

March 1, 2002

Mr. Charles H. Cruse
Vice President - Nuclear Energy
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: STEAM GENERATOR REPLACEMENT (TAC NOS.
MB0951 AND MB0952)

Dear Mr. Cruse:

The Commission has issued the enclosed Amendment No. 249 to Renewed Facility Operating License No. DPR-53 and Amendment No. 225 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 December 20, 2000, as supplemented by letter dated July 12, 2001.

The amendments revise the Technical Specifications to incorporate changes required to support operation with replacement steam generators in Calvert Cliffs Units 1 and 2. The changes are as follows: (1) revise the reference point for the "reactor trip steam generator level-low" set-point to account for geometric differences; (2) increase the reactor coolant minimum required total flow rate; and (3) eliminate the steam generator tube sleeving options.

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/

Donna Skay, Project Manager, Section 1
Project Directorate 1
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-317 and 50-318

Enclosures: 1. Amendment No. 249 to DPR-53
2. Amendment No. 225 to DPR-69
3. Safety Evaluation

cc w/encls: See next page

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The amendments revise the Technical Specifications to incorporate changes required to support operation with replacement steam generators in Calvert Cliffs Units 1 and 2. The changes are as follows: (1) revise the reference point for the "reactor trip steam generator level-low" set-point to account for geometric differences; (2) increase the reactor coolant minimum required total flow rate; and (3) eliminate the steam generator tube sleeving options.

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cc w/encls: See next page

Package: ML020640009 **TSs: ML020630260**

Accession Number: ML012400449

** See previous concurrence

*SE input provided by memo incorporated with no significant changes

OFFICE	PDI-1/PM	PDI-1/LA	SC:EMCB	SC:SRXB	PDI-1/ASC	OGC
NAME	DSkay	SLittle**	ESullivan*	FAkstulewicz*	J.Munday	AHodgdon**
DATE	2/27/02	8/30/01	08/15/01	06/29/01	3/1/02	9/17/01

OFFICIAL RECORD COPY

DATED: March 1, 2002

AMENDMENT NO. 249 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-53
CALVERT CLIFFS UNIT 1

AMENDMENT NO. 225 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-69
CALVERT CLIFFS UNIT 2

PUBLIC
PDI-1 R/F
PDI-1 ASC
SLittle
DSkay
OGC
GHill (2)
WBeckner
ACRS
BPlatchek, RI

cc: Plant Service list

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. 249
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 December 20, 2000, as supplemented on July 12, 2001, 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. 249, 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 prior to restart following replacement of the steam generators.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Joel Munday, Acting Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: March 1, 2002

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. 225
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 December 20, 2000, as supplemented on July 12, 2001, 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. 225, 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 prior to restart following replacement of the steam generators.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Joel Munday , Acting Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: March 1, 2002

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 249 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-53

AMENDMENT NO. 225 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

3.3.1-10
3.4.1-1
3.4.1-2
5.0-19
5.0-20

Insert Pages

3.3.1-10
3.4.1-1
3.4.1-2
5.0-19
5.0-20

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 249 TO RENEWED

FACILITY OPERATING LICENSE NO. DPR-53

AND AMENDMENT NO. 225 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 December 20, 2000, as supplemented July 12, 2001, 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 Technical Specifications (TSs) to incorporate changes required to support operation with replacement steam generators in Calvert Cliffs Units 1 and 2. The licensee proposed the following changes: (1) revise the reference point for the "reactor trip steam generator level-low" setpoint to account for geometric differences between the old and the new steam generators; (2) increase the reactor coolant minimum required total flow rate; and (3) eliminate the steam generator tube sleeving options. The July 12, 2001, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 BACKGROUND

Calvert Cliffs Nuclear Power Plant (CCNPP) is a dual unit site. Each unit is a two-loop 2700 MWt Combustion Engineering (CE) design. The original CE Model 67 steam generators have been in service since the mid-seventies when the two CCNPP units were first licensed for commercial operation. The licensee for Calvert Cliffs is currently preparing to replace the CE designed steam generators with steam generators designed and fabricated by Babcock & Wilcox Canada Ltd. (BWC). This will take place during the Unit 1 refueling outage in the spring of 2002 (end of Cycle 15), and the Unit 2 refueling outage in the spring of 2003 (end of Cycle 14).

The Calvert Cliffs replacement steam generators (RSGs) consist of a new lower subassembly, new steam drum internals, and a new feeding, with the existing steam drum being refurbished and reattached to the subassembly within the containment. The RSGs will occupy the same physical envelope as the original steam generators (OSGs). There are no changes to interfaces with the reactor coolant, main feedwater, or main steam systems, or to major component supports or piping supports. Some of the differences between the OSG and RSG

designs include: (1) the use of thermally-treated Alloy 690 tube material instead of mill-annealed Alloy 600 used for the OSGs; (2) a small weight increase and a small change in the center of gravity location; (3) addition of an integral flow restrictor in the main steam nozzle; (4) increased heat transfer area; and (5) a minor geometric difference in the location of the top of the feed ring with respect to the pedestal.

