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July 18, 2011

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

Serial No. NA3-11-039R  
Docket No. 52-017  
COL/DWL

**DOMINION VIRGINIA POWER**  
**NORTH ANNA UNIT 3 COMBINED LICENSE APPLICATION**  
**SRP 11.04: RESPONSE TO RAI LETTER 76**

On June 16, 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 three questions. The responses to the following three Request for Additional Information (RAI) questions are provided in Enclosures 1 through 3:

- RAI 5461, Question 11.04-6      IRSF Lighting During Power Loss
- RAI 5461, Question 11.04-7      IRSF Electrical Distribution Testing Frequency
- RAI 5461, Question 11.04-8      Impact of Power Loss on IRSF Systems

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

Very truly yours,

Eugene S. Grecheck

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Enclosures:

1. Response to NRC RAI Letter No. 76, RAI 5461 Question 11.04-6
2. Response to NRC RAI Letter No. 76, RAI 5461 Question 11.04-7
3. Response to NRC RAI Letter No. 76, RAI 5461 Question 11.04-8

Commitments made by this letter:

None

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 18th day of July, 2011

My registration number is 310847 and my

Commission expires: 4/30/15

  
Notary Public

Ginger Lynn Rutherford  
NOTARY PUBLIC  
Commonwealth of Virginia  
Reg. # 310847  
My Commission Expires 4/30/2015

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

**ENCLOSURE 1**

**Response to NRC RAI Letter 76**

**RAI 5461, Question 11.04-6**

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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.: 5461 (RAI Letter 76)**

**SRP Section: 11.04 – Solid Waste Management System**

**QUESTIONS for Electrical Engineering Branch (EEB)**

**DATE of RAI issue: 06/16/2011**

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**QUESTION NO.: 11.04-6**

FSAR states that the 120/208 VAC distribution panel is designed to provide power to 120 or 208 VAC rated loads (such as adequate lighting throughout the facility) in the IRSF. Discuss type of lighting that will be available during loss of 480 VAC power.

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**Dominion Response**

The US-APWR DCD Section 9.5.3 describes the lighting systems. This section is incorporated by reference into the North Anna Unit 3 COLA. DCD Section 9.5.3.1 states that normal lighting powered from the normal power supply system is provided in all plant indoor and outdoor areas, during all modes of plant operation and also design basis events, except for LOOP. The DCD further states that emergency lighting, powered by self-contained battery packs, is provided in areas required for safe movement of people to the access and egress routes during plant emergencies and loss of normal power supply. These lighting systems described in DCD Section 9.5.3 also apply to the Interim Radwaste Storage Facility (IRSF). Therefore, in the event of a loss of normal 480 VAC power, adequate emergency lighting would be available in the IRSF.

**Proposed COLA Revision**

None

**ENCLOSURE 2**

**Response to NRC RAI Letter 76**

**RAI 5461, Question 11.04-7**

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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.: 5461 (RAI Letter 76)**

**SRP Section: 11.04 – Solid Waste Management System**

**QUESTIONS for Electrical Engineering Branch (EEB)**

**DATE of RAI issue: 06/16/2011**

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**QUESTION NO.: 11.04-7**

FSAR Subsection 11AA.4.5 states that the electrical distribution system is designed to permit periodic in-service testing and inspection of components to assure system integrity and capability to perform its intended function. Provide frequency of in-service testing and inspection of electrical distribution system components.

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**Dominion Response**

Inservice inspection and testing frequencies for non-safety related, low voltage level AC electrical distribution system components are beyond the level of detail required by RG 1.206 and are not provided in the North Anna Unit 3 COLA for this system. When these systems are fully designed, the Maintenance Rule program described in Section 17.6 will be used to develop the details of the inspection and testing program, including the required intervals for testing. The milestone for Maintenance Rule implementation is provided in FSAR Table 13.4-201.

**Proposed COLA Revision**

None

**ENCLOSURE 3**

**Response to NRC RAI Letter 76**

**RAI 5461, Question 11.04-8**

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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.: 5461 (RAI Letter 76)**

**SRP Section: 11.04 – Solid Waste Management System**

**QUESTIONS for Electrical Engineering Branch (EEB)**

**DATE of RAI issue: 06/16/2011**

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**QUESTION NO.: 11.04-8**

FSAR Subsection 11AA.1.2 states that as hydrogen and other combustible gases are generated from the radiolysis and hydrolysis reactions, the IRSF has a ventilation design to prevent the buildup of these gases to the lower flammability limit. Additionally, FSAR Subsection 11AA.4.1 states that heat tracing of the fire water standpipe is provided to prevent freezing. Since IRSF is powered from Unit 3 Non-Class 1E 480 VAC, 3 phase, 60 Hz distribution system, discuss the following during a loss of power:

- a. How the ventilation will prevent the buildup of these gases to the lower flammability limit.
  - b. The effect of loss of heat tracing on the standpipe for the fire suppression system.
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**Dominion Response**

- a. As stated in FSAR Section 11AA.3.5, a combustible gas generation rate was calculated using industry published data (G-values = 0.8, from a range of 0.3 to 0.8 molecules/100 eV). The combustible gases generation rate was determined to be very low. It would take approximately 7 years for the gases to build up to the lower flammability limit (4%) when ventilation is not available, assuming that the building is completely sealed (no air leakage) and the waste containers are filled at the maximum radiation doses. From this analysis, it is concluded there is no need to rely on ventilation to maintain combustible gases below the lower flammability limit.



- b. The standpipe for the fire protection system is for a manual hose station and is located in the IRSF truck bay. If normal power is lost to the heat tracing for the standpipe, power will be restored as with any other non-safety building and is expected to be restored before the standpipe is able to freeze. However, as described in FSAR Section 11AA.4.3, Fire Protection System and Fire Hazards Analysis, the manual hose station located in the truck bay and portable fire extinguishers are listed as the secondary fire suppression methods, in the event of a loss of the primary automatic fire suppression system. This area is also provided with automatic smoke detection and is within a reasonable distance from a yard fire hydrant for use by the fire brigade.

**Proposed COLA Revision**

None