Dominion Nuclear North Anna, LLC
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Dominion®

April 13, 2005

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

Serial No. 05-209A
ESP/JDH
Docket No. 52-008

DOMINION NUCLEAR NORTH ANNA, LLC
NORTH ANNA EARLY SITE PERMIT APPLICATION
RESPONSE TO SUPPLEMENTAL REQUEST FOR ADDITIONAL INFORMATION

In its March 18, 2005 letter titled "Supplemental Request for Additional Information (RAI) Regarding the Environmental Portion of the Early Site Permit (ESP) Application for the North Anna Site," the NRC requested additional information regarding certain aspects of the environmental portion of Dominion Nuclear North Anna, LLC's North Anna Early Site Permit application. The RAI consisted of four questions. This letter contains our response to the three questions listed below:

- RAI 1, 2 and 3

Our response to RAI 4 was submitted separately on April 12, 2005.

It is our intent to update the North Anna ESP application to reflect our responses to these questions. Planned changes to the application are identified following the response to each question.

If you have any questions or require additional information, please contact Mr. Tony Banks at 804-273-2170.

Very truly yours,

Eugene S. Grecheck
Vice President-Nuclear Support Services

Enclosure: Response to Supplemental Environmental RAI 1, 2 and 3

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Commitments made in this letter:

1. Update the North Anna ESP application to reflect responses to the supplemental environmental questions.

cc: (with enclosure)

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Sam Nunn Atlanta Federal Center
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Mr. Jack Cushing
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Mr. J. T. Reece
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COMMONWEALTH OF VIRGINIA

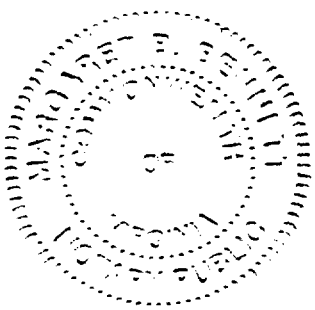
COUNTY OF HENRICO

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 Support Services, of Dominion Nuclear North Anna, LLC. He has affirmed before me that he is duly authorized to execute and file the foregoing document on behalf of Dominion Nuclear North Anna, LLC, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 13th day of April, 2005

My Commission expires: August 31, 2008

Margaret B. Bennett
Notary Public



(SEAL)

Enclosure 1

Response to Supplemental Environmental RAI 1, 2 and 3

RAI 1 (NRC 3/18/05 Letter)

By letter dated March 1, 2005, Dominion submitted comments on the DEIS. The staff requests clarification on Comments 18, 19, 20 and 29 since these comments appear to affect the plant parameter envelope (PPE) values specified in both Dominion's application and staff's DEIS as follows:

Part a. of RAI 1

a. Comment 18 – Page 3-7 Line 12-13, of the DEIS

The staff based the maximum discharge temperature for Unit 3 on the bounding PPE value of 127 °F (ER page 3-3-18). In comment 18, Dominion stated that the PPE value of 127 °F is not relevant in this instance. Dominion indicated that the maximum discharge temperature would not exceed 113 °F based on site characteristics.

Clarify whether the bounding value (PPE) for Unit 3 discharge temperature is 113 °F or 127 °F.

Response to Part a. of RAI 1

The 127°F value for cooling water discharge temperature in Section 2.5.1 of ER Table 3.1-1 is the correct PPE bounding value and is based on the design which assumed the highest allowable combination of cooling water inlet temperature plus condenser temperature rise. The 113°F value is a Unit 3 site-specific bounding value based on a 95°F maximum inlet water temperature plus an 18°F condenser temperature rise at full cooling water flow.

To clarify the applicability of both values, ER Tables 3.1-1 and 3.1-9 will be revised to identify a Unit 3 site-specific bounding value of 113°F.

Additionally, the definition for cooling water temperature rise in Section 2.5.3 of ER Table 3.1-1 will be revised to clarify that the 18°F value is at the full station load and full cooling water flow condition. Please note that the 18°F condenser temperature rise is an appropriate characterization only at the specified full load, full flow condition. At other times, because cooling water flow might be reduced for operational considerations (e.g., to maintain appropriate condenser vacuum), the condenser temperature rise could be greater than 18°F. However, the cooling water discharge temperature of 113°F would remain bounding.

Application Revision

The following new subsection will be added to Section 2.5.1 of ER Table 3.1-1:

PPE Section	Bounding Value [Value for 2 Units in Brackets]	Bound Notes See Table 3.1-2	Comments	Definition
2.5.1.1 Unit 3 Cooling Water Discharge Temperature	113°F	3	g	Site-specific bounding value based on a maximum inlet temperature of 95°F and a condenser temperature rise of 18°F at full flow condition. See Table 3.1-9, "Unit 3 Once-Through Cooling, Cooling Water Discharge Temperature;" Sections 3.4.1.1, 3.4.2.2, 3.4.2.3, 5.2.2.1.2, & 5.3.2.1.2.

