November 29, 1994

Mr. Robert E. Denton
Vice President - Nuclear Energy
Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, MD 20657-4702

SUBJECT: ISSUANCE OF AMENDMENTS FOR CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1 (TAC NO. M90124) AND UNIT NO. 2 (TAC NO. M90125)

Dear Mr. Denton:

The Commission has issued the enclosed Amendment No. 201 to Facility Operating License No. DPR-53 and Amendment No. 179 to Facility Operating License No. DPR-69 for the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated August 2, 1994.

The amendments revise TSs 3.9.1 and 3.1.2.7 to clarify the requirements when the required boron concentration is greater than 2300 ppm.

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,

Original signed by

Daniel G. McDonald, Senior Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-317
and 50-318

Enclosures: 1. Amendment No. 201 to DPR-53
2. Amendment No. 179 to DPR-69
3. Safety Evaluation

cc w/encls: See next page

C50041

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DATE	10/1 /94		10/1 /94		10/02/94		10/2/94		10/29/94	

OFFICE	OGC									
NAME	[illegible]									
DATE	10/24/94									

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cc:

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 29, 1994

Mr. Robert E. Denton
Vice President - Nuclear Energy
Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
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The amendments revise TSs 3.9.1 and 3.1.2.7 to clarify the requirements when the required boron concentration is greater than 2300 ppm.

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,

Daniel G. McDonald, Senior Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-317
and 50-318

Enclosures: 1. Amendment No.201 to DPR-53
2. Amendment No.179 to DPR-69
3. Safety Evaluation

cc w/encls: See next page

DATED: November 29, 1994

AMENDMENT NO. 201 TO FACILITY OPERATING LICENSE NO. DPR-53-CALVERT CLIFFS UNIT 1
AMENDMENT NO. 179 TO FACILITY OPERATING LICENSE NO. DPR-69-CALVERT CLIFFS UNIT 2

Docket File
PUBLIC
PDI-1 Reading
S. Varga, 14/E/4
J. Zwolinski, 14/H/3
M. J. Case
J. Harold
C. Vogan
D. McDonald
OGC
D. Hagan, T-4 A43
C. Liang, 8/E/23
G. Hill (4), T5 C3
C. Grimes, 11/E/22
ACRS (4)
OPA
OC/LFDCB
PD plant-specific file
C. Cowgill, Region I

cc: Plant Service list

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-317

CALVERT CLIFFS NUCLEAR POWER PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.201
License No. DPR-53

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Baltimore Gas and Electric Company (the licensee) dated August 2, 1994, 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 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. 201, 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

Michael J. Case, Acting Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 29, 1994

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-318

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 179
License No. DPR-69

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Baltimore Gas and Electric Company (the licensee) dated August 2, 1994, 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.

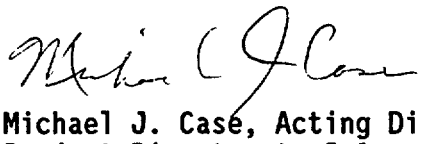
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.2. of Facility Operating License No. DPR-69 is hereby amended to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 179, 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



Michael J. Case, Acting Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 29, 1994

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 201 FACILITY OPERATING LICENSE NO. DPR-53

AMENDMENT NO. 179 FACILITY OPERATING LICENSE NO. DPR-69

DOCKET NOS. 50-317 AND 50-318

Revise Appendix A as follows:

Remove Pages	Insert Pages
3/4 1-17	3/4 1-17
3/4 9-1	3/4 9-1
Bases 3/4 1-3	Bases 3/4 1-3

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

Borated Water Sources - Shutdown

LIMITING CONDITION FOR OPERATION

3.1.2.7 As a minimum, one of the following borated water sources shall be **OPERABLE:**

a. One boric acid storage tank and one associated heat tracing circuit with the tank contents in accordance with Figure 3.1.2-1.

b. The refueling water tank with:

1. A minimum contained borated water volume of 9,844 gallons,

2. A minimum solution temperature of 35°F, and

3. A minimum boron concentration of:

a) 2300 ppm in **MODE** 5, and
b) the boron concentration limit of Technical Specification 3.9.1 in **MODE** 6.

APPLICABILITY: **MODES** 5 and 6.

ACTION: With no borated water sources **OPERABLE**, suspend all operations involving **CORE ALTERATIONS** or positive reactivity changes until at least one borated water source is restored to **OPERABLE** status.

SURVEILLANCE REQUIREMENTS

4.1.2.7 The above required borated water source shall be demonstrated **OPERABLE:**

a. At least once per 7 days by:

1. Verifying the boron concentration of the water,

2. Verifying the contained borated water volume of the tank, and

3. Verifying the boric acid storage tank solution temperature when it is the source of borated water.

b. At least once per 24 hours by verifying the RWT temperature when it is the source of borated water and the outside air temperature is < 35°F.

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.9.1 With the reactor vessel head unbolted or removed, the boron concentration of all filled portions of the Reactor Coolant System and the refueling pool shall be maintained within the limit provided in the COLR.

