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CALVERT CLIFFS  
NUCLEAR POWER PLANT

August 31, 2011

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  
Application for Technical Specification Improvement to Adopt TSTF-487-A,  
Revision 1, "Relocate DNB Parameters to the COLR"

In accordance with 10 CFR 50.90, Calvert Cliffs Nuclear Power Plant, LLC is submitting a request for an amendment to the Technical Specifications for Calvert Cliffs Nuclear Power Plant (CCNPP) Units 1 and 2. The proposed changes would allow CCNPP to replace the departure from nucleate boiling numeric limits in Technical Specifications with references to the Core Operating Limits Report (COLR).

The changes are consistent with Nuclear Regulatory Commission-approved Industry Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-487-A, Revision 1. The availability of this Technical Specification improvement was announced in the Federal Register on June 5, 2007 (72 FR 31108) as part of the consolidated line item improvement process.

Attachment (1) provides a description and assessment of the proposed changes, as well as confirmation of applicability. Attachment (2) provides the existing Technical Specification pages and Technical Specification Bases marked up to show the proposed changes. Calvert Cliffs Nuclear Power Plant requests approval of the proposed license amendment by June 1, 2012 with the amendment being implemented within 60 days. In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated Maryland Official.

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NRD



**ATTACHMENT (1)**

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**DESCRIPTION AND ASSESSMENT OF PROPOSED CHANGES**

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## ATTACHMENT (1)

### DESCRIPTION AND ASSESSMENT OF PROPOSED CHANGES

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#### 1.0 DESCRIPTION

This letter is a request for an amendment to Renewed Operating Licenses DPR-53 and DPR-69 for Calvert Cliffs Nuclear Power Plant (CCNPP), Units 1 and 2. The proposed changes would revise Technical Specification (TS) 3.4.1, "RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits," the bases for TS 3.4.1, and TS 5.6.5 "Core Operating Limits Report (COLR)," to allow CCNPP to replace the DNB numeric limits with references to the COLR.

Technical Specification Task Force (TSTF) change traveler TSTF-487-A, Revision 1 "Relocate DNB Parameters to the COLR" was announced for availability in the Federal Register on June 5, 2007 (72 FR 31108) as part of the consolidated line item improvement process (CLIIP).

#### 2.0 PROPOSED CHANGES

Consistent with Nuclear Regulatory Commission (NRC)-approved TSTF-487-A Revision 1, the following changes are proposed:

- Revise the limiting conditions for operation and surveillance requirements in TS 3.4.1 to replace the DNB numeric limits for reactor coolant pressure, temperature, and flow with references to limits for those parameters calculated in the COLR.
- Revise the Bases associated with TS 3.4.1 to reflect that the DNB numeric limits are contained in the COLR.
- Remove an outdated note from TS 3.4.1.c and SR 3.4.1.3 as described below. This is an administrative change and a minor variance from TSTF-487-A, Revision 1.
- Revise TS 5.6.5 to add the methodology requirements for calculating the DNB numeric limits in the COLR.

#### 3.0 VARIATIONS FROM MODEL LICENSE AMENDMENT REQUEST

This license amendment request conforms to the model published in 72 FR 31108 with the following exception:

- Limiting Condition for Operation (LCO) 3.4.1.c and Surveillance Requirement 3.4.1.3, RCS Pressure, Temperature, and Flow DNB Limits – We request an administrative change to remove an asterisk note that no longer applies to Unit 2 since completion of steam generator replacement in 2003. The existing note says, "For Unit 2, the RCS total flow rate shall remain  $\geq$  340,000 gpm through Cycle 14." Unit 2 is currently operating in Cycle 19.

Prior to replacement, the original steam generators had a number of tubes plugged which impacted the RCS flow rate that could be achieved. The flow limit for the original steam generators was 340,000 gpm. As part of the steam generator replacement, a license amendment was approved (Reference 1) that increased the RCS flow rate to 370,000 gpm. An asterisk note was added to LCO 3.4.1.c and SR 3.4.1.3 for Unit 2 to leave the original RCS flow rate in place through Cycle 14 until the steam generators in Unit 2 could be replaced. With the completion of the Unit 2 steam generator replacement in 2003 (at the end of Cycle 14), the asterisk note is no longer applicable and can be removed. Therefore, we request that this asterisk note be deleted from both LCO 3.1.4.c and SR 3.4.1.3.

This is an administrative change and a minor variation from the CLIIP and should not require additional time and resources by the NRC staff for review.

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#### 4.0 BACKGROUND

The background for this application is as stated in the model Safety Evaluation (SE) in NRC's Notice of Availability published on June 5, 2007 (72 FR 31108) and TSTF-487-A, Revision 1.

#### 5.0 TECHNICAL ANALYSIS

Calvert Cliffs has reviewed Generic Letter 88-16, and the model SE published on June 5, 2007 (72 FR 31108) as part of the CLIP Notice for Comment. Calvert Cliffs has applied the methodology in Generic Letter 88-16 to develop the proposed TS changes. Calvert Cliffs has also concluded that the justifications presented in TSTF-487-A, Revision 1 and the model SE prepared by the NRC staff are applicable to CCNPP Units 1 and 2, and justify this amendment for the incorporation of the changes to CCNPP TS.

