

Issued at Rockville, Maryland, this 11th day of December 2007.

**E. Roy Hawkens,**

*Chief Administrative Judge, Atomic Safety and Licensing Board Panel.*

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## NUCLEAR REGULATORY COMMISSION

[Docket No. 50-317]

### **Calvert Cliffs Nuclear Power Plant, Inc.; Calvert Cliffs Nuclear Power Plant, Unit No. 1; Environmental Assessment and Finding of No Significant Impact**

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 50.46 and Appendix K to Part 50 for Renewed Facility Operating License No. DPR-53, issued to Calvert Cliffs Nuclear Power Plant, Unit No. 1 (Calvert Cliffs 1), located in Calvert County, Maryland. Therefore, as required by 10 CFR 51.21, the NRC is issuing this environmental assessment and finding of no significant impact.

#### **Environmental Assessment**

##### *Identification of Proposed Action*

The proposed exemption would allow the licensee to reinsert up to four lead fuel assemblies (LFAs), two of which contain cladding with advanced zirconium-based alloys manufactured by Westinghouse Electric Company (Westinghouse), and two of which contain cladding with M5™ alloy manufactured by AREVA, into the Unit 1 core during Cycle 19. The four LFAs were previously inserted into the Unit 2 core in April of 2003. The proposed action is in accordance with the licensee's application dated February 23, 2007.

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

10 CFR 50.46 and 10 CFR Part 50, Appendix K make no provisions for use of fuel rods clad in a material other than Zircaloy or ZIRLO. Since the material specifications of the advanced zirconium-based and M5™ alloys differ from the specification for Zircaloy or ZIRLO, a plant-specific exemption is required to support the use of the four LFAs for Calvert Cliffs 1. If the exemption were not approved, the licensee would not gain practical experience in order to assess performance of the cladding material at higher burnups. The proposed action is needed to support future fuel load

capabilities by allowing the use of higher enriched fuel, which can provide the flexibility of extending fuel irradiation.

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

The NRC has completed its evaluation of the proposed action and concludes that the exemption described above would continue to satisfy the underlying purpose of 10 CFR 50.46 and 10 CFR Part 50, Appendix K and will not present an undue risk to the public health and safety. Previously, the Westinghouse safety evaluation (WCAP-15874-NP, Revision 0, "Safety Analysis Report for Use of Improved Zirconium-based Cladding Materials in Calvert Cliffs Unit 2 Batch T Lead Fuel Assemblies," dated April 2002) and approved Framatome ANP topical report (BAW-10227P-A, "Evaluation of Advanced Cladding and Structural Material (M5) in PWR [Pressurized Water Reactor] Reactor Fuel," Framatome Cogema Fuels, February 2000) demonstrated that the predicted chemical, mechanical, and material performance of the advanced zirconium and M5™ cladding are acceptable under all anticipated operational occurrences and postulated accidents. The LFAs will be placed in core locations to permit higher burnups to be achieved for these LFAs. In the event that cladding failures occur in the LFAs, the environmental impact would be minimal and is bounded by the previous environmental assessments.

The exemption, which would be effective during the Unit 1 Cycle 19 fuel cycle, would allow the fuel to be irradiated to levels above 60 gigawatt days per metric ton (Gwd/MTU), but not to exceed 70 Gwd/MTU. The safety considerations associated with reactor operation with extended irradiation have been evaluated by the NRC staff.

The NRC staff has concluded that such changes would not adversely affect plant safety, and would have no adverse effect on the probability of any accident. For accidents in which the core remains intact, fuel rod integrity has been shown to be unaffected by the extended burnup under consideration; therefore, the probability of an accident will not be affected. For accidents that involve damage or melting of the fuel in the reactor core, the increased burnup may slightly change the mix of fission products that could be released in the event of a serious accident, but because the radionuclides contributing most to the dose are short-lived, increased burnup would not have an effect on the consequences of a serious accident beyond those accident scenarios

previously evaluated. Increases in projected consequences of postulated accidents associated with fuel burnup up to 70 Gwd/MTU are not considered significant, and remain well below regulatory limits.

Regulatory limits on radiological effluent releases are independent of burnup. The requirements of 10 CFR 50.36a and Appendix I to 10 CFR Part 50 ensure that any release of gaseous, liquid, or solid radiological effluents to unrestricted areas are kept "as low as reasonably achievable." Therefore, the NRC staff concludes that during routine operations, there will be no significant increase in the amount of gaseous radiological effluents released into the environment as a result of the proposed action, nor will there be a significant increase in the amount of liquid radiological effluents or solid radiological effluents released into the environment.

No significant increase in the allowable individual or cumulative occupational radiation exposure will occur. The impact to workers is expected to be reduced with higher irradiation due to the need for less frequent outages for fuel changes and less frequent fuel shipments to and from reactor sites.

