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

October 29, 1993

Docket Nos. 50-317
and 50-318

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

Dear Mr. Denton:

SUBJECT: ISSUANCE OF AMENDMENTS FOR CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1 (TAC NO. M86138) AND UNIT NO. 2 (TAC NO. M86139)

The Commission has issued the enclosed Amendment No. 183 to Facility Operating License No. DPR-53 and Amendment No. 160 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 (TS) in response to your application transmitted by letters dated April 1, 1993, as supplemented on July 22 and September 8, 1993.

The amendments revise TS 3/4.8.2, "Onsite Power Distribution Systems AC Power Distribution - Operating," in relation to the actions to be taken if any of the 120 volt alternating current vital busses are not operable. The allowed outage time of 8 hours for an inoperable vital bus can be extended to 24 hours when the vital bus is being powered from the inverter backup bus.

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. 183 to DPR-53
2. Amendment No. 160 to DPR-69
3. Safety Evaluation

cc w/enclosures:
See next page

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PDR ADOCK 05000317
P PDR

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DATED: October 29, 1993

AMENDMENT NO. 183 TO FACILITY OPERATING LICENSE NO. DPR-53-CALVERT CLIFFS UNIT 1
AMENDMENT NO. 160 TO FACILITY OPERATING LICENSE NO. DPR-69-CALVERT CLIFFS UNIT 2

Docket File
NRC & Local PDRs
PDI-1 Reading
S. Varga, 14/E/4
J. Calvo, 14/A/4
R. Capra
C. Vogan
D. McDonald
OGC
D. Hagan, 3302 MNBB
C. Liang, 8/E/23
G. Hill (4), P1-22
C. Grimes, 11/F/23
C. Berlinger, 7/E/4
F. Burrows, 7/E/4
ACRS (10)
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. 183
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 April 1, 1993, as supplemented on July 22 and September 8, 1993, 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:

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(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 183, 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: October 29, 1993

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. 160
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 April 1, 1993, as supplemented on July 22 and September 8, 1993, 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. 160, 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

Original signed by:

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: October 29, 1993

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 183 FACILITY OPERATING LICENSE NO. DPR-53

AMENDMENT NO. 160 FACILITY OPERATING LICENSE NO. DPR-69

DOCKET NOS. 50-317 AND 50-318

Revise Appendix A as follows:

Remove Page	Insert Page
VII	VII
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 8-12	3/4 8-12*
3/4 8-13	3/4 8-13*
3/4 8-14	3/4 8-14*
3/4 8-15	3/4 8-15*
3/4 8-16	3/4 8-16*
3/4 8-17	3/4 8-17*
B 3/4 1-4	B 3/4 1-4**
B 3/4 1-5	B 3/4 1-5**

* These pages are text rollover pages with no changes as the result of this amendment. The amendment number appears at the bottom of the page to indicate a shift in text.

** Unit 1 only. Rollover pages with no changes from previous Amendment No. 182. The amendment number appears at the bottom of the page to indicate a shift in text.

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LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.8 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
- 480 volt Emergency Bus #11B
- 480 volt Emergency Bus #14A
- 480 volt Emergency Bus #14B
- 480 volt Motor Control Center #104R
- 480 volt Motor Control Center #114R
- 120 volt A.C. Vital Bus #11 energized from its associated inverter
- 120 volt A.C. Vital Bus #12 energized from its associated inverter
- 120 volt A.C. Vital Bus #13 energized from its associated inverter
- 120 volt A.C. Vital Bus #14 energized from its associated inverter

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

ACTION:

a. With less than the above complement of 4160- and 480-volt 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.

