

June 10, 2002

Mr. David A. Christian  
Senior Vice President - Nuclear  
Virginia Electric and Power Company  
Innsbrook Technical Center  
5000 Dominion Blvd.  
Glen Allen, Virginia 23060

SUBJECT: NORTH ANNA POWER STATION UNIT 2 RE: ASME SECTION XI INSERVICE  
INSPECTION (ISI) PROGRAM RELIEF REQUEST SPT-001 (TAC NO. MB2280)

Dear Mr. Christian:

This letter grants the relief you requested in Relief Request SPT-001 for the North Anna Power Station, Unit 2. By letter dated June 13, 2001, as supplemented by letters dated April 4 and April 30, 2002, Virginia Electric and Power Company requested relief from certain ISI requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI.

Our evaluation and conclusion are contained in the enclosed Safety Evaluation. The staff has concluded that complying with the Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety and reasonable assurance of system leakage integrity is provided by the proposed alternative. Therefore, the proposed alternative is authorized pursuant to Title 10 of the *Code of Federal Regulations* Section 50.55a(g)(3)(ii) for the third 10-year ISI interval.

TAC No. MB2280 will remain open and will be closed after disposition of all associated relief requests submitted by your June 13, 2001, letter.

Sincerely,

*/RA/*

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

Docket No. 50-339

Enclosure: As stated

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST SPT-001

THIRD 10-YEAR INSERVICE INSPECTION INTERVAL

NORTH ANNA POWER STATION, UNIT 2

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-339

1.0 INTRODUCTION

By letter dated June 13, 2001, as supplemented by letters dated April 4 and April 30, 2002, Virginia Electric and Power Company (the licensee) requested relief from certain inservice inspection (ISI) requirements of the 1995 Edition of the American Society of Mechanical Engineers (ASME) Code, Section XI including the 1996 Addenda, for North Anna Power Station, Unit 2. Relief Request SPT-001 provides an alternative to performing the VT-2 visual examination within the Code-allowed maximum permissible distance stated under Table IWA-2210-1 during the system leakage test of Class 1 components.

2.0 BACKGROUND

The ISI of the 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 Boiler and Pressure Vessel Code (Code) and applicable 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). Paragraph 10 CFR 50.55a(a)(3) of 10 CFR Part 50 states, in part, that alternatives to the requirements of paragraph (g) may be used, when authorized by the Director of the Office of Nuclear Reactor Regulation, 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, to the extent practical within the limitations of design, geometry, and materials of construction of the components. Inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals must 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 in 10 CFR 50.55a(g)(4).

Enclosure

The applicable edition of Section XI of the ASME Code for the North Anna, Unit 2, third 10-year ISI interval is the 1995 Edition with addenda up to and including the 1996 Addenda.

### 3.0 EVALUATION OF RELIEF REQUEST SPT-001

#### 3.1 IDENTIFICATION OF COMPONENTS:

Class 1 pressure-retaining components.

#### 3.2 CODE REQUIREMENTS:

The 1995 Edition of ASME Code, Section XI, with addenda up to and including the 1996 Addenda requires the following:

- (1) Table IWB-2500-1, Examination Category B-P requires that all Class 1 pressure-retaining components receive a system leakage test each refueling outage. Note (2) of the table requires that the system leakage test (IWB-5220) be conducted prior to plant startup following each reactor refueling outage.
- (2) IWB-5220(a) requires that the system leakage test be conducted at a pressure not less than nominal operating pressure associated with normal system operation.
- (3) IWA-2212(b) by reference to Table IWA-2210-1 requires that the maximum examination distance (as allowed by Table IWA-2210-1) be applied to the distance from the eye to the surfaces being examined. The maximum distance allowed by Table IWA-2210-1 is 6 feet.

#### 3.3 CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED:

Relief is requested from performing the VT-2 visual examination from the Code-allowed maximum distance of 6 feet stated under Table IWA-2210-1 in inaccessible areas.

#### 3.4 LICENSEE'S BASIS FOR RELIEF:

[North Anna, Unit 2] is designed with a subatmospheric containment. The Class 1 system leakage test is performed during Mode 3. The plant's Technical Specifications require the subatmospheric conditions to exist when the plant is in Mode 3. The subatmospheric requirements create conditions that require the use of self-contained breathing apparatus (SCBA) with full-face respirators by anyone required to be in the containment.

The VT-2 visual examination procedure has been demonstrated using no visual aids to a distance of nine feet nine inches using a visual card that complies with the 1995 Edition, 1996 Addenda of the ASME Code. We have evaluated additional remote monitoring equipment and determined that they are not practical for inspectors wearing full-face respirators and SCBA. The use of binoculars or a telescope is not feasible due to not being able to place the eyepiece directly to the inspector's eye.

