multiple pumps and valves is required." In addition, Footnote 2 of this table states, "The examination may be performed from either the inside or outside surface of the component."

4.3 Proposed Alternate Examination

The licensee requested approval to use Paragraph IWC-1223 of the 1995 Edition with the 1996 Addenda of Section XI of the ASME Code to perform inspections of Examination Category C-G, Item Number C6.10, pump casing welds on the Low-Head Safety Injection Pumps. When the licensee removes a pump for maintenance activities, it intends to perform the ASME Code-required surface examination on 100 percent of the accessible welds in accordance with Table IWC-2500-1, Examination Category C-G, Item Number C6.10. In addition, the licensee intends to comply with the related requirements of the 1995 Edition with the 1996 Addenda of the ASME Code regarding the Examination Category C-G, Item Number C6.10.

4.4 Licensee's Basis for Relief

In the 1995 Edition of the ASME Section XI Code, paragraph IWC-1223 in section IWC-1220, "Components Exempt From Examination" was changed to read "Welds or portions of welds that are inaccessible due to being encased in concrete, buried underground, located inside a penetration, or encapsulated by guard pipe" in the definition of "Inaccessible Welds."

The pumps in question are vertical, two-stage, centrifugal pumps with an extended shaft and casing that allows suction from the containment sump. This pump casing extends subgrade for more than 40 feet. The pump column consists of bolted flange sections of pipe. Circumferential welds exist at the pipe to flange locations. The pump is suspended in a suction can container, which renders the welds inaccessible while the pump is in operational standby. Only when the pump is removed from the suction can do the pressure retaining casing welds become accessible.

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4.5 NRC Staff Evaluation

As stated in 10 CFR 50.55a(g)(4)(iv), inservice examination of components and system pressure tests may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in 10 CFR 50.55a(b) and subject to Commission approval. Portions of editions or addenda may be used provided that all related requirements of the respective editions or addenda are met.

The ISI Code of record for the subject welds is the 1989 Edition of the ASME Code, Section XI, Examination Category C-G, Item Number C6.10 and Subarticle IWC-1220. The 1989 Edition of the ASME Code, Subarticles IWC-1220 and IWC-1230 do not address the inaccessibility of the subject pumps. By letter dated May 27, 2004, the licensee stated that these pumps are vertical, two-stage, centrifugal pumps with an extended shaft and casing that allows suction from the containment sump. This pump casing extends subgrade for more than 40 feet. The pump column consists of bolted flange sections of pipe, and circumferential welds exist at the pipe flange locations. The licensee stated that the pump is suspended in a suction can container that renders the welds inaccessible while the pump is in operational standby. The subject welds are part of the associated pump casings that are embedded within the concrete building structure. This concrete embedment makes the welds inaccessible from the outside. To satisfy the 1989 Edition of the ASME Code examination requirement, the licensee stated that the pump would have to be pulled out of the suction can in order for the pressure-retaining casing welds to become accessible.

The 1995 Edition with the 1996 Addenda of the ASME Section XI Code recognized the difficulties associated with the removal of the components with parts that are subgrade and expanded Subarticle IWC-1220 to include inaccessible welds in Paragraph IWC-1223. The 1995 Edition with the 1996 Addenda of the ASME Code Section XI requires that a surface examination be performed when the pump is removed from the suction can for maintenance, thus allowing accessibility to the welds.

To use Paragraph IWC-1223, the licensee must determine that all related requirements are met. In its letter dated May 27, 2004, the licensee stated that all related requirements of the 1995 Edition with 1996 Addenda of the ASME Code, Section XI will be met without specifically identifying any related requirements. Therefore, the staff only considered ASME Code changes to the 1989 Edition, Subarticles IWC-1220 and IWC-1230. Subarticle IWC-1230 is not in the 1995 Edition with 1996 Addenda of the ASME Code. Instead, IWC-1230 requirements were included in Paragraph IWC-1223 in the 1995 Edition with 1996 Addenda of the ASME Code.

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5.5 Conclusion

Based on the above review, the NRC staff concludes that the use of Paragraph IWC-1223 from the 1995 Edition with 1996 Addenda of the ASME Code, Section XI may be used in place of the Subarticle IWC-1230 from the 1989 Edition of the ASME Code, Section XI for the subject welds that are encased or embedded in concrete. Therefore, pursuant to 10 CFR 50.55a(g)(4)(iv), the NRC staff authorizes the use of the 1995 Edition with 1996 Addenda of ASME Code, Section XI, Paragraph IWC-1223 for the subject welds.

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: E. Reichelt

Date: March 10th, 2005

North Anna Power Station, Units 1 & 2

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