Docket File

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

June 27, 1991

Docket Nos. 50-317
and 50-318

Mr. G. C. Creel
Vice President - Nuclear Energy
Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
MD Rts. 2 & 4
P. O. Box 1535
Lusby, Maryland 20657

Dear Mr. Creel:

SUBJECT: ISSUANCE OF AMENDMENTS FOR CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1 (TAC NO. 79236) AND UNIT NO. 2 (TAC NO. 79237)

The Commission has issued the enclosed Amendment No. 155 to Facility Operating License No. DPR-53 and Amendment No. 135 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 in response to your application transmitted by letter dated November 7, 1990, as supplemented on May 20, 1991.

The amendments modify Technical Specifications (TS) action statements of 3.8.1.2, 3.8.2.2, 3.8.2.4, and 3.9.4 in relation to the limiting condition for operation (LCO) requirements for the A.C. electrical power sources, A.C. electrical busses, D.C. electrical equipment and busses, and the containment penetrations. The requirement to establish containment integrity is replaced with the requirement to suspend all operations relative to: core alterations, positive reactivity changes, the movement of irradiated fuel, and the movement of heavy loads over irradiated fuel. The change also requires that containment penetration closure, as identified in TS 3.9.4, be established within 8 hours and corrective actions be initiated immediately to restore the minimum A.C. electrical power sources, A.C. electrical busses, and, D.C. electrical equipment and busses. The requirements of TS 3.9.4 are modified to be consistent with the above action statements and the applicable TS Bases sections are also modified to reflect the proposed changes.

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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

Enclosures:
1. Amendment No. 155 to DPR-53
2. Amendment No. 135 to DPR-69
3. Safety Evaluation

cc w/enclosures:
See next page

cc:

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

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-317

CALVERT CLIFFS NUCLEAR POWER PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 155
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 November 7, 1990, as supplemented on May 20, 1991, 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. 155, 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

Robert A. Capra

Robert A. Capra, 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: June 27, 1991

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

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-318

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 135
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 November 7, 1990, as supplemented on May 20, 1991, 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. 135, 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

Robert A. Capra

Robert A. Capra, 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: June 27, 1991

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 155 FACILITY OPERATING LICENSE NO. DPR-53

AMENDMENT NO. 135 FACILITY OPERATING LICENSE NO. DPR-69

DOCKET NOS. 50-317 AND 50-318

Revise Appendix A as follows:

Remove Pages	Insert Pages
3/4 8-5	3/4 8-5
3/4 8-6*	3/4 8-6*
3/4 8-7	3/4 8-7
3/4 8-8	3/4 8-8
3/4 8-9	3/4 8-9
3/4 8-10	3/4 8-10
3/4 8-11	3/4 8-11
3/4 9-3*	3/4 9-3*
3/4 9-4	3/4 9-4
---	3/4 9-4a
B 3/4 6-1	B 3/4 6-1
B 3/4 9-1	B 3/4 9-1
B 3/4 9-2*	B 3/4 9-2*

*Pages which did not change, but are overleaf.

ELECTRICAL POWER SYSTEMS

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be **OPERABLE**:

a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and

b. One diesel generator with:

1. A day fuel tank containing a minimum volume of 375 gallons of fuel,

2. A fuel storage system containing a minimum volume of 18,250 gallons of fuel, and

3. A fuel transfer pump.

APPLICABILITY: **MODES** 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources **OPERABLE**:

a. Immediately* suspend all operations involving **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel and movement of heavy loads over irradiated fuel, and

b. Immediately initiate corrective actions to restore the minimum A.C. electrical power sources to **OPERABLE** status, and

c. Establish containment penetration closure as identified in Specification 3.9.4 within 8 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated **OPERABLE** by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 except for requirement 4.8.1.1.2a.5.

* Performance of Action a. shall not preclude completion of actions to establish a safe conservative position.

ELECTRICAL POWER SYSTEMS

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be **OPERABLE**:

a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and

b. One diesel generator with:

1. A day fuel tank containing a minimum volume of 375 gallons of fuel,

2. A fuel storage system containing a minimum volume of 18,250 gallons of fuel, and

3. A fuel transfer pump.

APPLICABILITY: **MODES** 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources **OPERABLE**:

a. Immediately* suspend all operations involving **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel and movement of heavy loads over irradiated fuel, and

b. Immediately initiate corrective actions to restore the minimum A.C. electrical power sources to **OPERABLE** status, and

c. Establish containment penetration closure as identified in Specification 3.9.4 within 8 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated **OPERABLE** by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 except for requirement 4.8.1.1.2a.5.

* Performance of Action a. shall not preclude completion of actions to establish a safe conservative position.

