



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

August 26, 2010

Mr. David A. Heacock  
President and Chief Nuclear Officer  
Virginia Electric and Power Company  
Innsbrook Technical Center  
5000 Dominion Boulevard  
Glen Allen, VA 23060-6711

SUBJECT: NORTH ANNA POWER STATION, UNIT NOS. 1 AND 2 (NAPS), AND SURRY  
POWER STATION, UNIT NOS. 1 AND 2 (SURRY) – ENVIRONMENTAL  
ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT (TAC NOS.  
ME3885, ME3886, ME3343, AND ME3344)

Dear Mr. Heacock:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your applications for an exemption for NAPS and Surry dated May 6 and February 10, 2010, respectively. The proposed exemption would allow the use of Optimized ZIRLO fuel rod cladding in future core reload applications at NAPS and Surry.

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

Sincerely,

A handwritten signature in cursive script that reads "Karen Cotton".

Karen Cotton, Project Manager  
Plant Licensing Branch 2-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-338, 50-339, 50-280, and 50-281

Enclosure:  
Environmental Assessment

cc w/encl: Distribution via Listserv

UNITED STATES NUCLEAR REGULATORY COMMISSION

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION, UNIT NOS. 1 AND 2

SURRY POWER STATION, UNIT NOS. 1 AND 2

ENVIRONMENTAL ASSESSMENT AND

FINDING OF NO SIGNIFICANT IMPACT

DOCKET NOS. 50-338 AND 50-339

DOCKET NOS. 50-280 AND 50-281

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an exemption from Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.46 “Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors,” and Appendix K to 10 CFR Part 50, “ECCS (emergency core cooling system) Evaluation Models,” to allow the use of Optimized ZIRLO fuel rod cladding in future core reload applications for North Anna Power Station, Unit Nos. 1 and 2 (NAPS), for Renewed Facility Operating License Nos. NPF-4 and NPF-7, and Surry Power Station, Unit Nos. 1 and 2 (Surry) for Renewed Facility Operating License Nos. DPR-32 and DPR-37, issued to Virginia Electric and Power Company (the licensee), for operation of NAPS and Surry located in Lake Anna, Virginia, and Surry, Virginia, respectively. Therefore, as required by 10 CFR 51.21, the NRC performed an environmental assessment. Based on the results of the environmental assessment, the NRC is issuing a finding of no significant impact.

## ENVIRONMENTAL ASSESSMENT

### Identification of the Proposed Action:

The proposed action would add Optimized ZIRLO as an acceptable fuel rod cladding materials. The proposed action is in accordance with the licensee's applications dated May 6 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML101260517) and February 10, 2010 (ADAMS Accession No. ML100470738).

### The Need for the Proposed Action:

The proposed action is needed because the regulation in 10 CFR 50.46 contains acceptance criteria for the ECCS for reactors that have fuel rods fabricated either with Zircaloy or ZIRLO. Appendix K to 10 CFR Part 50, paragraph I.A.5, requires the Baker-Just equation to be used to predict the rates of energy release, hydrogen concentration, and cladding oxidation for the metal-water reaction. The Baker-Just equation assumed the use of a zirconium alloy different than Optimized ZIRLO; therefore, an exemption is required.

### Environmental Impacts of the Proposed Action:

The NRC has completed its evaluation of the proposed action and concludes that the exemption does not present undue risk to public health and safety, and is consistent with common defense and security.

The proposed action will not significantly increase the probability or consequences of accidents. No changes are being made in the types of effluents that may be released offsite. There is no significant increase in the amount of any effluent released offsite. There is no significant increase in occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

Based on the nature of the exemption, the proposed action does not result in changes to land use or water use, or result in changes to the quality or quantity of non-radiological effluents. No changes to the National Pollution Discharge Elimination System permit are needed. No effects on the aquatic or terrestrial habitat in the vicinity of the plant, or to threatened, endangered, or protected species under the Endangered Species Act, or impacts to essential fish habitat covered by the Magnuson-Stevens Act are expected. There are no impacts to the air or ambient air quality. There are no impacts to historic and cultural resources. There would be no noticeable effect on socioeconomic conditions in the region.

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 NRC 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 resources than those previously considered in the "Final Environmental Statement Related to the Continuation of Construction and the Operation," for NAPS dated April 1973, and Surry dated May 1972 and June 1972, respectively, as supplemented through the "Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Supplements 6 and 7 Regarding Surry and NAPS - Final Report (NUREG-1437, Supplements 6 and 7)," dated November 2002.

Agencies and Persons Consulted:

In accordance with its stated policy, on May 5, 2010, the staff consulted with the Virginia State official, Leslie P. Foldesi, Director of the Division of Radiological Health, regarding the environmental impact of the proposed action. The State official 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 letters dated May 6 and February 10, 2010. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, Public File Area O1 F21, 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 send an e-mail to [pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov).

Dated at Rockville, Maryland, this 26th day of August 2010.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink that reads "Karen Cotton". The signature is written in a cursive style with a large, stylized initial 'K'.

Karen Cotton, Project Manager  
Plant Licensing Branch 2-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

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*/RA/*

Karen Cotton, Project Manager  
Plant Licensing Branch 2-I  
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Environmental Assessment

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