

June 9, 2005

Mr. David A. Christian
Sr. Vice President and Chief Nuclear Officer
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Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, Virginia 23060-6711

SUBJECT: NORTH ANNA POWER STATION, UNITS 1 AND 2 - REQUEST FOR
ADDITIONAL INFORMATION REGARDING ASME SECTION XI INSERVICE
INSPECTION PROGRAM END OF INTERVALS SYSTEM PRESSURE
TESTING RELIEF REQUESTS

Dear Mr. Christian:

By letter dated January 10, 2005, Virginia Electric and Power Company (VEPCO) submitted proposed Relief Requests SPT-010 through SPT-013 for North Anna Power Station, Unit 1 and proposed Relief Requests SPT-009 through SPT-013 for North Anna Power Station, Unit 2. Based on its review of the January 10, 2005, submittal, the NRC staff has determined that additional information is required to complete its review.

The NRC staff's questions are provided in the Enclosure. We request a conference call with VEPCO to discuss these questions and to schedule a response to the request for additional information.

Sincerely,

/RA/

John Honcharik, Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-338 and 50-339

Enclosure: As stated

cc w/enclosure: See next page

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ADDITIONAL INFORMATION REGARDING ASME SECTION XI INSERVICE
INSPECTION PROGRAM END OF INTERVALS SYSTEM PRESSURE TESTING
RELIEF REQUESTS

Dear Mr. Christian:

By letter dated January 10, 2005, Virginia Electric and Power Company (VEPCO) submitted proposed Relief Requests SPT-010 through SPT-013 for North Anna Power Station, Unit 1 and proposed Relief Requests SPT-009 through SPT-013 for North Anna Power Station, Unit 2. Based on its review of the January 10, 2005, submittal, the NRC staff has determined that additional information is required to complete its review.

The NRC staff's questions are provided in the Enclosure. We request a conference call with VEPCO to discuss these questions and to schedule a response to the request for additional information.

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REQUEST FOR ADDITIONAL INFORMATION
ASME SECTION XI INSERVICE INSPECTION PROGRAM
END OF INTERVALS SYSTEM PRESSURE TESTING RELIEF REQUESTS
SPT-010, 011, 012, AND 013 FOR NORTH ANNA, UNIT 1,
SPT-009, 010, 011, 012, AND 013 FOR NORTH ANNA, UNIT 2,
VIRGINIA ELECTRIC AND POWER COMPANY
DOCKET NOS. 50-338 AND 50-339

1.0 SCOPE

By letter dated January 10, 2005, Virginia Power and Electric Company (VEPCO, the licensee), submitted the following requests for relief from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, for North Anna Power Station, Units 1 and 2.

1. North Anna, Unit 1 - SPT-010, 011, 012, and 013
2. North Anna, Unit 2 - SPT-009, 010, 011, 012, and 013

The requests for relief are for the third 10-year inservice inspection (ISI) interval, in which North Anna, Unit 1 adopted the 1989 Edition of ASME Section XI as the ASME Code of record and North Anna, Unit 2 adopted the 1995 Edition of Section XI including the 1996 Addenda as the ASME Code of record.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(a)(3)(ii), the licensee has submitted the subject relief requests for ASME Code pressure test requirements on Class 1 components and piping in North Anna, Units 1 and 2. As stated in 10 CFR 50.55a(a)(3)(ii), licensees may propose an alternative to ASME Code requirements if a hardship or unusual difficulty would be incurred by performing the requirement. The licensee must adequately state the hardship or unusual difficulty, and demonstrate that no compensating level of quality or safety would be realized by performing the inspection or testing required by the ASME Code.

Pacific Northwest National Laboratory (PNNL) and the NRC staff have reviewed the information submitted by the licensee and, based on this review, determined the following information is required to complete the evaluation for SPT-010 through SPT-013 for North Anna, Unit 1 and for SPT-009 through SPT-012 for North Anna, Unit 2. Additional information for Request for Relief SPT-013 for North Anna, Unit 2 is not required by the NRC staff for its review.

2.0 REQUESTS FOR ADDITIONAL INFORMATION

2.1 **General Information**

2.1(a) Please confirm the start and end dates for the third 10-year inspection intervals at North Anna Power Station, Units 1 and 2.

2.2 **Requests for Additional Information for North Anna, Unit 1**

2.2.1 In the requests for relief SPT-010 through SPT-013, ASME Code Case –498-1, “Alternative Rules For Ten Year System Hydrostatic Testing For Class 1, 2, and 3 Systems, Section XI, Division 1” was listed as an alternative to rules for system leakage testing. Was ASME Code Case –498-1 invoked under Regulatory Guide 1.147, Revision 12, “Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1” for the applicable 10-year ISI interval program? Since ASME Code Case –498-4 is now approved for general use in Regulatory Guide 1.147, Revision 13, was it considered for this request for relief?