LIMITING CONDITION FOR OPERATION (Continued)

b. With less than the above complement of 120-volt A.C. vital busses **OPERABLE**, either:

1. Restore the de-energized vital bus to **OPERABLE** status by re-energizing the vital bus from its associated inverter within 2 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours;

OR

2. Power the vital bus from the associated backup bus within 2 hours. Restore the vital bus to **OPERABLE** status by re-energizing the vital bus from its associated inverter within 24 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.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.2 ONSITE POWER DISTRIBUTION 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:

a. With less than the above complement of A.C. busses **OPERABLE** and energized for reasons other than the performance of Surveillance Requirement 4.8.1.1.2.d.1 on No. 12 diesel generator:

1. 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

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

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

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

LIMITING CONDITION FOR OPERATION (Continued)

b. With less than the above minimum required A.C. electrical power sources **OPERABLE** for the performance of Surveillance Requirement 4.8.1.1.2.d.1 on No. 12 emergency diesel generator:**

1. Verify either two 500 kV offsite power circuits or a 500 kV offsite power circuit and the 69 kV SMECO offsite power circuit are available and capable of being used. This availability shall be verified prior to removing the **OPERABLE** emergency diesel generators and once per shift thereafter,

2. Suspend all operations involving **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel and movement of heavy loads over irradiated fuel,

3. Have established containment penetration closure as identified in Specification 3.9.4,

4. An emergency diesel generator shall be **OPERABLE** and aligned to provide power to the emergency busses within seven days.

5. Within two weeks prior to the planned unavailability of an **OPERABLE** emergency diesel generator, a temporary diesel generator shall be demonstrated available.

6. A temporary diesel generator shall be demonstrated available by starting it at least once per 72 hours.

7. If **ACTIONS** b) 1 through b) 6 are not met, restore compliance with the **ACTIONS** within 4 hours or restore an **OPERABLE** emergency diesel generator within the next 4 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.

** The provisions of **ACTION** b. are no longer applicable following the installation of two additional emergency diesel generators.

3/4.8 **ELECTRICAL POWER SYSTEMS**

3/4.8.2 ONSITE POWER DISTRIBUTION 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 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.

LIMITING CONDITION FOR OPERATION (Continued)

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.

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.

SURVEILLANCE REQUIREMENTS (Continued)

3. The pilot cell voltage is ≥ 2.10 volts.

4. The overall battery voltage is ≥ 125 volts.

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

1. The voltage of each connected cell is ≥ 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 ≥ 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.

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 ≤ 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 ≥ 105 volts. At the completion of this test, the battery shall be charged to at least 95% capacity in ≤ 24 hours, excluding the stabilization time. The emergency loads of the design duty cycle shall be

SURVEILLANCE REQUIREMENTS (Continued)

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.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.2 ONSITE POWER DISTRIBUTION 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.

withdrawn to less than 129 inches even if it is within 7.5 inches of all other CEAs in its group. For the purposes of the Technical Specifications, a dual assembly, connected to a single CEA drive mechanism, is considered to be a single CEA (e.g., dual shutdown CEAs connected to a single drive mechanism).

The **ACTION** statements applicable to an untrippable CEA and to a large misalignment ($\geq$ 15 inches) of two or more CEAs, require a prompt shutdown of the reactor since either of these conditions may be indicative of a possible loss of mechanical functional capability of the CEAs and in the event of an untrippable CEA, the loss of **SHUTDOWN MARGIN**. A CEA is considered untrippable when it is known that the CEA would not be insertable in response to a Reactor Protection System signal or is known to be immovable due to excessive friction or mechanical interference.

For small misalignments (< 15 inches) of the CEAs, there is 1) a small degradation in the peaking factors relative to those assumed in generating LCOs and LSSS setpoints for DNBR and linear heat rate, 2) a small effect on the time dependent long term power distributions relative to those used in generating LCOs and LSSS setpoints for DNBR and linear heat rate, 3) a small effect on the available **SHUTDOWN MARGIN**, and 4) a small effect on the ejected CEA worth used in the safety analysis. Therefore, the **ACTION** statement associated with the small misalignment of a CEA permits a one hour time interval during which attempts may be made to restore the CEA(s) to within their alignment requirements prior to initiating a reduction in **THERMAL POWER**. The one hour time limit is sufficient to (1) identify causes of a misaligned CEA, (2) take appropriate corrective action to realign the CEAs and (3) minimize the effects of xenon redistribution.