ELECTRICAL POWER SYSTEMS

3/4.8.2 ONSITE POWER DISTRIBUTION SYSTEMS

A.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.1 The following A.C. electrical busses shall be **OPERABLE** and energized from sources of power other than the diesel generators with tie breakers open between redundant busses:

4160	volt Emergency Bus #11
4160	volt Emergency Bus #14
480	volt Emergency Bus #11A or 14B
480	volt Emergency Bus #14A of 11B
120	volt A.C. Vital Bus #11
120	volt A.C. Vital Bus #12
120	volt A.C. Vital Bus #13
120	volt A.C. Vital Bus #14

APPLICABILITY: **MODES** 1, 2, 3 and 4.

ACTION:

With less than the above complement of A.C. busses **OPERABLE**, restore the inoperable bus to **OPERABLE** status within 8 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.1 The specified A.C. busses shall be determined **OPERABLE** and energized from A.C. sources other than the diesel generators with tie breakers open between redundant busses at least once per 7 days by verifying correct breaker alignment and indicated power availability.

ELECTRICAL POWER SYSTEMS

3/4.8.2 ONSITE POWER DISTRIBUTION SYSTEMS

A.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.1 The following A.C. electrical busses shall be **OPERABLE** and energized from sources of power other than the diesel generators with tie breakers open between redundant busses:

4160 volt Emergency Bus #21

4160 volt Emergency Bus #24

480 volt Emergency Bus #21A or 24B

480 volt Emergency Bus #24A of 21B

120 volt A.C. Vital Bus #21

120 volt A.C. Vital Bus #22

120 volt A.C. Vital Bus #23

120 volt A.C. Vital Bus #24

APPLICABILITY: **MODES** 1, 2, 3 and 4.

ACTION:

With less than the above complement of A.C. busses **OPERABLE**, restore the inoperable bus to **OPERABLE** status within 8 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.1 The specified A.C. busses shall be determined **OPERABLE** and energized from A.C. sources other than the diesel generators with tie breakers open between redundant busses at least once per 7 days by verifying correct breaker alignment and indicated power availability.

ELECTRICAL POWER SYSTEMS

A.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, the following A.C. electrical busses shall be **OPERABLE** and energized from sources of power other than a diesel generator but aligned to an **OPERABLE** diesel generator:

1 - 4160 volt Emergency Bus

1 - 480 volt Emergency Bus

2 - 120 volt A.C. Vital Busses

APPLICABILITY: **MODES** 5 and 6

ACTION:

With less than the above complement of A.C. busses **OPERABLE** and energized:

a. Immediately* suspend all operations involving **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel and movement of heavy loads over irradiated fuel, until the minimum required A.C. busses are restored to **OPERABLE** and energized status, and

b. Immediately initiate corrective actions to restore the minimum A.C. electrical busses to **OPERABLE** and energized status, and

c. Establish containment penetration closure as identified in Specification 3.9.4 within 8 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.2 The specified A.C. busses shall be determined **OPERABLE** and energized from A.C. sources other than the diesel generators at least once per 7 days by verifying correct breaker alignment and indicated power availability.

* Performance of Action a. shall not preclude completion of actions to establish a safe conservative position.

ELECTRICAL POWER SYSTEMS

A.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, the following A.C. electrical busses shall be **OPERABLE** and energized from sources of power other that a diesel generator but aligned to an **OPERABLE** diesel generator:

1 - 4160 volt Emergency Bus

1 - 480 volt Emergency Bus

2 - 120 volt A.C. Vital Busses

APPLICABILITY: **MODES** 5 and 6

ACTION:

With less that the above complement of A.C. busses **OPERABLE** and energized:

a. Immediately* suspend all operations involving **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel and movement of heavy loads over irradiated fuel, until the minimum required A.C. busses are restored to **OPERABLE** and energized status, and

b. Immediately initiate corrective actions to restore the minimum A.C. electrical busses to **OPERABLE** and energized status, and

c. Establish containment penetration closure as identified in Specification 3.9.4 within 8 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.2 The specified A.C. busses shall be determined **OPERABLE** and energized from A.C. sources other than the diesel generators at least once per 7 days by verifying correct breaker alignment and indicated power availability.

* Performance of Action a. shall not preclude completion of actions to establish a safe conservative position.

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.3 The following D.C. bus trains shall be energized and **OPERABLE**:

a. 125-volt D.C. bus No. 11, the associated 125-volt D.C. battery bank or as necessary the Reserve Battery, and one associated full capacity charger.

b. 125-volt D.C. bus No. 12, the associated 125-volt D.C. battery bank or as as necessary the Reserve Battery, and one associated full capacity charger.

c. 125-volt D.C. bus No. 21, the associated 125-volt D.C. battery bank or as necessary the Reserve Battery, and one associated full capacity charger.

d. 125-volt D.C. bus No. 22, the associated 125-volt D.C. battery bank or as necessary the Reserve Battery, and one associated full capacity charger.