In order to perform direct examination within the maximum distance requirements of IWA-2212(b) it will be necessary to leave scaffolding in place to be able to access, within six feet, all surfaces that require examination. The use of scaffolding would only be allowed in containment during Mode 3 if it has been designed and erected to withstand the design seismic event without causing damage to safety related equipment. The design of the scaffolding, installation at the end of one outage, and then disassembly at the beginning of the next refueling outage only to start the installation process over at the end of that outage is impractical. To leave the scaffolding in place until the Class 1 system leakage test is completed and then remove it before proceeding with startup is also impractical. Because of the subatmospheric containment, it would be necessary to either bring the unit back to Cold Shutdown, Mode 5 or attempt to remove the scaffolding using self-contained breathing apparatus, which would be an unreasonable burden for the personnel involved.

ASME Code Interpretation XI-1-98-06 is consistent with this relief request. XI-1-98-06 states:

Subject: IWA-2210, IWA-2212, and IWA-5240; VT-2 Visual Examination Requirements (1992 Edition Through the 1995 Edition with the 1997 Addenda), Date Issued: January 16, 1998, File: IN97-034

Question (1): Is it a requirement of IWA-2212(b) and Table IWA-2210-1 that all VT-2 examinations be conducted by direct examination? Reply (1): No.

Question (2): When items subject to VT-2 examinations are inaccessible for direct examination because the distance requirement is exceeded, does IWA-2210 require a remote examination be performed? Reply (2): No. Alternatives are described in IWA-5241 and IWA-5242.

Question (3): When performing a VT-2 visual examination on surrounding areas (including floor areas or equipment surfaces) per IWA-5241(b) or IWA-5242(b), do the requirements of Table IWA-2210-1 apply to the surrounding area rather than the actual component? Reply (3): Yes.

### 3.5 LICENSEE'S ALTERNATE PROVISIONS:

[North Anna, Unit 2] requests approval in accordance with 10 CFR 50.55a(a)(3)(ii) to perform the Class 1 system leakage test without the erection of temporary scaffolding to satisfy the examination requirements of Table-2210-1. As an alternative, existing permanent structures, platforms or ladders will be used to the extent practical to gain access to the surface to be examined. The required visual examination will be performed from the access afforded by these structures, ladders or platforms to the extent practical. Any examination surface that cannot be accessed per the requirements of Table-2210-1 or to the maximum qualified distance will be considered "inaccessible". As such the surrounding area (including floor areas or equipment surfaces located underneath the inaccessible components) will be examined for leakage as required by IWA-5241(b) or IWA-5242(b).

#### 4.0 STAFF EVALUATION

The 1995 Edition of ASME Code, Section XI, Table IWA-2210-1, with addenda up to and including the 1996 Addenda requires that the maximum direct examination distance be 6 feet during VT-2 visual examination. This refers to the distance from the eye to the surfaces being examined. The Code further states that for insulated and non-insulated components whose external surfaces are inaccessible for direct VT-2 visual examination during system pressure test, only the examination of the surrounding area (including floor areas or equipment surfaces located underneath the components) for evidence of leakage shall be required. However, the maximum direct examination distance of 6 feet has to be maintained to meet the Code requirement. The staff notes that the Class 1 system leakage test is performed during Mode 3 (Hot Standby) with the containment being in subatmospheric condition. This environment requires the use of SCBA with full-face respirator for personnel entry into the containment. The licensee has stated that in order to perform direct examination within the maximum permissible distance within the containment, it will be necessary either to build permanent scaffolding inside the containment that is specially designed to withstand applicable seismic loads or install temporary scaffolding. The temporary scaffolding would have to be installed during an outage then dismantled following the examination with a mode change initiated (hot shutdown or cold shutdown) to allow for the removal of the scaffolding from the containment prior to startup of the unit. The use of the permanent or temporary scaffolding would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

As an alternative, the licensee has demonstrated a VT-2 visual examination procedure to perform direct examination from a maximum distance of 9 feet 9 inches in lieu of the 6-foot requirement specified in Table IWA-2210-1. The licensee has stated that remote examination using optical aids such as binoculars or telescopes is not feasible with SCBA and a full-face respirator. Nonetheless, the required visual examination can be performed from access obtained from existing structures, ladders, or platforms with a greater maximum distance of 9 feet 9 inches. In the event of any examination surface deemed to be inaccessible, the surrounding area (including floor areas or equipment surfaces located underneath the inaccessible component) will be examined for leakage as required by IWA-5241(b) or IWA-5242(b). The staff has determined that the proposed alternative examination would provide reasonable assurance of system leakage integrity.

#### 5.0 CONCLUSION

The staff concludes that compliance with the Code requirements regarding the maximum direct examination distance for VT-2 visual examination during system leakage test of Class 1 components, in a subatmospheric containment that requires the use of SCBA with a full-face respirator, would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The licensee's proposed alternative of a direct visual examination from a greater distance, or examination of surrounding area (including floor areas or equipment surfaces) in case of inaccessibility, provides reasonable assurance of system leakage integrity. Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the third 10-year ISI interval for North Anna Unit 2.

Principal Contributor: P. Patnaik

Date: June 10, 2002