Section 2.5.3 of ER Table 3.1-1 will be revised to read as follows:

PPE Section	Bounding Value [Value for 2 Units in Brackets]	Bound Notes See Table 3.1-2	Comments	Definition
2.5.3 Cooling Water Temperature Rise	18°F [Same for 2nd unit/group]	1,3,5	g	Temperature rise across the condenser (temperature of water out minus temperature of water in) at full station load and full cooling water flow condition. Note that the 18°F condenser temperature rise is an appropriate characterization only at the specified full load, full flow condition. At other times, because cooling water flow might be reduced for operational considerations (e.g., to maintain appropriate condenser vacuum), the condenser temperature rise could be greater than 18°F.

ER Table 3.1-9 will be revised to add the following new design parameter under the heading "Normal Plant Heat Sink, Unit 3 Once-Through Cooling:"

Item	Single Unit/Group Value [Second Unit/Group Value]	Description and References
Cooling Water Discharge Temperature	113°F	• Site-specific bounding value based on a maximum inlet temperature of 95°F and a condenser temperature rise of 18°F at full flow condition. • Item 2.5.1.1 of Table 3.1-1 • Refer to Sections 3.4.1.1, 3.4.2.2, 3.4.2.3, 5.2.2.1.2, & 5.3.2.1.2

Part b. of RAI 1

b. Comment 19 – Page 3-7 Line 14-15, of the DEIS

In the DEIS, the staff stated, "Dominion specified in the PPE that the flow rate through the condenser will not exceed 71,900 L/s (1,140,000 gpm)" (ER page 3-3-18). Dominion's comment is that the PPE value is a nominal value and would be within a few percent of the PPE value.

Clarify whether the condenser flow rate is a bounding PPE value or a nominal value. If it is a "nominal" value, what is the bounding value?

Response to Part b. of RAI 1

The value for cooling water flow rate in Section 2.5.2 of ER Table 3.1-1 is correctly listed as 1,140,000 gpm, and it is a bounding value. This value will be clarified in ER Tables 3.1-9 and 3.3-1 and in ER Figure 3.3-1.

Application Revision

The "Cooling Water Flow Rate" item in ER Table 3.1-9 under the heading, "Normal Plant Heat Sink, Unit 3 Once-Through Cooling," will be revised to read as follows:

Item	Single Unit/Group Value [Second Unit/Group Value]	Description and References
Cooling Water Flow Rate	1,140,000 gpm	• Total cooling water flow rate through the condenser at specified heat rejection rate and temperature rise of 18°F. • Item 2.5.2 of Table 3.1-1 • Refer to Sections 3.4.1.1, 3.4.2.1, 3.4.2.2, 5.2.1.1, 5.2.2.1.2, 5.3.1, 5.3.1.1, 5.3.1.1.2, 5.3.2.1.2 & 5.3.2.1.3; Table 3.3-1; Figure 3.3-1

The "Circulating Water" item in ER Table 3.3-1 under the heading, "Cooling Water Flows," will be revised to read as follows:

Service	Normal (gpm/cfs)	Maximum (gpm/cfs)	Reference (PPE Section)
Circulating Water	--	1,140,000/2540	2.5.2

The 1,140,000 gpm identified in ER Figure 3.3-1 will be revised to read as follows: "(1,140,000)." The parentheses signify that this flow rate is a maximum value in accordance with Note 2.

Part c. of RAI 1

c. Comment 20 – Page 3-8 Line 26-27 and Comment 29 Page 5-8 Line 24-26

In the DEIS, the staff stated, "Dominion estimates, in the PPE, a maximum evaporative loss of a once-through design to be 738 L/s (11,700 gpm) or 0.738 m^3/s (26 cfs) as compared to 1230 L/s (19,500 gpm) or 1.23 m^3/s (43 cfs) for wet cooling towers." Dominion's comment is that the statement is inconsistent with the wording in ER Section 5.2.1.2, which states, "The operation of the Unit 3 once-through cooling system would decrease the water available to be released by 29 cfs." The PPE value (ER page 3-3-18) is 11,700 gpm or 26 cfs maximum. The value stated in ER Section 5.2.1.2 (29 cfs) is greater that the bounding PPE value (26 cfs) for the surrogate reactor design.

Clarify which value (29 cfs or 26 cfs) is the correct bounding PPE value.

Response to Part c. of RAI 1

The maximum evaporation rate of 11,700 gpm (26 cfs) as listed in Section 2.5.4 of ER Table 3.1-1 is the bounding estimated value from the PPE input provided by the various reactor vendors. The 13,000 gpm (29 cfs) value in ER Table 3.1-9 and ER Section 5.2.1.2 is the site-specific value calculated based on full-load operation, as a result of heat rejection to the WHTF at the specified cooling water flow rate and a cooling water temperature rise of 18°F.

