



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

December 29, 1992

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. M84724) AND UNIT NO. 2 (TAC NO. M84725)

The Commission has issued the enclosed Amendment No. 177 to Facility Operating License No. DPR-53 and Amendment No. 154 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 letter dated October 9, 1992.

The amendments revise the TS regarding the diesel fuel oil requirements. The requested changes are divided into 3 specific areas.

Change No. 1 revises TS 3.8.1.1 to: increase the required volume of fuel maintained in each fuel oil storage tank (FOST), clarify the FOST requirements during periods of high tornado probability, and removes the requirement to maintain an 8,000-gallon alternate source of fuel onsite whenever a FOST is inoperable. This change also revises TS 3.8.1.2 to more clearly specify the action requirements for an inoperable FOST in MODES 5 and 6.

Change No. 2 revises TSs 3.8.1.1.b.1 and 3.8.1.2.b.2 to change the required minimum volume of fuel oil maintained in the day tanks from 375 to 275 gallons.

Change No. 3 revises TS 4.7.11.1.2.b surveillance requirements for the diesel-driven fire pump fuel oil chemistry requiring it to be within the acceptable limits specified in American Society for Testing and Materials (ASTM) D975-81.

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Mr. Robert E. Denton

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December 29, 1992

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,

A handwritten signature in cursive script, appearing to read "Daniel G. McDonald", with a small "for" written below it.

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. 177 to DPR-53
2. Amendment No. 154 to DPR-69
3. Safety Evaluation

cc w/enclosures:  
See next page

Mr. Robert E. Denton  
Baltimore Gas & Electric Company

Calvert Cliffs Nuclear Power Plant  
Unit Nos. 1 and 2

cc:

Mr. Michael Moore, President  
Calvert County Board of  
Commissioners  
175 Main Street  
Prince Frederick, Maryland 20678

Mr. Joseph H. Walter  
Engineering Division  
Public Service Commission of  
Maryland  
American Building  
231 E. Baltimore Street  
Baltimore, Maryland 21202-3486

D. A. Brune, Esquire  
General Counsel  
Baltimore Gas and Electric Company  
P. O. Box 1475  
Baltimore, Maryland 21203

Kristen A. Burger, Esquire  
Maryland People's Counsel  
American Building, 9th Floor  
231 E. Baltimore Street  
Baltimore, Maryland 21202

Jay E. Silberg, Esquire  
Shaw, Pittman, Potts and Trowbridge  
2300 N Street, NW  
Washington, DC 20037

Patricia T. Birnie, Esquire  
Co-Director  
Maryland Safe Energy Coalition  
P. O. Box 33111  
Baltimore, Maryland 21218

Mr. G. L. Detter, Director, NRM  
Calvert Cliffs Nuclear Power Plant  
1650 Calvert Cliffs Parkway  
Lusby, Maryland 20657-47027

Resident Inspector  
c/o U.S. Nuclear Regulatory  
Commission  
P. O. Box 287  
St. Leonard, Maryland 20685

Mr. Richard I. McLean  
Administrator - Radioecology  
Department of Natural Resources  
580 Taylor Avenue  
Tawes State Office Building  
B3  
Annapolis, Maryland 21401

Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, Pennsylvania 19406



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. 177  
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 October 9, 1992, 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. 177, 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

*for John E. Manning*

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: December 29, 1992



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. 154  
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 October 9, 1992, 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. 154, 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

*for John E. Manning*

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: December 29, 1992

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 177 FACILITY OPERATING LICENSE NO. DPR-53

AMENDMENT NO. 154 FACILITY OPERATING LICENSE NO. DPR-69

DOCKET NOS. 50-317 AND 50-318

Revise Appendix A as follows:

Remove Pages

3/4 7-36  
3/4 8-1  
3/4 8-3  
3/4 8-6 to 3/4 8-15  
B 3/4 8-1  
-

Insert Pages

3/4 7-36  
3/4 8-1  
3/4 8-3  
3/4 8-6 to 3/4 8-16  
B 3/4 8-1  
B 3/4 8-2

### 3/4.7 PLANT SYSTEMS

#### SURVEILLANCE REQUIREMENTS (Continued)

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3. Verifying that each high pressure pump starts (sequentially) to maintain the Fire Suppression Water System pressure  $\geq$  80 psig.

g. At least once per **REFUELING INTERVAL** by: (1) performing a flow test of the system in accordance with Chapter 5, Section 11 of the Fire Protection Handbook, 14th Edition, published by the National Fire Protection Association, and (2) performing a system functional test which includes simulated automatic actuation of the system throughout its operating sequence and cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel.