APPLICABILITY: **MODE 6.**

ACTION: With the requirements of the above specification not satisfied, immediately suspend all operations involving **CORE ALTERATIONS** or positive reactivity changes and initiate actions to restore boron concentration to within its limit. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.1.1 The boron concentration shall be determined to be within its limit prior to:

a. Removing or unbolting the reactor vessel head, and

b. Withdrawal of any full length CEA in excess of 3 feet from its fully inserted position.

4.9.1.2 The boron concentration of the Reactor Coolant System and the refueling pool shall be determined by chemical analysis at least 3 times per 7 days with a maximum time interval between samples of 72 hours.

BASES

With the RCS average temperature above 200°F, a minimum of two independent and redundant boration systems are provided to ensure single functional capability in the event an assumed failure renders one of the systems inoperable. Allowable out-of-service periods ensure that minor component repair or corrective action may be completed without undue risk to overall facility safety from injection system failures during the repair period.

The boration capability of either system will provide sufficient **SHUTDOWN MARGIN** from all operating conditions assuming xenon decay and cooldown to 200°F. The maximum boration capability requirement occurs at EOL from full power equilibrium xenon conditions and requires boric acid solution from the boric acid tanks, the concentration and volume of which are met by the range of values given in Specifications 3.1.2.8 and 3.1.2.9, or 55,627 gallons of 2300 ppm borated water from the refueling water tank. However, to be consistent with the ECCS requirements, the RWT is required to have a minimum contained volume of 400,000 gallons during **MODES** 1, 2, 3 and 4. The maximum boron concentration of the refueling water tank shall be limited to 2700 ppm and the maximum boron concentration of the boric acid storage tanks shall be limited to 8% to preclude the possibility of boron precipitation in the core during long term ECCS cooling.

With the RCS temperature below 200°F, one boration system is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting **CORE ALTERATIONS** and positive reactivity change in the event the single injection system becomes inoperable.

The boron capability required below 200°F is based upon providing sufficient **SHUTDOWN MARGIN** after xenon decay and cooldown from 200°F to 140°F. This condition requires either boric acid solution from the boric acid tanks, the requirements of which are met by Specification 3.1.2.7, or 9,844 gallons of 2300 ppm borated water from the refueling water tank.

The **OPERABILITY** of one boration system in **MODE** 6 ensures that this system is available for reactivity control as required by **ACTION** 3.9.1.

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

The specifications of this section ensure that (1) acceptable power distribution limits are maintained, (2) the minimum **SHUTDOWN MARGIN** is maintained, and (3) the potential effects of a CEA ejection accident are limited to acceptable levels.

The **ACTION** statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original criteria are met. A regulating or shutdown CEA is considered to be misaligned if it is more than 7.5 inches from any other CEA in its group, however, a shutdown CEA is also considered to be misaligned if it is

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

Borated Water Sources - Shutdown

LIMITING CONDITION FOR OPERATION

3.1.2.7 As a minimum, one of the following borated water sources shall be **OPERABLE**:

a. One boric acid storage tank and one associated heat tracing circuit with the tank contents in accordance with Figure 3.1.2-1.

b. The refueling water tank with:

1. A minimum contained borated water volume of 9,844 gallons,

2. A minimum solution temperature of 35°F, and

3. A minimum boron concentration of:

a) 2300 ppm in **MODE** 5, and
b) the boron concentration limit of Technical Specification 3.9.1 in **MODE** 6.

APPLICABILITY: **MODES** 5 and 6.

ACTION: With no borated water sources **OPERABLE**, suspend all operations involving **CORE ALTERATIONS** or positive reactivity changes until at least one borated water source is restored to **OPERABLE** status.

SURVEILLANCE REQUIREMENTS

4.1.2.7 The above required borated water source shall be demonstrated **OPERABLE**:

a. At least once per 7 days by:

1. Verifying the boron concentration of the water,

2. Verifying the contained borated water volume of the tank, and

3. Verifying the boric acid storage tank solution temperature when it is the source of borated water.

b. At least once per 24 hours by verifying the RWT temperature when it is the source of borated water and the outside air temperature is < 35°F.

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.9.1 With the reactor vessel head unbolted or removed, the boron concentration of all filled portions of the Reactor Coolant System and the refueling pool shall be maintained within the limit provided in the COLR.

APPLICABILITY: **MODE 6.**

ACTION: With the requirements of the above specification not satisfied, immediately suspend all operations involving **CORE ALTERATIONS** or positive reactivity changes and initiate actions to restore boron concentration to within its limit. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.1.1 The boron concentration shall be determined to be within its limit prior to:

a. Removing or unbolting the reactor vessel head, and

b. Withdrawal of any full length CEA in excess of 3 feet from its fully inserted position.

4.9.1.2 The boron concentration of the Reactor Coolant System and the refueling pool shall be determined by chemical analysis at least 3 times per 7 days with a maximum time interval between samples of 72 hours.