APPLICABILITY: **MODES** 1, 2, 3 and 4.

ACTION:

a. With one 125-volt bus inoperable, restore the inoperable bus to **OPERABLE** status within 2 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

b. With one 125-volt D.C. battery inoperable and the associated 125-volt D.C. bus not being supplied by the Reserve Battery except during surveillance testing per Specification 4.8.2.3.2.d.1:

1. Restore the inoperable battery to **OPERABLE** status within 2 hours, or replace the inoperable battery with the **OPERABLE** Reserve Battery within the next 2 hours, or

2. Be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

c. With both 125-volt battery chargers from the same D.C. bus inoperable:

1. Except when necessary during surveillance testing per Specification 4.8.2.3.2.d.1, restore at least one 125-volt D.C. battery charger to **OPERABLE** status within 2 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.3 The following D.C. bus trains shall be energized and **OPERABLE**:

a. 125-volt D.C. bus No. 11, the associated 125-volt D.C. battery bank or as necessary the Reserve Battery, and one associated full capacity charger.

b. 125-volt D.C. bus No. 12, the associated 125-volt D.C. battery bank or as as necessary the Reserve Battery, and one associated full capacity charger.

c. 125-volt D.C. bus No. 21, the associated 125-volt D.C. battery bank or as necessary the Reserve Battery, and one associated full capacity charger.

d. 125-volt D.C. bus No. 22, the associated 125-volt D.C. battery bank or as necessary the Reserve Battery, and one associated full capacity charger.

APPLICABILITY: **MODES** 1, 2, 3 and 4.

ACTION:

a. With one 125-volt bus inoperable, restore the inoperable bus to **OPERABLE** status within 2 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

b. With one 125-volt D.C. battery inoperable and the associated 125-volt D.C. bus not being supplied by the Reserve Battery except during surveillance testing per Specification 4.8.2.3.2.d.1:

1. Restore the inoperable battery to **OPERABLE** status within 2 hours, or replace the inoperable battery with the **OPERABLE** Reserve Battery within the next 2 hours, or

2. Be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

c. With both 125-volt battery chargers from the same D.C. bus inoperable:

1. Except when necessary during surveillance testing per Specification 4.8.2.3.2.d.1, restore at least one 125-volt D.C. battery charger to **OPERABLE** status within 2 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

LIMITING CONDITION FOR OPERATION (Continued)

2. During surveillance testing per Specification 4.8.2.3.2.d.1, restore at least one 125-volt D.C. battery charger to **OPERABLE** status within 4 hours or be in at least **HOT STANDBY** within 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

d. With single cells having a voltage decrease of more than 0.10 volts from the previous performance discharge test (4.8.2.3.2.f.) value, but still $\geq$ 2.10 volts per surveillance requirement 4.8.2.3.2.b.1., either restore/replace cells or replace the affected battery with the Reserve Battery within 24 hours or be in **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.3.1 Each D.C. bus train shall be determined **OPERABLE** and energized at least once per 7 days by verifying correct breaker alignment and indicated power availability.

4.8.2.3.2 Each 125-volt battery bank and charger and the Reserve Battery shall be demonstrated **OPERABLE:**

a. At least once per 7 days by verifying that:

1. The electrolyte level of each pilot cell is between the minimum and maximum level indication marks.

2. The pilot cell specific gravity, corrected to 77°F and full electrolyte level is $\geq$ 1.200.

3. The pilot cell voltage is $\geq$ 2.10 volts.

4. The overall battery voltage is $\geq$ 125 volts.

b. At least once per 92 days by verifying that:

1. The voltage of each connected cell is $\geq$ 2.10 volts under float charge and has not decreased more than 0.10 volts from the value observed during the latest performance discharge test (4.8.2.3.2.f).

2. The specific gravity, corrected to 77°F and full electrolyte level, of each connected cell is $\geq$ 1.200 and has not decreased more than 0.02 from the value observed during the previous test.

3. The electrolyte level of each connected cell is between the minimum and maximum level indication marks.

LIMITING CONDITION FOR OPERATION (Continued)

2. During surveillance testing per Specification 4.8.2.3.2.d.1, restore at least one 125-volt D.C. battery charger to **OPERABLE** status within 4 hours or be in at least **HOT STANDBY** within 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

d. With single cells having a voltage decrease of more than 0.10 volts from the previous performance discharge test (4.8.2.3.2.f.) value, but still $\geq$ 2.10 volts per surveillance requirement 4.8.2.3.2.b.1., either restore/replace cells or replace the affected battery with the Reserve Battery within 24 hours or be in **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.3.1 Each D.C. bus train shall be determined **OPERABLE** and energized at least once per 7 days be verifying correct breaker alignment and indicated power availability.

