

April 27, 2000

Mr. J. P. O'Hanlon  
Senior Vice President - Nuclear  
Virginia Electric and Power Company  
5000 Dominion Blvd.  
Glen Allen, Virginia 23060

SUBJECT: NORTH ANNA POWER STATION, UNIT 1 - RELIEF REQUEST NDE-15 FOR  
THE THIRD 10-YEAR INSERVICE INSPECTION (ISI) INTERVAL  
(TAC NO. MA8567)

Dear Mr. O'Hanlon:

The purpose of this letter is to grant the relief you requested for North Anna Power Station, Unit 1, in Relief Request (RR) NDE-15 .

By letters dated April 8, 1999, and March 28 and April 6, 2000, Virginia Electric and Power Company submitted two requests for relief, NDE-9 and NDE-15, from the ASME Code, Section XI, Class 3 requirements for the third 10-year ISI interval at North Anna Power Station, Unit 1. We have separated the review of the two relief requests because the review of NDE-9 requires more time, and your current relief will expire soon. We will provide our review of NDE-9 under separate cover. In NDE-15 you requested relief from IWA-5250(a)(3) to perform Code repairs to identified welds and piping in the Service Water System (SWS) within 14 days, or as an alternative, to apply Code Case N-513 except that flaws would be replaced within 18 months from time of discovery to coincide with an appropriate SWS header outage. This relief request is only applicable to SWS piping that is accessible to flaw characterization (i.e., SWS piping not addressed by RR NDE-9 as discussed in the enclosed Safety Evaluation).

The staff evaluated RR NDE-15 and concludes that certain Code requirements cannot be satisfied without undue burden for North Anna Power Station, Unit 1. The staff concludes that, for RR NDE-15, Code repairs or completion of evaluations are impractical within the timeframe and to the extent required by the Code. Your proposed alternatives provide reasonable

assurance of structural integrity of the subject components. Relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

This concludes our efforts on this issue; therefore, we are closing TAC No. MA8567.

Sincerely,

*/RA/*

Richard L. Emch, Jr., 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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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE THIRD INSERVICE INSPECTION PROGRAM

RELIEF REQUEST NDE-15

NORTH ANNA POWER STATION UNIT 1

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NUMBER 50-338

1.0 INTRODUCTION

By letters dated April 8, 1999, March 28 and April 6, 2000, Virginia Electric and Power Company (the licensee) submitted two requests for relief, NDE-9 and NDE-15, from the American Society of Mechanical Engineers (ASME) Code Section XI Corrective Action and Repair\Replacement requirements. The licensee has requested that we separate the review of the two relief requests since the review of NDE-9 will require more time and the licensee's current relief is expiring. The staff has evaluated the licensee's request for Relief NDE-15 pursuant to the provisions of 10 CFR 50.55a(g)(6)(i).

2.0 BACKGROUND

Inservice inspection of the ASME Code Class 1, 2 and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel (B&PV) Code and applicable addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). 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 the preservice 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) 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 North Anna Power Station Unit 1 for the third 10-year interval is the 1989 Edition of Section XI of the ASME B&PV Code.

Pursuant to 10 CFR 50.55a(g)(5)(iii), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is impractical for its facility, information shall be submitted to the Commission in support of that determination and a request made for relief from the ASME Code requirement. After evaluation of the determination, pursuant to 10 CFR 50.55a(g)(6)(i), the Commission may grant relief and may impose requirements that are determined to be authorized by law, will not endanger life, property, or the common defense and security, and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed.

### 3.0 EVALUATION

#### The components for which relief is requested:

Pursuant to the licensee's request in its March 28, 2000 submittal, NDE-15 is only applicable to Service Water System (SWS) piping that is accessible for flaw characterization (i.e., SWS piping not addressed by Relief Request (RR) NDE-9). The licensee identifies the components as stated below:

<u>Identification of Components</u>	<u>Drawing #</u>
Service Water System	11715-CBB-40D-3 SHT. 1
	11715-CBM-78A-3 SHTS. 1 and 4
	11715-CBM-78B-3 SHT. 1
	11715-CBM-78C-3 SHT. 2
	11715-CBM-78G-3 SHTS. 1 and 2

Pressure retaining piping, fittings, and associated welds on moderate energy stainless steel piping of the Service Water System (SW). This piping system provides cooling water from the Service Water Reservoir to safety related equipment and returns the Service Water back to the return headers. Normal operating pressure is 100 PSIG. The design pressure is 150 PSIG and the design temperature is 150°F. This is an ASME, Section XI, Class 3 system.

The licensee provided an identification of each piping segment within the scope of this request for relief as Attachment 1 to their submittal. The piping segments are identified by their line number designation, which is a unique identifier.

