



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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September 28, 2011

Mr. David A. Heacock
President and Chief Nuclear Officer
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: NORTH ANNA POWER STATION, UNIT NOS. 1 AND 2, REQUEST FOR
INFORMATION REGARDING THE EARTHQUAKE OF AUGUST 23, 2011
(TAC NOS. ME7050 AND ME7051)

Dear Mr. Heacock:

A public meeting was held between the Virginia Electric and Power Company and the Nuclear Regulatory Commission (NRC) staff on September 8, 2011, to discuss the earthquake that occurred near the North Anna Power Station (NAPS) on August 23, 2011, and an NRC request for information was issued on September 14, 2011, on that topic. On September 17, 2011, you submitted the report, "Virginia Electric and Power Company (Dominion) North Anna Power Station, Units 1 and 2, North Anna Independent Spent Fuel Storage Installation Summary Report of August 23, 2011, Earthquake Response and Restart Readiness Determination Plan" (Agencywide Documents Access and Management System Accession No. ML11262A151). This letter forwards the staff's request for information on additional topics. Your most expeditious response is requested to enable the staff to continue its review of your proposed plans for restarting the NAPS.

Sincerely,

A handwritten signature in black ink, appearing to read "Meena Khanna".

Meena Khanna
Lead of North Anna Restart Team
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-338 and 50-339

Enclosure:
Request for Information

cc w/encl: Distribution via Listserv

REQUEST FOR INFORMATION

VIRGINIA ELECTRIC AND POWER COMPANY (VEPCO)

NORTH ANNA POWER STATION, UNIT NOS. 1 AND 2 (NAPS)

DOCKET NOS. 50-338 AND 50-339

The following requests for information are related to the earthquake of August 23, 2011, that occurred in the vicinity of the North Anna Power Station, Units 1 and 2 (NAPS), as discussed in the public meeting held by the Nuclear Regulatory Commission (NRC) staff on September 8, 2011, and communicated to the NRC in a letter dated September 17, 2011, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML11262A151).

Snubbers

Short Term Questions Prior to Plant Restart:

1. Please confirm that a visual examination of all the snubbers (small bore and large bore) has been performed to ensure compliance with the design basis acceptance criteria. If all snubbers were not inspected, please provide the rationale for the sampling strategy.
2. Please confirm that an evaluation of snubbers has been performed, and how you determined whether a snubber was locked. If a snubber was determined to be unacceptable (e.g., deformation, damaged bearing, missing or broken pin, fluid leak in hydraulic snubbers, etc.) during the visual examination (Item 1, above), please discuss the results of these evaluations.
3. Please confirm that an evaluation of snubber(s) has been performed for snubbers located on an unacceptable or damaged piping system discovered during the inspection of the piping system. Please discuss the results of these evaluations.
4. Please confirm that the testing of snubbers (small bore and large bore) as required by Technical Requirement Manual (TRM) Section 3.7.5, has been performed to ensure the operability of all the snubbers. (NRC authorized the use of alternative TRM Section 3.7.5 in lieu of the American Society of Mechanical Engineers (ASME) Code requirements in the safety evaluations for Relief Request CS-001 for North Anna, Unit 1 (ADAMS Accession No. ML091350058, dated June 10, 2009) and Relief Request N2-I4-CG-001 for North Anna, Unit 2 (ADAMS Accession No. ML110260022, dated January 28, 2011). Please confirm that snubbers tested during the initial visual examinations (Item 1, 2, and 3) were not included in the sample test performed per the TRM.

Enclosure

Long Term Questions:

Please confirm that analyses will be performed to ensure the snubbers are designed (with appropriate factors of safety) to withstand loads comparable to or greater than that observed during the August 23, 2011 earthquake.

Reactor Vessel Internal (RVI) components

- (1) The licensee, in Enclosure 3 of the submittal dated September 17, 2011, stated that structural loadings on the RVI components were used in its structural analysis as a part of the post-earthquake evaluation of the RVI components. The staff requests that the licensee confirm inclusion of the following RVI components in its structural evaluation: (a) Lower Support Forging; (b) Baffle Former Assembly including bolts; (c) Upper Core Plate; (d) Guide Tube; and (e) Core Barrel Assembly including bolts.
- (2) The Electric Power Research Institute Materials Reliability Program (MRP) developed guidelines for use by the industry in developing aging management programs for Pressurized Water Reactor (PWR) internals. The goal was to ensure the long-term safety, integrity, and reliability of PWR internals using proven and familiar methods for inspection, monitoring, surveillance, and reporting. This guidance, which is contained in MRP-227, "Pressurized Water Reactor Internals Inspections and Evaluation Guidelines," is applicable to all U.S. PWRs and includes visual and nondestructive examination inspection of RVI components. In the submittal dated September 17, 2011, the licensee stated that a visual examination of the RVI components will be performed at North Anna, Unit 2. Considering the potential impact of the recent seismic event, and the fact the North Anna, Units 1 and 2 do not have commitments to MRP-227, address how the visual examination of the North Anna, Unit 2 RVI components will be performed (to ensure that no functional damage occurred). Will the examinations performed achieve the equivalent objectives of MRP-227?
- (3) NAPS Updated Final Safety Analysis Report (UFSAR), Section 4.2.2.1 describes the design basis for the NAPS RVI structural support components which includes consideration of seismic loads, either from an operating-basis earthquake (OBE) or a design basis earthquake/safe-shutdown earthquake (DBE/SSE), as described in Table 3.2-1. UFSAR Table 3.7-4 lists maximum seismic stresses, maximum combined stresses (including seismic stresses) and the allowable stresses for safety-related plant components under OBE and DBE/SSE conditions. The NAPS UFSAR contains many citations for specific design criteria related to seismic loads. For example, UFSAR, Section 4.2.2 of the UFSAR states transverse loads from earthquake acceleration, coolant cross flow, and vibration are carried by the core barrel shell and distributed between the lower radial support to the vessel wall, and to the vessel flange and that the transverse loads of the fuel assemblies are transmitted to the core barrel shell by direct connection of the lower core plate to the barrel wall and by upper core plate alignment pins that are welded into the core barrel. In addition, Table 4.2-1 provides the maximum allowable deflections for the RVI component design at NAPS. Section 4.2.3.1.4 of the NAPS UFSAR states that a dynamic seismic analysis is required for the control rod drive mechanisms when a seismic disturbance has been postulated. The UFSAR specifically states that this analysis is needed to confirm the ability of the mechanisms to meet

ASME Code Section III allowable stresses and to confirm its ability to trip when subjected to the seismic disturbance.

For the UFSAR citations provided above, specify how the current design elements that consider seismic loading have been validated for the beyond design basis earthquake loadings at NAPS, and discuss the findings from the validation. Describe how this validation has occurred for all elements of the NAPS UFSAR that address seismic loading, and discuss the findings from these validations.

- (4) UFSAR Section 3.6.2.4 states that the NAPS main coolant loop piping was approved for leak-before-break (LBB) by the NRC. How have the effects of the beyond design basis earthquake loadings been evaluated to confirm that the NAPS LBB analyses are still valid, and what were the results from the evaluations?

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/RA/

Meena Khanna
Lead of North Anna Restart Team
Division of Operating Reactor Licensing
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ADAMS Accession No. ML11270A317

OFFICE	NRR/LPL2-1/PM	NRR/LPL2-1/PM	NRR/LA	NRR/BC
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DATE	09/28/11	09/28/11	09/28/11	09/28/11

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