4.8.2.3.2 Each 125-volt battery bank and charger and the Reserve Battery shall be demonstrated **OPERABLE:**

a. At least once per 7 days by verifying that:

1. The electrolyte level of each pilot cell is between the minimum and maximum level indication marks.

2. The pilot cell specific gravity, corrected to $77^{o}F$ and full electrolyte level is $\geq$ 1.200.

3. The pilot cell voltage is $\geq$ 2.10 volts.

4. The overall battery voltage is $\geq$ 125 volts.

b. At least once per 92 days be verifying that:

1. The voltage of each connected cell is $\geq$ 2.10 volts under float charge and has not decreased more than 0.10 volts from the value observed during the latest performance discharge test (4.8.2.3.2.f).

2. The specific gravity, corrected to $77^{o}F$ and full electrolyte level, of each connected cell is $\geq$ 1.200 and has not decreased more than 0.02 from the value observed during the previous test.

3. The electrolyte level of each connected cell is between the minimum and maximum level indication marks.

SURVEILLANCE REQUIREMENTS (Continued)

c. At least once per 18 months by verifying that:

1. The cells, cell plates and battery racks show no visual indication of physical damage or deterioration.

2. The cell-to-cell and terminal connections are clean, tight, and coated with anti-corrosion material.

d. At least once per 18 months by verifying that the battery capacity, with the charger disconnected, is adequate to either:

1. Supply and maintain in **OPERABLE** status all of the actual emergency loads for at least 2 hours when the battery is subjected to a battery service test. At the completion of this test, surveillance 4.8.2.3.2.e shall be performed for the affected battery. The battery shall be charged to at least 95% capacity in $\leq$ 24 hours, or

2. Supply a dummy load simulating the emergency loads of the design duty cycle for at least 2 hours while maintaining the battery terminal voltage $\geq$ 105 volts. At the completion of this test, the battery shall be charged to at least 95% capacity in $\leq$ 24 hours, excluding the stabilization time. The emergency loads of the design duty cycle shall be documented and updated, as appropriate, in the system description contained in FSAR Chapter 8, and updated in accordance with 10 CFR 50.71(e).

e. At least once per 18 months, the battery charger* shall be demonstrated capable of recharging the battery at a rate of $\leq$ 400 amperes while supplying normal D.C. loads or equivalent or greater dummy load.

f. At least once per 60 months by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. This performance discharge test shall be performed subsequent to the satisfactory completion of the required battery service test.

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* Not applicable to the charger associated with the Reserve Battery.

SURVEILLANCE REQUIREMENTS (Continued)

c. At least once per 18 months by verifying that:

1. The cells, cell plates and battery racks show no visual indication of physical damage or deterioration.

2. The cell-to-cell and terminal connections are clean, tight, and coated with anti-corrosion material.

d. At least once per 18 months by verifying that the battery capacity, with the charger disconnected, is adequate to either:

1. Supply and maintain in **OPERABLE** status all of the actual emergency loads for at least 2 hours when the battery is subjected to a battery service test. At the completion of this test, surveillance 4.8.2.3.2.e shall be performed for the affected battery. The battery shall be charged to at least 95% capacity in $\leq$ 24 hours, or

2. Supply a dummy load simulating the emergency loads of the design duty cycle for at least 2 hours while maintaining the battery terminal voltage $\geq$ 105 volts. At the completion of this test, the battery shall be charged to at least 95% capacity in $\leq$ 24 hours, excluding the stabilization time. The emergency loads of the design duty cycle shall be documented and updated, as appropriate, in the system description contained in FSAR Chapter 8, and updated in accordance with 10 CFR 50.71(e).

e. At least once per 18 months, the battery charger* shall be demonstrated capable of recharging the battery at a rate of $\leq$ 400 amperes while supplying normal D.C. loads or equivalent or greater dummy load.

f. At least once per 60 months by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. This performance discharge test shall be performed subsequent to the satisfactory completion of the required battery service test.

* Not applicable to the charger associated with the Reserve Battery.

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.4 As a minimum, the following D.C. electrical equipment and busses shall be energized and **OPERABLE**:

2 - 125-volt D.C. busses, and

2 - 125-volt battery banks, one of which may be the Reserve Battery, and one associated charger per bank supplying the above D.C. busses.

APPLICABILITY: **MODES** 5 and 6.

