



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

May 23, 2016

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

SUBJECT: SURRY POWER STATION, UNIT NOS. 1 AND 2 - DRAFT ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT RELATED TO THE USE OF M5<sup>®</sup> ADVANCED ZIRCONIUM FUEL CLADDING MATERIAL (CAC NOS. MF6967 AND MF6868)

Dear Mr. Heacock:

Enclosed is a copy of the Draft Environmental Assessment and Finding of No Significant Impact related to your application dated September 30, 2015, for the Surry Power Station, Unit Nos. 1 and 2. The proposed application would provide a temporary exemption from specific requirements of 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, "ECCS Evaluation Models," to allow the use of up to eight lead test assemblies containing fuel rods fabrication with M5<sup>®</sup> advanced zirconium cladding material.

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

If you have any questions, please contact me at 301-415-1438 or [Karen.Cotton@nrc.gov](mailto:Karen.Cotton@nrc.gov).

Sincerely,

Handwritten signature of Karen R. Cotton in black ink.

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

Docket Nos. 50-280 and 50-281

Enclosure:  
Draft Environmental Assessment

cc w/enclosure: Distribution via Listserv

**ENCLOSURE**

***FEDERAL REGISTER NOTICE***

**NUCLEAR REGULATORY COMMISSION**

**[Docket Nos. 50-280 and 50-281; NRC-2016-XXXX]**

**Virginia Electric and Power Company; Surry Power Station, Unit Nos. 1 and 2**

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Draft environmental assessment and finding of no significant impact; request for comment.

**SUMMARY:** The U.S. Nuclear Regulatory Commission (NRC) is issuing for public comment a draft environmental assessment and finding of no significant impact regarding the request for exemption from specific requirements of acceptance criteria for emergency core cooling systems for Facility Operating License Nos. DPR-32 and DPR-37, issued to Virginia Electric and Power Company (the licensee) for the Surry Power Station, Unit Nos. 1 and 2 (Surry).

**DATES:** Submit comments by **[INSERT DATE 30 DAYS FROM DATE OF PUBLICATION]**.

Comments received after this date will be considered if it is practical to do so, but the Commission is able to ensure consideration only for comments received before this date.

**ADDRESSES:** You may submit comments by any of the following methods (unless this document describes a different method for submitting comments on a specific subject):

- **Federal Rulemaking Web Site:** Go to <http://www.regulations.gov> and search for Docket ID <**INSERT:** NRC-20YY-XXXX>. Address questions about NRC dockets to Carol Gallagher; telephone: 301-415-3463; e-mail: [Carol.Gallagher@nrc.gov](mailto:Carol.Gallagher@nrc.gov). For technical

questions, contact the individuals listed in the FOR FURTHER INFORMATION CONTACT section of this document.

- **Mail comments to:** Cindy Bladey, Office of Administration, Mail Stop: OWFN-12-H08, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

For additional direction on obtaining information and submitting comments, see “Obtaining Information and Submitting Comments” in the SUPPLEMENTARY INFORMATION section of this document.

**FOR FURTHER INFORMATION CONTACT:** Karen Cotton, Office of Nuclear Reactor Regulation (NRR), telephone: 301-415-1438; e-mail: [Karen.Cotton@nrc.gov](mailto:Karen.Cotton@nrc.gov); or V. Sreenivas, NRR, telephone: 301-415-2597; e-mail: [V.Sreenivas@nrc.gov](mailto:V.Sreenivas@nrc.gov); U.S. Nuclear Regulatory Commission, Washington DC 20555-0001.

## **SUPPLEMENTARY INFORMATION:**

### **I. Obtaining Information and Submitting Comments.**

#### **A. Obtaining Information**

Please refer to Docket ID <**INSERT: NRC-20YY-XXXX**> when contacting the NRC about the availability of information for this action. You may obtain publicly-available information related to this action by any of the following methods:

- **Federal rulemaking Web Site:** Go to <http://www.regulations.gov> and search for Docket ID <**INSERT: NRC-20YY-XXXX**>.

