

June 1, 2004

Mr. David A. Christian
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5000 Dominion Blvd.
Glen Allen, VA 23060-6711

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 6 -
DOMINION NUCLEAR NORTH ANNA, LLC EARLY SITE PERMIT
APPLICATION FOR THE NORTH ANNA ESP SITE (TAC NO. MC1127)

Dear Mr. Christian:

By letter dated September 25, 2003, Dominion Nuclear North Anna, LLC (Dominion) submitted its application for an early site permit (ESP) for the North Anna ESP site.

The Nuclear Regulatory Commission (NRC) staff is performing a detailed review of the Site Safety Analysis Report in your ESP application. The NRC staff is requesting additional information with respect to the application. Various topics are covered in the requests for additional information (RAIs) contained in Enclosure 1. These RAIs were sent to you via electronic mail on May 6, 2004, and were discussed with your staff by phone on May 19, 2004. As a result of the phone discussion, draft RAI 13.3-9 was deleted (and the following RAI renumbered accordingly) because the staff found it already has the requested information.

Receipt of requested information within 60 days of the date of this letter will support the NRC's efficient and timely review of Dominion's ESP application. Please note that failure to provide a response in a timely fashion may result in a delay of completion of the staff's safety evaluation report.

If you have any questions or comments concerning this matter, you may contact me at (301) 415-1421 or mls3@nrc.gov.

Sincerely,

/RA/

Michael L. Scott, Dominion ESP Project Manager
New Reactors Section
New, Research and Test Reactors Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 52-008

Enclosure: As stated

cc: See next page

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ACCESSION NO. **ML041400498**

***See previous concurrence**

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**North Anna Early Site Permit Application
Site Safety Analysis Report (SSAR)
Requests for Additional Information (RAI)
RAI LETTER NO. 6**

SSAR Section 1.3, Plant Parameters Envelope

RAI 1.3-2

Please provide the following information regarding Table 1.3-1, Plant Parameters Envelope:

- a) Plant parameters envelope (PPE) Section 9.3.2, "Post-Accident," lists 10 CFR Part 20 and 10 CFR Part 50, Appendix I as "Bounding values." Please describe how these "bounding values" were used in the radiological post-accident dose consequences analyses. Also, please add the dose criteria in 10 CFR 50.34(a)(1) as bounding value references or explain why these references are not needed.
- b) PPE Section 9.3.2, "Post-Accident," lists items 1, 3, 4, 5, and 7 of Table 1.3-2 as "Bound Notes." Please explain how data from these notes (which refer to bounding values for the AP1000, ABWR/ESBWR, PBMR, ACR-700, and IRIS) were used for the accident analyses, and please provide the values to which these notes refer.
- c) PPE Section 10.1.2, "Post-Accident," lists 10 CFR Part 100 as a "bounding value." Please explain how this "bounding value" was used for analyses of the liquid radwaste system. Also, please list the accidents to which this bounding value applies.
- d) PPE Section 10.1.2, "Post-Accident," lists items 1, 3, 4, and 5 of Table 1.3-2 as "Bound Notes." Please explain how data from these notes were used for the accident analyses, and please provide the values to which these notes refer.

RAI 1.3-3

Tables 1.3-1 through 1.3-8 in SSAR Section 1.3 reference "bounding values" from various advanced reactor design criteria. Please clarify the relationship between the items in the "bounding values" provided in the tables and the references. For example, PPE Section 9.4.3, "Elevation (Post Accident)" in Table 1.3-1 contains an assumption of ground-level release. The "Bound Notes" column refers to five different reactor designs. The design control document for one of the designs, the advanced boiling water reactor, does not assume a ground-level release.

SSAR Section 2.1.2, Exclusion Area Authority and Control

RAI 2.1.2-1

Please provide the following information regarding Dominion's approach to obtaining appropriate regulatory approvals to purchase or lease the ESP site from Virginia Power and Old Dominion Electric Cooperative should a decision be made to seek a combined license:

- a) List regulatory agencies (other than the NRC) from which Dominion would need approval to purchase or lease the ESP site.

