



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 13, 2015

MEMORANDUM TO: Robert J. Pascarelli, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: David W. Alley, Chief *DWA for*
Component Performance, NDE, and Testing Branch
Division of Engineering
Office of Nuclear Reactor Regulation

SUBJECT: NORTH ANNA UNITS 1 AND 2: REVIEW OF COMMITMENT
ACTIONS IN CONFIRMATORY ACTION LETTER REGARDING
EARTHQUAKE IN 2011 (TAC NOS. MF1807 AND MF1808)

By letter dated May 13, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13135A637), Virginia Electric and Power Company (Dominion, the licensee) submitted a response to address actions in the Confirmatory Action Letter (CAL) No. NRR-2011-002 (ADAMS Accession No. ML11311A201) that the U.S. Nuclear Regulatory Commission (NRC) issued on November 11, 2011, for North Anna Power Station, Units 1 and 2 (North Anna). The NRC issued the CAL to address plant safety issues related to the August 23, 2011, earthquake, which resulted in ground motion exceeding the Operating Basis Earthquake and Safe Shutdown/Design Basis Earthquake at North Anna.

The Component Performance, NDE and Testing Branch (EPNB), Division of Engineering, reviewed the licensee's response to Commitment Number 7 in the CAL. The EPNB staff finds that the licensee's response to Commitment Number 7 is acceptable and concludes that the licensee has satisfactorily completed the action associated with Commitment Number 7.

Docket Nos.: 50-338 and 50-339

Enclosure:
Review of Response to CAL

CONTACT: John Tsao, NRR/DE
301-415-2702

REVIEW OF COMMITMENT ACTION COMPLETION
CONFIRMATORY ACTION LETTER
VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
NORTH ANNA POWER STATION, UNITS 1 AND 2
DOCKET NUMBERS: 50-338 AND 50-339

1.0 INTRODUCTION

By letter dated May 13, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13135A637), Virginia Electric and Power Company (Dominion, the licensee) submitted a response to address actions in the Confirmatory Action Letter (CAL) No. NRR-2011-002 (ADAMS Accession No. ML11311A201) that the U.S. Nuclear Regulatory Commission (NRC) issued on November 11, 2011 for North Anna Power Station, Units 1 and 2 (North Anna). The NRC issued the CAL to address plant safety issues related to the August 23, 2011, earthquake, which resulted in ground motion exceeding the Operating Basis Earthquake and Safe Shutdown/Design Basis Earthquake at North Anna.

The Component Performance, NDE and Testing Branch, Division of Engineering, has evaluated the licensee's response to Commitment Number 7 as follows.

2.0 TECHNICAL EVALUATION

Commitment Number 7 in the May 13, 2013 submittal states that:

The licensee will perform a comparison of the calculated load from the August 23, 2011 earthquake and the existing leak-before-break (LBB) analysis and submit the results [to the NRC].

To fulfill the action associated with Commitment Number 7, the licensee compared the calculated applied piping loads as a result of the earthquake and the existing LBB analysis as discussed in the May 13, 2013 letter. The existing LBB analysis for the main reactor coolant loop was documented in Westinghouse Report WCAP-11163, "Technical Bases For Eliminating Large Primary Loop Pipe Rupture as a Structural Design Basis For North Anna Units 1 & 2, August 1986," and Supplement 1, "Additional Information in Support of the Technical Justification For Eliminating Large Primary Loop Pipe Rupture as the Structural Design Basis For North Anna Units 1 & 2, January 1988." The licensee identified five weld locations in the reactor coolant loop that were affected by the earthquake.

The licensee indicated that normal loads remained the same as those evaluated in the existing LBB analysis. However, the earthquake affected the seismic loads in the subject piping which changed the applied loads.

The NRC staff noted that the applied piping loads as a result of the earthquake remained less than the applied piping loads used in the existing LBB evaluation at all five weld locations except the axial load at Weld number 4, which exceeded the applied load used in the existing LBB evaluated axial load by about 1%. However, the resultant bending moment during the earthquake was only 7,183 in-kips as compared to 10,884 in-kips used in the existing LBB evaluation. This means that the loads used the existing LBB analysis are still bounding. The licensee stated that the existing LBB evaluation still maintains a margin of 10 on leak rate, 2 on

crack size and 1.4 on load as specified in NRC Standard Review Plan 3.6.3, "Leak-Before-Break Evaluation Procedures."

The NRC staff determines that because the applied piping loads generated by the earthquake are still bounded by the piping loads used in the existing LBB analysis, the leakage size flaws remain the same and that the margins specified in Standard Review Plan 3.6.3 are satisfied. The NRC staff finds that the comparison of the applied piping loads from the earthquake and the loads used in the existing LBB analysis shows that the existing LBB analysis remains valid.

In summary, the NRC staff finds that the applied operating loads to the postulated leakage size flaws in reactor coolant system piping as analyzed in the existing LBB analysis are not affected by the earthquake. The NRC staff finds that the existing LBB analysis remains valid as a result of the earthquake.

3.0 CONCLUSION

Based on the information submitted, the NRC staff concludes that the existing LBB analysis remains acceptable and that the existing licensing basis for the LBB analysis remains valid. Therefore, the NRC concludes that the licensee has satisfactorily completed the action associated with Commitment Number 7.

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