

April 10, 2007

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

DOCKETED  
USNRC

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

May 16, 2007 (4:05pm)

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

In the Matter of )  
 )  
DOMINION NUCLEAR NORTH ANNA, LLC )  
 )  
(Early Site Permit for North Anna ESP Site) )

Docket No. 52-008-ESP

PREFILED DIRECT TESTIMONY OF JOHN S. CUSHING ON  
ENVIRONMENTAL ISSUES IN THE NORTH ANNA ESP PROCEEDING

Q1. Please state your name and job title.

A1. John S. Cushing. I am a Senior Project Manager in the Nuclear Regulatory Commission's ("NRC") Office of Nuclear Reactor Regulation, Division of Operator Reactor Licensing.

Q2. Please describe your responsibilities in connection with the Staff's review of the North Anna early site permit application.

A2. As the NRC Project Manager for the environmental review of the Dominion Nuclear North Anna, LLC ("Dominion" or "Applicant") application for an early site permit ("ESP") at the North Anna ESP site near Mineral, Virginia, I was responsible for overseeing the preparation of NUREG-1811, the "Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site," December 2006 ("FEIS").

Q3. In that capacity, do you hereby sponsor the introduction of the FEIS into the record of this proceeding?

A3. I do.

Dominion North Anna, LLC.  
Docket No. 52-008-ESP  
Staff Exhibit 16

U.S. NUCLEAR REGULATORY COMMISSION

In the Matter of Dominion Nuclear North Anna, LLC

Docket No. 52-008-ESP Official Exhibit No. 16

OFFERED by: Applicant/Licensee Intervenor \_\_\_\_\_

NRC Staff

Other \_\_\_\_\_

IDENTIFIED on 4/24/07 Witness/Panel Cushing

Action Taken: ADMITTED REJECTED WITHDRAWN

Reporter/Clerk HC

Q4. Please briefly describe the Staff's approach to the environmental review of the North Anna ESP application.

A4. With respect to environmental matters – that is, matters stemming from the agency's obligations under the National Environmental Policy Act ("NEPA") – the FEIS addresses (1) the results of the Staff's analyses, which consider and weigh the environmental effects of the proposed action (issuance of the ESP) and of constructing and operating two new nuclear units at the ESP site, (2) mitigation measures for reducing or avoiding adverse effects, (3) the environmental impacts of alternatives to the proposed action, and (4) the Staff's recommendation regarding the proposed action based on its environmental review.

The NRC standards for review of an ESP application are outlined in 10 C.F.R. § 52.18. The Staff conducts its reviews of ESP applications in accordance with guidance set forth in NRR Review Standard (RS)-002, "Processing Applications for Early Site Permits," issued May 2004 ("RS-002"). That review standard draws from the previously published NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Revision 3, issued July 1981, as well as from NUREG-1555, "Environmental Standard Review Plan" ("ESRP"). FEIS at 1-4.<sup>1</sup>

In conducting its review, the Staff evaluated environmental impacts based on the bounding plant parameter envelope ("PPE") values Dominion submitted as part of its application. See FEIS at xxiii. A PPE is a set of values of plant design parameters that an ESP applicant expects would bound the design characteristics of the reactor or reactors that might be constructed at a given site. The PPE values are surrogates for actual reactor design information. Analysis of environmental impacts based on a PPE approach permits an ESP

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<sup>1</sup> In addition, the Staff also considered the information and analyses provided in NUREG-1437, *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* ("GEIS"), in its review. Because the GEIS included a review of data from all operating nuclear power plants, some of the information was useful for the environmental review of the ESP application. FEIS at 1-4.

applicant to defer the selection of a reactor design until the construction permit ("CP") or combined construction and operating license ("combined license" or "COL") stage. The PPE reflects the value of each parameter that it encompasses rather than the characteristics of any specific reactor design. See FEIS at 3-3. A list of these values is reproduced in Appendix I to the FEIS.

In any COL or CP application referencing the North Anna ESP, if issued, the Applicant would have to address whether the characteristics of the reactor ultimately selected fall within the values of the design parameters specified in the ESP. See FEIS at 3-4.

