VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

December 12, 2001

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No. 01-328B
NL&OS/ETS R0
Docket No. 50-339
License No. NPF-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 2
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
THIRD INSPECTION INTERVAL ISI PROGRAM

In a letter dated June 13, 2001 (Serial No. 01-328), Virginia Electric and Power Company (Dominion) submitted the inservice inspection (ISI) program for the Third Inspection Interval for North Anna Unit 2, including the associated relief requests.

In a November 20, 2001 telephone conference call with the NRC Staff regarding the ISI program and associated relief requests, additional information was requested. Responses to questions associated with those relief requests that may be required at the start of the third interval and prior to the first inservice inspection outage (currently scheduled for Fall 2002), are provided in the attachment to this letter. Requested information associated with the remaining relief requests will be submitted in January 2002.

If you have any questions or require additional information, please contact us.

Very truly yours,

Lesile N. Hartz
Vice President – Nuclear Engineering

Commitments made in this letter: None

Attachment

A047

cc: U.S. Nuclear Regulatory Commission
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Request for Additional Information
North Anna Power Station Unit 2
Third Inspection Interval Program

North Anna Power Station Unit 2
Virginia Electric and Power Company
(Dominion)

Request for Additional Information
Third Inspection Interval Program
North Anna Power Station Unit 2

Request for Relief NDE-004 – The licensee submitted an alternative system using the weld isometric drawings and continued use of the system established in the second inspection interval. In order for the proposed alternative to be acceptable, please provide the following:

1. In the last sentence of the first paragraph in Section III of the licensee's submittal, relief is being requested under the provisions of 10 CFR 50.55a (3)(a). Clarification is required as to under which provision of 10 CFR 50.55a the licensee is requesting relief [i.e., 10 CFR 50.55a (a)(3)(i) or (ii) or 10 CFR 50.55a(g)(6)(i)].

   Response: Section XI paragraph IWA-2610 requires, in part, that "A reference system shall be established for all welds and areas subject to surface or volumetric examination..." As stated in the request for relief, the plant was built to a code that did not require the establishment of a weld reference system. North Anna considers it a hardship to "backfit" a weld reference on all welds and areas subject to surface or volumetric examination. It is a hardship because the Section XI selection requirements, especially as modified by risk-informed selection criteria for Class 1 piping, results in significantly fewer welds or areas being examined than are considered "subject to examination." To build scaffolding, handle insulation, clean areas and expose staff to radiation simply to strike a mark or several marks on a weld or area that is subject to examination, but may never be examined, is work and exposure that provides no compensating increase in the quality or safety of the plant. Therefore, approval of Request for Relief NDE-004 is being made under the provisions of 10 CFR 50.55a (a)(3)(ii).

2. The licensee states in Section IV, "As welds, which require a volumetric examination but did not require examination as part of the second interval, are examined, the alternative system will establish a reference for each weld, including a zero point and direction of examination." Please clarify this statement.

   Response: The implementation of the third inspection interval will require that some welds be examined that were not examined in the Second Inspection Interval. This results, in part, from the implementation of risk-informed ISI selection criteria for selection of Category B-F and B-J welds. It is also possible that due to the detection of a rejectable indication, that an expansion program will be necessary under the requirements of IWB-2430, or IWC-2430, "Additional Examinations." These additional examinations will likely contain welds or areas that did not receive an examination in the Second Inspection Interval. The

purpose of the noted statement is to document 1) that some of the welds or areas examined in the Third Inspection Interval will not have a reference system existing from a Second Inspection Interval examination, and 2) when this happens North Anna will continue to implement the reference system established for the Second Inspection Interval. This will establish a reference for each weld, including a zero point and direction of examination for each volumetric examination.

3. The licensee states that the implementation of this Section XI Code requirement is considered impractical. Please explain the impracticality. Later the licensee states that significant effort would be expended to achieve this compliance. Does this mean that it would be a hardship, not impracticality? Please clarify.

Response: Reference to the word "impractical" in the Request for Relief NDE-004 was intended to contrast the amount of resources required and the lack of resulting benefits from "backfitting" a reference system on every weld or area subject to surface or volumetric examination. With that perspective we consider implementation of this requirement of the Code to be a hardship.