Overpower margin is provided to protect the core in the event of a large misalignment ($\geq$ 15 inches) of a single regulating or shutdown CEA. However, this misalignment would cause distortion of the core power distribution. The Reactor Protective System would not detect the degradation in radial peaking factors and since variations in other system parameters (e.g., pressure and coolant temperature) may not be sufficient to cause trips, it is possible that the reactor could be operating with process variables less conservative than those assumed in generating LCO and LSSS setpoints. The **ACTION** statement associated with a large CEA misalignment requires prompt action to realign the CEA to avoid excessive margin degradation. If the CEA is not realigned within the given time constraints, **ACTION** is specified which will preserve margin, including reductions in **THERMAL POWER**.

For a single CEA misalignment, the time allowance to realign the CEA (Figure 3.1.3-1 or as determined by BASSS) is permitted for the following reasons:

1. The margin calculations which support the power distribution LCOs for DNBR are based on a steady-state F_r^t as specified in Technical Specification 3.2.3.

2. When the actual F_r^T is less than the Technical Specification value, additional margin exists.

3. This additional margin can be credited to offset the increase in F_r^T with time that will occur following a CEA misalignment due to xenon redistribution.

4. If an F_r^T measurement has not been taken recently (within 5 days), a pre-misaligned value of 1.70 is assumed and no time for realignment is permitted.

The requirement to reduce power level after the time limit of Figure 3.1.3-1 or after the time limit determined by BASSS is reached offsets the continuing increase in F_r^T that can occur due to xenon redistribution. A power reduction is not required below 50% power. Below 50% power there is sufficient conservatism in the DNB power distribution LCOs to completely offset any, or any additional, xenon redistribution effects.

The **ACTION** statements applicable to misaligned or inoperable CEAs include requirements to align the **OPERABLE** CEAs in a given group with the inoperable CEA. Conformance with these alignment requirements brings the core, within a short period of time, to a configuration consistent with that assumed in generating LCO and LSSS setpoints. However, extended operation with CEAs significantly inserted in the core may lead to perturbations in 1) local burnup, 2) peaking factors, and 3) available **SHUTDOWN MARGIN** which are more adverse than the conditions assumed to exist in the safety analyses and LCO and LSSS setpoints determination. Therefore, time limits have been imposed on operation with inoperable CEAs to preclude such adverse conditions from developing.

There are five different operating modes for control of CEAs; Off, Manual Individual, Manual Group, Manual Sequential and Automatic. The Manual Sequential mode is applicable to only the regulating CEAs and the Automatic mode is disabled and not used for both regulating and shutdown CEAs.

OPERABILITY of the CEA position indicators is required to determine CEA positions and thereby ensure compliance with the CEA alignment and insertion limits and ensures proper operation of the rod block circuit. The CEA "Full In" and "Full Out" limits provide an additional independent means for determining the CEA positions when the CEAs are at either their fully inserted or fully withdrawn positions. Therefore, the **OPERABILITY** and the **ACTION** statements applicable to inoperable CEA position indicators permit continued operations when positions of CEAs with inoperable indicators can be verified by the "Full In" or "Full Out" limits.

CEA positions and **OPERABILITY** of the CEA position indicators are required to be verified on a nominal basis of once per 12 hours with more frequent verifications required if an automatic monitoring channel is inoperable. These verification frequencies are adequate for assuring that the applicable LCOs are satisfied.

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3/4.8 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
- 480 volt Emergency Bus #21B
- 480 volt Emergency Bus #24A
- 480 volt Emergency Bus #24B
- 480 volt Motor Control Center #204R
- 480 volt Motor Control Center #214R
- 120 volt A.C. Vital Bus #21 energized from its associated inverter
- 120 volt A.C. Vital Bus #22 energized from its associated inverter
- 120 volt A.C. Vital Bus #23 energized from its associated inverter
- 120 volt A.C. Vital Bus #24 energized from its associated inverter

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

ACTION:

a. With less than the above complement of 4160- and 480-volt 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.