3.0 EVALUATION

3.1 Steam Generator Level - Low Setting

The current TS Table 3.3.1-1, "Reactor Protective System Instrumentation," Item 7 sets the allowable value for "Steam Generator Level-Low" function to greater than or equal to 10 inches below the top of the feed ring. To accommodate the geometric difference in the location of the top of the feed ring with respect to the pedestal between the OSG and the RSG, the proposed amendment would change the allowable value for "Steam Generator Level-Low" function to greater than or equal to 50 inches below normal water level. Since normal water levels for RSG and OSG with respect to the pedestal are identical and the current steam generator level-low reactor trip setpoint, "greater or equal to 10 inches below top of feed ring" is "greater or equal to 50 inches below normal water level" for both the RSG and OSG, the functionality of the steam generator level-low reactor trip setpoint will be remain unchanged.

The design-basis accident affected by the proposed change is a loss of feedwater event. Subsequent to its December 20, 2000, application for license amendment, the licensee discovered that non-conservative assumptions were used in the Loss of Feedwater Flow accident analysis. By letter dated November 19, 2001, the licensee submitted a revision to its Loss of Feedwater Flow accident analysis. NRC approval of the revised analysis was required because it constituted a change to the methodology and acceptance criteria. The staff approved the revised analysis in a license amendment dated February 26, 2002.

The December 20, 2000, application stated that the OSG safety analysis assumed the reactor trip water level setpoint to be 116.4 inches below normal water level. The November 19, 2001, submittal revised the trip setpoint to 55" below normal water level. The new analyzed setpoint is below the proposed TS limit of 50" below normal level. At this water level, the RSG has slightly more water mass than the OSG due to differences in internal design. Therefore, the RSG has more post-reactor trip secondary side water inventory to ensure that the results of a loss of feedwater transient are bounded by the current safety analysis.

Based on its evaluation, the staff concludes that the proposed change to TS Table 3.3.1-1, Item 7 is acceptable because the proposed change will not change the functionality of the Steam Generator Level-Low reactor trip setpoint and plant operation with this revised TS is bounded by the current safety analysis.

3.2 Reactor Coolant Minimum Flow

The current TS limiting condition for operation (LCO) 3.4.1 and Surveillance Requirement (SR) 3.4.1.3 set the minimum required total reactor coolant flow value to 340,000 gpm which was recently established to accommodate more tube plugging in the OSG. The proposed amendment would revise TS LCO 3.4.1 and TS SR 3.4.1.3 to increase reactor coolant minimum required total flow rate back to the originally established value of 370,000 gpm.

Since the flow resistance of the RSG is equivalent to that of the OSG without plugged tubes, the required minimum RCS total flow rate can be increased to the value previously established for the OSG with zero plugged tubes, 370,000 gpm. The increase in RCS flow associated with the RSG is bounded by the previous evaluation performed for the OSG.

The staff concludes that the proposed changes to TS LCO 3.4.1 and TS SR 3.4.1.3 are acceptable because the proposed changes are supported by the original evaluation performed for OSG with zero plugged tubes. Since the flow resistance of the RSG is equivalent to that of the OSG with zero plugged tubes, it is reasonable to restore the TS required minimum RCS flow rate to the value originally established for the OSG, 370,000 gpm.

3.3 Steam Generator Tube Slewing

As described above, one of the differences between the OSG and the RSG design is the use of thermally-treated Alloy 690 tube material instead of mill-annealed Alloy 600 used for the OSGs. The three slewing tube repair options described in CCNPP TS Administrative Control 5.5.9. are: (1) the Westinghouse Laser Welded sleeves, (2) the Asea Brown Boveri, Inc. (ABB) Combustion Engineering Leak Tight sleeves, and (3) the ABB Combustion Engineering Alloy 800 Leak Limiting sleeves. These options are designed specifically for the OSGs' mill-annealed Alloy 600 tubes. As currently designed and described in Administrative Control 5.5.9, these slewing options are not compatible with, and cannot be used to repair, the RSG Alloy 690 tubes. Therefore, these repair options will no longer be applicable to CCNPP Units 1 and 2 after the steam generators are replaced. TS Administrative Control 5.5.9 is revised to reflect this limitation. The staff finds that this change has no adverse safety significance and is therefore acceptable.

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 (66 FR 13799). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(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.

Principal Contributors: C. Y. Liang
H. F. Conrad

Date: March 1, 2002

Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 and 2

cc:

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