November 7, 2001

Mr. David A. Christian
Senior 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 2 RE: ASME SECTION XI INSERVICE INSPECTION (ISI) PROGRAM RELIEF REQUEST NDE-009 (TAC NO. MB2223)

Dear Mr. Christian:

By letter dated June 13, 2001, as supplemented by letter dated September 20, 2001 (for Relief Request NDE-009), Virginia Electric and Power Company requested relief from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI Article IWA-5250(a)(3). This letter grants the relief you requested by Relief Request NDE-009 for North Anna Power Station, Unit 2.

Our evaluation and conclusion are contained in the enclosed Safety Evaluation. The staff has concluded that the requirements of Section XI of the ASME Code are impractical for the service water piping, and reasonable assurance of structural integrity has been provided. The relief you requested is authorized pursuant to Title 10 of the *Code of Federal Regulations* Section 50.55a(g)(6)(i) for the third 10-year ISI interval.

TAC No. MB2223 will remain open and will be closed after disposition of all associated relief requests submitted by your June 13, 2001, letter.

Sincerely,

***/RA/***

Richard J. Laufer, Acting 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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Mr. David A. Christian
Virginia Electric and Power Company

North Anna Power Station
Unit 2

cc:
Mr. C. Lee Lintecum
County Administrator
Louisa County
P.O. Box 160
Louisa, Virginia 23093

Mr. David A. Heacock
Site Vice President
North Anna Power Station
P.O. Box 402
Mineral, Virginia 23117-0402

Mr. Donald P. Irwin, Esquire
Hunton and Williams
Riverfront Plaza, East Tower
951 E. Byrd Street
Richmond, Virginia 23219

Mr. Richard H. Blount, II
Site Vice President
Surry Power Station
Virginia Electric and Power Company
5570 Hog Island Road
Surry, Virginia 23883-0315

Dr. W. T. Lough
Virginia State Corporation
Commission
Division of Energy Regulation
P.O. Box 1197
Richmond, Virginia 23209

Robert B. Strobe, M.D., M.P.H.
State Health Commissioner
Office of the Commissioner
Virginia Department of Health
P. O. Box 2448
Richmond, Virginia 23218

Old Dominion Electric Cooperative
4201 Dominion Blvd.
Glen Allen, Virginia 23060

Mr. William R. Matthews
Vice President - Nuclear Operations
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, Virginia 23060-6711

Mr. Stephen P. Sarver, Director
Nuclear Licensing & Operations Support
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, Virginia 23060-6711

Office of the Attorney General
Commonwealth of Virginia
900 East Main Street
Richmond, Virginia 23219

Senior Resident Inspector
North Anna Power Station
U.S. Nuclear Regulatory Commission
1024 Haley Drive
Mineral, Virginia 23117

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR RELIEF NDE-009

THIRD 10-YEAR INTERVAL INSERVICE INSPECTION

NORTH ANNA POWER STATION, UNIT 2

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-339

## 1.0 INTRODUCTION

The inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components is to be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel (B&PV) 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).

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) 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 2, third 10-year ISI interval is the 1995 Edition through 1996 Addenda of the ASME B&PV Code.

Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is not practical 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 alternative 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.

By letter dated June 13, 2001, as supplemented by letter dated September 20, 2001, Virginia Electric and Power Company (the licensee) submitted a request for relief from the ASME Code Section XI Corrective Action and Repair\Replacement requirements for North Anna Power Station, Unit 2 (NAPS 2). Alternatively, the licensee requested that we approve their use of Code Case N-513 to perform flaw evaluation for temporary acceptance of flaws (without repair or replacement) that are found in piping, fittings, and associated butt welds of moderate energy stainless steel piping of the service water system for the NAPS 2 third ISI interval starting December 14, 2001.

2.0 EVALUATION

2.1 LICENSEE'S RELIEF REQUEST NDE-009

The components for which relief is requested:

| | Drawing # |
|---|---|
| Service Water System | 11715-CBB-040D-3 SHT. 2<br>11715-CBM-078A-3 SHTS. 1 and 4<br>11715-CBM-078B-3 SHT. 3<br>11715-CBM-078C-3 SHT. 2<br>11715-CBM-078G-3 SHT. 2 |

This request includes pressure-retaining piping, fittings, and associated butt welds that are accessible for flaw characterization on the moderate energy stainless steel piping of the Service Water [SW] System.... These piping systems provide cooling water from the SW Reservoir to safety-related equipment and [return] the SW 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.