LIMITING CONDITION FOR OPERATION (Continued)

b. With less than the above complement of 120-volt A.C. vital busses **OPERABLE**, either:

1. Restore the de-energized vital bus to **OPERABLE** status by re-energizing the vital bus from its associated inverter within 2 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours;

OR

2. Power the vital bus from the associated backup bus within 2 hours. Restore the vital bus to **OPERABLE** status by re-energizing the vital bus from its associated inverter within 24 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.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.2 ONSITE POWER DISTRIBUTION 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:

a. With less than the above complement of A.C. busses **OPERABLE** and energized for reasons other than the performance of Surveillance Requirement 4.8.1.1.2.d.1 on No. 12 diesel generator:

1. 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

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

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

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

LIMITING CONDITION FOR OPERATION (Continued)

b. With less than the above minimum required A.C. electrical power sources **OPERABLE** for the performance of Surveillance Requirement 4.8.1.1.2.d.1 on No. 12 emergency diesel generator:**

1. Verify either two 500 kV offsite power circuits or a 500 kV offsite power circuit and the 69 kV SMECO offsite power circuit are available and capable of being used. This availability shall be verified prior to removing the **OPERABLE** emergency diesel generators and once per shift thereafter,

2. Suspend all operations involving **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel and movement of heavy loads over irradiated fuel,

3. Have established containment penetration closure as identified in Specification 3.9.4,

4. An emergency diesel generator shall be **OPERABLE** and aligned to provide power to the emergency busses within seven days.

5. Within two weeks prior to the planned unavailability of an **OPERABLE** emergency diesel generator, a temporary diesel generator shall be demonstrated available.

6. A temporary diesel generator shall be demonstrated available by starting it at least once per 72 hours.

7. If **ACTIONS** b) 1 through b) 6 are not met, restore compliance with the **ACTIONS** within 4 hours or restore an **OPERABLE** emergency diesel generator within the next 4 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.

** The provisions of **ACTION** b. are no longer applicable following the installation of two additional emergency diesel generators.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.2 ONSITE POWER DISTRIBUTION SYSTEM

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 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.

LIMITING CONDITION FOR OPERATION (Continued)

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.

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.

SURVEILLANCE REQUIREMENTS (Continued)

3. The pilot cell voltage is ≥ 2.10 volts.

4. The overall battery voltage is ≥ 125 volts.

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

1. The voltage of each connected cell is ≥ 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 ≥ 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.

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 ≤ 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 ≥ 105 volts. At the completion of this test, the battery shall be charged to at least 95% capacity in ≤ 24 hours, excluding the stabilization time. The emergency loads of the design duty cycle shall be

SURVEILLANCE REQUIREMENTS (Continued)

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.

3/4.8 **ELECTRICAL POWER SYSTEMS**

3/4.8.2 ONSITE POWER DISTRIBUTION SYSTEM

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.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 183 TO FACILITY OPERATING LICENSE NO. DPR-53

AND AMENDMENT NO. 160 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 April 1, 1993, as supplemented on July 22 and September 8, 1993, the 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 revise TS 3/4.8.2, "Onsite Power Distribution Systems AC Power Distribution - Operating," in relation to the actions to be taken if any of the 120 volt alternating current (VAC) vital busses are not operable. The existing TS 3.8.2.1 action statement requires that an inoperable vital bus be restored to operable status within 8 hours or be in at least hot standby within the next 6 hours and cold shutdown within the following 30 hours. The proposed action statement change would provide an additional option. An inoperable vital bus could be powered from its associated backup bus within the first 2 hours and the vital bus restored to operable status by reenergizing the vital bus from its associated inverter, which is the normal source of power, within 24 hours or be in at least hot standby within the next 6 hours and cold shutdown within the following 30 hours.

2.0 BACKGROUND

Each of the Calvert Cliffs units has four uninterruptible direct current/AC inverters. Each of the inverters normally powers an associated 120 VAC vital bus which, in turn, energizes an associated reactor protection system (RPS) and engineered safety features actuation system (ESFAS) sensor channel. Two of the four vital busses provide power for the corresponding ESFAS actuation channels.