ACTION:

With less than the above complement of D.C. equipment and busses **OPERABLE**:

a. Immediately* suspend all operations involving **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel, and movement of heavy loads over irradiated fuel until the minimum required D.C. equipment and busses are restored to **OPERABLE** status, and

b. Immediately initiate corrective actions to restore the minimum D.C. equipment and busses to **OPERABLE** status, and

c. Establish containment penetration closure as identified in Specification 3.9.4 within 8 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.4.1 The above required 125-volt D.C. busses shall be determined **OPERABLE** and energized at least once per 7 days by verifying correct breaker alignment and indicated power availability.

4.8.2.4.2 The above required 125-volt battery banks and chargers shall be demonstrated **OPERABLE** per Surveillance Requirement 4.8.2.3.2.

* Performance of Action a. shall not preclude completion of actions to establish a safe conservative position.

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.4 As a minimum, the following D.C. electrical equipment and busses shall be energized and **OPERABLE**:

2 - 125-volt D.C. busses, and

2 - 125-volt battery banks, one of which may be the Reserve Battery, and one associated charger per bank supplying the above D.C. busses.

APPLICABILITY: **MODES** 5 and 6.

ACTION:

With less than the above complement of D.C. equipment and busses **OPERABLE**:

a. Immediately* suspend all operations involving **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel and movement of heavy loads over irradiated fuel until the minimum required D.C. equipment and busses are restored to **OPERABLE** status, and

b. Immediately initiate corrective actions to restore the minimum D.C. equipment and busses to **OPERABLE** status, and

c. Establish containment penetration closure as identified in Specification 3.9.4 within 8 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.4.1 The above required 125-volt D.C. busses shall be determined **OPERABLE** and energized at least once per 7 days by verifying correct breaker alignment and indicated power availability.

4.8.2.4.2 The above required 125-volt battery banks and chargers shall be demonstrated **OPERABLE** per Surveillance Requirement 4.8.2.3.2.

* Performance of Action a. shall not preclude completion of actions to establish a safe conservative position.

REFUELING OPERATIONS

DECAY TIME

LIMITING CONDITION FOR OPERATION

3.9.3 The reactor shall be subcritical for at least 72 hours.

APPLICABILITY: During movement of irradiated fuel in the reactor pressure vessel.

ACTION:

With the reactor subcritical for less than 72 hours, suspend all operations involving movement of irradiated fuel in the reactor pressure vessel. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.3 The reactor shall be determined to have been subcritical for at least 72 hours by verification of the date and time of subcriticality prior to movement of irradiated fuel in the reactor pressure vessel.

REFUELING OPERATIONS

DECAY TIME

LIMITING CONDITION FOR OPERATION

3.9.3 The reactor shall be subcritical for at least 72 hours.

APPLICABILITY: During movement of irradiated fuel in the reactor pressure vessel.

ACTION:

With the reactor subcritical for less than 72 hours, suspend all operations involving movement of irradiated fuel in the reactor pressure vessel. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.3 The reactor shall be determined to have been subcritical for at least 72 hours by verification of the date and time of subcriticality prior to movement of irradiated fuel in the reactor pressure vessel.

REFUELING OPERATIONS

CONTAINMENT PENETRATIONS

LIMITING CONDITION FOR OPERATION

3.9.4 The containment penetrations shall be in the following status:

a. The equipment door closed and held in place by a minimum of four bolts,

b. A minimum of one door in each airlock is closed,* and

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be either:

1. Closed by an isolation valve, blind flange, or manual valve, or

2. Be capable of being closed by an **OPERABLE** automatic containment purge valve.

APPLICABILITY: During **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel within the containment, movement of heavy loads over irradiated fuel within the containment building, and electrical power distribution system degradation as required by Specifications 3.8.1.2, 3.8.2.2 and 3.8.2.4.

ACTION:

a. With the requirements of the above specification not satisfied, immediately** suspend all operations involving **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel within the containment and movement of heavy loads over irradiated fuel within the containment building.

b. The provisions of Specification 3.0.3 are not applicable.

---

* The emergency escape hatch temporary closure device is an acceptable replacement for that airlock door.

** Performance of Action a. shall not preclude completion of actions to establish a safe conservative position.

SURVEILLANCE REQUIREMENTS

4.9.4 Each of the above required containment penetrations shall be determined to be either in its closed/isolated condition or capable of being closed by an **OPERABLE** automatic containment purge valve within 72 hours prior to the start of and at least once per 7 days during **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel in the containment, movement of heavy loads over irradiated fuel within the containment building, or electrical power distribution system degradation by:

a. Verifying the penetrations are in their closed/isolated condition, or

b. Testing the containment purge valves per the applicable portions of Specification 4.6.4.1.2.

