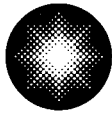


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**Constellation Energy**  
Generation Group

February 27, 2007

U. S. Nuclear Regulatory Commission  
Washington, DC 20555

**ATTENTION:** Document Control Desk

**SUBJECT:** Calvert Cliffs Nuclear Power Plant  
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318  
License Amendment Request: Change to the Core Operating Limits Report  
Analytical Methods List

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**REFERENCES:**

- (a) Letter from Mr. J. A. Spina (CCNPP) to Document Control Desk (NRC), dated February 23, 2007, Letter of Intent to Irradiate Lead Fuel Assemblies Above the Current Maximum Burnup Limit
- (b) WCAP-15604-NP Revision 2-A, Limited Scope High Burnup Lead Test Assemblies, September 2003

Pursuant to 10 CFR 50.90, Calvert Cliffs Nuclear Power Plant requests an amendment to Renewed Operating License Nos. DPR-53 and DPR-69 to incorporate the change described below into the Technical Specifications for Calvert Cliffs Unit Nos. 1 and 2. In a letter dated February 23, 2007 (Reference a), we submitted a letter describing our intent to irradiate up to four lead fuel assemblies (LFAs) to a higher burnup limit than currently allowed at Calvert Cliffs. These LFAs are currently installed in the Unit 2 core and are scheduled to be discharged during the 2007 refueling outage. As described in Reference (a), these assemblies are scheduled to undergo a detailed examination and will be inserted into Unit 1 Cycle 19 for the high burnup irradiation.

The purpose of this License Amendment Request is to add the supporting Topical Report (Reference b) to the list of references in Technical Specification 5.6.5, Core Operating Limits Report (COLR). The approved topical report provides guidance for operation with a limited number of LFAs to be irradiated to a higher burnup limit than currently allowed for Calvert Cliffs fuel assemblies. The NRC Safety Evaluation for the topical report contains eight conditions for allowing a limited number of LFAs to be irradiated to a higher burnup limit. The addition of this reference to Technical Specification 5.6.5, Core Operating Limits Report (COLR), satisfies the first of these eight conditions as described in Attachment (1). Attachment (2) contains the marked up Technical Specification page. The final Technical Specification pages will be renumbered to accommodate the insertion of this change, if necessary.

#### **SAFETY COMMITTEE REVIEW**

The Plant Operations Review Committee has reviewed this proposed change and concurs that operation with the proposed change will not result in an undue risk to the health and safety of the public.

A001



Document Control Desk  
February 27, 2007  
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cc: D. V. Pickett, NRC  
S. J. Collins, NRC

Resident Inspector, NRC  
R. I. McLean, DNR

**ATTACHMENT (1)**

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**TECHNICAL BASIS AND  
NO SIGNIFICANT HAZARDS CONSIDERATION**

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## ATTACHMENT (1)

### TECHNICAL BASIS AND NO SIGNIFICANT HAZARDS CONSIDERATION

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#### **1.0 DESCRIPTION**

This letter is a request to amend Operating Licenses DPR-53 and DPR-69 for Calvert Cliffs Units 1 and 2. The proposed change will revise the Operating Licenses to add an approved topical report to the Core Operating Limits Report (COLR) reference list in Technical Specification 5.6.5.b. The approved topical report presents the conditions to allow limited lead fuel assemblies (LFAs) to be irradiated to a higher burnup level than currently approved.

#### **2.0 PROPOSED CHANGE**

The proposed change will add an approved topical report (WCAP-15604-NP Revision 2-A) to the COLR list of topical reports in Technical Specification 5.6.5.b. The approved topical report supports the insertion of LFAs to be irradiated to a higher burnup limit than currently approved.

#### **3.0 BACKGROUND**

Calvert Cliffs Nuclear Power Plant intends to irradiate a limited number of LFAs above the current maximum burnup limit. The LFAs are part of the irradiation program originally submitted for approval in References (1) and (2) to test advanced cladding materials and an alternate fuel vendor. In the original program, there are four LFAs manufactured by Westinghouse Electric Company (Westinghouse) and four assemblies manufactured by AREVA. These eight LFAs were approved for insertion into Calvert Cliffs Unit 2 Cycles 15 and 16 to begin irradiation in April 2003, Reference (3) and (4). The assemblies are currently in their second cycle of irradiation which is scheduled to end in the spring of 2007.

The original intent of the program was to irradiate these eight assemblies for a third cycle and an explicit submittal was to be provided at that time. However, since References (1) and (2) were submitted, Calvert Cliffs has re-evaluated the LFA program and modified it slightly as explained in Reference (5).

The modification consists of four of the eight LFAs (two from each manufacturer) to be returned immediately to the core for a third cycle of irradiation (into either Unit 1 Cycle 19 or Unit 2 Cycle 17) in low duty locations on the core periphery to allow evaluation of grid-to-rod fretting resistance. References (5) and (6) are the Exemption and License Amendment Request to allow the irradiation of these LFAs. These requests included the use of some advanced cladding material while not exceeding the current peak burnup limitation of 60,000 MWD/MTU.

