

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

October 12, 2011

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

Serial No. NA3-11-052R
Docket No. 52-017
COL/MWH

DOMINION VIRGINIA POWER
NORTH ANNA UNIT 3 COMBINED LICENSE APPLICATION
SRP 03.07.04: RESPONSE TO RAI LETTER 83

On August 18, 2011, the NRC requested additional information to support the review of certain portions of the North Anna Unit 3 Combined License Application (COLA), which consisted of one question. The response to the following Request for Additional Information (RAI) Question is provided in Enclosure 1:

- RAI 5939 Question 03.07.04-1 Free-Field Instrumentation

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

Very truly yours,

Eugene S. Grecheck

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

DO89
NRC

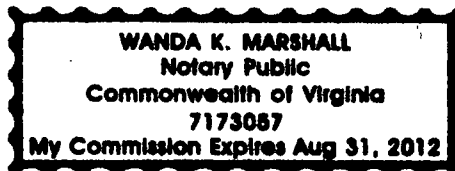
COMMONWEALTH OF VIRGINIA

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 12th day of October, 2011
My registration number is 7173057 and my
Commission expires: August 31, 2012

Wanda K. Marshall
Notary Public



Enclosure:

1. Response to NRC RAI Letter 83, RAI 5939 Question 03.07.04-1

Commitments made by this letter:

None

ENCLOSURE 1

Response to NRC RAI Letter 83

RAI 5939 Question 03.07.04-1

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

North Anna Unit 3

Dominion

Docket No. 52-017

RAI NO.: 5939 (RAI Letter 83)

SRP SECTION: 03.07.04 – SEISMIC INSTRUMENTATION

QUESTIONS for Geosciences and Geotechnical Engineering Branch 2 (RGS2)

DATE OF RAI ISSUE: 8/18/2011

QUESTION NO.: 03.07.04-1

FSAR section 3.7.4.2 states that the free-field instrumentation will be installed "In the vicinity of the power block area at surface grade, on top of backfill material, and sufficiently far away from structures in order to appropriately measure free-field ground motion". FSAR section 3.7.4.1 states that "OBE motion is measured at plant grade with seismic instrumentation located in the free-field". The OBE is defined as 1/3 of the minimum site dependent SSE at site grade (elevation of 290 ft). FSAR Figures 3.7-213 and 3.7-214 demonstrate results of calculations of horizontal and vertical SSE and OBE, and their comparisons with the CSDRS.

Considering the site subsurface complexity and the varying elevation of the ground surface please specify at which location you are planning to put the free-field instrument and provide details how SSE and OBE spectra at plant grade were developed.

Dominion Response

The specific location of the free-field instrumentation will be finalized during final design stages considering site physical features such as location of access routes and above/below grade SSCs. The location will be determined in accordance with Regulatory Position 1.3.1 of Regulatory Guide 1.12, *Nuclear Power Plant Instrumentation for Earthquakes*, Revision 2, to minimize the effects associated with surface features, buildings, and components on the recorded ground motion. As described in FSAR Section 3.7.4.2, the free-field instrumentation will be installed in the vicinity of the power block area at grade (nominal Elevation of 290 ft – NAVD88), on top of the backfill material, and sufficiently far away from the structures in order to appropriately measure free-field ground motion.

The effect of subsurface variability within the proposed free-field instrument installation location is bounded by the consideration of subsurface variability in the calculation of the Performance-Based Surface Response Spectra (PBSRS). The calculation of the free-field PBSRS, described

in FSAR Section 300.1.3, follows the same methodology and uses the same soil profiles as used in the calculation of the Foundation Input Response Spectra (FIRS). These soil profiles are based on the best estimate (BE) shear-wave velocity (V_s) profile, the variation of V_s , and the soil and rock layer thicknesses observed at the location of each of the following structures:

- Reactor Building Complex,
- Power Source Buildings,
- Ultimate Heat Sink Related Structures A through D, and
- East and West Emergency Service Water Pipe Tunnels

As described in FSAR Section 3.7.1.1, the minimum safe-shutdown earthquake (SSE) at grade is defined as the minimum of the PBSRS corresponding to these structures augmented by the minimum required response spectra (US-APWR CSDRS anchored at 0.1g PGA) which serve as conservative spectra for an SSE event at the grade of the site. Accordingly, one-third of the minimum SSE at grade is defined as the free-field site operating basis earthquake (OBE) at grade.

Proposed COLA Revision

None