4. The licensee discusses the alternate reference system for volumetric examination of subject welds. Please explain the alternative reference system that will be used for surface and/or visual examination of subject welds.

Response: North Anna uses a set of weld isometrics drawings (the WMKS series) to provide detailed unique identification and location of each weld or area requiring volumetric or surface examination. In most cases, where surface examination is specified, Section XI requires that 100% of the selected weld or area be examined. Unlike the performance of a volumetric examination, there is no need to indicate the direction of examination (or scan) to assure uniformity in reporting results. In these cases no marks are placed on the weld or area. In some cases, only a portion of a weld may be examined as part of a period examination. This usually involves a large weld that is divided into thirds, with 1/3 being done each period. In these cases, the weld is required to have both a surface and volumetric examination. Therefore, reference points are marked on the weld to identify the volumetric examination.

The location of reportable surface indications is documented on a map of the weld or surface that permits accurate identification of areas on the examination surface. The map contains sufficient indicators (e.g., reference points, orientation, and/or proximity to other welds) to positively identify the weld or area in question and the examination starting point. The starting point of the map is determined from the instructions provided for determining the location of the zero reference point associated with a volumetric examination. The examination record will provide information as to the location of the surface indication on the weld examination map.

The North Anna weld identification activity only addresses surface and volumetric examinations in accordance with the requirements of IWA-2600. The Code does not require a reference system for visual examinations.

Request for Relief NDE-008 – In order for the proposed alternative to be acceptable, please provide the following:

1. Clarification is required as to under which provision of 10 CFR 50.55a the licensee is requesting relief [i.e., 10 CFR 50.55a (a)(3)(i) or (ii) or 10 CFR 50.55a(g)(6)(i)].

   Response: Request for Relief NDE-008 states that the variations in the calibration blocks are not technically significant. Use of the existing blocks will not affect the quality of the calibrations used for the examinations. Because the remaining calibration requirements of the 1995 Edition through 1996 Addenda of the Section XI Code will be met, the resultant calibrations will be no different than if fully compliant calibration blocks had been used. Therefore, it is North Anna's position that use of the existing calibration blocks provides an alternative with an acceptable level of quality and safety. To acquire fully compliant calibration blocks would be a hardship without a compensating increase in the level of quality or safety. Approval of this alternative is requested under the provisions of 10CFR50.55a(a)(3)(ii).

Request for Relief NDE-011 – The licensee submitted justifications for using the Code Case N-573. In order for the proposed alternative to be acceptable, please provide the following:

1. Clarification is required as to under which provision of 10 CFR 50.55a the licensee is requesting relief [i.e., 10 CFR 50.55a (a)(3)(i) or (ii) or 10 CFR 50.55a(g)(6)(i)].

   Response: For the reasons presented in the request for relief, North Anna determined that Code Case N-573 provides an alternative to the requirements of IWA-4440 that will maintain an acceptable level of quality and safety. A Procedure Qualification Record (PQR) is simply documentation that certain base material and weld metal chemistries when brought together under a stated set of physical conditions (such as atmosphere, voltage, amperage, moisture, and temperature) will produce certain metallurgical properties. It is not necessary for each Owner to perform the PQR to maintain acceptable quality and safety. The Code Case establishes rules for assuring that the Owner using a PQR is no more than one step removed from the Owner who performed the qualification of the PQR. The Code case maintains the principle that the Owner using the PQR is responsible for the technical adequacy of the PQR. Additionally, the Owner using the PQR must demonstrate proficiency in the use of the PQR by producing a the Welding Procedure Specification(WPS) from the requirements of the PQR and then successfully complete a performance demonstration test using the

WPS. Therefore, approval of the alternative is requested under the provisions of 10CFR50.55a(a)(3)(i).

2. Code Case N-573, item (a) states that the Owner that performed the procedure qualification test shall certify, by signing the PQR, that testing was performed in accordance with Section IX. Item 2 of the relief request states that the procedure qualification testing performed to the requirements of Section XI. Clarify this discrepancy.

   Response: Item III.2 of Relief Request NDE-011 should reference Section IX, not Section XI.