- **NRC’s Agencywide Documents Access and Management System (ADAMS):** You may obtain publicly-available documents online in the ADAMS Public Documents collection at <http://www.nrc.gov/reading-rm/adams.html>. To begin the search, select “ADAMS Public”

Documents” and then select “Begin Web-based ADAMS Search.” For problems with ADAMS, please contact the NRC’s Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to [pdresource@nrc.gov](mailto:pdresource@nrc.gov). The ADAMS accession number for each document referenced (if it is available in ADAMS) is provided the first time that it is mentioned in the SUPPLEMENTARY INFORMATION section.

- **NRC’s PDR:** You may examine and purchase copies of public documents at the NRC’s PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland.

#### B. Submitting Comments

Please include Docket ID <NRC-20YY-XXXX> in your comment submission.

The NRC cautions you not to include identifying or contact information that you do not want to be publicly disclosed in your comment submission. The NRC will post all comment submissions at <http://www.regulations.gov> as well as enter the comment submissions into ADAMS. The NRC does not routinely edit comment submissions to remove identifying or contact information.

If you are requesting or aggregating comments from other persons for submission to the NRC, then you should inform those persons not to include identifying or contact information that they do not want to be publicly disclosed in their comment submission. Your request should state that the NRC does not routinely edit comment submissions to remove such information before making the comment submissions available to the public or entering the comment into ADAMS.

## II. Introduction

The NRC is considering issuance of an exemption from section 50.46 of title 10 of the *Code of Federal Regulations* (10 CFR), “Acceptance criteria for emergency core cooling

systems [(ECCS)] for light-water nuclear power reactors,” and appendix K to 10 CFR part 50, “ECCS Evaluation Models,” for Facility Operating License Nos. DPR-32 and DPR-37, issued to the licensee for operation of Surry, located in the southeastern part of Virginia, in Surry County, Virginia. In accordance with 10 CFR 51.21, the NRC prepared an environmental assessment documenting its findings. The NRC concluded that the proposed actions will have no significant environmental impact.

### **III. Draft Environmental Assessment and Finding of No Significant Impact**

#### *Description of the Proposed Action*

The proposed action would exempt the licensee from certain requirements contained in 10 CFR 50.46 and appendix K to 10 CFR part 50 to allow the use of up to eight AREVA AGORA® lead test assemblies (LTAs) containing fuel rods fabricated with M5® cladding material at Surry. The proposed action is in accordance with the licensee’s application dated September 30, 2015 (ADAMS Accession No. ML15282A036).

#### *The Need for the Proposed Action*

The proposed temporary exemption to 10 CFR 50.46 and appendix K to 10 CFR part 50 is needed to allow Surry to use up to eight LTAs containing fuel rods fabricated with M5® advanced zirconium cladding. The requested exemption is required since Surry’s technical specifications do not currently include the use of M5® advanced zirconium cladding material for use in its reactors.

The regulations in 10 CFR 50.46(a)(1)(i) and appendix K to 10 CFR part 50 require the demonstration of adequate ECCS performance for light-water reactors that contain fuel

consisting of uranium oxide pellets enclosed in Zircaloy or ZIRLO tubes. In addition, 10 CFR 50.44(a) addresses requirements to control hydrogen generated by Zircaloy or ZIRLO fuel after a postulated loss-of-coolant accident. Each of these three regulations, either implicitly or explicitly, assume that either Zircaloy or ZIRLO is used as the fuel rod cladding material.

The proposed temporary exemption is needed by Surry to allow the use of M5 alloy clad LTAs to evaluate cladding material for use in up to eight fuel assemblies and to provide a more robust design to eliminate grid to rod fretting fuel failures. The regulations specify standards and acceptance criteria only for fuel rods clad with Zircaloy or ZIRLO. Consistent with 10 CFR 50.46, a temporary exemption is required to use fuel rods clad with an advanced alloy that is not Zircaloy or ZIRLO. Therefore, the licensee needs a temporary exemption to insert up to eight LTAs containing new cladding material into the Surry, Unit Nos. 1 and 2, reactor cores.