REFUELING OPERATIONS

CONTAINMENT PENETRATIONS

LIMITING CONDITION FOR OPERATION

3.9.4 The containment penetrations shall be in the following status:

a. The equipment door closed and held in place by a minimum of four bolts,

b. A minimum of one door in each airlock is closed*, and

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APPLICABILITY: During **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel within the containment, movement of heavy loads over irradiated fuel within the containment building, and electrical power distribution system degradation as required by Specifications 3.8.1.2, 3.8.2.2 and 3.8.2.4.

ACTION:

a. With the requirements of the above specification not satisfied, immediately** suspend all operations involving **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel within the containment and movement of heavy loads over irradiated fuel within the containment building.

b. The provisions of Specification 3.0.3 are not applicable.

---

* The emergency escape hatch temporary closure device is an acceptable replacement for that airlock door.

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SURVEILLANCE REQUIREMENTS

4.9.4 Each of the above required containment penetrations shall be determined to be either in its closed/isolated condition or capable of being closed by an **OPERABLE** automatic containment purge valve within 72 hours prior to the start of and at least once per 7 days during **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel in the containment, movement of heavy loads over irradiated fuel within the containment building, or electrical power distribution system degradation by:

a. Verifying the penetrations are in their closed/isolated condition, or

b. Testing the containment purge valves per the applicable portions of Specification 4.6.4.1.2.

3/4.6.1 PRIMARY CONTAINMENT

3/4.6.1.1 CONTAINMENT INTEGRITY

In **MODES** 1, 2, 3, and 4, primary **CONTAINMENT INTEGRITY** ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leak rates assumed in the accident analyses. This restriction, in conjunction with the leakage rate limitation, will limit the site boundary radiation doses to within the limits of 10 CFR 100 during accident conditions. In **MODES** 5 and 6, the probability and consequences of these events are reduced because of the Reactor Coolant System (RCS) pressure and temperature limitations of these modes, by preventing operations which could lead to a need for containment isolation, and by providing containment isolation through penetration closure.

3/4.6.1.2 CONTAINMENT LEAKAGE

The limitations on containment leakage rates ensure that the total containment leakage volume will not exceed the value assumed in the accident analyses at the peak accident pressure, P_a. As an added conservatism, the measured overall integrated leakage rate is further limited to $\leq 0.75\ L_a$ or $0.75\ L_t$ (as applicable) during performance of the periodic tests to account for possible degradation of the containment leakage barriers between leak tests.

The surveillance testing for measuring leakage rates are consistent with the requirements of Appendix "J" of 10 CFR 50.

3/4.6.1.3 CONTAINMENT AIR LOCKS

The limitations on closure and leak rate for the containment air locks are required to meet the restrictions on **CONTAINMENT INTEGRITY** and containment leak rate. Surveillance testing of the air lock seals provides assurance that the overall air lock leakage will not become excessive due to seal damage during the intervals between air lock leakage tests.

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3/4.9 REFUELING OPERATIONS

BASES

3/4.9.1 BORON CONCENTRATION

The limitations on minimum boron concentration (2300 ppm) ensure that: 1) the reactor will remain subcritical during **CORE ALTERATIONS**, and 2) a uniform boron concentration is maintained for reactivity control in the water volumes having direct access to the reactor vessel. The limitation on K_{eff} of no greater than 0.95 which includes a conservative allowance for uncertainties, is sufficient to prevent reactor criticality during refueling operations.

3/4.9.2 INSTRUMENTATION

The **OPERABILITY** of the source range neutron flux monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.

3/4.9.3 DECAY TIME

The minimum requirement for reactor subcriticality prior to movement of irradiated fuel assemblies in the reactor pressure vessel ensures that sufficient time has elapsed to allow the radioactive decay of the short lived fission products. This decay time is consistent with the assumptions used in the accident analyses.

3/4.9.4 CONTAINMENT PENETRATIONS

During **CORE ALTERATIONS** or movement of irradiated fuel within containment, a release of fission product radioactivity to the environment must be prevented. During **MODES** 1, 2, 3, and 4, this is accomplished by maintaining **CONTAINMENT INTEGRITY** as described in LCO 3.6.1. In other situations, the potential for containment pressurization as a result of an accident is not present, therefore, less stringent requirements are needed to isolate the containment from the outside atmosphere.

The containment structure serves to contain fission product radioactivity which may be released from the reactor core following a Design Basis Accident (DBA), such that offsite radiation exposures are maintained within the requirements of 10 CFR 100. Additionally, this structure provides radiation shielding from the fission products which may be present in the containment atmosphere following accident conditions.