3. Explain the difference between the item numbers (3) and (6) in the relief request. They both address the Quality Assurance Program requirements. What other applicable requirements of Section XI reference in item (6)?

   Response: In item 3) the quality assurance program reference is to the quality assurance program used by the qualifying organization. The ASME Code requires that the Owner implement a quality assurance program that meets either the requirements of 10 CFR 50, App. B or ASME NQA-1, parts II and III. However, before a PQR prepared by the qualifying organization can be used by North Anna, it must also be in compliance with the requirements of the North Anna quality assurance program. There may be commitments to the regulator, specific items in procedures, or aspects of design that prohibit the PQR from being used at North Anna. The discussion in item number 6) is directed to these unit specific commitments or procedures. Similarly, Section XI requires that repair/replacement activity be in compliance with the design basis of the plant. This includes what Section XI calls Owner's Requirements. Owner's Requirements are defined as:

   > "those technical requirements prepared by or for the Owner that define the material, design, fabrication, and examination requirements for an item in excess of Construction Code requirements..."

   Contained within the body of the Owner's Requirements could be an issue prohibiting the use of a PQR prepared by an organization that does not have a similar issue. The statement made by Item 6 is recognition of this possibility.

4. The licensee has not committed to the requirements delineated in items (e) through (h) of the Code Case. These items refer to (i) documentation of the acceptance of the PQR. , (ii) technical competence in application of the received PQR, (iii) direct receipt from the Owner that certified the PQR, and (iv) statement in the NIS-2 form. Explain how these requirements are satisfied by the accepting owner.

Response:
Item (e) of the Code Case requires the following:

> "(e) The Owner accepting the completed PQR shall accept responsibility for the PQR. Acceptance shall be documented by the Owner's Approval of each WPS that references the PQR."

North Anna interprets the paragraph to mean that North Anna is totally responsible for the use of any PQR it accepts from the qualifying Owner just as if North Anna had performed the qualification work. Each Welding Procedure Specification (WPS) generated by North Anna and based on such a PQR will reference the subject PQR by a unique identification number on the face of the WPS. Each WPS is issued as part of the North Anna Welding Program, which is controlled per the requirements of the North Anna quality assurance program compliant with 10 CFR 50 Appendix B.

Item (f) of the Code Case requires the following:

> "(f) The Owner accepting the completed PQR shall demonstrate technical competence in application of the received PQR by completing a performance qualification test using the parameters of a resulting WPS."

North Anna will perform a performance qualification test for each WPS based in total or in part on a PQR obtained from the qualifying Owner. This performance qualification test will meet the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

Item (g) of the Code Case requires the following:

> "(g) The Owner may accept and use a PQR only when it is received directly from the Owner that certified the PQR."

North Anna will only allow the use of a PQR when it is received directly from the Owner that certified the PQR.

Item (h) of the Code Case requires:

> "(h) Use of this Case shall be shown on the NIS-2 form documenting welding or brazing."

The third inspection interval program for North Anna Power Station, Unit 2, includes the use of Code Case N-532, "Alternative Requirements to Repair and Replacement Documentation Requirements and Inservice Summary Report Preparation and Submission as Required by IWA-4000 and IWA-6000." Code Case N-532 eliminates the use of the NIS-2 Form to document repair and replacement activities. Code Case N-532 requires the use of the NIS-2A Form,

which does not require the documentation of Code Cases. However, IWA-4150(c)(1) requires that the Code Cases used in the repair/replacement activity be documented on the Repair/Replacement Plan. Therefore, the use of Code Case N-573 will be documented, if used, on the Repair/Replacement Plan. Similar to the NIS-2, documentation of use of the Code Case will be maintained and traceable to the involved component.

Request for Relief SPT-003 – In order for the proposed alternative to be acceptable, please provide the following:

1. Clarification is required as to under which provision of 10 CFR 50.55a the licensee is requesting relief [i.e., 10 CFR 50.55a (a)(3)(i) or (ii) or 10 CFR 50.55a(g)(6)(i)].