- b) State whether the ESP site incorporates the entire exclusion area boundary as shown in the SSAR.
- c) State the duration of a lease that Dominion would seek should it elect to take that approach.

RAI 2.1.2-2

Please describe how an agreement or conveyance document (e.g., a lease or deed) would provide for the use of the North Anna Power Station site as a single exclusion area in the event additional reactors are constructed there.

Section 2.1.3, Population Distribution

RAI 2.1.3-1

SSAR Section 2.1.3 projects population distribution, including transient population, for the low population zone, population center, and population density for the proposed ESP site up to 2040. If the ESP were approved and issued in 2006, and assuming a COL application is submitted near the end of the ESP term with projected start-up of new units in about 2026, and an operational period of 40 years for new units, the projected year for end of plant life is about 2066. Please project population distribution, including transient population, for the low population zone, population center, and population density for the proposed ESP site up to about 2066.

RAI 2.1.3-2

Please describe appropriate protective measures that could be taken on behalf of the populace in the low population zone in the event of a radiological emergency.

SSAR Section 13.3, Emergency Planning

RAI 13.3-4

SSAR Section 13.3.2.2.c.2 (Radiological Laboratories) lists five radiological count laboratory resources, and states that “[i]f required at the time of the event, these additional resources can be obtained through purchase agreements with private institutions” (emphasis added). In North Anna Emergency Plan (NAEP) Section 5.3.2 (Vendor and Contractor Support), the same five radiological count laboratory resources are listed, and the comparable sentence reads “[i]f required at the time of the event, additional resources can be obtained through purchase agreements with private institutions.” Please explain the differences in these statements.

In addition, please identify the general capabilities of: (1) the University of Virginia, Charlottesville, VA; (2) the Virginia Commonwealth Laboratories, Richmond, VA; and (3) Newport News Shipbuilding & Drydock, Newport News, VA, to provide radiological monitoring and analysis services during an emergency, in support of the ESP site.

RAI 13.3-5

Please describe the specific provisions (i.e., the “means” referred to in SSAR Section 13.3.2.2.2.f) for communications with contiguous State and local governments within the 10-mile and 50-mile emergency planning zones (EPZs), and with Federal emergency response organizations. In addition, please describe the extent to which existing site communications will be utilized.

RAI 13.3-6

SSAR Section 13.3.2.2.2.j.1 (Evacuation of Onsite Individuals) states that onsite evacuees would use personal vehicles for transportation to emergency assembly areas, and references the North Anna Emergency Plan (NAEP). NAEP Section 6.3.2 (Onsite Criteria for the Exclusion Area) states that evacuees may use personal vehicles. Please explain the differences between these statements. In addition, please describe the transportation to emergency assembly areas for any onsite individuals who do not have their personal vehicle available onsite.

RAI 13.3-7

SSAR Section 13.3.2.2.2.j.2 (Protective Action Recommendations) describes the bases for making protective action recommendations, and SSAR Section 13.3.2.2.2.d (Emergency Classification System) describes the timing for providing the recommendations, and how the emergency action levels would be used in determining the type and timing of protective measures to consider.

Please describe the mechanism for recommending protective actions to the appropriate State and local authorities, including how EALs would be used to determine protective action recommendations (e.g., sheltering, evacuation, use of potassium iodide/KI), consistent with EPA 400-R-92-001 (Manual of Protective Action Guides and Protective Actions for Nuclear Incidents). Describe how those recommendations would be provided to the appropriate State and local authorities. Describe how changes to, or termination of, protective action recommendations would be provided to State and/or local authorities.

RAI 13.3-8

Please discuss the extent to which the ESP application is intended to address Evaluation Criteria V.H.1 and V.H.2 of Supp. 2 to NUREG-0654/FEMA-REP-1 for the TSC, OSC, and EOF; including addressing NUREG-0696. If the application is intended to address these criteria, please provide additional information to address the applicable NUREG-0696 criteria. Please state whether or not Dominion intends to utilize the existing TSC, OSC, and EOF, which support North Anna Units 1 & 2, for the ESP site. If so, provide information consistent with Evaluation Criteria V.H.1 and V.H.2 of Supp. 2 regarding the impact of the new reactors on these facilities.

