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Dominion®

August 13, 2012

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

Serial No. NA3-12-008RA
Docket No. 52-017
COL/BCB

DOMINION VIRGINIA POWER
NORTH ANNA UNIT 3 COMBINED LICENSE APPLICATION
SRP 09.02.05: RESPONSE TO RAI LETTER 96--SUPPLEMENT

On February 28, 2012, the NRC requested additional information to support the review of certain portions of the North Anna Unit 3 Combined License Application (COLA), consisting of one question. The response to Request for Additional Information (RAI) 6198, Question 09.02.05-2 was provided in Dominion letter NA3-12-008R, dated April 13, 2012 (ML12108A017).

Dominion has since determined that supplementing the original response would help clarify how the 0% exceedance ambient wet-bulb temperature was used in the analysis of Ultimate Heat Sink performance. It is expected that this clarification would be beneficial to the NRC Staff in conducting its review. The clarifying information is provided in the enclosure and will be incorporated into a future submission of the North Anna Unit 3 COLA.

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

Very truly yours,

Eugene S. Grecheck

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NRO

Enclosure:

1. Supplemental Response to NRC RAI Letter No. 96, RAI 6198, Question 09.02.05-2.

Commitments made by this letter:

1. This additional information is provided in Enclosure 1 and will be incorporated into a future submission of the North Anna Unit 3 COLA, as described in the enclosure.

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 August, 2012
My registration number is 7173057 and my
Commission expires: August 31, 2012

Wanda K. Marshall
Notary Public

WANDA K. MARSHALL
Notary Public
Commonwealth of Virginia
7173057
My Commission Expires Aug 31, 2012

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

ENCLOSURE 1

Supplemental Response to NRC RAI Letter No. 96

RAI No. 6198, Question 09.02.05-2

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

North Anna Unit 3

Dominion

Docket No. 52-017

RAI NO.: 6198 (RAI LETTER NO. 96)

SRP SECTION: 09.02.05 – ULTIMATE HEAT SINK

QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)

DATE OF RAI ISSUE: 02/28/2012

Supplemental Response to QUESTION NO.: 09.02.05-2

Dominion has determined that a supplement to the response to RAI 6198, Question 09.02.05-2 (Serial No. NA3-12-008R) would clarify how the 0% exceedance ambient wet-bulb temperature was used in the analysis of Ultimate Heat Sink (UHS) performance.

Dominion Supplemental Response

- Response Part (a)

  As described in FSAR Subsection 9.2.5.2.3, the UHS is analyzed using the heat loads provided in DCD Table 9.2.5-2 for LOCA and safe shutdown conditions with a loss of offsite power (LOOP). The analysis is performed using an ambient wet-bulb temperature of 84.9°F (maximum 0% exceedance from SSAR Table 2.3-18) and shows that the UHS is capable of removing ESWS heat loads during all plant operating and accident conditions with an ambient wet-bulb temperature of 84.9°F or lower, without exceeding the maximum UHS basin temperature of 95°F.

  FSAR Subsection 9.2.5.2.3 will be revised to describe how this maximum 0% exceedance ambient wet-bulb temperature of 84.9°F is used to evaluate the heat removal capability of the UHS during an accident.

- Response Part (c)

  The initial response to Part (c) states that the UHS water temperature operability limit of $\leq 93°F$ is confirmed by analyses using the maximum 0% exceedance ambient wet-bulb temperature of 84.9°F (SSAR Table 2.3-18). This statement refers to an analysis, using a wet-bulb temperature of 84.9°F, which confirms that the UHS basin water temperature will not exceed 95°F during all plant conditions, including normal power operation and accident conditions. As noted above, FSAR Subsection 9.2.5.2.3 will be revised to add this description.

Proposed COLA Revision

FSAR Subsection 9.2.5.2.3 will be revised as indicated on the attached markup.

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.

stopped to preclude system inventory drain down, which could result in water hammer at pump restart. Table 9.2.5-4R shows the redundancy for the above functions.

9.2.5.2.3 System Performance

NAPS COL 9.2(3)
NAPS COL 9.2(4)
NAPS COL 9.2(5)
NAPS COL 9.2(18)
NAPS COL 9.2(19)
NAPS COL 9.2(20)
NAPS COL 9.2(21)
NAPS COL 9.2(28)
NAPS COL 9.2(31)
NAPS CDI

Replace the content of DCD Subsection 9.2.5.2.3 with the following.

DCD Table 9.2.5-1 lists the UHS peak heat loads during accident conditions (i.e., LOCA) with two trains in operation and four trains in operation. DCD Table 9.2.5-2 provides the heat loads for LOCA and safe shutdown conditions with loss of off-site power for two-train and four-train operations of the ESWS. The heat load per train with two-train operation is higher than the heat load per train with four-train operation. UHS design requires water inventory (capacity) of three basins for accident mitigation. Operation of two UHS trains requires larger water volume per (operating) basin than the operation of four trains. Therefore, the UHS (basin) is sized assuming two-train operation of the ESWS, which bounds four-train operation of the ESWS.

The UHS is designed with sufficient inventory to provide cooling for at least 30 days following an accident with no makeup water. The UHS must be capable of dissipating the design bases heat loads under the worst environmental conditions that minimize heat dissipation without exceeding the maximum ESW supply temperature of 95°F.

Meteorological parameters for the UHS design are identified in SSAR Section 2.3.1.3.8. Based on this, the worst 30 days daily average wet bulb temperature is 76.3°F. The cooling towers are designed for a 30 day daily average wet bulb temperature of 78.3°F (includes 2°F recirculation penalty).

The UHS is analyzed using the heat loads provided in DCD Table 9.2.5-2 for LOCA and safe shutdown conditions with LOOP and an ambient wet-bulb temperature of 84.9°F (maximum 0% exceedance from SSAR Table 2.3-18). The analysis shows that the UHS is capable of removing ESWS heat loads during all plant operating and accident conditions without exceeding a maximum ESW supply temperature of 95°F.

Per Subsection 9.2.1.2.2, each ESWP is designed to provide 13,000 gpm flow. Since cooling water flow is inversely proportional to the cooling tower temperature range, for conservatism, a lower ESW flow of 12,000 gpm to each cooling tower is used in the analysis.