Calvert Cliffs now intends to irradiate the other four LFAs above the current maximum burnup limit. The nuclear industry has submitted a Topical Report, Reference (7), to justify the use of limited scope high burnup LFAs. This Topical Report has been approved by the NRC (References 8 and 10) and provides eight conditions for allowing limited LFA irradiation to high burnup. We understand that even though the Topical Report is a Westinghouse report, it is approved for the entire nuclear industry and may be used for the AREVA LFAs as well as the Westinghouse LFAs (Reference 7).

#### **4.0 TECHNICAL ANALYSIS**

The final Nuclear Regulatory Commission (NRC) Safety Evaluation (SE) for WCAP-15604-NP Revision 2-A, "Limited Scope High Burn-up Lead Test Assemblies" includes eight conditions which must be met in order for any particular licensee to participate in the limited scope LFA program. One of the conditions stated, "If the Core Operating Limits Report analytical methods listed in the licensee's Technical Specifications are approved up to a specified burnup limit a license amendment is required to add this topical report to that list in order for the licensee to be able to use the topical report." This proposed Technical Specification change satisfies the condition. The methods listed in the Calvert Cliffs Unit 1 and 2 Technical Specifications are limited to a maximum rod average burnup of 60 GWD/MTU.

## ATTACHMENT (1)

### TECHNICAL BASIS AND NO SIGNIFICANT HAZARDS CONSIDERATION

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The purpose of this License Amendment Request is to add topical report WCAP-15604-NP Revision 2-A to the reference list in order to reference it for the high burnup irradiation of a limited number of LFAs.

The other seven conditions do not require a technical specification change and are listed in the topical report. Calvert Cliffs responses to these conditions are provided in a separate letter (Reference 9).

#### **5.0 REGULATORY ANALYSIS**

##### **5.1 Regulatory Requirements**

The applicable regulatory requirements and guidance for this type of application are as follows:

Title 10 of the Code of Federal Regulations (10 CFR) establishes the fundamental regulatory requirements with respect to the reactivity control systems. Calvert Cliffs is committed to the draft General Design Criteria which implement these regulatory requirements. Specifically, draft General Design Criterion 6, "Reactor Core Design," states, in part, that the reactor core shall be designed to function throughout its design lifetime without exceeding acceptable fuel damage limits which have been stipulated and justified.

Section 50.36(c)(2)(ii) states, in part, that a Technical Specification limiting condition for operation of a nuclear reactor must be established for a process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Nuclear Regulatory Commission (NRC) Generic Letter 88-16, "Removal of Cycle-Specific Parameter Limits from Technical Specifications," provides guidance on modifying cycle-specific parameter limits in the Technical Specifications. Specifically, Generic Letter 88-12 provides Core Operating Limits Report implementation guidance, which includes the requirement to list the NRC-approved analytical methods used to determine the core operating limits in the Technical Specifications. The analytical methods referenced in the Technical Specifications identify the topical report(s) by number and title, or the staff's safety evaluation report for an NRC-approved plant-specific methodology.

##### **5.2 No Significant Hazards Consideration**

The proposed change to the Technical Specifications has been evaluated against the standards in 10 CFR 50.92. The proposed change has been determined to not involve a significant hazards consideration, in that operation of the facility in accordance with the proposed amendment:

1. *Would not involve a significant increase in the probability or consequences of an accident previously evaluated.*

The proposed change would modify the Calvert Cliffs Units 1 and 2 Technical Specification 5.6.5.b, Core Operating Limits Report by adding an approved topical report to the existing list of topical reports. The topical report provides the technical basis that supports irradiating a limited number of lead fuel assemblies to a higher burnup limit than currently approved for Calvert Cliffs. The proposed change is administrative in nature and has no impact on any plant configurations or on system performance that is relied upon to mitigate the consequences of an accident.

In the safety evaluation report approving the requested topical report (WCAP-15604-NP Revision 2-A), the Nuclear Regulatory Commission concluded that it is acceptable for an individual power licensee to irradiate a limited number of lead fuel assemblies to a maximum burnup to 75 GWD/MTU provided that certain conditions are met. Calvert Cliffs meets those required

## ATTACHMENT (1)

### TECHNICAL BASIS AND NO SIGNIFICANT HAZARDS CONSIDERATION

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conditions. Because those required conditions are met and only a limited number of fuel assemblies are included in this change, the probability or consequences of an accident previously evaluated are not significantly increased.

Therefore, the proposed change does not involve a significant increase in the probability or consequence of an accident previously evaluated.

2. *Would not create the possibility of a new or different kind of accident from any accident previously evaluated.*

The proposed change does not add any new equipment, modify any interfaces with existing equipment, change the equipment's function, or change the method of operating the equipment. The proposed change does not affect normal plant operations or configuration. Since the proposed change does not change the plant design, operation or configuration, it could not become an accident initiator.