When an inverter is inoperable, the associated vital bus is deenergized. The plant's current TSs, as noted above, allows up to 8 hours for the vital bus to be restored to operable status. During the time that the vital bus is deenergized, the associated sensor channel is in the tripped condition which increases the likelihood of a spurious RPS/ESFAS actuation. In addition, an inoperable vital bus could render one of the two ESFAS actuation channels inoperable.

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Each unit has an inverter backup bus which can be used as a source of power for the vital busses and can be manually connected to one vital bus at a time. Although the inverter backup bus is fed from a Class 1E regulated transformer that, in turn, is backed by an emergency diesel generator, it is not capable of providing uninterruptible power to the vital busses during design basis events such as a loss of offsite power. Therefore, it is not considered an emergency source of power. Currently when the inverter backup bus is used, the vital bus it is powering is declared inoperable and an 8-hour action statement is entered.

As previously noted, the licensee has requested that an inoperable vital bus which is powered from its associated backup bus within the first 2 hours have the allowed outage time extended to 24 hours while it is being powered from the inverter backup bus. This change would provide more time to complete repairs and post-maintenance testing necessary to return an inoperable inverter to service.

3.0 EVALUATION

The licensee has proposed the following specific changes to the Calvert Cliffs Unit 1 and Unit 2 TSs:

Change 1: Under Specification 3.8.2.1 add "energized from its associated inverter" after each 120 volt A.C. vital bus.

Change 2: Delete the current entry under ACTION for Specification 3.8.2.1 and substitute the following:

ACTION:

a. With less than the above complement of 4160 and 480-volt A.C. buses **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.

b. With less than the above complement of 120-volt A.C. vital busses **OPERABLE**, either:

1. Restore the de-energized vital bus to **OPERABLE** status by re-energizing the vital bus from its associated inverter within 2 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours:

OR

2. Power the vital bus from the associated backup bus within 2 hours. Restore the vital bus to **OPERABLE** status by re-energizing the vital bus from its associated inverter within 24 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

Although the current TSs do not explicitly address the use of the inverter backup busses, the licensee declares the related vital bus inoperable when a backup bus is utilized as discussed in the background section of this evaluation. The net effect of the proposed changes to the TSs is to recognize an inverter backup bus as an alternate source for a vital bus and to extend its use from the current 8 hours to 24 hours. This is consistent with the current staff position and Standard TSs which consider the 24-hour limit acceptable based on engineering judgment. This judgment takes into consideration the time required to repair an inoperable inverter and the additional risk for the specific unit while powering a vital bus from an interruptible inverter backup bus should a loss of offsite or onsite AC power occur. This judgment is balanced against the risk associated with a forced shutdown and potential challenges to the safety systems during that shutdown. Therefore, the staff has determined that the proposed changes are considered 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 (58 FR 28052 and 58 FR 50965). 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 Contributor:
F. Burrows

Date: October 29, 1993

October 29, 1993

Docket Nos. 50-317
and 50-318

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

Dear Mr. Denton:

SUBJECT: ISSUANCE OF AMENDMENTS FOR CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1 (TAC NO. M86138) AND UNIT NO. 2 (TAC NO. M86139)

The Commission has issued the enclosed Amendment No. 183 to Facility Operating License No. DPR-53 and Amendment No. 160 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 (TS) in response to your application transmitted by letters dated April 1, 1993, as supplemented on July 22 and September 8, 1993.

The amendments revise TS 3/4.8.2, "Onsite Power Distribution Systems AC Power Distribution - Operating," in relation to the actions to be taken if any of the 120 volt alternating current vital busses are not operable. The allowed outage time of 8 hours for an inoperable vital bus can be extended to 24 hours when the vital bus is being powered from the inverter backup bus.

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. 183 to DPR-53
2. Amendment No. 160 to DPR-69
3. Safety Evaluation

cc w/enclosures:
See next page

#93-141

LA:PDI-1	PM:PDI-1	OTSB	OGC	D:PDI-1	
CVogan	DMcDonald:smm	CGrimes		RACapra	
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