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

Applicable Code requirement from which relief is requested:

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

Identification of additional through-wall leakage is anticipated. Through-wall leakage must be located and corrected in accordance with the requirements of Section XI, IWA-5250, of the 1995 Edition with addenda up to and including the 1996 Addenda. The specific Code requirement for which relief is requested is IWA-5250(a)(3).

"IWA-5250 Corrective Action

(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) Components requiring correction shall have repair/replacement activities performed in accordance with IWA-4000."

Article IWA-4000 of ASME Section XI Code requires removal of the flaw and subsequent weld repair or replacement without consideration of the other concerns. Alternatively, the use of ASME Code Case, N-513, "Evaluation Criteria for Temporary Acceptance of Flaws in Class 3 Piping," does allow deferral of repairs provided certain criteria are met and is authorized for use except for certain restrictions imposed by 10 CFR 50.55a. 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

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

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. This request for relief proposes to continue this timeframe for the evaluation process as it is appropriate for the damage mechanism. Also this request for relief proposes to allow a period of up to 18 months to effect a Section XI repair/replacement of any leakage left in service under the provisions of this request and Code Case N-513. Eighteen months is the normal fuel cycle for NAPS 2 and would therefore be the maximum time allowed for leakage to remain in service under the provisions of CC N-513. The flexibility gained by these two proposed time periods for assessment of the leakage and repair/replacement activities allows the MIC degradation to be managed without excessive action statements being forced by Technical Specifications and Section XI.

These time periods have been approved previously by the NRC for NDE-32 (second inspection interval corresponding relief request) by letter 98-720B, dated December 22, 1998 (TAC NOS. MA1222 and MA1223). In addition a similar relief request was approved for North Anna Unit 1 by letter, dated April 27, 2000. The request for relief is identified as NDE-15, for that unit's third inspection interval and the work was performed under TAC NO. MA8567. The approval of NDE-15 for North Anna Unit 1 limited its applicability only to "service water piping that is accessible for flaw characterization." The limitation thus excludes leaks in sections of SW piping, fittings

and welds that are inaccessible for flaw characterization, or leaks in socket welds. This request for relief incorporates these limitations.

Licensee's Proposed Alternative Examination

Within 14 days, Code repairs, in accordance with IWA-5250(a)(3), will be performed to the above identified sections of pressure piping, fittings, and associated butt welds in the SW System that are accessible for flaw characterization; or, as an alternative, the provisions of ASME Code Case N-513 will apply except as modified below. This request for relief does not include socket welds or sections of piping inaccessible for flaw characterization.

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

Staff Evaluation

The staff has evaluated the licensee's basis for requesting relief. As stated in the licensee's June 13, 2001 submittal, NDE-009 is only applicable to SW piping that is accessible for flaw characterization. To complete the Code-required repairs would require the system to be redesigned to allow components to be isolated in order to comply with the Technical Specification 3.7.4.1 requirements. 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 about 14 days from the detection of the flaw.

Acceptable margins of safety will be maintained for the degraded component for the requested period (up to 18 months) of operation if: 1) the component is examined volumetrically to determine the extent of degradation; 2) flaw sizes are determined using ASME proximity rules; 3) flaw growth is monitored by inspection; and 4) the results of the analysis demonstrate that the structural integrity criteria in Code Case N-513 are met. 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. These actions will provide reasonable assurance of the continued structural integrity of the affected components. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for Relief Request NDE-009.

3.0 CONCLUSION

The staff concludes that for Relief Request NDE-009, the Code requirements are impractical with regard to the repairs or completion of evaluations imposed within the timeframe. In addition, the licensee's proposed alternatives provide reasonable assurance of structural integrity of the subject piping, fittings, and associated butt welds. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for the third 10-year ISI interval. The staff has determined that this grant of relief is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Principal Contributor: Simon Sheng

Date: November 7, 2001