Therefore, the proposed change does not create the possibility of a new or different type of accident from any previously evaluated.

3. *Would not involve a significant reduction in a margin of safety.*

The proposed change will add a reference to an approved topical report to allow a limited number of lead fuel assemblies to be irradiated to a higher burnup level than is currently allowed at Calvert Cliffs. The higher burnup limit has been evaluated and approved in the topical report being referenced. Calvert Cliffs conforms to the requirements of the topical report. The addition of an approved reference to the Technical Specifications is administrative in nature and has no impact on the margin of safety for any plant configuration or on system performance that is relied upon to mitigate the consequences on an accident.

Therefore, the proposed change does not involve a significant reduction in the margin of safety.

### **6.0 ENVIRONMENTAL CONSIDERATION**

We have determined that operation with the proposed amendment would not result in any significant change in the types, or significant increases in the amounts, of any effluents that may be released offsite, and no significant increases in individual or cumulative occupational radiation exposure. The addition of four LFAs at a slightly higher burnup to the full core does not significantly change the type or amount of effluents released nor does it significantly affect occupational radiation exposure. Therefore, the proposed amendment is eligible for categorical exclusion as set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement, or environmental assessment is needed in connection with the approval of the proposed amendment.

### **7.0 PRECEDENCE**

None.

### **8.0 REFERENCES**

- (1) Letter from Mr. P. E. Katz (CCNPP) to Document Control Desk (NRC), dated July 17, 2002, Westinghouse Lead Fuel Assemblies – Temporary Exemption Request and License Amendment Request

**ATTACHMENT (1)**

**TECHNICAL BASIS AND NO SIGNIFICANT HAZARDS CONSIDERATION**

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- (2) Letter from Mr. P. E. Katz (CCNPP) to Document Control Desk (NRC), dated August 6, 2002, Framatome Lead Fuel Assemblies – Temporary Exemption Request and License Amendment Request
- (3) Letter from Mr. G. S. Vissing (NRC) to Mr. P. E. Katz (CCNPP), dated April 14, 2003, Amendments Re: Lead Fuel Assemblies (TAC Nos. MB5646, MB5647 and MB6064)
- (4) Letter from Mrs. G. S. Vissing (NRC) to Mr. P. E. Katz (CCNPP), dated April 11, 2003, Exemption from the Requirements of 10 CFR 50.44, 10 CFR 50.46, and 10 CFR Part 50, Appendix K (TAC Nos. MB5648 and MB6065)
- (5) Letter from Mr. J. A. Spina (CCNPP) to Document Control Desk (NRC), dated January 19, 2006, Temporary Exemption Request for Use of Lead Fuel Assemblies
- (6) Letter from Mr. J. A. Spina (CCNPP) to Document Control Desk (NRC), dated February 27, 2006, License Amendment Request: Use of Lead Fuel Assemblies
- (7) WCAP-15604-NP Revision 2-A, “Limited Scope High Burnup Lead Test Assemblies,” September 2003
- (8) Letter from W. H. Ruland (NRC) to R. H. Bryan (Westinghouse), dated January 8, 2003, Acceptance for Referencing of Topical Report WCAP-15604-NP, Revision 1
- (9) Letter from Mr. J. A. Spina (CCNPP) to Document Control Desk (NRC), dated February 23, 2007, Letter of Intent to Irradiate Lead Fuel Assemblies Above the Current Maximum Burnup Limit
- (10) Letter from Mr. H. N. Berkow (NRC) to Mr. R. H. Bryan (Westinghouse), received August 28, 2003, Response to Comments Received from the Westinghouse Owners Group on the Safety Evaluation for WCAP-15604-NP, Revision 1



**ATTACHMENT (2)**

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**MARKED-UP TECHNICAL SPECIFICATION PAGE**

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5.6 Reporting Requirements

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- 46. CENPD-132, Supplement 4-P-A, "Calculative Methods for the CE Nuclear Power Large Break LOCA Evaluation Model"
- 47. CENPD-137, Supplement 2-P-A, "Calculative Methods for the ABB CE Small Break LOCA Evaluation Model"
- 48. WCAP-11596-P-A, "Qualification of the PHOENIX-P, ANC Nuclear Design System for Pressurized Water Reactor Cores"
- 49. WCAP-10965-P-A, "ANC: A Westinghouse Advanced Nodal Computer Code"
- 50. WCAP-10965-P-A Addendum 1, "ANC: A Westinghouse Advanced Nodal Computer Code; Enhancements to ANC Rod Power Recovery"
- 51. WCAP-16072-P-A, "Implementation of Zirconium Diboride Burnable Absorber Coatings in CE Nuclear Power Fuel Assembly Designs"
- 52. WCAP-16045-P-A, "Qualification of the Two-Dimensional Transport Code PARAGON"

Insert →

- c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, ECCS limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.
- d. The COLR, including any mid cycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6.6 Not Used

**INSERT**

53. WCAP-15604-NP, "Limited Scope High Burnup Lead Test Assemblies"