August 24, 2016

MEMORANDUM TO: Michael T. Markley, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Operation

FROM: Eric R. Oesterle, Acting Chief ***/RA/***
Reactor Systems Branch
Division of Safety System
Office of Nuclear Reactor Regulation

SUBJECT: AUDIT REPORT FOR NORTH ANNA POWER STATION, UNITS 1 AND 2, PROPOSED LICENSE AMENDMENT TO REVISE THE TECHNICAL SPECIFICATIONS TO ADDRESS THE ISSUE IDENTIFIED IN WESTINGHOUSE DOCUMENTS NSAL-09-5. REV. 1 AND NSAL-15-I (TAC NO. MF7186 AND MF7187)

By letter dated December 10, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15352A108), Dominion (the licensee) submitted a License Amendment Request (LAR) for the North Anna Power Station, Units 1 and 2. The proposed license amendment revises the North Anna Power Station Units 1 and 2 technical specifications to address the issues identified in two Westinghouse Nuclear Safety Advisory Letter, NSAL-09-5, Rev. 1 and NSAL-15-1, Rev. 0. U.S. Nuclear Regulatory Commission staff conducted a regulatory audit to increase the efficiency of the LAR review. The audit report is enclosed.

Enclosure:
Audit Report

CONTACT: Fred M. Forsaty, NRR/DSS
(301) 415-8523

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ADAMS Accession No.: ML16215A075 **NRR-106**

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AUDIT REPORT FOR NORTH ANNA POWER STATION, UNITS 1 AND 2, PROPOSED LICENSE AMENDMENT TO REVISE THE TECHNICAL SPECIFICATIONS TO ADDRESS THE ISSUE IDENTIFIED IN WESTINGHOUSE DOCUMENTS NSAL-09-5. REV. 1 AND NSAL-15-I (TAC NO. MF7186 AND MF7187)

BACKGROUND

By letter dated December 10, 2015 (Agency Document Access and Management System (ADAMS) Accession No. ML15352A108), Dominion (the licensee) submitted a License Amendment Request (LAR) for the North Anna Power Station, Units 1 and 2. The proposed license amendment revises the North Anna Power Station Units 1 and 2 Technical Specifications (TS). The proposed changes would revise the TS to address the issues identified in two Westinghouse communication documents. Specifically, the proposed changes will address the issues identified in:

- Westinghouse Nuclear Safety Advisory Letter NSAL-09-5, Rev. 1 by relocating required operating space reductions (power and axial flux difference) to the Core Operating Limits Report.

- Westinghouse Nuclear Safety Advisory Letter NSAL-15-1, Rev. 0 by defining TS surveillance requirements for steady-state and transient F_Q (Z) (heat flux hot channel factor) and corresponding actions with which to apply an appropriate penalty factor to measured results.

AUDIT REPORT

The U.S. Nuclear Regulatory Commission (NRC) staff conducted an audit (ADAMS Accession Number: ML16091A454) at the offices of the Nuclear Energy Institute, Washington, D.C. on May 4, 2016. The purpose of the audit was to 1) review detailed calculations, analyses, and technical bases; 2) identify further information that may be necessary to reach a licensing or regulatory decision; 3) discuss possible requests for additional information; and 4) examine Core Operating Limits Report Reference List of Analysis Methods in meeting GL 88-16 Guidance. During the audit, the NRC staff discussed a number of questions with the licensee as listed below. As a result, the licensee provided additional information to supplement the original LAR via letter dated June 15, 2016 (ADAMS Accession Number: ML16174A098).

Question No. 1

Explain why Dominion is introducing separate terms and associated TS and Required Actions for steady-state and transient FQs ($F_Q^E(Z)$ and $F_Q^T(Z)$, respectively).

Enclosure

Question No. 1

Explain why Dominion is introducing separate terms and associated TS and Required Actions for steady-state and transient FQs ($F_Q^E(Z)$ and $F_Q^T(Z)$, respectively).

Question No. 2

What is the justification for the proposed phrase, 'after each $F_Q^T(Z)$ determination,' associated with the Completion Times for LCO 3.2.1.B? This proposed phrase is not consistent with the terminology in the current revision of NUREG-1431 (Revision 4).

Question No. 3

What is the justification for the additional Required Action (B.2 – Reduce THERMAL POWER as specified in the COLR) for LCO 3.2.1.B? The current revision of NUREG-1431 has only one Required Action associated with this LCO.

Question No. 4

Attachment 1, page 12, of the original Dominion LAR submittal (Reference 1) indicates, 'This approach, although different in the details of application from that recommended in Reference 2, has been deemed to be more suitable for use with Dominion methods.' Explain why the approach is more suitable for use with Dominion methods.

Question No. 5

Please confirm that the fuel thermal conductivity degradation (TCD) issue has been addressed for North Anna.

Question No. 6

Regarding LCO 3.2.1, Required Action A.2, why is the phrase, '$F_Q^M(Z)$ exceeds limit,' struck out and replaced with, 'that THERMAL POWER is limited below RTP by Required Action A. 1'?

Question No. 7

Regarding LCO 3.2.1, why are the proposed Required Actions 8.3 and 8.4 indicated to reduce the associated setpoints (Neutron Flux and Overpower delta-T, respectively) for each 1%, 'that THERMAL POWER is limited below RTP by Required Action 8.2'?

