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January 3, 2012

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

Serial No. NA3-11-055R  
Docket No. 52-017  
COL/DWL

**DOMINION VIRGINIA POWER**  
**NORTH ANNA UNIT 3 COMBINED LICENSE APPLICATION**  
**SRP 19: RESPONSE TO RAI LETTER 85**

On September 28, 2011, the NRC requested additional information to support the review of certain portions of the North Anna Unit 3 Combined License Application (COLA). The response to the following Request for Additional Information (RAI) Question is provided in Enclosure 1:

- RAI 6021 Question 19-5 Phase II D-RAP Table

This information will be incorporated into a future submission of the North Anna Unit 3 COLA, as described in the enclosure.

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

Very truly yours,

Eugene S. Grecheck

DOB9  
NRO

Enclosures:

1. Response to NRC RAI Letter No. 85, RAI 6021 Question 19-5

Commitments made by this letter:

1. Incorporate proposed changes in a future COLA submission.

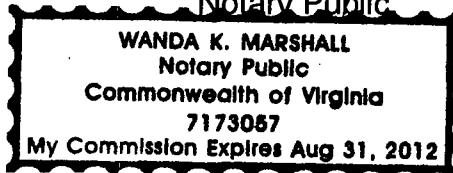
COMMONWEALTH OF VIRGINIA

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 3<sup>rd</sup> day of January, 2012  
My registration number is 71730570 and my  
Commission expires: August 31, 2012

Wanda K. Marshall  
Notary Public



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

**ENCLOSURE 1**

**Response to NRC RAI Letter 85**

**RAI 6021, Question 19-5**

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**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

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

**RAI NO.: 6021 (RAI Letter 85)**

**SRP SECTION: 19 – Probabilistic Risk Assessment and Severe Accident  
Evaluation**

**QUESTIONS for PRA and Severe Accident Branch (SPRA)**

**DATE OF RAI ISSUE: 09/28/2011**

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**QUESTION NO.: 19-5**

Based on staff review of FSAR Chapter 2.4.4, the staff understands that North Anna has partially buried water storage basins that provide the required 30 day water supply without makeup during accident conditions. Based on the availability of these water storage basins, the applicant has concluded that even if Lake Anna were to be drained due to a dam failure, no safety-related structures or systems for Unit 3 would be adversely affected. The staff then reviewed Table 17.4-201, Risk-Significant SSC's (Phase II D-RAP). The staff found that the partially buried water storage basins were not added to DRAP as plant specific SSCs. Given the US Bureau of Reclamation perspective of dam failure rates based on published literature, the failure rate of dams is very roughly estimated as 1/10,000 per year depending on age and failure mechanism. Based on this observation, the staff is requesting that the applicant add the partially buried water storage basins to Table 17.4-201, Risk Significant SSC's (Phase II D-RAP).

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**Dominion Response**

Each Ultimate Heat Sink Related Structure (UHSRS) consists of a cooling tower enclosure, an Essential Service Water pump house, and a water storage basin.

The UHSRS water storage basins are not modeled in the PRA because the probability of failure of any one of these structures is sufficiently lower than the higher failure probabilities of other components in the same system train. The failure of one of the four UHSRS water storage basins will not result in the loss of the ability to supply the required 30 days of cooling water since each basin contains one-third of the total water

volume needed to satisfy the 30-day cooling requirement without makeup. The required 30-day cooling water supply is independent of Lake Anna and, therefore, a dam failure would not impact the function of the four UHSRSs.

Site-specific SSCs were initially reviewed for inclusion in the D-RAP based on the criteria described in the US-APWR DCD. Subsequent to that review, the site-specific Seismic Margin Analysis (SMA) was updated to include the UHSRSs and the Power Source Fuel Storage Vaults (PSFSV).

A recent review of site-specific SSCs was performed and determined that the UHSRSs and the PSFSVs should have been included in the D-RAP, based on the updated site-specific SMA. This review did not identify any other site-specific SSCs for inclusion in the D-RAP.

### **Proposed COLA Revision**

FSAR Table 17.4-201 will be revised as shown in the attached markup to include the UHSRSs and PSFSVs in the D-RAP.

### **Markup of North Anna COLA**

The attached markup represents Dominion's good faith effort to show how the COLA will be revised in a future COLA submittal in response to the subject RAI. However, the same COLA content may be impacted by revisions to the DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be somewhat different than as presented herein.

NAPS COL 17.4(1) Table 17.4-201 Risk-Significant SSC's (Phase II D-RAP)

#	Systems, Structures or Component (SSCs)	Rationale <sup>(1)</sup>	Insights and Assumption
1	Ultimate Heat Sink Cooling Tower Fan 1 [UHS-MFN-001A(B,C,D)]  Ultimate Heat Sink Cooling Tower Fan 2 [UHS-MFN-002A(B,C,D)]	RAW/CCF/LPSD	<p>The ESWS transfers heat from the CCWS to the ultimate heat sink (UHS), which is the cooling towers. This system supports the CCWS, which supports various safety and non-safety mitigation systems. Accordingly, reliability of the CCWS and EFW systems has significant impact on risk.</p> <p>Since ESWS consists of four independent trains, failure of one train does not have a significant impact on risk. However, failures of SSCs that impact multiple trains have significant impact on risk. Accordingly, SSCs that have potential to cause common cause failures among multiple trains are risk significant.</p>
2	UHS Cooling Tower Isolation Valve [UHS-MOV-509A (B,C,D)]	RAW/CCF	<p>The two valves are interlocked. When main flowpath valves are opened during normal operation, the bypass valves are normally closed. When bypass mode is applied to prevent freezing of ESWS, the bypass valves associated with the standby towers will stay closed regardless of the bypass valve position of the operating cooling tower. If an accident occurs during bypass mode, the valves will be automatically returned to their normal position upon detection of signal.</p>
3	UHS Cooling Tower Bypass Valve [UHS-MOV-510A (B,C,D)]	RAW/CCF	<p>The two valves are interlocked. When main flowpath valves are opened during normal operation, the bypass valves are normally closed. When bypass mode is applied to prevent freezing of ESWS, the bypass valves associated with the standby towers will stay closed regardless of the bypass valve position of the operating cooling tower. If an accident occurs during bypass mode, the valves will be automatically returned to their normal position upon detection of signal.</p>
<u>4</u>	<u>UHS Related Structures</u>	<u>SM</u>	<p><u>UHS related structures include the UHS Basins and UHS/ESW Pump house ventilation structures. Failure of UHS related structures will result in loss of cooling water for the ESWS, which in turn results in the loss of CCWS function. Loss of two or more UHS Basins will result in the loss of the capability to dissipate heat loads from the ESWS for the analyzed duration of at least 30 days during safe shutdown following a loss of offsite power event, and, consequently, result in a loss of capability to dissipate heat loads from safety-related CCWS heat exchangers and essential chiller units.</u></p>

NAPS COL 17.4(1) Table 17.4-201 Risk-Significant SSC's (Phase II D-RAP) (continued)

#	Systems, Structures or Component (SSCs)	Rationale <sup>(1)</sup>	Insights and Assumption
<u>5</u>	<u>PSFSV</u>	<u>SM</u>	<u>The PSFSVs store the fuel supply required for Class 1E GTGs, the components needed for safe shutdown during seismic events. The Class 1 GTGs serve as the first line of defense for LOOP.</u>

Notes:

1. Definition of Rationale Terms:  
 RAW = risk achievement worth  
 CCF = common cause failure  
 LPSD = low-power and shut down operation  
SM = seismic event