RAI 13.3-9

SSAR Section 13.3.2.1 (Identification of Physical Characteristics) states that (1) physical characteristics unique to the ESP site have been analyzed to determine whether they could pose a significant impediment to the development of emergency plans; (2) a preliminary

analysis of evacuation times has been used to identify these characteristics, including seasonal recreation visitors around the lake, school populations, etc.; and (3) a description of the analysis methods and results is provided in the most recent Evacuation Time Estimate (ETE) for North Anna.

Please state whether any physical characteristics unique to the proposed ESP site were, or were not, identified—from the ETE, or any other source/analysis—that could pose a significant impediment to the development of emergency plans for the ESP site. If such physical characteristics were identified, please provide a discussion and detailed analysis that addresses the physical characteristics of concern, including how they could pose a significant impediment to the development of emergency plans for the ESP site.

SSAR Section 15.4, Radiological Consequences

RAI 15.4-1

SSAR Section 15.4 states that the site-specific doses were calculated by multiplying the design certification doses by the ratio of the site χ/Q_s to design certification χ/Q_s . The SSAR shows the χ/Q_s for the AP1000 design for the exclusion area boundary (EAB) and low population zone (LPZ). Westinghouse has revised its χ/Q_s in the AP1000 design certification control document since submittal of the North Anna ESP application. Please use the χ/Q_s in the most recent Westinghouse AP1000 Design Control Document (dated April 26, 2004), and, based on the AP1000 χ/Q_s , provide the site-specific doses and fission product releases for all design basis accidents (DBAs) in SSAR Chapter 15. If you elect not to use the updated values in the accident analyses, please so state.

RAI 15.4-2

SSAR Section 15.4 states that, for the ABWR design, an equivalent total effective dose equivalent (TEDE) value is estimated by multiplying the thyroid dose by 0.03 and adding the product to the whole body dose. The results of this calculation are shown in Table 15.4-1. Please explain how this dose compares to that for the General Electric ABWR design, which is certified with the thyroid and whole body doses specified in 10 CFR Part 100.

RAI 15.4-3

Several tables in SSAR Section 15.4 present doses for ABWR design basis accidents in TEDE units (e.g., Table 15.4-12). Since the General Electric ABWR design is certified with thyroid and whole body doses, please provide thyroid and whole body doses for ABWR design basis accidents.

RAI 15.4-4

Several tables in SSAR Section 15.4 present the time-dependent activity releases for each design basis accident (e.g., Table 15.4-13). Please provide the references and the methodology used to determine the time-dependent activity release values in these tables. Also, please ensure the values in these tables appropriately reflect the AP1000 design χ/Q_s as discussed in RAI 15.4-1.

RAI 15.4-5

SSAR Table 15.4-1 summarizes the resulting doses at the ESP site for postulated design basis accidents using the AP1000 and the ABWR as surrogate designs. For each design basis accident, please provide (1) AP1000 and ABWR doses used for the exclusion area boundary (EAB) and low population zone (LPZ), and (2) the ratios of site-specific χ/Qs to design certification χ/Qs used.

RAI 15.4-6

Several tables in SSAR Section 15.4 present doses for AP1000 design basis accidents. Please clarify whether the 0- to 2-hour EAB doses are for the 2-hour period with the greatest EAB doses. If they are not, please provide the doses for the 2-hour period with the greatest EAB doses.

SSAR Section 17.1, ESP Quality Assurance

RAI 17.1-3

Please provide copies of the following documents:

- a) Quality Assurance Program Plan (QAPP),” Bechtel Document Number: 24830-001-GAQ-00001-001, dated August 5, 2003
- b) “Bechtel Nuclear Quality Assurance Manual,” Revision 4, dated November 1, 2002

NORTH ANNA EARLY SITE PERMIT
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