   Response: North Anna reviewed Code Case N-566-1 and determined that the use of the Code Case provides an acceptable level of quality and safety to the requirements of Section XI for the reasons stated in Request for Relief SPT-003. The evaluations required by the Code Case provide a systematic approach and allow for the use of sound engineering judgement in determining the condition of the bolts. Therefore, permission to use Code Case N-566-1 as an alternative to the requirements of Section XI is requested under the provisions of 10CFR 50.55a(a)(3)(i).

2. There is not a sub-paragraph IWA-5250(a)(2)(b), as stated under Section II of the licensee's relief request. Please clarify.

   Response: The correct Code reference is IWA-5250(a)(2).

Request for Relief SPT-004 – In order for the proposed alternative to be acceptable, please provide the following:

1. Clarification is required as to under which provision of 10 CFR 50.55a the licensee is requesting relief [i.e., 10 CFR 50.55a (a)(3)(i) or (ii) or 10 CFR 50.55a(g)(6)(i)].

   Response: Both Section XI and the NRC have accepted, by the issuance and approval for use of Code Case N-498-1, "Alternative Rules for 10-Year System Hydrostatic Testing for Class 1, 2, and 3 Systems," that overpressure testing is no longer necessary to provide effective surveillance of the pressure boundaries. Conducting these tests at normal operating pressure in accordance with the provisions of Code Case N-481-1 has been determined to provide an acceptable level of quality and safety. The alternative proposed by Relief Request SPT-004 for Class 3 systems is identical to Code Case N-481-1 for Class 3 systems. Therefore, North Anna considers it to be an alternative that also provides an acceptable level of quality and safety. Permission is requested to implement Request for Relief SPT-004 under the provisions of 10CFR50.55a(a)(3)(i).

2. In Section III of the relief request, it states, "...to perform the over pressurization testing of Class III components as part of the Third Inspection Interval is considered impractical as both the industry and the NRC have agreed that the benefit to safety does not merit the effort to perform the test at the elevated pressure." An explanation by the licensee of what is currently "impractical" about performing the test at elevated pressure, especially since there is no reference in the submittal that it was not performed in previous test intervals.

Response: By letter dated October 14, 1997, North Anna requested to use Code Case N-498-1 as part of the second inspection interval. The NRC approved the request on December 29, 1997 (TAC No. M99807). This request extended the system leakage test to Class 3 systems. The testing allowed by Code Case N-498-1 was implemented upon approval for almost the entire third period of the second inspection interval. The testing alternative requested by Request for Relief SPT-006 is the same as required by Code Case N-498-1 for Class 3 systems. Therefore, the testing of Class 3 systems in the third inspection interval will be the same as that requested and approved for the third period of the Second Inspection Interval, if Request for Relief SPT-006 is approved.

Reference to the word "impractical" was intended to convey that the benefits derived from meeting the Section XI overpressure hydrostatic testing requirements for Class 3 systems was not commensurate with the commitment of resources necessary to do so. The increased use of resources arises from the fact that overpressure testing may require the use of auxiliary equipment, "gags" on relief valves, special valve line-ups, increased testing times, maintenance valves used as boundary valves for tests, and possible radiation exposure to accomplish these tasks. The NRC and Section XI reached agreement, as evidenced by the issuance and approval of Code Case N-498-1, that the minimal increase in assurance of structural integrity provided by a slightly higher pressure associated with hydrostatic test of Class 3 systems is not considered commensurate with the increase in cost and possible radiation exposure. Acceptable quality and safety can be achieved by performing system pressure boundary testing at normal operating pressure.

3. Please clarify the statement in Section III of the relief request, "To propose these requirements outside of the Code Case allows the aspects of the Code Case to be applied to the Class 3 components only. It does not cause the need to request the use of only part of the Code Case or to correct what are now incorrect references to specific Section XI requirements (for example, only Examination Category D-A now states system pressure testing requirements for Class 3 components)."

Response: The direct use of Code Case N-498-1 to solve the issue with Class 3 testing was not considered proper for the following reasons; none of which were technical:

1) Use of the Code Case for Class 1 and 2 was no longer justified, as Section XI no longer required the overpressure test for these two Code classes. Class 3 requirements were revised by a Code revision published after the 1996 Addenda.