3/4.9.5 COMMUNICATIONS

The requirement for communications capability ensures that refueling station personnel can be promptly informed of significant changes in the facility status or core reactivity condition during **CORE ALTERATIONS**.

3/4.9 REFUELING OPERATIONS

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3/4.9.5 COMMUNICATIONS

The requirement for communications capability ensures that refueling station personnel can be promptly informed of significant changes in the facility status or core reactivity condition during **CORE ALTERATIONS**.

3/4.9.6 REFUELING MACHINE OPERABILITY

The **OPERABILITY** requirements for the refueling machine ensure that: (1) the refueling machine will be used for movement of CEAs and fuel assemblies, (2) the refueling machine has sufficient load capacity to lift a CEA or fuel assembly, and (3) the core internals and pressure vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

3/4.9.7 CRANE TRAVEL - SPENT FUEL STORAGE BUILDING

The restriction on movement of loads in excess of the nominal weight of a fuel assembly and CEA over other fuel assemblies in the storage pool ensures that in the event this load is dropped (1) the activity release will be limited to that contained in a single fuel assembly, and (2) any possible distortion of fuel in the storage racks will not result in a critical array. This assumption is consistent with the activity release assumed in the accident analyses.

3/4.9.8 COOLANT CIRCULATION

The requirement that at least one shutdown cooling loop be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the **REFUELING MODE**, and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification.

The requirement to have two shutdown cooling loops **OPERABLE** when there is less than 23 feet of water above the core ensures that a single failure of the operating shutdown cooling loop will not result in a complete loss of decay heat removal capability. With the reactor vessel head removed and 23 feet of water above the core, a large heat sink is available for core cooling, thus in the event of a failure of the operating shutdown cooling loop, adequate time is provided to initiate emergency procedures to cool the core.

3/4.9.9 CONTAINMENT PURGE VALVE ISOLATION SYSTEM

The **OPERABILITY** of this system ensures that the containment purge valves will be automatically isolated upon detection of high radiation levels within the containment. The **OPERABILITY** of this system is required to restrict the release of radioactive material from the containment atmosphere to the environment.

3/4.9.6 REFUELING MACHINE OPERABILITY

The **OPERABILITY** requirements for the refueling machine ensure that: (1) the refueling machine will be used for movement of CEAs and fuel assemblies, (2) the refueling machine has sufficient load capacity to lift a CEA or fuel assembly, and (3) the core internals and pressure vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 155 TO FACILITY OPERATING LICENSE NO. DPR-53

AND AMENDMENT NO. 135 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 November 7, 1990, as supplemented May 20, 1991, Baltimore Gas and Electric Company (the licensee) submitted a request for changes to the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, Technical Specifications (TS). The requested changes would modify Technical Specifications (TS) action statements of TS 3.8.1.2, 3.8.2.2, 3.8.2.4, and 3.9.4 in relation to the limiting condition for operation (LCO) requirements for the A.C. electrical power sources, A.C. electrical busses, D.C. electrical equipment and busses, and the containment penetrations. The requirement to establish containment integrity is replaced with the requirement to suspend all operations relative to: core alterations, positive reactivity changes, the movement of irradiated fuel, and the movement of heavy loads over irradiated fuel. The change also requires that containment penetration closure, as identified in TS 3.9.4, be established within 8-hours and corrective actions be initiated immediately to restore the minimum A.C. electrical power sources, A.C. electrical busses and D.C. electrical equipment and busses. The requirements of TS 3.9.4 are modified to be consistant with the above action statements and the applicable TS Bases sections are also modified to reflect the proposed changes.

The May 20, 1991, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

TS 3.8.2.2 and 3.8.2.4 provide LCOs and actions required when the LCOs cannot be met for the A.C. electrical busses and the D.C. electrical equipment and busses when the units are in Mode 5, shutdown; or Mode 6, refueling. These action statements require that full containment integrity be established within 8-hours of determining that the required complement of A.C. or D.C. busses are not operable. Containment integrity is defined, partially, in terms of TS 3.6.1.2, 3.6.1.3, and 3.6.4.1. These TS are applicable only in Modes 1 through 4, and are not required to be met in Modes 5 and 6. However, they are invoked through the current action statements of TS 3.8.2.2 and 3.8.2.4 for Modes 5 and 6 under certain conditions. Thus, a discrepancy exists in

requiring full containment integrity during shutdown or refueling (Modes 5 or 6) based on conditions and requirements during hot shutdown through operating conditions (Modes 4 through 1).

