

January 19, 2006

Mr. George Vanderheyden, Vice President
Calvert Cliffs Nuclear Power Plant, Inc.
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, MD 20657-4702

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2 -
AMENDMENT RE: SHUTDOWN MARGIN AND OPERATIONS INVOLVING
POSITIVE REACTIVITY ADDITIONS (TAC NOS. MC7328 AND MC7329)

Dear Mr. Vanderheyden:

The Commission has issued the enclosed Amendment No. 277 to Renewed Facility Operating License No. DPR-53 and Amendment No. 254 to Renewed Facility Operating License No. DPR-69 for the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2. These amendments consist of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated June 7, 2005, as supplemented on September 16, 2005.

These amendments revise TS 3.1.1, "Shutdown Margin," to modify the restrictions in Required Action B.1 to allow positive reactivity additions as long as shutdown margin requirements in Limiting Condition for Operation 3.1.1 are maintained. The amendments also correct an administrative error regarding an incorrect TS reference in TS 3.4.17, "Special Test Exception RCS [reactor coolant system] Loops - Modes 4 and 5."

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly *Federal Register* notice.

Sincerely,

/RA/

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

Docket Nos. 50-317 and 50-318

Enclosures: 1. Amendment No. 277 to DPR-53
2. Amendment No. 254 to DPR-69
3. Safety Evaluation

cc w/encls: See next page

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Accession Number: ML053460269

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DATE	01/03/06	01/03/06	12/09/05	01/13/06	01/17/06

OFFICIAL RECORD COPY

DATED: January 19, 2006

AMENDMENT NO. 277 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-53
CALVERT CLIFFS UNIT 1

AMENDMENT NO. 254 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-69
CALVERT CLIFFS UNIT 2

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CALVERT CLIFFS NUCLEAR POWER PLANT, INC.

DOCKET NO. 50-317

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 277
Renewed License No. DPR-53

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Calvert Cliffs Nuclear Power Plant, Inc. (the licensee) dated June 7, 2005, as supplemented on September 16, 2005, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.2. of Renewed Facility Operating License No. DPR-53 is hereby amended to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 277, are hereby incorporated into the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Richard J. Laufer, Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: January 19, 2006

CALVERT CLIFFS NUCLEAR POWER PLANT, INC.

DOCKET NO. 50-318

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 254
Renewed License No. DPR-69

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Calvert Cliffs Nuclear Power Plant, Inc. (the licensee) dated June 7, 2005, as supplemented on September 16, 2005, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.2. of Renewed Facility Operating License No. DPR-69 is hereby amended to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 254, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Richard J. Laufer, Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: January 19, 2006

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 277 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-53

AMENDMENT NO. 254 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-69

DOCKET NOS. 50-317 AND 50-318

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

3.1.1-2
3.4.17-1

Insert Pages

3.1.1-2
3.4.17-1

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 277 TO RENEWED

FACILITY OPERATING LICENSE NO. DPR-53

AND AMENDMENT NO. 254 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-69

CALVERT CLIFFS NUCLEAR POWER PLANT, INC.

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-317 AND 50-318

1.0 INTRODUCTION

By letter dated June 7, 2005, as supplemented on September 16, 2005 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML051660195 and ML052650346, respectively), the Calvert Cliffs Nuclear Power Plant, Inc. (the licensee) submitted a request for changes to the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 (Calvert Cliffs 1 and 2) Technical Specifications (TSs). The requested changes would revise TS 3.1.1, "Shutdown Margin [SDM]," to modify Required Action B.1, which restricts a positive reactivity addition. The proposed amendments would also correct an administrative error regarding an incorrect TS reference in TS 3.4.17, "Special Test Exception RCS [reactor coolant system] Loops - Modes 4 and 5." The September 16, 2005, letter provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* dated July 5, 2005 (70 FR 38716).

2.0 REGULATORY EVALUATION

2.1 Proposed Changes to TS Sections 3.1.1 and 3.4.17

The licensee proposed to revise Required Action B.1 in Limiting Condition for Operation (LCO) 3.1.1 by replacing the existing required action statement stating "[s]uspend positive reactivity changes" with the statement to "[s]uspend operations involving positive reactivity additions that could result in loss of Required SDM." This proposed change is similar to those proposed in the Technical Specification Task Force (TSTF) Change Traveler TSTF-286, Revision 2, "Operations Involving Positive Reactivity Insertion," approved by the Nuclear Regulatory Commission (NRC) on March 20, 2000 (Reference 3).

The licensee also proposed to correct an administrative error associated with prior Amendment Nos. 266 and 243 to Renewed Facility Operating License Nos. DPR-53 and DPR-69, dated

May 6, 2004 (References 4 and 5), for Calvert Cliffs 1 and 2, respectively. Specifically, the licensee requested to revise LCO 3.4.17.b by replacing the reference to LCO 3.9.1 with a reference to LCO 3.1.1.

