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

Dominion®

October 23, 2012

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

Serial No. NA3-12-019R
Docket No. 52-017
COL/BCB

DOMINION VIRGINIA POWER
NORTH ANNA UNIT 3 COMBINED LICENSE APPLICATION
SRP 02.04.12: RESPONSE TO RAI LETTER 103

On July 20, 2012, 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 the enclosure:

- RAI 6565, Question 02.04.12-3 Maximum Groundwater Elevation

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

Very truly yours,

Eugene S. Grecheck

Enclosure: Response to NRC RAI Letter No. 103, RAI 6565, Question 02.04.12-3

Commitments made by this letter: None

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NRO

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 23rd day of October, 2012
My registration number is 7173057 and my
Commission expires: August 31, 2016

Wanda K. Marshall
Notary Public

WANDA K. MARSHALL
NOTARY PUBLIC
REGISTRATION # 7173057
COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES
AUGUST 31, 2016

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

ENCLOSURE

Response to NRC RAI Letter No. 103

RAI No. 6565, Question 02.04.12-3

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

North Anna Unit 3

Dominion

Docket No. 52-017

RAI NO.: 6565 (RAI LETTER NO. 103)

SRP SECTION: 02.04.12 – GROUNDWATER

DATE OF RAI ISSUE: 07/20/2012

QUESTION NO.: 02.04.12-3

The staff has reviewed the North Anna Final Safety Analysis Report (FSAR), Rev. 5. As described in FSAR Rev. 5, section 2.4.12.4, Dominion has concluded that the maximum post-construction groundwater elevation in the power block area will be 86.69 m (284.4 ft) NAVD88. This elevation is higher than the Maximum Elevation of Groundwater site characteristic that is stated in the Early Site Permit (ESP), Appendix A, as 82.3 m MSL (270 ft MSL).

Under 10 CFR 52.79(b)(2), if an application for a combined license references an ESP, the application must either demonstrate, among other things, that the design of the facility falls within the site characteristics specified in the ESP or include a request for a variance that complies with 10 CFR §§ 52.39 and 52.93.

Although the ESP site characteristic is also given as "... or 1 ft below the free surface, whichever is higher," this alternative was apparently intended to mean 1 ft below plant grade.

The staff requests that the applicant either (a) request and justify a variance from the ESP Maximum Elevation of Groundwater site characteristic to make it consistent with the maximum groundwater elevation predicted in the FSAR, or (b) provide an explanation why no variance is needed.

Dominion Response

No variance is needed. The explanation is provided below.

The Site Safety Analysis Report (SSAR) in the Early Site Permit (ESP) Application described a site characteristic value of 270 ft NGVD29 (269.14 ft NAVD88)[1] for the maximum groundwater elevation. This value was presented in SSAR Table 1.9-1 and was defined as: "Site basis for subsurface hydrostatic loading due to difference in elevation between the site grade elevation in the power block area and the maximum site ground water level."

SSAR Section 2.4.12.4 described a planned plant grade of 271 ft for the power block area (containment building and associated structures for new units) as the basis for a maximum groundwater elevation of 270 ft. This section also noted that other structures may be constructed at higher elevations in support of new units on the ESP site, and that a higher design groundwater level may be justified. The intent of this statement was to acknowledge that plant grade rises from the northeast to the southwest across the site and that the maximum groundwater elevation would be relative to plant grade. However, the SSAR did not explicitly describe the maximum groundwater elevation site characteristic value as a relative value that would be at least one foot below final plant grade.

Section 2.4.12.3 of the NRC staff's Safety Evaluation Report (SER) for the ESP (Ref.) noted that the groundwater levels approximately follow the undulations of the ground surface, varying from about 250 ft to over 300 ft, and that the groundwater levels could rise as high as 1 ft below the ground surface within the ESP site footprint. The staff recognized that the site characteristic for maximum groundwater elevation would need to be relative to the plant grade surface to account for the varying ground surface elevations and the potential for a change in the final plant grade elevation. As a result, the SER established the maximum groundwater elevation site characteristic value at 270 ft, or 1 ft below the free surface, whichever is higher (Reference SER Sections 2.4.3.3, 2.4.8.3, and 2.4.12.3; Table 2.4.14-1; and Appendix A).

When the NRC issued Early Site Permit ESP-003 for the North Anna site, the site characteristic value for the maximum groundwater elevation was included in Appendix A and remained essentially the same as in the SER: "82.3 m (270 ft) MSL or 1 ft below the free surface, whichever is higher." Based on the discussion in the ESP SER, it is reasonable to interpret "free surface" as referring to the final plant grade elevation. Further, because the provisions of the ESP take precedence over the SSAR, it is reasonable to view the site characteristic in the ESP as superseding the characteristic

[1] In the North Anna 3 COLA, references to elevation relative to mean sea level (MSL) are presented in both English and metric units, and reference is made to two vertical datum, NGVD 29 and NAVD88. To enhance readability, after this initial reference, the response refers only to traditional English units (i.e., feet). Further reference to metric units and the two vertical datum is omitted except where the response incorporates a direct quote.

originally proposed in the SSAR. Indeed, 10 CFR 52.1 explicitly states: "Site characteristics are specified in an early site permit or in a final safety analysis report for a combined license." Similarly, for a COL application referencing an ESP, 10 CFR 52.79(b) requires the final safety analysis report to demonstrate that the design of the facility "falls within the site characteristics and design parameters *specified in the early site permit.*" Moreover, it is difficult to see why a site characteristic value initially proposed in an SSAR would be considered later in determining whether a variance is necessary when the ESP characteristic value has already been determined by the NRC to be adequate.

For the North Anna Unit 3 COLA, the plant grade elevation of the power block changed from what was described in the SSAR (i.e., 271 ft) to 290 ft. As was anticipated in the SER, a higher plant grade elevation for the power block area resulted in a higher groundwater elevation. For the higher Unit 3 plant grade elevation of 290 ft, the Unit 3 maximum groundwater elevation is 284.4 ft. The Unit 3 maximum groundwater elevation of 284.4 ft remains bounded by the site characteristic, which by definition is the value in the ESP of 270 ft, or 1 ft below the free surface, whichever is higher.

Reference

NUREG-1835, Safety Evaluation Report for an Early Site Permit (ESP) at the North Anna ESP Site, U.S. Nuclear Regulatory Commission, September 2005 (ML052710305).

Proposed COLA Revision

None.