2) Code Case N-498-1 is only applicable through the 1992 Edition with the 1993 Addenda. To use the Code Case would require relief from the requirements of IWA-2441(b), "Code Cases shall be applicable to the Edition and Addenda specified in the Inspection Plan."

3) The Code Case is not administratively compatible with the 1995 Edition through the 1996 Addenda. Category D-A no longer addresses pressure testing and Category D-C no longer exists.

When approval of the code case was not considered to be an option, North Anna relied on previous success in gaining approval to use applicable aspects of a code case by submitting them to the NRC in the form of a request for relief. North Anna considers this to be a case where that strategy should be followed. The referenced sentence is an attempt to document the use of this strategy. (Note: The reference in the request for relief to D-A is incorrect. The correct reference is D-B.)

Request for Relief SPT-008 – In order for the proposed alternative to be acceptable, please provide the following:

1. Clarification is required as to under which provision of 10 CFR 50.55a the licensee is requesting relief [i.e., 10 CFR 50.55a (a)(3)(i) or (ii) or 10 CFR 50.55a(g)(6)(i)].

   Response: Section XI considered that the wording of Code Case N-416-1 was not sufficiently clear to determine whether either type of weld (fabrication or installation) needs to be subjected to overpressure testing. Section XI eliminated this concern by issuing Code Case N-416-2. There is no difference in the welding program, the quality assurance program, the proposed examination program, or the end use of the welds based on their classification as either fabrication or installation welds.

   Typically, overpressure hydrostatic testing only subjects the piping components to a small increase in pressure over the design pressure and, therefore, does not present a significant challenge to pressure boundary integrity. Little benefit is gained from the added challenge to the piping system provided by an overpressure hydrostatic test of weld on a test stand. The weld on the test stand

is not subjected to the additional stresses of being installed in a system, even though these could be the primary stresses on the weld.

Code Case N-416-2, like Code Case N-416-1, requires volumetric examination of Class 1 and 2 piping components in accordance with the requirements of the 1992 Edition of Section III. Also, like Code Case N-416-1, it only requires a surface examination of Class 3 welds. The NRC, in approving Code Case N-416-1, required that in addition to the surface examination required for Class 3, a surface examination will also be performed on the root pass of butt and socket welds of pressure retaining boundary of Class 3 components. North Anna, in requesting permission to use the alternative provided by N-416-2, committed to perform this additional root pass examination of Class 3 welds. North Anna concluded that the use of the 1992 Edition examination requirements with the additional surface examination of the root pass of Class 3 welds in conjunction with the proposed system pressure test at nominal operating pressure provides an acceptable level of quality and safety. Therefore, permission to use Code Case N-416-2 is requested under the provisions of 10CFR50.55a(a)(3)(i).

2. Please explain the hardships associated with the Code-required hydrostatic testing.

Response: Performing overpressure testing of subassemblies may require that special fixtures and/or or welded end caps be installed on the subassemblies prior to testing. These actions will likely result in work to clear the material of the residual effects of these acts (e.g., clearing/repairing tack welds). Alternatively, to avoid this effort, it may be necessary to perform welding inside the plant under conditions that may not be optimum to obtain the best welds or subject personnel to unnecessary radiation exposure.

3. The licensee stated that Code Case N-416-2 provides an acceptable level of quality and safety if implemented with similar conditions required by the Code Case N-416-1. Please explain

Response: Code Case N-416-2 is identical to Code Case N-416-1, except that N-416-2 has clarifying language that both fabrication and installation welds are included in the scope of the Code Case. There is no technical difference between a "fabrication" weld and an "installation" weld. The only difference is whether or not the other end of the component or subassembly is physically attached to the plant at the actual time the weld is made. Code Case N-416-1 has been determined to provide acceptable alternative requirements for pressure testing of welds by Section XI. The NRC agreed with this decision provided the additional NDE examinations were performed on Class 3 components. These additional requirements were published in Regulatory Guide 1.147. North Anna, in implementing the requirements of Code Case N-416-2, will perform the additional NDE the NRC requires for the implementation of Code Case N-416-1 in Regulatory Guide 1.147.