August 13, 2002

Mr. David A. Christian
Sr. Vice President and Chief Nuclear Officer
Virginia Electric and Power Company
5000 Dominion Blvd.
Glen Allen, Virginia 23060

SUBJECT: NORTH ANNA POWER STATION, UNIT 2 - ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT RELATED TO EXEMPTION FROM THE REQUIREMENTS OF 10 CFR PART 50.44, 10 CFR 50.46, AND APPENDIX K FOR LEAD TEST ASSEMBLY (TAC NO. MB4044)

Dear Mr. Christian:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for an exemption from the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.44, 50.46, and Appendix K to Part 50. This action is in response to your letter dated February 11, 2002, as supplemented by letter dated May 16, 2002, for North Anna Power Station, Unit 2. The proposed exemption would allow Virginia Electric and Power Company to use a zirconium-based alloy for cladding material instead of either Zircaloy or ZIRLO during Cycle 16, when irradiating a lead test assembly to an end-of-life assembly average burnup of about 70,000 MWD/MTU with a lead rod burnup not to exceed 75,000 MWD/MTU.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

/RA/

John A. Nakoski, Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-339

Enclosure: Environmental Assessment

cc w/encl: See next page

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UNITED STATES NUCLEAR REGULATORY COMMISSION

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-339

NORTH ANNA POWER STATION, UNIT 2

ENVIRONMENTAL ASSESSMENT AND FINDING OF

NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an exemption from the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Sections 50.44 and 50.46, and Appendix K for Facility Operating License No. NPF-7, issued to Virginia Electric and Power Company (the licensee), for operation of the North Anna Power Station, Unit 2, located in Louisa County, Virginia. As required by 10 CFR 51.21, the NRC is issuing this environmental assessment and finding of no significant impact.

ENVIRONMENTAL ASSESSMENT

Identification of the Proposed Action:

The proposed action would enable the licensee to use one lead test assembly that contains zirconium-based alloys as cladding material for the fuel rods instead of Zircaloy or ZIRLO. This lead test assembly will be used at North Anna, Unit 2 during Cycle 16, subject to the following constraints:

(1) the lead test assembly is not to be irradiated for more than one full operating cycle, and

(2) the lead test assembly shall not exceed the lead rod burnup limit of 75,000 MWD/MTU.

The proposed action is in accordance with the licensee's application for exemption dated February 11, 2002, as supplemented by letter dated May 16, 2002.

The Need for the Proposed Action:

The proposed exemption to 10 CFR 50.44, 10 CFR 50.46, and Appendix K to 10 CFR Part 50 is needed because these regulations specifically refer to light-water reactors containing fuel consisting of uranium oxide pellets enclosed in Zircaloy or ZIRLO tubes. Zircaloy and ZIRLO are zirconium-based alloys currently in use as cladding for fuel pellets. The proposed zirconium-based cladding is not the same chemical composition as Zircaloy or ZIRLO, and the licensee wants to test this composition in reactor operation. Since 10 CFR 50.46 and 10 CFR Part 50, Appendix K limit Emergency Core Cooling System (ECCS) calculations to Zircaloy, and 10 CFR 50.44 relates to the generation of hydrogen gas from a metal-water reaction with Zircaloy or ZIRLO, an exemption is required in order to place a lead test assembly in the reactor core.

Environmental Impacts of the Proposed Action:

The use of the lead test assembly with the zirconium-based cladding would not affect the ECCS calculations and would have no significant effect on the previous assessment of hydrogen gas generation following a loss-of-coolant accident. The lead test assembly meets the same design bases as the fuel currently used in the reactors. No safety limits would be changed or setpoints altered as a result of the use of these assemblies. The Updated Final Safety Analysis Report analyses are bounding for the lead test assembly as well as the remainder of the core. The advanced zirconium-based cladding alloys have operated at North Anna Power Station through three previous cycles of operation and have performed satisfactorily under these conditions. In addition, the relatively small number of fuel rods involved does not represent a significant increase in the inventory of radioactive material that could be released into the reactor coolant in the event of cladding failure. The only credible consequence of this change would be a failure of the lead test assembly cladding. Even in the case of gross fuel failure, the number of rods involved is less than 1 percent of the core, and

thus sufficiently small so that the additional environmental impact would be negligible and bounded by previous assessments. With regard to the potential environmental impacts associated with the transportation of the lead test assembly, the zirconium-based claddings have no impact on previous assessments determined in accordance with the staff assessment entitled, "NRC Assessment of the Environmental Effects of Transportation Resulting from Extended Fuel Enrichment and Irradiation," published in the FEDERAL REGISTER on August 11, 1988 (53 FR 30355), as corrected on August 24, 1988 (53 FR 32322). Thus, the proposed action would not significantly increase the probability or consequences of accidents, no changes would be made in the types or amounts of effluents that may be released off-site, and there would be no significant increase in occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

With regard to potential nonradiological impacts, the proposed action does not have a potential to affect any historic sites. It does not affect nonradiological plant effluents and has no other environmental impact. Therefore, there are no significant nonradiological environmental impacts associated with the proposed action.

Accordingly, the NRC concludes that there are no significant environmental impacts associated with the proposed action.

Environmental Impacts of the Alternatives to the Proposed Action:

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the "no-action" alternative). Denial of the application would result in no change in current environmental impacts. The environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources:

The action does not involve the use of any different resource than those previously considered in the Final Environmental Statement related to the operation of North Anna Power Station, Unit 2, issued by the Commission in April 1973.

Agencies and Persons Consulted:

On July 29, 2002, the staff consulted with Mr. Les Foldesi of the Virginia Department of Radiological Health, regarding the environmental impact of the proposed action. Mr. Foldesi had no comments.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of the environmental assessment, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated February 11, 2002, and supplemental letter dated May 16, 2002. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the Agencywide Documents Access and Management System (ADAMS) Public Electronic Reading Room on the Internet at the NRC Web site, http://www.nrc.gov/reading-rm/adams.html. Persons who do not have access to

ADAMS or who encounter problems in accessing the documents located in ADAMS, should contact the NRC PDR Reference staff by telephone at 1-800-397-4209 or 301-415-4737, or by e-mail to pdr@nrc.gov.

Dated at Rockville, Maryland, this 13th day of August 2002.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

John A. Nakoski, Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

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