#### 6.0 REGULATORY ANALYSIS

A description of this proposed change and its relationship to applicable regulatory requirements and guidance was provided in the NRC Notice of Availability published on June 5, 2007 (72 FR 31108), the NRC Notice for Comment published on March 15, 2007 (72 FR 12223), and TSTF-487-A, Revision 1.

#### 7.0 NO SIGNIFICANT HAZARDS CONSIDERATION

Calvert Cliffs has reviewed the proposed no significant hazards consideration determination published in the Federal Register on June 5, 2007 (72 FR 31108) as part of the CLIP. The published no significant hazards consideration determination is repeated below and includes the removal of outdated reactor coolant flow information.

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

1. *Involve a significant increase in the probability or consequences of an accident previously evaluated; or*

No.

The proposed amendment replaces the limit values of the Reactor Coolant System (RCS) departure from nucleate boiling (DNB) parameters i.e., pressurizer pressure, RCS cold leg temperature and RCS flow rate in the Technical Specifications (TS) with references to the Core Operating Limits Report (COLR), in accordance with the guidance of Generic Letter 88-16, to allow these parameter limit values to be recalculated without a license amendment. The proposed amendment does not involve operation of any required structures, systems, or components in a manner or configuration different from those previously recognized or evaluated. The cycle-specific values in the COLR must be calculated using the NRC approved methodologies listed in TS 5.6.5, "Core Operating Limits Report (COLR)." Replacing the RCS DNB parameter limits in the TS with references to the COLR will maintain existing operating fuel cycle analysis requirements. Because these parameter limits are determined using NRC-approved methodologies, the acceptance criteria established for the safety analyses of various transients and accidents will continue to be met. Therefore, neither the probability nor consequences of any accident previously evaluated will be increased by the proposed change.

The proposed administrative change to remove an outdated note from TS 3.4.1.c and SR 3.4.1.3 does not affect any analyzed accident initiators, nor does it affect the unit's ability to successfully respond

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to any previously evaluated accident. In addition, the proposed amendment does not change the operation or maintenance that is performed on plant equipment.

Therefore, operation of the facility in accordance with the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. *Create the possibility of a new or different type of accident from any accident previously evaluated; or*

No.

The proposed amendment to replace the RCS DNB parameter limits in the TS with references to the COLR does not involve a physical alteration of the plant, nor a change or addition of a system function. The proposed amendment does not involve operation of any required system, structure, or component in a manner or configuration different from those previously recognized or evaluated. No new failure mechanisms will be introduced by the proposed change.

The proposed administrative change to remove an outdated note from TS 3.4.1.c and SR 3.4.1.3 does not involve a physical alteration to the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation.

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

3. *Involve a significant reduction in a margin of safety.*

No.

The proposed amendment to replace the RCS DNB parameter limits in the TS with references to the COLR will continue to maintain the margin of safety. The DNB parameter limits specified in the COLR will be determined based on the safety analysis of transients and accidents, performed using NRC-approved methodologies that show that, with appropriate measurement uncertainties of the parameters accounted for, the acceptance criteria for each of the analyzed transients are met. This provides the same margin of safety as the limit values currently specified in the TS. Any future revisions to the safety analyses that require prior NRC approval are identified per the 10 CFR 50.59 review process.

The proposed administrative change removes an outdated note from TS 3.4.1.c and SR 3.4.1.3. Since this is an administrative change, the safety function of plant equipment and their response to any analyzed accident are unaffected by this proposed change and, thus, there is no reduction in any margin of safety.

Therefore, the proposed amendment would not involve a significant reduction in a margin of safety.

Based on the above, Calvert Cliffs concludes that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c) and, accordingly, a finding of "no significant hazards consideration" is justified.

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#### 8.0 ENVIRONMENTAL EVALUATION

Calvert Cliffs has reviewed the environmental consideration included in the model SE published in the Federal Register on June 5, 2007 (72 FR 31108) as part of the CLIIP. Calvert Cliffs has concluded that the staff's findings presented therein are applicable to CCNPP and the determination is hereby incorporated by reference for this application.

#### 9.0 REFERENCES

1. Letter from D. Skay (NRC) to C. H. Cruse (CCNPP), dated March 1, 2002, Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 - Amendment Re: Steam Generator Replacement (TAC Nos. MB0951 and MB0952)

**ATTACHMENT (2)**

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**PROPOSED TECHNICAL SPECIFICATION CHANGES AND  
TECHNICAL SPECIFICATION BASES CHANGES**

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3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

LCO 3.4.1 RCS DNB parameters for pressurizer pressure, cold leg temperature, and RCS total flow rate shall be within the limits specified ~~below:~~ in the COLR

- ~~a. Pressurizer pressure  $\geq$  2200 psia;~~
- ~~b. RCS cold leg temperature ( $T_c$ )  $\leq$  548°F; and~~
- ~~c. RCS total flow rate  $\geq$  370,000\* gpm.~~

APPLICABILITY: MODE 1.

