

Eugene S. Grecheck
Vice President
Nuclear Development

Dominion Energy, Inc. • Dominion Generation
Innsbrook Technical Center
5000 Dominion Boulevard, Glen Allen, VA 23060
Phone: 804-273-2442, Fax: 804-273-3903
E-mail: Eugene.Grecheck@dom.com



February 13, 2012

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No. NA3-11-061R
Docket No. 52-017
COL/MWH

DOMINION VIRGINIA POWER
NORTH ANNA UNIT 3 COMBINED LICENSE APPLICATION
SRP 02.05.02: RESPONSE TO RAI LETTERS 88 AND 94

On November 1, 2011, in Request for Additional Information (RAI) letter No. 88, the NRC requested additional information to support the review of certain portions of the North Anna Unit 3 Combined License Application (COLA). The RAI consisted of one question related to the August 23, 2011 Mineral, VA earthquake. Separately, on January 18, 2012, in RAI letter No. 94, the NRC also requested information related to the Mineral, VA earthquake. Because the topic and scope of the second request is similar to the first, a response to both of the questions, listed below, is provided in the enclosures:

- RAI 6032 Question 02.05.02-4 Effects on the COLA of the Mineral, VA Earthquake
- RAI 6220 Question 02.05.02-5 Schedule for Completion of the Assessment of the Effects on the COLA of the Mineral, VA Earthquake

Please contact Regina Borsh at (804) 273-2247 (regina.borsh@dom.com) if you have questions.

Very truly yours,

Eugene S. Grecheck

Enclosures:

1. Response to NRC RAI Letter 88, RAI 6032 Question 02.05.02-4
2. Response to NRC RAI Letter 94, RAI 6220 Question 02.05.02-5

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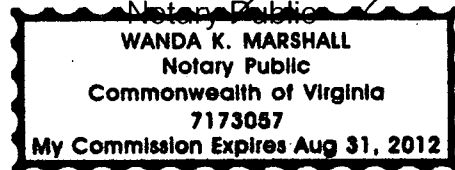
COMMONWEALTH OF VIRGINIA

COUNTY OF HENRICO

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Eugene S. Grecheck, who is Vice President-Nuclear Development of Virginia Electric and Power Company (Dominion Virginia Power). He has affirmed before me that he is duly authorized to execute and file the foregoing document on behalf of the Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 13th day of February, 2012
My registration number is 7173057 and my
Commission expires: August 31, 2012

Wanda K. Marshall



cc: U. S. Nuclear Regulatory Commission, Region II
C. P. Patel, NRC
T. S. Dozier, NRC
G. J. Kolcum, NRC

Commitments made by this letter:

Any needed FSAR changes as a result of the assessment described in this letter will be included in a future COLA submission.

ENCLOSURE 1

Response to NRC RAI Letter 88

RAI 6032 Question 02.05.02-4

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

**North Anna Unit 3
Dominion
Docket No. 52-017**

RAI NO.: 6032 (RAI Letter 88)

SRP SECTION: 02.05.02 – VIBRATORY GROUND MOTION

QUESTIONS for Geosciences and Geotechnical Engineering Branch 2 (RGS2)

DATE OF RAI ISSUE: 11/1/2011

QUESTION NO.: 02.05.02-4

In accordance with NUREG-0800, Standard Review Plan, Chapter 2.5.2, "Vibratory Ground Motion," and Regulatory Guide (RG) 1.208, "A Performance-Based Approach to Define the Site-Specific Earthquake Ground Motion" please assess the adequacy of the existing EPRI-SOG seismic source model in light of the August 23, 2011 **M5.8** Mineral, Virginia earthquake. The earthquake was located in the Central Virginia Seismic Zone, which is modeled by all of the EPR-SOG ESTs except for the Law Engineering Team. Please review the adequacy of each of the ESTs source models that incorporate the earthquake of the size of the Mineral, Virginia, earthquake on August 23, 2011, (including the Law Engineering Team) in terms of the maximum magnitude probability distribution, source geometry, probability of activity, and seismicity rates. In addition, please address the impact on the GMRS.

In addition, please provide your assessment of the ground shaking experienced at NANPP Units 1 and 2 during the August 23, 2011 **M5.8** Mineral, Virginia earthquake and address the impact on the GMRS from the COL application for NANPP Unit 3.