#### *Environmental Impacts of the Proposed Action*

The NRC has completed its evaluation of the proposed action and concludes that the proposed action will not present any undue risk to public health and safety. The details of the NRC staff's safety evaluation will be provided in the exemption that, if approved by the NRC, will be issued as part of the letter to the licensee approving the exemption to the regulation.

The proposed action does not exempt the licensee from complying with the acceptance and analytical criteria of 10 CFR 50.46 and appendix K to 10 CFR part 50 applicable to the M5 alloy cladding. The exemption solely allows the criteria set forth in these regulations to apply to the M5 cladding material, which is similar in design and function to the Zircaloy and ZIRLO cladding material required by NRC regulations. Consequently, no changes are being made in the types of effluents that may be released offsite and there is no significant increase in the amount of any effluent released offsite, nor a significant increase in occupational or public

radiation exposure because this exemption will not change the criteria set forth in the present regulations, since the M5-clad fuel has been shown by the licensee to be capable of meeting this criteria. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

With regard to potential non-radiological impacts, the proposed action does not have any foreseeable impacts to historic properties, land, air, or water resources, including impacts to biota, because the exemption only allows the application of the acceptance criteria in the regulations to the new fuel assemblies, rather than fuel assemblies with Zircaloy or ZIRLO cladding material. The exemptions do not allow any changes that will impact any offsite or onsite resources. In addition, there are also no known socioeconomic or environmental justice impacts associated with such proposed action. Therefore, there are no significant non-radiological 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 actions, the NRC staff considered denial of the proposed action (i.e., the “no-action” alternative). Denial of the exemption request would result in no change in current environmental impacts. The environmental impacts of the proposed temporary exemption and the “no action” alternative 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 Operation of Surry Power Station Unit 1”; “Final Environmental Statement Related to Operation of Surry Power Station Unit 2,”

*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 Operation of Surry Power Station Unit 1"; "Final Environmental Statement Related to Operation of Surry Power Station Unit 2," dated 1972; and NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 6, Regarding Surry Power Station Units 1 and 2, Final Report," dated November 2002 (ADAMS Accession No. ML023310717).

*Agencies and Persons Consulted*

The staff did not enter into consultation with any other Federal agency or with the State of Virginia regarding the environmental impact of the proposed action.

**IV. Finding of No Significant Impact.**

The licensee has requested an exemption from certain requirements contained in 10 CFR 50.46 and appendix K to 10 CFR part 50 to allow the use of up to eight AREVA AGORA® lead test assemblies containing fuel rods fabricated with M5® cladding material. 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.

Dated at Rockville, Maryland, this 23rd day of May 2016.

For the Nuclear Regulatory Commission.

A handwritten signature in black ink, appearing to read 'Anne T. Boland', with a long horizontal flourish extending to the right.

Anne T. Boland, Director,  
Division of Operating Reactor Licensing,  
Office of Nuclear Reactor Regulation.

May 23, 2016

Mr. David A. Heacock  
President and Chief Nuclear Officer  
Virginia Electric and Power Company  
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If you have any questions, please contact me at 301-415-1438 or [Karen.Cotton@nrc.gov](mailto:Karen.Cotton@nrc.gov).

Sincerely,

*/RA/*

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

Docket Nos. 50-280 and 50-281

Enclosure:  
Draft Environmental Assessment

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**ADAMS Accession No.: ML16124B149**

**EA FRN: ML16124B154**

\*by e-mail

OFFICE	NRR/DORL/LPL2-1/PM	NRR/DORL/LPL2-1/LA	NRR/DLR/RERB/BC
NAME	KCotton	LRonewicz	JDanna
DATE	5/17/2016	5/16/2016	5/9/2016
OFFICE	OGC – NLO w/comments*	NRR/DORL/LPL2-1/BC	NRR/DORL/LPL2-1/PM
NAME	MRing	MMarkley	KCotton
DATE	5/9/2016	5/17/2016	5/23/2016

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