ER Tables 3.1-1 and 3.1-9 will be revised to clarify these values and bases.

Application Revision

The following new subsection will be added to Section 2.5.4 of ER Table 3.1-1:

PPE Section	Bounding Value [Value for 2 Units in Brackets]	Bound Notes See Table 3.1-2	Comments	Definition
2.5.4.1 Unit 3 Evaporation Rate	12,600 gpm, average, at 96% capacity factor (13,000 gpm, average, at full-load operation)	N/A	h	Site-specific expected average rates of water lost by evaporation from Lake Anna, at 96% capacity factor and full-load operation, as a result of heat rejection to the WHTF at the specified cooling water flow rate and cooling water temperature rise of 18°F. See Section 5.2.1.2; Table 3.1-9, "Normal Plant Heat Sink, Evaporation Rate;" Table 3.3-1 & 5.2-1; Figure 3.3-1.

The "Evaporation Rate" item in Table 3.1-9 under the heading, "Normal Plant Heat Sink," will be revised to read as follows:

Item	Single Unit/Group Value [Second Unit/Group Value]	Description and References
• Evaporation Rate	12,600 gpm, average, at 96% capacity factor (13,000 gpm, average, at full-load operation)	• Site-specific expected average rates of water lost by evaporation from Lake Anna, at 96% capacity factor and full-load operation, as a result of heat rejection to the WHTF at the specified cooling water flow rate and cooling water temperature rise of 18°F. • Item 2.5.4.1 of Table 3.1-1 • Refer to Section 5.2.1.2; Tables 3.3-1 & 5.2-1; Figure 3.3-1

RAI 2 (NRC 3/18/05 Letter)

Identify any other changes not reflected in the September 7, 2004, revision to the application that would effect the environmental report or the DEIS.

Response

Dominion letters that provided information relevant to the Environmental Report since Revision 3 (September 7, 2004) are referenced below. Planned changes to the application to incorporate this information were identified in each letter.

References

1. Letter from Eugene S. Grecheck, Vice President-Nuclear Support Services, Dominion, to U.S. Nuclear Regulatory Commission, Document Control Desk, "Dominion Nuclear North Anna, LLC, North Anna Early Site Permit Application, Response to October 29, 2004 RAI on Uranium Fuel Cycle Impacts," November 18, 2004 (ML043240229).

2. Letter from Eugene S. Grecheck, Vice President-Nuclear Support Services, Dominion, to U.S. Nuclear Regulatory Commission, Document Control Desk, "Dominion Nuclear North Anna, LLC, North Anna Early Site Permit Application, Responses to Draft Safety Evaluation Report Open Items," March 3, 2005 (ML050660238).

RAI 3 (NRC 3/18/05 Letter)

On March 3, 2005, Dominion submitted its response to the open items contained in the NRC's Draft Safety Evaluation Report (DSER). Dominion's response to DSER Open Item 2.4-3, informed the staff that it had changed the minimum operating level for the existing Units 1 and 2 from 244 ft msl (feet above mean sea level) to 242 ft msl. This change in the operating level resulted in changes to Dominion's ER.

In light of the change in minimum operating level from 244 to 242 ft msl, and any changes identified in response to supplemental RAIs 1 and 2 above, assess the environmental impacts such changes will have on your environmental report.

Response

As described in our response to DSER Open Item 2.4-3 (Reference 1) regarding the water budget analysis, the change in Lake Anna minimum operating level from 244 to 242 ft msl does not impact the analyses or conclusions in the ER. As discussed in ER Section 5.2.2.1.3, the water budget analysis determined that the minimum Lake Anna water level during the low-flow simulation period would be 242.6 ft msl if a new Unit 3 were operating along with existing Units 1 and 2. Conservatively, this analysis did not credit the shutdown of the operating units at 244 ft msl. ER Section 5.2.2.1.3 specifically noted the pending revision to the Technical Requirements Manual (TRM) to lower the minimum operating level to 242 ft msl.

The TRM minimum operating level has now been revised to 242 ft msl. The resulting changes required in the ER to identify the current TRM limit are identified in the response to DSER Open Item 2.4-3 (Reference 1). The water budget analysis with a new Unit 3 operating in conjunction with existing Units 1 and 2 has not changed and still shows that the resulting minimum Lake Anna water level during low flow conditions would be 242.6 ft msl, which is above the minimum required by the revised TRM. Thus, there is no impact to the analysis or conclusions in the ER.

The ER changes identified in the responses to RAIs 1 and 2 have no impact on the analyses or conclusions in the ER.

References

1. Letter from Eugene S. Grecheck, Vice President-Nuclear Support Services, Dominion, to U.S. Nuclear Regulatory Commission, Document Control Desk, "Dominion Nuclear North Anna, LLC, North Anna Early Site Permit Application, Responses to Draft Safety Evaluation Report Open Items," March 3, 2005 (ML050660238).

Application Revision

None