The need for the requested TS changes is based on the impracticality of implementing full containment integrity during certain conditions which occur during cold shutdown or refueling (Modes 5 or 6). These conditions would exist when the equipment necessary to establish containment integrity has been removed from service and the minimum A.C. or D.C. power systems required by the current TS 3.8.2.2 and 3.8.2.4 are not available. Examples of these conditions are: (1) when the minimum A.C. or D.C. power becomes unavailable during a 24-hour integrated leak rate test (ILRT), it would not be possible to complete the ILRT and reestablish containment integrity within the 8-hours specified in the current TSs (3.8.2.2 or 3.8.2.4); and (2) when performing repairs on a containment penetration which would require more than the 8-hours specified in the current TSs to reestablish containment integrity.

The licensee proposes to replace the requirement for full containment integrity, when in Modes 5 or 6, for TSs 3.8.2.2 and 3.8.2.4 with the requirement for containment penetration closure within the specified 8-hours. In addition, the proposed changes include the requirement to immediately suspend all operations involving core alterations positive reactivity changes, movement of irradiated fuel including the movement of heavy loads over irradiated fuel, and immediate initiation of corrective actions to restore the required minimum number of electrical power busses to an operable and energized status. A footnote is also proposed to allow completion of an ongoing action until a safe conservative position is established. TS 3.8.1.2, which does not have a current full containment integrity requirement, will be changed consistent with the proposed changes for TSs 3.8.2.2 and 3.8.2.4. The proposed changes to TS 3.9.4 will make the containment penetration closure requirements consistent with the changes proposed for 3.8.1.2, 3.8.2.2 and 3.8.2.4. The licensee has provided the following safety assessment to support the requested changes.

During operation in Modes 1 through 4, a Design Basis Accident (DBA) could cause a release of radioactive material into the containment. In these modes of operation, prevention against the release of this radioactive material to the environment is accomplished by maintaining containment integrity. In Modes 5 and 6; however, the probability and consequences of these events are lower because of the reactor coolant system pressure and temperature limitations. A minimum complement of electrical power sources and distribution systems is established to assure adequate power for systems required to recover from a boron dilution event or a fuel handling incident, as discussed in the Calvert Cliffs, Units 1 and 2, Updated Final Safety Analysis Report, Sections 14.3 and 14.18, respectively. A single power train/division is adequate when in Modes 5 and 6 because there is additional time available to restore power before fuel damage would occur. Additionally, because of the lack of a containment pressurization potential, less stringent requirements are needed to isolate the containment from the outside atmosphere. These less stringent requirements are applied during core alterations, movement of irradiated fuel, and when the power distribution systems are degraded, as addressed in TS 3.9.4 relating to containment penetrations.

When the number of energized A.C. or D.C. power distribution systems are less than the minimum required by the TS, sufficient power may not be available to recover from a fuel handling accident. Consequently, the proposed action statements require immediate suspension of core alterations, positive reactivity changes, movement of irradiated fuel in the containment and movement of loads over irradiated fuel within the containment. These actions would preclude the occurrence of the postulated events and the need for establishing containment integrity. However, containment penetration closure is proposed to provide additional conservatism and mitigation of unforeseen situations.

The requested TS changes take into consideration the need to prevent and/or control the consequences of a fuel handling incident or boron dilution event while in Modes 5 or 6. As previously discussed, containment integrity is not practical nor necessary, under the conditions existing during Mode 5 or 6. The proposed changes strengthen the controls to prevent the DBAs while in Modes 5 or 6 and modifies the means specified for controlling the consequences. A containment boundary will continue to be provided when there are operations being conducted which could lead to a fuel handling incident or boron dilution event. Containment penetration closure is equivalent to containment integrity under these circumstances. Therefore, if the electrical distribution systems necessary to mitigate the consequences of one of these events become inoperable, the proposed TS would require suspension of such operations and the establishment of containment penetration closure, thereby removing the possibility of the event occurring, and mitigating any unforeseen situations.

The staff has determined that the proposed changes described above for TS 3.8.1.2, 3.8.2.2, 3.8.2.4, 3.9.4 and the supporting TS Bases, Sections 6.1.1 and 9.4 are acceptable. This determination is based on (1) the expected conditions during Mode 5 and 6 operation; (2) the need to prevent or control the consequences of a fuel handling or boron dilution event; (3) the lack of a containment pressurization potential; (4) alternative actions (penetration closure, suspension of activities and initiation of corrective actions); and (5) the proposed changes correct current TS inconsistencies.

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 and changes surveillance requirements. 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 (56 FR 890). 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:

Daniel McDonald

Date: June 27, 1991

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

Enclosures:
1. Amendment No. 155 to DPR-53
2. Amendment No. 135 to DPR-69
3. Safety Evaluation

cc w/enclosures:
See next page

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