Question No. 8

What is the justification for Insert 1 contained in Attachment 2 of the original Dominion LAR submittal (Reference 1)?

Question No. 9

Attachment 1, page 12, of the original Dominion LAR submittal (Reference 1) provides a discussion of the cycle specific analyses that will be performed to determine the appropriate penalty factor required to accommodate potential increases in $F_Q(Z)$ over the surveillance period. Describe the basis for the penalty factors in the context of addressing NSAL-09-5 and NSAL-15-1.

Question No. 10

What is the technical justification for the different Completion Times associated with the violation of the steady-state and transient F_Q limits (15 minutes versus 4 hours)?

Question No. 11

The safety evaluation report for VEP-NE-1, Rev. 0 (Reference 12) provides a discussion of the calculational uncertainties that are applied to FQ. Address whether Reference 1 impacts any calculational uncertainties that affect FQ.

Question No. 12

LAR Attachment 1, Page 9, discusses previous adjustments to the F_Q surveillance region and corresponding Technical Specification Bases changes that are being tracked in Dominion's Corrective Action System. Describe this change and the schedule for completion of the Dominion corrective action.

References

1. Letter from M. D. Sartain (Dominion) to USNRC, "Virginia Electric and Power Company (Dominion) - North Anna Power Station Units 1 and 2 License Amendment Request to Address the Issues Identified in Westinghouse Documents NSAL-09-5, Rev.1 and NSAL-15-1, Serial No. 15-494, December 10, 2015.

2. Westinghouse Nuclear Safety Advisory Letter, NSAL-15-1, Rev. 0, "Heat Flux Hot Channel Factor Technical Specification Surveillance," February 3, 2015.

3. NUREG-1431, Revision 4, Vol. 1 and 2, "Standard Technical Specifications - Westinghouse Plants."

4. Letter from Leslie N. Hartz (Dominion) to USNRC, "Virginia Electric and Power Company, North Anna Power Station Units 1 and 2, Proposed License Amendment Request (LAR) Addition of Analytical Methodology to COLR Best-Estimate Large Break Loss of Coolant Accident (BE-LBLOCA)," Serial No. 10-575, October 21, 2010 (ADAMS Accession No. ML102980447).

5. Letter from J. A. Price (Dominion) to USNRC, "Virginia Electric and Power Company, North Anna Power Station Units 1 and 2, Proposed License Amendment Request

(LAR) Addition of Analytical Methodology to COLR," Serial No 10-404, July 19, 2010 (ADAMS Accession No. ML102020165).

6. Memorandum from Anthony J. Mendiola (DSS) to Gloria **J.** Kulesa (DORL), "Regulatory Audit Report – Virginia Electric and Power Company North Anna Power Station Units 1 and 2 Proposed License Amendment Request for Addition of Analytical Methodology to COLR – Fuel Transition (TAC Nos. ME4262, ME4263) and Addition of Analytical Methodology to COLR – Best Estimate LB LOCA (TAC NOs ME4933, ME4934," US NRC, July 18, 2011 (ADAMS Accession No. ML111741223).

7. Letter from V. Sreenivas (USNRC) to D. A. Heacock (Dominion), "North Anna Power Station, Units 1 and 2, Issuance of Amendments Regarding Addition of Analytical Methodology to Core Operating Limits Report for Best Estimate Large Break Loss of-Coolant Accident (TAC Nos. ME4933 and ME4934)," February 29, 2012 (ADAMS Accession No. ML12054A168).

8. Letter from V. Sreenivas (USNRC) to D. A. Heacock (Dominion), "North Anna Power Station, Units 1 and 2 – Correction Re: Issuance of Amendments Regarding Addition of Analytical Methodology to Core Operating Limits Report for Best Estimate Large Break Loss-of-Coolant Accident (TAC Nos. ME4933 and ME4934)," March 13, 2012 (ADAMS Accession No. ML12067A078).

9. Letter from V. Sreenivas (USNRC) to D. A. Heacock (Dominion), "North Anna Power Station, Units 1 and 2, Issuance of Amendments Regarding Addition of Analytical Methodology to Core Operating Limits Report for the Critical Heat Flux Correlation (TAC Nos. ME4262 and ME4263)," February 29, 2012 (ADAMS Accession No. ML12054A162).

10. WCAP-17661-P, Revision 1, "Improved RAOC and CAOC FQ Surveillance Technical Specifications," November 2013.

11. Westinghouse Nuclear Safety Advisory Letter, NSAL-09-5, Rev. 1, "Relaxed Axial Offset Control FQ Technical Specification Actions," September 23, 2009.

12. Safety Evaluation Report, transmitted in letter from Herbert N. Berkow (NRC) to W. L. Stewart (VEPCO), "Acceptance for Referencing of Licensing Topical Report VEP-NE-1, "VEPCO Relaxed Power Distribution Control Methodology and Associated FQ Surveillance Technical Specifications," February 26, 1986.

13. Westinghouse Notice 06-IC-03, "FQ and Fxy Surveillance Zone Issue," February 21, 2006.

Letter from V. Sreenivas (USNRC) to D. A. Heacock (Dominion), "North Anna Power Station, Units 1 and 2 – Correction Re: Issuance of Amendments Regarding Addition of Analytical Methodology to Core Operating Limits Report for the Critical Heat Flux Correlation (TAC Nos. ME4262 and ME4263)," dated March 13, 2012 (ADAMS Accession No. ML12066A208).