General Design Criterion (GDC) 26, "Reactivity control system redundancy and capability," in Appendix A to Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR Part 50) requires two independent control systems of different design principles capable of: (1) reliably controlling reactivity changes with appropriate margin to assure that under conditions of normal operation, including anticipated operational occurrences (AOO), specified acceptable fuel design limits (SAFDL) are not exceeded, and (2) holding the reactor core subcritical under cold conditions.

2.2 Regulatory Requirements and Guidance

Compliance with GDC 26 is met by the use of movable control element assemblies (CEA) and soluble boric acid in the RCS. The CEA system provides the SDM during power operation and is capable of making the core subcritical rapidly enough to prevent exceeding SAFDLs, assuming the CEA of highest reactivity worth remains fully withdrawn following a reactor scram. The soluble boron system can compensate for fuel depletion during operation and all xenon burnout reactivity changes, and maintain the reactor subcritical under cold conditions.

During power operation, SDM is assured by operating with the shutdown CEAs fully withdrawn and the regulating CEAs within the limits specified in LCO 3.1.6. When the unit is in the shutdown and refueling modes, the SDM requirements are met by means of adjustments to the RCS boron concentration. LCO 3.1.1 specifies the SDM requirement during Modes 3, 4, and 5 operation, which provides sufficient subcritical reactivity margin to assure that the SAFDLs will not be exceeded for normal shutdown and AOOs.

The proposed change to LCO 3.1.1, Required Action B.1, adopts generic changes in industry TSTF-286, Revision 2. TSTF-286 revises Required Actions that suspend operations involving positive reactivity additions and LCO notes to prevent operations involving a reduction in RCS boron concentration by limiting the introduction into the RCS of reactivity more positive than that required to meet the required SDM. The NRC staff evaluation of the proposed changes will use TSTF-286, Revision 2, as a guide to ensure continued compliance with GDC 26.

3.0 TECHNICAL EVALUATION

3.1 LCO 3.1.1, Required Action B.1 - Restriction on Positive Reactivity Addition

TS LCO 3.1.1 requires that the SDM be within the limits specified in the Core Operating Limits Report (COLR) during operation in Modes 3, 4, and 5. TS LCO 3.1.1 also specifies that, when in Mode 5 with pressurizer level < 90 inches, the RCS level shall be above the bottom of the hot leg nozzles and all sources of non-borated water shall be # 88 gallons per minute (gpm). With RCS level at or below the bottom of the hot leg nozzle, Required Action B.1 requires the operators to suspend positive reactivity changes and Required Action B.2 requires the operators to initiate action to increase RCS level to above the bottom of the hot leg nozzles immediately. Because Required Action B.2 is generally accomplished by taking water from the refueling water tank (RWT) and adding it to the RCS, a potential conflict exists between Required Actions B.1 and B.2 when the RWT boron concentration is lower than the RCS boron

concentration. This can happen if the RCS boron concentration is elevated above the required SDM and the RWT boron concentration is at the SDM; thus adding the RWT water into the RCS would result in positive reactivity addition. Therefore, the licensee proposed to revise Required Action B.1 to “[s]uspend operations involving positive reactivity additions that could result in loss of required SDM.” With this proposed change, a positive reactivity addition is allowed as long as the required SDM is maintained, and therefore, resolves the potential conflict.

The required SDM specified in the COLR is an initial condition assumed in safety analyses. The safety analyses establish the minimum SDM that ensures the SAFDLs are not exceeded for normal operation and AOs. The most limiting accident for the SDM requirements is a main steam line break (MSLB). The SDM requirements for Modes 3 and 4 also protect against an uncontrolled CEA withdrawal from a hot zero-power condition and a CEA ejection. For Mode 5 (which relates to Required Action B.1), the primary safety analysis that relies on the SDM limit is for boron dilution events.

In the Mode 5 boron dilution event analysis, the required SDM defines the reactivity difference between an initial subcritical boron concentration and the corresponding critical boron concentration. These values, in conjunction with the RCS inventory and the assumed dilution flow rate, directly affect the results of the analysis. With the RCS level below the bottom of the hot leg nozzles, while in Mode 5 with the pressurizer level less than 90 inches, the consequences of a boron dilution event may exceed the results of the analysis that assumed the RCS level above the bottom of the hot leg nozzles. To reduce the potential for such an event, Required Action B.1 requires immediate suspension of positive reactivity addition. However, Required Action B.1 only reduces the potential for, but does not preclude, a boron dilution event. An important immediate action is the addition of RCS inventory to increase the RCS level to above the bottom of the hot leg nozzles (i.e., Required Action B.2) to prevent uncovering the reactor core. Adding inventory from the RWT will not create a boron dilution event because the RWT boron concentration is at or above the concentration assumed in the calculated SDM.

