

PMNorthAnna3COLPEmails Resource

From: Patel, Chandu
Sent: Tuesday, April 08, 2014 10:36 AM
To: 'na3raidommailbox@dom.com' (na3raidommailbox@dom.com)
Cc: PMNorthAnna3COLPEmails Resource; Carpentier, Marcia; Weisman, Robert; Karas, Rebecca; Graizer, Vladimir; Wang, Weijun; Jackson, Diane
Subject: RAI Letter 115 FSAR Sections 2.5.2, 2.5.5, and 3.7.4, North Anna COLA (52-017)
Attachments: RAI Letter 115 RAI_7472.docx; RAI Letter 115 RAI_7473.docx; RAI Letter 115 RAI_7474.docx; RAI Letter 115 RAI_7468.docx

By letter dated November 26, 2007, Dominion Virginia Power (Dominion) submitted a Combined License Application for North Anna, Unit 3, pursuant to Title 10 of the *Code of Regulations*, Part 52. The U.S. Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this COLA.

The NRC staff has identified that additional information is needed to continue portions of the review and a Request for Additional Information (RAI), is enclosed. To support the review schedule, Dominion is requested to respond within 30 days of the date of this request. If the RAI response involves changes to the application documentation, Dominion is requested to include the associated revised documentation with the response.

Sincerely,
Chandu Patel
Lead Project Manager for NA3 COLA

Hearing Identifier: NorthAnna3_Public_EX
Email Number: 1153

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Subject: RAI Letter 115 FSAR Sections 2.5.2, 2.5.5, and 3.7.4, North Anna COLA (52-017)
Sent Date: 4/8/2014 10:36:24 AM
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Files	Size	Date & Time
MESSAGE	828	4/8/2014 10:36:26 AM
RAI Letter 115 RAI_7472.docx		30170
RAI Letter 115 RAI_7473.docx		29813
RAI Letter 115 RAI_7474.docx		29468
RAILetter 115 RAI_7468.docx		29377

Options

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Request for Additional Information 115

Issue Date: 04/08/2014

Application Title: North Anna, Unit 3 - Docket Number 52-017

Operating Company: Dominion

Docket No. 52-017

Review Section: 02.05.02 - Vibratory Ground Motion

Application Section:

QUESTIONS

02.05.02-6

Section 2.5.2.5 defines the GMRS as a hypothetical free-field geologic outcrop at an elevation of 224 ft, which corresponds to the deepest excavation at the site. First, the FSAR states that the amplification factors and UHRS corresponding to the GMRS are developed using the RB/FB soil column (Page 2-355). Later on Page 2-373 (Section 2.5.2.6.1.7), the FSAR states that to introduce conservatism, the GMRS is the envelope of the two response spectra (RS) at the RB/FB and CB.

Provide schematic locations of the 5 boreholes with shear-wave velocity measurements relative to the 3 locations chosen for the GMRS and FIRS calculations (RB/FB, CB and FWSC) and the footprints of the Cat.1 structures.

Clarify why the GMRS was calculated as an envelope of the two above mentioned RS instead of the envelope of all three RS for which FIRS are calculated or the three RS from downholes with S-wave velocity measurements (B-901, B-907 and B-909) in the power block area.

In accordance with 10 CFR 100.23 and in conformance with Regulatory Guide (RG) 1.208, please provide further details on the specific profiles used for calculation of the GMRS, not including the soil profile above the GMRS elevation. Include maximum and minimum S-wave velocities in each layer, variations in layer thicknesses (if done) and the basis for choosing the upper and lower band profiles. Provide information on modulus reductions curves and densities used for the analysis.

In order for the staff to be able to use them efficiently in its own confirmatory analyses please provide tables (in digital format, Excel) of site amplification functions used for calculation of the GMRS.

Request for Additional Information 115

Issue Date: 04/08/2014

Application Title: North Anna, Unit 3 - Docket Number 52-017

Operating Company: Dominion

Docket No. 52-017

Review Section: 02.05.02 - Vibratory Ground Motion

Application Section:

QUESTIONS

02.05.02-7

Section 2.5.2.4.3.1 states that your earthquake recurrence assessment found that for sources hosting the Mineral Virginia earthquake, the updated earthquake catalog resulted in a small and localized increase on the rates per unit area and b-values for cells in the vicinity of the site as compared to the original CEUS SSC values. (p.2-347).

In accordance with 10 CFR 100.23 and in conformance with Regulatory Guide (RG) 1.208, please provide further details on the seismic hazard calculations:

1. Demonstrate quantitatively how much the recurrence rates changed by providing corresponding figures of original CEUS SSC and updated rates.
2. Provide plots of b-values demonstrating how much the b-values changed.
3. Provide comparisons of the total hazard calculated using the original CEUS SSC model and the updated model.

Request for Additional Information 115

Issue Date: 04/08/2014

Application Title: North Anna, Unit 3 - Docket Number 52-017

Operating Company: Dominion

Docket No. 52-017

Review Section: 03.07.04 - Seismic Instrumentation

Application Section:

QUESTIONS

03.07.04-2

Section 3.7.4.4 defines two plant-shutdown OBE spectra: (1) the first one as 1/3 of the CSDRS, and (2) the second one as the site-dependent OBE derived from the SSE spectra at grade. This section states that plant shutdown is required only if there is an exceedance of both OBE response spectra.

ISG-1 states that the OBE should be the lower of (1) and (2) to avoid explicit response or design analysis required for the OBE. Please clarify how Section 3.7.4.4 meets the guidance of ISG-1, or provide justification for an alternate approach.

Request for Additional Information 115

Issue Date: 04/08/2014

Application Title: North Anna, Unit 3 - Docket Number 52-017

Operating Company: Dominion

Docket No. 52-017

Review Section: 02.05.05 - Stability of Slopes

Application Section:

QUESTIONS

02.05.05-4

RAI 2.5.5 -4

Subsection 2.5.5.5 of the revised COLA Part 2, FSAR Chapter 2 states that "[e]xisting slopes and embankments that are not impacted by Unit 3 (such as the SWR embankments) do not require analysis for Unit 3 and are not addressed here." Although the SWR embankments were built for Units 1 and 2 and the construction of Unit 3 will not impact those embankments, the reevaluation of the site seismic hazard for Unit 1 and 2 based on the lessons learned from the Fukushima event determined that the updated site-specific GMRS will exceed the original design basis. Because any breach of the SWR embankment might have an impact on the Unit 3 site, in accordance with 10 CFR 100.23 and 10 CFR Part 50, Appendix S, please address the impact of possible failure of the SWR embankment on the stability of slopes at the Unit 3 site.