Dominion Response

As noted in the RAI question, an earthquake occurred in central Virginia near the town of Mineral on August 23, 2011. Instruments located at the North Anna Unit 1 containment structure base mat recorded earthquake data. Certified data regarding the earthquake was received on September 13, 2011 and evaluated for its impact on North Anna Unit 3.

On December 12, 2011, a report was submitted to NRC (Dominion letter NA3-11-068, *10 CFR 21 Notification of Impact of New Seismic Data on ESP Seismic Analyses*). The report stated that this best-available earthquake data exceeded, at low frequencies, the safe-shutdown earthquake (SSE) response spectra established in the North Anna Early Site Permit (ESP-003). It also exceeded the ground motion response spectra (GMRS) for the Unit 3 site as presented in the North Anna Unit 3 COLA FSAR.

In the December 12, 2011 letter, Dominion also reported that it was assessing the August 23 event to determine whether any changes should be made to the Unit 3 application in light of the earthquake and that Dominion expected the assessment would not be completed until the third quarter of 2012.

To perform the assessment, Dominion plans to evaluate incorporation of the event using the new Central and Eastern United States (CEUS) Seismic Source Characterization (SSC) model, which addresses earthquakes through 2008. The CEUS-SSC catalog will be updated through 2011 to include the August 23 event. This model would incorporate the EPRI (2004, 2006) earthquake ground motion model for CEUS locations to develop a new hard rock probabilistic seismic hazard analysis (PSHA) and design response spectra. The methodology to develop the GMRS from the hard rock PSHA will follow Regulatory Guide (RG) 1.208, *A Performance-Based Approach to Define the Site-Specific Earthquake Ground Motion*, March 2007.

As also described in Dominion's December 12, 2011 letter, the US-APWR standard plant (i.e., Reactor Building Complex and Power Source Buildings) certified seismic design response spectra (CSDRS) envelop the actual seismic response recorded on August 23, 2011. However, the site-specific Seismic Category I Ultimate Heat Sink Related Structures, Essential Service Water Pipe Tunnels and Power Source Fuel Storage Vaults used the PSHA results based on the North Anna ESP. The recorded seismic response on August 23, 2011 exceeded the foundation input response spectra (FIRS) at low frequencies. As part of the assessment, the FIRS would be evaluated using the methodology described above.

Proposed COLA Revision

Any needed FSAR changes as a result of the assessment will be included in a future COLA submission.

ENCLOSURE 2

Response to NRC RAI Letter 94

RAI 6220 Question 02.05.02-5

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

**North Anna Unit 3
Dominion
Docket No. 52-017**

RAI NO.: 6220 (RAI Letter 94)

SRP SECTION: 02.05.02 – VIBRATORY GROUND MOTION

QUESTIONS for Geosciences and Geotechnical Engineering Branch 2 (RGS2)

DATE OF RAI ISSUE: 1/18/2012

QUESTION NO.: 02.05.02-5

On November 16, 2011, Dominion issued a Part 21 notification to the NRC stating that new data recorded at the North Anna Unit 1 containment structure base mat during the August 23, 2011, Mineral, Virginia earthquake demonstrated low-frequency exceedance of the safe-shutdown earthquake (SSE) established in the North Anna Early Site Permit (ESP) and the ground motion response spectra (GMRS) developed for the North Anna Unit 3 COLA. The letter states that site-specific Seismic Category I structures use design inputs presented in the ESP and that the recorded seismic response on August 23, 2011, exceeded the seismic design spectra presented in the ESP and COLA. You conclude by stating that "Dominion is assessing whether any changes should be made to the North Anna Unit 3 COLA."

As a supplement to RAI 02.05.02-4, issued November 1, 2011, provide a schedule for when the assessment discussed in the Part 21 notification will be completed and available for staff review. Please also describe how you will address the GMRS in the current COLA application in view of the recent earthquake data that exceed the GRMS, including your basis for your approach.

Dominion Response

Dominion's response to RAI 6032, question 02.05.02-4 (Enclosure 1 to this letter) addresses the above request.

Proposed COLA Revision

Dominion's response to RAI 6032, question 02.05.02-4 (Enclosure 1 to this letter) addresses a proposed COLA revision.