The use of extended irradiation will not change the potential environmental impacts of incident-free transportation of spent nuclear fuel or the accident risks associated with spent fuel transportation if the fuel is cooled for 5 years after discharge from the reactor. A report by Pacific Northwest National Laboratory (PNNL) for the NRC (NUREG/CR-6703, "Environmental Effects of Extending Fuel Burnup Above 60 Gwd/MTU," January 2001), concluded that doses associated with incident-free transportation of spent fuel with burnup to 75 Gwd/MTU are bounded by the doses given in 10 CFR 51.52, Table S-4, for all regions of the country if dose rates from the shipping casks are maintained within regulatory limits. Increased fuel burnup will decrease the annual discharge of fuel to the spent fuel pool, which will postpone the need to remove spent fuel from the pool.

With regard to potential non-radiological environmental impacts of reactor operation with extended irradiation, the proposed changes involve systems located within the restricted area as defined in 10 CFR Part 20. Therefore, the proposed action does not result in any significant changes to land use or water use, or result in any significant changes to the quality or quantity of effluents. The proposed action does not affect non-radiological

plant effluents, and 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 endangered or threatened species, or to the habitats of endangered or threatened species are expected. The proposed action does not have a potential to affect any historical or archaeological sites.

The proposed action will not change the method of generating electricity or the method of handling any influents from the environment or non-radiological effluents to the environment. Therefore, no changes or different types of non-radiological environmental impacts are expected as a result of the amendments.

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

For more detailed information regarding the environmental impacts of extended fuel burnup, please refer to the study conducted by Pacific Northwest National Laboratories for the NRC, which is entitled, "Environmental Effects of Extending Fuel Burnup Above 60 GWd/MTU" (NUREG/CR-6703, PNL-13257, January 2001).

The details of the staff's safety evaluation will be provided in the exemption that will be issued as part of the letter to the licensee approving the exemption to the regulation.

#### *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 resources than those previously considered in the Final Environmental Statement for Calvert Cliffs 1 and 2, dated April 1973, and the Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 1, Regarding the Calvert Cliffs Nuclear Power Plant (NUREG-1437, Supplement 1), dated October 1999.

#### *Agencies and Persons Consulted*

In accordance with its stated policy, on November 20, 2007, the staff consulted with the Maryland State official, Mr. R. McLean of the Maryland Department of Natural Resources,

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 February 23, 2007, available in the NRC's Agencywide Documents Access and Management System (ADAMS) (Accession Number ML070580103 and ML070580107). 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 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@nrc.gov](mailto:pdr@nrc.gov).

Dated at Rockville, Maryland, this 5th day of December, 2007.

For the Nuclear Regulatory Commission.

**Douglas V. Pickett,**

*Senior Project Manager, Plant Licensing Branch I-1, Division of Operating Reactor Licensing, Office of Nuclear Reactor Regulation.*

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## **NUCLEAR REGULATORY COMMISSION**

**[Docket Nos. 50-387 and 50-388]**

### **PPL Susquehanna, LLC; Susquehanna Steam Electric Station, Units 1 and 2 Final Environmental Assessment and Finding of No Significant Impact Related to the Proposed License Amendment To Increase the Maximum Reactor Power Level; Correction**

**AGENCY:** U.S. Nuclear Regulatory Commission (NRC).

**ACTION:** Final Environmental Assessment and Finding of No Significant Impact; Correction.

**SUMMARY:** This document corrects an Environmental Assessment appearing in the **Federal Register** on December 5, 2007 (72 FR 68598). This action is necessary to correctly declare the Environmental Assessment as a final document (in lieu of a draft) with no action for noticing for public comment. The corrected Environmental Assessment is provided as follows:

The NRC has prepared a final Environmental Assessment as part of its evaluation of a request by PPL Susquehanna, LLC for a license amendment to increase the maximum thermal power at Susquehanna Steam Electric Station, Units 1 and 2 (SSES 1 and 2), from 3,489 megawatts-thermal (MWt) to 3,952 MWt at each unit. This represents a power increase of approximately 13 percent thermal power. As stated in the NRC staff's position paper dated February 8, 1996, on the Boiling-Water Reactor Extended Power Uprate (EPU) Program, the NRC staff (the staff) will prepare an environmental impact statement if it believes a power uprate would have a significant impact on the human environment. The staff did not identify any significant impact from the information provided in the licensee's EPU application for Susquehanna Steam Electric Station, Units 1 and 2, or the staff's independent review; therefore, the staff is documenting its environmental review in an Environmental Assessment. Also, in accordance with the position paper, the final Environmental Assessment and Finding of No Significant Impact is being published in the **Federal Register**.

The NRC published a draft Environmental Assessment and finding of no significant impact on the proposed action for public comment in the **Federal Register** on August 21, 2007 (72 FR 46670). One set of comments were received on the draft Environmental Assessment from PPL Susquehanna, LLC by letter dated September 19, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML072820283). These comments were clarifications and editorial corrections to the draft Environmental Assessment. Based on these comments, the NRC staff revised the appropriate sections of the final Environmental Assessment.

#### **Environmental Assessment**

##### *Plant Site and Environs*

SSES is located just west of the Susquehanna River approximately 5 miles northeast of Berwick, in Luzerne County, Pennsylvania. In total, SSES majority owner and licensed operator,