BASES

The components required to perform this function include: 1) borated water sources, 2) charging pumps, 3) separate flow paths, 4) boric acid pumps, 5) associated heat tracing systems, and 6) an emergency power supply from **OPERABLE** diesel generators. At or below 80% of **RATED THERMAL POWER**, there is a corresponding decrease in decay heat which compensates for the loss of injection from one charging pump assumed in the Small Break LOCA Analyses.

With the RCS average temperature above 200°F, a minimum of two independent and redundant boration systems are provided to ensure single functional capability in the event an assumed failure renders one of the systems inoperable. Allowable out-of-service periods ensure that minor component repair or corrective action may be completed without undue risk to overall facility safety from injection system failures during the repair period.

The boration capability of either system will provide sufficient **SHUTDOWN MARGIN** from all operating conditions assuming xenon decay and cooldown to 200°F. The maximum boration capability requirement occurs at EOL from full power equilibrium xenon conditions and requires boric acid solution from the boric acid tanks, the concentration and volume of which are met by the range of values given in Specifications 3.1.2.8 and 3.1.2.9, or 55,627 gallons of 2300 ppm borated water from the refueling water tank. However, to be consistent with the ECCS requirements, the RWT is required to have a minimum contained volume of 400,000 gallons during **MODES** 1, 2, 3 and 4. The maximum boron concentration of the refueling water tank shall be limited to 2700 ppm and the maximum boron concentration of the boric acid storage tanks shall be limited to 8% to preclude the possibility of boron precipitation in the core during long term ECCS cooling.

With the RCS temperature below 200°F, one boration system is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting **CORE ALTERATIONS** and positive reactivity change in the event the single injection system becomes inoperable.

The boron capability required below 200°F is based upon providing sufficient **SHUTDOWN MARGIN** after xenon decay and cooldown from 200°F to 140°F. This condition requires either boric acid solution from the boric acid tanks, the requirements of which are met by Specification 3.1.2.7, or 9,844 gallons of 2300 ppm borated water from the refueling water tank.

The **OPERABILITY** of one boration system in **MODE** 6 ensures that this system is available for reactivity control as required by **ACTION** 3.9.1.

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

The specifications of this section ensure that (1) acceptable power distribution limits are maintained, (2) the minimum **SHUTDOWN MARGIN** is maintained, and (3) the potential effects of a CEA ejection accident are limited to acceptable levels.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 201 TO FACILITY OPERATING LICENSE NO. DPR-53

AND AMENDMENT NO. 179 TO FACILITY OPERATING LICENSE NO. DPR-69

BALTIMORE GAS AND ELECTRIC COMPANY

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

DOCKET NOS. 50-317 AND 50-318

1.0 INTRODUCTION

By letter dated August 2, 1994, the Baltimore Gas and Electric Company (the licensee) submitted a request for changes to the Calvert Cliffs Nuclear Power Plant, Units Nos. 1 and 2, Technical Specifications (TSs). The requested changes would revise the action statement of TS 3.9.1 and the requirements of TS 3.1.2.7 to clarify the requirements when the required refueling boron concentration is greater than 2300 ppm.

2.0 EVALUATION

During refueling operations, Calvert Cliffs Technical Specification 3.9.1, "Refueling Operations - Boron Concentration," requires the boron concentration of all filled portions of the Reactor Coolant System (RCS) and refueling pool be sufficient to maintain $k_{eff} \leq 0.95$. The boron concentration necessary to achieve this core reactivity is specified in the Core Operating Limits Report. This amount of shutdown margin is sufficient to ensure that the core will remain subcritical during core alterations and anticipated accidents. In the event that the boron concentration falls below the required concentration, TS 3.9.1 requires the core alterations or positive reactivity changes be immediately ceased, and that boration $\geq$ 40 gpm of 2300 ppm boric acid, or its equivalent, be continued until the boron concentration is within its limits. Currently, if the boron concentration limit is greater than 2300 ppm, borating with 2300 ppm water will not restore boron to the required concentration. Therefore, the operator must interpret the "or its equivalent" phrase and begin boration with a higher concentration in order to restore the required refueling boron concentration. The proposed change would revise the action statement to explicitly require the operator to immediately initiate actions to restore the boron concentration to within its limits.

TS 3.1.2.7, "Borated Water Sources - Shutdown," gives the operability requirement for borated water sources including the Refueling Water Tank (RWT), in Modes 5 and 6. The minimum boron concentration is given as 2300

ppm. While this minimum value is correct for mode 5, a larger boron concentration may be necessary in Mode 6. The RWT is the preferred borated water source for restoring the required boron concentration as required by TS 3.9.1. Therefore, the RWT boron concentration in Mode 6 should be at least be that required by TS 3.9.1. The proposed change to TS 3.1.2.7 would clarify the boron concentration requirements. In Mode 5, 2300 ppm will continue to be required. In Mode 6, the boron concentration limit for the RWT will be the boron concentration limit given in TS 3.9.1.

3.0 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.

4.0 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 (59 FR 47164). 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.

5.0 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 Contributor: J. Harold

Date: November 29, 1994