

VIRGINIA ELECTRIC AND POWER COMPANY

RICHMOND, VIRGINIA 23261

March 24, 2021

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10 CFR 51

10 CFR 54

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Serial No.: 21-073
NRA/DEA: R0
Docket Nos.: 50-338/339
License Nos.: NPF-4/7

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION (NAPS) UNITS 1 AND 2
SUBSEQUENT LICENSE RENEWAL APPLICATION (SLRA)
RESPONSE TO NRC REQUESTS FOR CONFIRMATION OF INFORMATION
FOR THE SAFETY REVIEW – SET 1

References:

1. Letter from Virginia Electric and Power Company to the US Nuclear Regulatory Commission dated August 24, 2020 (Serial No. 20-115), "Virginia Electric and Power Company, North Anna Power Station Units 1 and 2, Application for Subsequent Renewed Operating Licenses," [Agencywide Documents Access and Management System (ADAMS) Accession No. ML20246G697]
2. Email from Lois M. James of the US Nuclear Regulatory Commission to Daniel G. Stoddard of Virginia Electric and Power Company dated March 8, 2021, "FINAL Request for Confirmation of Information (RCI) Set 1 - North Anna SLRA Safety Review," [ADAMS Package Accession No. ML21067A500]

In Reference 1, Virginia Electric and Power Company (Dominion Energy Virginia) submitted the subsequent license renewal application (SLRA) for NAPS Units 1 and 2. In Reference 2, the NRC provided requests for confirmation of information (RCIs) the staff will likely use in the Safety Evaluation Report for the NAPS SLRA, but which has not been previously docketed. The NRC RCIs and Dominion Energy Virginia's confirmation of each RCI are provided in the enclosure.

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Enclosure

**RESPONSE TO NRC REQUESTS FOR CONFIRMATION OF INFORMATION
SET 1 - NAPS SLRA SAFETY REVIEW**

**Virginia Electric and Power Company
(Dominion Energy Virginia)
North Anna Power Station Units 1 and 2**

Response to NRC Requests for Confirmation of Information Set 1
NAPS SLRA Safety Review
North Anna Power Station, Units 1 and 2
Subsequent License Renewal Application

By letter dated August 24, 2020, (Agencywide Documents Access and Management System Accession No. ML20246G703), Dominion Energy submitted an application for subsequent license renewal of Renewed Facility Operating License Nos. NPF-4 and NPF-7 for the North Anna Power Station, Unit Nos. 1 and 2 (North Anna) to the U.S. Nuclear Regulatory Commission (NRC) pursuant to Section 103 of the Atomic Energy Act of 1954, as amended, and part 54 of title 10 of the Code of Federal Regulations, "Requirements for renewal of operating licenses for nuclear power plants."

The NRC is in the process of reviewing the application. Based on their review, the NRC staff identified requests for confirmation of information (RCIs) which will likely be used in the Safety Evaluation Report (SER) for the NAPS SLRA, but which have not been previously docketed. To the best of the staff's knowledge, this information is not on the docket or accessible in the public domain. Any information used to reach a conclusion in the SER must be included on the docket by the applicant.

Clarification calls were held between the NRC staff and Dominion Energy Virginia on February 24 and 25, 2021 and some of the RCIs were modified as a result of those calls.

Therefore, in an email dated March 8, 2021, the NRC staff transmitted nine final RCIs. The final NRC RCIs and Dominion Energy Virginia's confirmation of each RCI are provided below.

RCI No. B2.1.27-A:

Based on the review of procedure 0-EPM-2303-01, "Inspection of Service Water Cathodic Protection System," Revision 15, the staff noted that the acceptance range for instant-off potentials includes an upper bound of -1,200 mV.

During its audit, the staff reviewed the previous revision of procedure 0-EPM 2303 01 (i.e., Revision 14) and noted the acceptance range for instant-off potentials included an upper bound of -1,500 mV. Confirm that Revision 15 of procedure 0 EPM 2303 01 includes a limiting critical potential of -1,200 mV.

Dominion Response:

This information has been confirmed to be correct as stated.

RCI No. B2.1.27-B:

Based on the review of NAS 74, "Yard Water and Fire Protection Systems for North Anna Power Station," Revision 4, the staff noted that buried fire protection piping is cast iron with a cement mortar lining and bituminous coating.

Confirm that in scope buried gray cast iron piping is specified to be externally coated with a bituminous coating.

Dominion Response:

This information has been confirmed to be correct as stated.

RCI No. B2.1.27-C:

Based on the review of Design Change No. 04-018, "Underground Fire Protection Piping Replacement/ North Anna, Units 1&2," dated May 18, 2006, the staff noted that buried ductile iron fire protection lines are coated with an asphaltic exterior coating.

Confirm that in scope buried ductile iron piping is specified to be externally coated with an asphaltic coating.

Dominion Response:

This information has been confirmed to be correct as stated.

RCI No. B2.1.27-D:

Based on the review of 11715-FV-46A-8, "Underground Fuel Oil Storage Tanks I EG TK 2A & 2B," Revision 8, the staff noted buried fuel oil storage tanks are externally coated with a minimum of 16 mils of Koppers Bitumastic 300-M or equal.

Confirm that in scope buried steel tanks exposed to soil are specified to be externally coated with "Koppers Bitumastic 300-M or equal."

Dominion Response:

This information has been confirmed to be correct as stated.

RCI No. B2.1.27-E:

As amended by letter dated February 4, 2021, Enhancement No. 3 for the Buried and Underground Piping and Tanks program states the following:

The following buried piping materials will be replaced before the last five years of the inspection period prior to entering the subsequent period of extended operation. (Added – Supplement 1): (a) the buried copper piping between the fire protection jockey pump and the hydropneumatic tank will be replaced with carbon steel; and (b)

the buried carbon steel fill line piping for the security diesel fuel oil tank will be replaced with corrosion resistant material that does not require inspection (e.g., titanium alloy, super austenitic, or nickel alloy materials).