2.2.2 **Request for Relief SPT-010, (North Anna, Unit 1) Examination Category B-P, Pressure-Retaining Components in the Residual Heat Removal and Safety Injection Systems**

2.2.2(a) For each of the piping segments listed in Relief Request SPT-010, please state the piping material, nominal pipe size, and overall length of the segment.

2.2.2(b) It is stated that, “the Class 1 [segments] between [valves] 1-SI-126 and 1-SI-HCV-1850B, 1-SI-143 and 1-SI-HCV-1850D, and 1-SI-160 and 1-SI-HCV-1850F will be tested externally to required test pressure, and [are] not part of this relief request.” If the piping segments listed above can be pressurized to the required test pressure, discuss why the pipe segments listed in the relief request could not be pressurized to pressures higher than the 660 psig stated in the alternative by using the same external source. If plant technical specifications prevent such a pressurization, or if injecting water inventory into the reactor coolant system (RCS) is a concern, discuss what maximum test pressure could be used in an alternative leakage test. Include in the discussion why the proposed test pressure and temperature are adequate to ensure leakage integrity for these lines.

2.2.2(c) For the piping segments in SPT-010, the licensee’s proposed alternative states that the test pressure (with the valves in normal line-up) will be examined for evidence of leakage at the safety injection system normal operating pressure. Clearly state the actual test pressure and temperatures that will be applied to this segment during the system leakage test.

2.2.3 Request for Relief SPT-011, (North Anna, Unit 1) Examination Category B-P, Pressure-Retaining Components in the Residual Heat Removal System

2.2.3(a) For the piping segment listed in Relief Request SPT-011, please state the piping material, nominal pipe size, and overall length of the segment.

2.2.3(b) For the piping segment associated with Relief Request SPT-011, it is stated that valve 1-RH-MOV-1700 is prevented from being opened by a pressure interlock. The function of the interlock is to prevent the low-pressure residual heat removal system piping from being overpressurized by the RCS. Please verify that North Anna, Unit 1 technical specifications prevent 1-RH-MOV-1700 from being opened during modes of plant operation when the RCS pressure is at 100-percent rated power.

2.2.3(c) For the piping segment in SPT-011, the proposed alternative states that the piping segment will be examined for evidence of leakage at nominal system operating pressure. Clearly state the actual test pressure and temperature that will be applied to this segment during the system leakage test.

2.2.4 Request for Relief SPT-012, (North Anna, Unit 1) Examination Category B-P, Pressure-Retaining Components in the Safety Injection System

2.2.4(a) For each of the piping segments listed in Relief Request SPT-012, please state the piping material, nominal pipe size, and overall length of the segments.

2.2.4(b) For the piping segments associated with SPT-012, it is stated that test pressures and temperatures will be coincident with a system functional test. Discuss why these segments cannot be pressurized to higher pressures by using a safety injection pump with the test header aligned, or some other method. If injection of water inventory is an issue, state the maximum test pressure that could be used for testing these piping segments. If conflict with plant technical specifications is an issue, please verify that North Anna, Unit 1 technical specifications prevent isolation of these piping segments during all modes of plant operation. Also, please state the operating pressures and temperatures of these emergency core cooling system line segments during a plant event that requires safety injection, i.e., operation of these lines. Include a discussion why the proposed test pressure and temperature are adequate to ensure leakage integrity for these lines.

2.3 Requests for Additional Information for North Anna, Unit 2

2.3.1 Request for Relief SPT-009, (North Anna, Unit 2) Examination Category B-P, Pressure-Retaining Components in the Residual Heat Removal and Safety Injection Systems

2.3.1(a) For each of the piping segments listed in Relief Request SPT-009, please state the piping material, nominal pipe size, and overall length of the segments.

2.3.1(b) It is stated that “the Class 1 [segments] between [valves] 2-SI-152 and 2-SI-HCV-2850B, 2-SI-169 and 2-SI-HCV-2850D, and 2-SI-186 and 2-SI-HCV-2850F will be tested externally to required test pressure, and [are] not part of this relief request.” If the piping segments listed above can be pressurized to the required test pressure, discuss why the pipe segments listed in the relief request could not be pressurized to higher pressures by using the same external source. If plant technical specifications prevent such a pressurization or if injecting water inventory into the RCS is a concern, discuss the maximum test pressure that could be used in an alternative leakage test. Include in the discussion why the proposed test pressure and temperature are adequate to ensure leakage integrity for these lines.

2.3.1(c) For the piping segments between valves 2-SI-152 and 2-SI-HCV-2850B, 2-SI-169 and 2-SI-HCV-2850D, and 2-SI-186 and 2-SI-HCV-2850F, please verify that the test pressure will be normal reactor coolant pressure at 100-percent rated reactor power, or 2235 psig.