----- NOTE -----  
Pressurizer pressure limit does not apply during:

- a. THERMAL POWER ramp > 5% RTP per minute; or
- b. THERMAL POWER step > 10% RTP.

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ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RCS DNB parameter(s) not within limits.	A.1 Restore parameter(s) to within limit.	2 hours

~~\* For Unit 2, the RCS total flow rate shall remain  $\geq$  340,000 gpm through Cycle 14.~~

RCS Pressure, Temperature, and Flow DNB Limits  
3.4.1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 2.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.1.1 Verify pressurizer pressure $\geq 2200$ psia. <i>is within the limits specified in the COLR</i>	12 hours
SR 3.4.1.2 Verify RCS cold leg temperature $\leq 548^{\circ}\text{F}$ . <i>is within the limits specified in the COLR</i>	12 hours
SR 3.4.1.3 Verify RCS total flow rate $\geq 370,000^*$ gpm. <i>is greater than or equal to the limits specified in the COLR</i>	12 hours
SR 3.4.1.4 Verify measured RCS total flow rate is within limits <i>the</i> specified in the COLR.	24 months

\* For Unit 2, the RCS total flow rate shall remain  $\geq 340,000$  gpm through Cycle 14.

5.6 Reporting Requirements

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25. CEN-161-(B)-P, Supplement 1-P, "Improvements to Fuel Evaluation Model"
  26. Letter from Mr. S. A. McNeil, Jr. (NRC) to Mr. J. A. Tiernan (BG&E), dated February 4, 1987, Docket Nos. 50-317 and 50-318, "Safety Evaluation of Topical Report CEN-161-(B)-P, Supplement 1-P, Improvements to Fuel Evaluation Model"
  27. CEN-372-P-A, "Fuel Rod Maximum Allowable Gas Pressure"
  28. CENPD-135, Supplement 5-P, "STRIKIN-II, A Cylindrical Geometry Fuel Rod Heat Transfer Program"
  29. CENPD-387-P-A, "ABB Critical Heat Flux Correlations for PWR Fuel"
  30. CENPD-404-P-A, "Implementation of ZIRLO™ Cladding Material in CE Nuclear Power Fuel Assembly Designs"
  31. WCAP-11596-P-A, "Qualification of the PHOENIX-P, ANC Nuclear Design System for Pressurized Water Reactor Cores"
  32. WCAP-10965-P-A, "ANC: A Westinghouse Advanced Nodal Computer Code"
  33. WCAP-10965-P-A Addendum 1, "ANC: A Westinghouse Advanced Nodal Computer Code; Enhancements to ANC Rod Power Recovery"
  34. WCAP-16072-P-A, "Implementation of Zirconium Diboride Burnable Absorber Coatings in CE Nuclear Power Fuel Assembly Designs"
  35. WCAP-16045-P-A, "Qualification of the Two-Dimensional Transport Code PARAGON"
- c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core

*assuming operation at RTP*

BASES

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APPLICABLE  
SAFETY ANALYSES

The requirements of LCO 3.4.1 represent the initial conditions for DNB limited transients analyzed in the safety analyses (Reference 1). The safety analyses have shown that transients initiated from the limits of this LCO will meet the DNBR criterion. Changes to the facility that could impact these parameters must be assessed for their impact on the DNBR criterion. The transients analyzed include loss of coolant flow events and dropped or stuck control element assembly events. A key assumption for the analysis of these events is that the core power distribution is within the limits of LCO 3.1.6, LCO 3.2.4, and LCO 3.2.5. The safety analyses are performed over the following range of initial values: RCS pressure 2154-2311 psia, core inlet temperature  $\leq 548^{\circ}\text{F}$ , and reactor vessel inlet coolant flow rate  $\geq 370,000$  gpm.

The RCS DNB limits satisfy 10 CFR 50.36(c)(2)(ii), Criterion 2.

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LCO

This LCO specifies limits on the monitored process variables - RCS pressurizer pressure, RCS cold leg temperature, and RCS total flow rate - to ensure that the core operates within the limits assumed for the plant safety analyses. Operating within these limits will result in meeting the DNBR criterion in the event of a DNB limited transient.

The LCO numerical values for pressure and temperature (P/T) are given for the measurement location and have been adjusted for instrument error. Reactor Coolant System flow rate is given as an analytical value.

These variables are contained in the COLR to provide operating and analysis flexibility from cycle to cycle.

Specified in the COLR

APPLICABILITY

In MODE 1, the limits on RCS pressurizer pressure, RCS cold leg temperature, and RCS flow rate must be maintained during steady-state operation in order to ensure that DNBR criteria will be met in the event of an unplanned loss of forced coolant flow or other DNB limited transient. In all other MODEs, the power level is low enough so that DNBR is not a concern.

A Note has been added to indicate the limit on pressurizer pressure may be exceeded during short-term operational transients such as a THERMAL POWER ramp increase of  $> 5\%$  RATED THERMAL POWER (RTP) per minute or a THERMAL