Confirm the following: (1) that the piping referenced in part (a) is the only in-scope (within scope of subsequent licensing renewal) buried copper alloy piping; and (2) that the piping referenced in part (b) is the only in scope (within scope of subsequent licensing renewal) buried steel piping in the security system.

Dominion Response:

This information has been confirmed to be correct as stated.

RCI No. B2.1.34-A:

Based on the audit review of ER-NA-INS-1047, Revision 10, "Monitoring of Structures North Anna Power Station," the staff verified that the component referenced as "valve body" in SLRA Table 3.5.2-15, "Structures and Components Supports – Flood Protection Dike – Aging Management Evaluation," is included in the inspection of component reference as "steel culvert" in Attachment 6 of ER-NA-INS-104, "List of Earthen Structures."

Attachment 6 of ER-NA-INS-104 states that the "steel culvert" associated with the flood wall west of Turbine Building is inspected in accordance with Procedure 1-PT-9.3. Procedure 1-PT-9.3 indicates that exposed portions of the drainpipe and valves associated with the flood wall are inspected.

Confirm that the component referenced as "valve body" in SLRA Table 3.5.2-15, "Structures and Component Supports – Flood Protection Dike – Aging Management Evaluation," is included in the inspection of the component referenced as "steel culvert" in Attachment 6 of ER-NA-INS-104, "List of Earthen Structures."

Dominion Response:

This information has been confirmed to be correct as stated.

RCI No. TLAA 4.7.4-A:

Based on the audit review of Calculation 11715-NMB-282-FC, Revision 0, Addendum 00B, "Thermal Stress Analysis of Fuel Pool Liner – Fuel Pool Liner Fatigue Evaluation for 80 Years Plant Life, NAPS Units 1 & 2" and supporting referenced Calculation CE-1272, Revision 0, "Analysis of Surry Fuel Pool Liner at 212 Degrees Fahrenheit," the staff noted that Dominion calculated the limiting cumulative damage (or cumulative usage factor) due to fatigue effects of thermal cyclic loadings for the controlling component (i.e., plate-stiffener weld) of the SFP liner from the three design conditions described in the SLRA to be 0.75. This is less than the acceptance criterion of 1.0.

Confirm that the limiting cumulative damage (or cumulative usage factor) due to fatigue effects of thermal cyclic loadings calculated for the controlling component (i.e., plate-stiffener weld) of the SFP liner from the three design conditions described in SLRA Section 4.7.4 to be 0.75.

Dominion Response:

This information has been confirmed to be correct as stated.

RCI No. 3.5.2.2.2.6-A:

Based on the audit review of ETE-SLR-2020-2204, "Assessment of Radiation Effects on Reactor Vessel Supports for NAPS Units 1 & 2," Revision 0, the staff noted that the observed difference in critical stress values for Cases 2 and 4 in ETE-SLR-2020-2204 are small and that Case 2 bounds Case 3, and that Case 4 was analyzed as a quality check for the effect of higher levels of irradiation (reflected by the 62.9 ksi yield stress) on the values of critical stress and that Cases 3 and 4 need not be included in SLRA Section 3.5.2.2.2.6.

- a. Confirm that observed difference in critical stress values for Cases 2 and 4 in ETE-SLR-2020-2204 are small*
- b. Confirm that Case 2 bounds Case 3*
- c. Confirm that Case 4 was analyzed as a quality check for the effect of higher levels of irradiation (reflected by the 62.9 ksi yield stress) on the values of critical stress.*
- d. Confirm that Cases 3 and 4 need not be included in SLRA Section 3.5.2.2.2.6.*

Dominion Response:

- a. This information has been confirmed to be correct as stated.
- b. This information has been confirmed to be correct as stated.
- c. Dominion confirms that Case 4 was an extra check for the effect of higher levels of irradiation (reflected by the 62.9 ksi yield stress) on the values of stress.
- d. This information has been confirmed to be correct as stated.

RCI No. 3.5.2.2.2.6-B:

Based on the audit review of ETE-SLR-2020-2204, "Assessment of Radiation Effects on Reactor Vessel Supports for NAPS Units 1 & 2," Revision 0, the staff noted that the inner surface flaw analyzed in Table 1 is for a flaw that has a depth of 1/4T; and stresses in Figures 1 through 4 of ETE-SLR-2020-2204 was back calculated from the applied stress intensity factor (K) set equal to K_{IC} and that the critical stress in Table 1 of SLRA Section 3.5.2.2.2.6 came from these plots.

- a. *Confirm that the inner surface flaw analyzed in Table 1 is for a flaw that that has a depth of $1/4T$*
- b. *Confirm stresses in Figures 1 through 4 of ETE-SLR-2020-2204 was back calculated from the applied stress intensity factor (K) set equal to K_{IC}*
- c. *Confirm that the critical stress in Table 1 of SLRA Section 3.5.2.2.6 came from these plots.*

Dominion Response:

- a. This information has been confirmed to be correct as stated.
- b. Dominion confirms that the stresses in Figures 1 through 4 of ETE-SLR-2020-2204 were back calculated. Specifically, equations were used to solve for S_m with K_{IC} equal to 33.2 ksi \sqrt{in} . Figures 1 through 4 of ETE-SLR-2020-2204 were generated using a best fit second order polynomial expression to illustrate the relationship of S_m and K_{IC} .
- c. This information has been confirmed to be correct as stated, with the clarification that the critical stress values in Table 1 of SLRA Section 3.5.2.2.6 were back calculated as described in the Dominion Response to RCI 3.5.2.2.6-B, Item b, above.