2.3.2 Request for Relief SPT-010, (North Anna, Unit 2) Examination Category B-P, Pressure-Retaining Components in the Residual Heat Removal System

2.3.2(a) For the piping segment listed in Relief Request SPT-010, please state the piping material, nominal pipe size, and overall length of the segment.

2.3.2(b) It is stated that valve 2-RH-MOV-2700 is prevented from being opened by a pressure interlock. The function of the interlock is to prevent the low-pressure residual heat removal system piping from being overpressurized by the RCS. Please verify that North Anna, Unit 2 technical specifications prevent this valve from being opened during modes of plant operation when the RCS pressure is at 100-percent rated power.

2.3.2(c) For the piping segments in SPT-010, the proposed alternative states that the piping segments will be examined for evidence of leakage at Class 2 test requirements. Clearly state the actual test pressure and temperatures that will be applied to this segment during the system leakage test.

2.3.3 Request for Relief SPT-011, (North Anna, Unit 2) Examination Category B-P, All Pressure-Retaining Components in the Class 1 Extended Boundary

2.3.3.(a) The regulations at 10 CFR 50.55a(a)(3) allow licensees to propose alternatives to ASME Code requirements provided (i) an acceptable level of quality and safety will be realized by the alternative, or (ii) if existing ASME Code or CFR requirements would impose an unusual hardship or difficulty without a compensating increase in quality and safety. However, for Request for Relief SPT-011, the licensee has not provided sufficient justification to demonstrate hardship or difficulty.

For example, the licensee’s basis for relief states the following.

“Pressurizing the extended Class 1 boundaries could lift these check valves off the [sic] seats. Current practice is to test many of these check valves for positive closure following any potential opening to verify reactor coolant system pressure boundary integrity. These check valve positive closure tests are normally run with the plant shutdown and with a lower reactor coolant pressure. Requiring the ASME Section XI 10 year test at the note's prescribed time would put the plant in a situation where it would possibly be required to reduce pressure again following the ASME Section XI test to repeat check valve closure testing.”

The statements above would seem to indicate that it is possible for a pressure test as required by ASME Code to be conducted; however, conducting the leakage test may require a repeat of check valve closure. Conflict with plant practice is not considered sufficient hardship for relief from ASME Code requirements. In addition, it is unclear why the current practice of testing the check valves for positive closure provides verification of leakage boundary integrity. Please discuss this current plant practice, and any plant modifications such as bypass lines or modifications to piping runs that would need to be made to accommodate the specific ASME Code requirement. Also state any potential conflict with plant technical specifications that prevent complying with ASME Code system leakage tests.

2.3.3(b) The proposed alternative does not clearly state the exact test pressure and temperature conditions that will be applied or exactly when the licensee proposes to conduct the system leakage test. Please state exactly what alternative system leakage test is being proposed, including test pressure, test temperature, and plant status.

2.3.3(c) In request for relief for SPT-011, general relief for all Class 1 components in the extended Class 1 boundary has been requested. The NRC does not typically grant blanket requests for relief. For Relief Requests SPT-009, -010, -012, and -013, specific piping segments that require relief were listed. For each of the piping segments that require relief under SPT-011, please state the piping material, nominal pipe size, and overall length of the segments, and adequately describe the hardship or unusual difficulty associated with the ASME Code requirements.

2.3.4 **Request for Relief SPT-012, (North Anna, Unit 2) Examination Category B-P, Pressure-Retaining Components in the Safety Injection System**

2.3.4(a) For each of the piping segments listed in Relief Request SPT-012, please state the piping material, nominal pipe size, and overall length of the segments.

2.3.4(b) There appears to be an inconsistency between the pressures stated in this request for relief and ASME Code-required test pressures. Relief Request SPT-012 correctly states that IWB-5221(a) requires that the system leakage test shall be conducted at a pressure not less than nominal system operating pressure associated with normal system operation. However, in the Basis for Relief section provided in SPT-012 it is stated that normal RCS pressure at 100-percent rated

power is 2235 psig. It is unclear whether the piping segments listed in Relief Request SPT-012 are considered part of the RCS. If not, please discuss what the normal operating pressure is for the piping segments in the portion of the subject Safety Injection System and explain why the system leakage test cannot be conducted at normal operating pressure for these piping segments.

In the alternative proposed for SPT-012, it is stated that test pressures and temperatures will be based upon a Class 2 system functional test. The 1995 Edition with the 1996 Addenda of Section XI does not contain a definition of a "system functional" test. Please state what exact test conditions are being proposed in the alternative system leakage test.

North Anna Power Station, Units 1 & 2

cc:

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