The Staff's FEIS focused on the environmental effects of construction and operation of reactor designs with characteristics that fall within the PPE developed by Dominion, and it included an evaluation of alternative sites to determine whether there is an obviously superior alternative to the proposed North Anna ESP site. FEIS at 1-5. An ESP environmental report ("ER") is not required to include (and the Dominion ER did not include) an assessment of the benefits (for example, the need for power) (10 C.F.R. § 52.17) or a discussion of energy alternatives; these may be deferred to the CP or COL stage. FEIS at 1-4, 1-5.

On November 24, 2003, the Staff published a notice in the *Federal Register* (68 FR 65,961) stating its intent to prepare an Environmental Impact Statement ("EIS") regarding the application submitted by Dominion Nuclear North Anna, LLC for an ESP at the North Anna ESP site located adjacent to the North Anna Power Station, Units 1 and 2; to conduct scoping; and to publish a Draft Environmental Impact Statement ("DEIS") for public comment, as required by 10 C.F.R. § 51.26. FEIS at 1-6. A public scoping meeting was held on December 8, 2003, to obtain public input on the scope of the environmental review. FEIS at 1-6. The U.S. Environmental Protection Agency issued a notice on December 17, 2004 (69 FR 75,535) announcing the availability of the DEIS, and a public meeting was held on February 17, 2005, to receive comments on the DEIS. FEIS at 1-7. Subsequently, based on

Dominion's revision of its application on April 13, 2006 (Revision 6), the Staff published a notice in the *Federal Register* (71 FR 28,392) stating its intent to prepare a supplement to the DEIS ("SDEIS"). FEIS at 1-7. In response to Dominion's proposed changes related to the Unit 3 cooling system and the maximum power level of both Units 3 and 4, the Staff re-evaluated the environmental impacts of these issues and documented its conclusions in the SDEIS. The EPA issued a notice on July 14, 2006 (71 FR 40,096) announcing the availability of the SDEIS, and a public meeting was held on August 15, 2006, to receive comments on the SDEIS. FEIS at 1-7. As required by NEPA, the Staff considered public comments on the DEIS and SDEIS while developing its FEIS. FEIS at 1-7, App. E.

Following the requirements set forth in 10 C.F.R. Part 51 and the guidance in RS-002, the NRC environmental Staff (and its technical experts from the Pacific Northwest National Laboratory retained to assist the Staff) visited the North Anna ESP site and alternative sites in December 2003; January, February, September, and December 2005; and May 2006 to gather information and to become familiar with the sites and their environs. FEIS at 1-6. During these site visits, the Staff and its contractor personnel met with the Applicant's staff, public officials, Federal and State regulators, local officials, and the public. FEIS at 1-6. To guide its assessment of environmental impacts of a proposed action or alternative actions, the NRC established a standard for quantifying environmental impacts using the Council on Environmental Quality guidance (40 C.F.R. § 1508.27). FEIS at 1-7, 1-8. Using this approach, the NRC established three significance levels -- SMALL, MODERATE, or LARGE<sup>2</sup> -- that the Staff applied to its findings throughout the FEIS.

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<sup>2</sup> The NRC Staff's definitions of these significance levels are as follows:

SMALL – Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

MODERATE – Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.

(continued. . .)

The Staff's recommendation, after consideration of the environmental impacts described in this FEIS, is that an ESP for North Anna Units 3 and 4 should be issued. This recommendation is based on (1) the ER submitted by Dominion; (2) consultation with Federal, State, Tribal and local agencies; (3) the Staff's independent review; (4) the Staff's consideration of public comments related to the environmental review that were received during the review process; and (5) the assessments summarized in this FEIS, including the potential mitigation measures identified in the ER and in this FEIS. In addition, in making its recommendation, the Staff concludes that the alternative sites considered are not obviously superior to the proposed site. Finally, the Staff concludes that the site preparation and preliminary construction activities enumerated in 10 C.F.R. 50.10(e)(1) would not result in any significant adverse environmental impact that cannot be redressed. See FEIS at 10-11. The Staff also recommends that the permit include certain additional environmental conditions that require a site redress plan, prohibit site preparation or preliminary construction activities until a certification required by Section 401 of the Federal Water Pollution Control Act is obtained or waived by the Commonwealth of Virginia, and require the Dominion to conduct an Instream Flow Incremental Methodology Study. See FEIS at 1-10, 1-11, 4-48.

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(...continued)

LARGE – Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.