TSTF-286, Revision 2, allows licensees to revise their plant TS LCO Required Actions and notes that require suspension of operations involving positive reactivity additions or preclude reduction in boron concentration by placing a limit on positive reactivity addition to within the TS-required SDM. TSTF-286 thus provides the flexibility necessary for continued safe reactor operations, while also limiting any potential for excessive positive reactivity addition to the core. During conditions in which these Required Actions may be required, various activities for unit operation must be continued to maintain RCS inventory and control RCS temperature. These activities that involve inventory makeup from sources with boron concentrations less than the current RCS concentration need not be precluded in the TSs so long as there still is assurance that the required SDM is maintained for the worst-case overall effect on the core. The NRC has approved changes to various LCOs and Required Actions in a previous application dated July 29, 2003 (Reference 4), based on TSTF-286, Revision 2.

The proposed change to LCO 3.1.1, Required Action B.1 is similar in nature to these changes approved by NRC and TSTF-286, Revision 2. With the RCS level at or below the bottom of the hot leg nozzles in Mode 5 with the pressurizer < 90 inches, immediate action must be taken to increase the RCS inventory from the RWT. Without the change to Required Action B.1 that requires immediate suspension of a positive reactivity change, the RCS inventory makeup

activity cannot be pursued if the RWT boron concentration is lower than the current RCS boron concentration. The revised Required Action B.1 would allow for continued safe operation with the RCS inventory makeup to above the bottom of the hot leg nozzles as long as the required SDM is met. By limiting the positive reactivity addition to the required SDM, the initial boron concentration assumed for the safety analysis and the analysis results for boron dilution events would remain valid providing reasonable assurance that the SAFDLs will not be exceeded. The proposed change to LCO 3.1.1 Required Action B.1 still requires suspension of operations involving positive reactivity additions that could result in loss of required SDM. Therefore, the proposed change continues to meet the SDM requirement and GDC 26 and is acceptable.

3.2 LCO 3.4.17.b - Correction of Administrative Error

The licensee proposed to correct an administrative error contained in its previous application, dated July 29, 2003 (Reference 4), that changed LCO 3.4.17.b. LCO 3.4.17.b specified that “[n]o operations are permitted which could cause introduction of coolant into the RCS with boron concentration less than that required to meet the minimum boron concentration of LCO 3.9.1.” In its amendment application of June 7, 2005, as supplemented by a letter dated September 16, 2005 (Reference 2), the licensee proposed to change the last few words in LCO 3.4.17.b from “minimum boron concentration of LCO 3.9.1” to “SDM of LCO 3.1.1.” The licensee indicated that LCO 3.4.17.b in its July 29, 2003, application should have referenced LCO 3.1.1 instead of LCO 3.9.1. However, it had improperly marked-up the proposed TSs change in Attachment 2, although it was properly identified on Page 7 of Attachment 1 to the July 29, 2003, application. Also, the NRC staff’s safety evaluation (Reference 5) referenced LCO 3.1.1 in the discussion for accepting the proposed change. Whereas LCO 3.9.1 specifies the boron concentration requirement during Mode 6 operation, LCO 3.4.17 specifies conditions for special test exception for RCS loops during Modes 4 and 5. Thus, it is appropriate to reference LCO 3.1.1 since it specifies the SDM requirement during Modes 3, 4, and 5. The NRC staff concludes that the proposed change is acceptable since it provides the applicable TS LCO reference.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Maryland State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (70 FR 38716). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22©)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

7.0 REFERENCES

1. Letter from George Vanderheyden, Constellation Generation Group, LLC, to U.S. Nuclear Regulatory Commission, "Calvert Cliffs Nuclear Power Plant Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318, License Amendment Request: Technical Specification Changes to Modify Requirements Related to Positive Reactivity Addition," June 7, 2005.
2. Letter from Bruce S. Montgomery, Constellation Generation Group, LLC, to U.S. Nuclear Regulatory Commission, "Calvert Cliffs Nuclear Power Plant Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318, Response to Request for Additional Information: Technical Specification Changes to Modify Requirements Related to Positive Reactivity Addition (TAC Nos. MC7328 and MC7329)," September 16, 2005.
3. Letter from W. D. Beckner, U.S. Nuclear Regulatory Commission, to J. Davis, Nuclear Energy Institute, July 6, 2000.
4. Letter from George Vanderheyden, Constellation Generation Group, LLC, to U.S. Nuclear Regulatory Commission, "Calvert Cliffs Nuclear Power Plant Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318, License Amendment Request: Improvement to the Definition of Operations Involving Positive Reactivity Changes," July 29, 2003.
5. Letter from G. S. Vissing, U.S. Nuclear Regulatory Commission, to George Vanderheyden, CCNPP, "Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 & 2 Amendment Re: Technical Specification Changes to Modify Requirements Related to Positive Reactivity Additions (TAC Nos. MB8478 and MB8479)," May 6, 2004.

Principal Contributor: Y. Hsii

Date: January 19, 2006