#### Applicable Code requirement from which relief is requested (as stated):

The Service Water System has experienced through-wall leakage caused by Microbiological Influenced Corrosion (MIC). Chemical treatment of the Service Water System has not been effective in eliminating MIC. The Service Water System is being monitored for MIC.

Identification of additional through-wall leakage is anticipated. Through-wall leakage must be located and evaluated in accordance with the requirements of IWA-5250 of the 1989 Edition for Unit 1. The specific Code requirement for which relief is requested is IWA-5250(a)(3).

"IWA-5250 Corrective Measures

(b)[a] The source of leakage detected during the conduct of a system pressure test shall be located and evaluated by the Owner for corrective measures as follows:

- (3) repairs or replacements of components shall be performed in accordance with IWA-4000 or IWA-7000, respectively."

The licensee stated:

Articles IWA-4000 and IWD-4000 of ASME Section XI Code repair requirements would require removal of the flaw and subsequent weld repair.

Alternatively, the use of ASME Code Case, N-513, "Evaluation Criteria for Temporary Acceptance of Flaws in Class 3 Piping," is authorized except for certain restrictions by 10 CFR 50.55a rulemaking. However, the Code Case requires a Code repair or replacement not exceeding the time to the next scheduled outage. Additionally, the Code case provides no timeframe for completion of the evaluation of the flaw.

Licensee's Basis for Requesting Relief (as stated)

Code repairs for through-wall leaks require the line to be isolated and drained. Taking a train of service water out of service in some instances is a major evolution and requires entering a Technical Specification action statement. The Service Water System is common to both Units. As long as one Unit is in Mode 1, 2, 3, or 4 both trains of service water must be operable. If both Units are in Mode 5 or 6, then one train of service water must be operable.

Historically, the timeframe from detection of the flaw to completion of the flaw evaluation process for the components in the affected system has been within 14 days of detection otherwise the component has been repaired or replaced. The timeframe for this process will be continued and is appropriate for the damage mechanism as approved previously by the NRC for NDE-32 (2nd interval corresponding relief request) in letter dated December 22, 1998 (TAC NOS. MA1222 and MA1223).

Licensee's Proposed Alternative Examination (as stated)

Code repairs in accordance with IWA-5250(a)(3) will be performed to the above identified welds and piping in the Service Water System within 14 days; or as an alternative, the provisions of ASME Code Case N-513 will apply except as modified below:

Flaws will be replaced within 18 months from the time of discovery to coincide with an appropriate service water header outage.

## Staff Evaluation

The staff has evaluated the licensee's basis for requesting relief. NDE-15 is only applicable to SWS piping that is accessible for flaw characterization (i.e., SWS piping not addressed by RR NDE-9). Additional through-wall leakage due to MIC is expected. Code repairs for through-wall leaks require the line to be isolated and drained. In some instances taking a line out of service can cause significant operational impact because the SWS is shared with both units, and both trains of SWS are needed. Continuing to operate with one train out of service would be less safe than leaving both trains in service provided structural integrity is assured. Because it is sometimes very difficult to make a Code repair in the time that a train is permitted by Technical Specifications to be inoperable, the plant would have to be shut down to make the repair. Imposition of this requirement would create a considerable burden on the licensee since the timeframe from detection of the flaw to completion of the flaw evaluation process or repair/replacement for the components in the affected system has been experienced to be about 14 days from the detection of the flaw. The timeframe of 14 days is reasonable to complete the above-stated actions since the system is moderate energy and the design conditions are conservative when compared with normal operating conditions.

If the component is examined volumetrically to determine the extent of degradation, flaw sizes are determined using ASME proximity rules, and flaw growth is monitored by inspection and the results of the analysis demonstrate that the structural integrity criteria in Code Case N-513 are met, then acceptable margins of safety will be maintained for the degraded component for the requested period (up to 18 months) of operation. Alternately, repair or replacement of the component to ASME Section XI Repair/Replacement requirements will also demonstrate that acceptable margins will be maintained for the period of operation considered in the ASME Section XI, Repair/Replacement Plan.

The above-described actions will provide reasonable assurance of the continued structural integrity for the affected components. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for RR NDE-15.

## 4.0 CONCLUSION

The staff evaluated the licensee's submittal and concluded that certain Code requirements cannot be satisfied without undue burden at North Anna Power Station Unit 1. The staff concludes that for RR NDE-15, Code repairs or completion of evaluations are impractical within the timeframe and to the extent required by the Code, and the licensee's proposed alternatives provide reasonable assurance of structural integrity of the affected components. Relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for RR NDE-15.

Principal Contributor: R. A. Hermann

Date: April 27, 2000