4.7.11.1.2 The fire pump diesel engine shall be demonstrated **OPERABLE**:

a. At least once per 31 days by verifying:

1. The diesel fuel oil day storage tank contains at least 174 gallons of fuel, and
2. The diesel starts from ambient conditions and operates for at least 30 minutes. This test shall be performed on a **STAGGERED TEST BASIS** with the test required by Specification 4.7.11.1.1.b.

b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank, obtained in accordance with ASTM-D270-65, is within the acceptable limits specified in Table 1 of ASTM D975-81 when checked for viscosity, water and sediment.

c. At least once per 18 months by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for the class of service, and
2. Verifying the diesel starts from ambient conditions on the auto-start signal and operates for  $\geq$  20 minutes while loaded with the fire pump.

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 3/4.8.1 A.C. SOURCES

##### Operating

#### LIMITING CONDITION FOR OPERATION

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

- a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E Distribution System consisting of either:
  1. Two 500 kV offsite power circuits, or as necessary
  2. The 69 kV SMECO offsite power circuit described in the January 14, 1977 Safety Evaluation and one 500 kV offsite power circuit;

and

- b. Two separate and independent diesel generators (one of which may be a swing diesel generator capable of serving either Unit 1 or Unit 2) with:
  1. Separate fuel oil day tanks containing a minimum volume of 275 gallons of fuel for each diesel generator,
  2. A common Fuel Storage System consisting of:
    - a. No. 21 Fuel Oil Storage Tank containing a minimum volume of 74,000 gallons of fuel oil, and
    - b. No. 11 Fuel Oil Storage Tank containing a minimum volume of 32,000 gallons of fuel oil, and
  3. A separate fuel transfer pump for each diesel generator.

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

#### **ACTION:**

- a. With two offsite circuits of the above required A.C. electrical power sources inoperable, demonstrate the **OPERABILITY** of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; and 4.8.1.1.2.a.4 within 24 hours, unless the diesel generators are already operating. Restore at least two

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### LIMITING CONDITION FOR OPERATION (Continued)

- 2 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours. Restore at least two diesel generators to **OPERABLE** status within 72 hours from time of initial loss or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.
- f. With No. 21 Fuel Oil Storage Tank inoperable, during the period from:
1. October 1 to March 31, demonstrate the **OPERABILITY** of No. 11 Fuel Oil Storage Tank by: 1) performing Surveillance Requirement 4.8.1.1.2.a.2 (verifying 74,000 gallons) within 1 hour and at least once per 8 hours thereafter; and 2) verifying the flow path from No. 11 Fuel Oil Storage Tank to the diesel generators within 1 hour. Restore No. 21 Fuel Oil Storage Tank to **OPERABLE** status within 72 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.
  2. April 1 to September 30, demonstrate the **OPERABILITY** of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore No. 21 Fuel Oil Storage Tank 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.
- g. With No. 11 Fuel Oil Storage Tank inoperable, demonstrate the **OPERABILITY** of No. 21 Fuel Oil Storage Tank by: 1) performing Surveillance Requirement 4.8.1.1.2.a.2 (verifying 74,000 gallons) within 1 hour and at least once per 8 hours thereafter; and 2) verifying the flow path from No. 21 Fuel Oil Storage Tank to the diesel generators within 1 hour. Restore the No. 11 Fuel Oil Storage Tank to **OPERABLE** status within 7 days or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

#### SURVEILLANCE REQUIREMENTS

4.8.1.1.1. Each required independent circuit between the offsite transmission network and the onsite Class 1E Distribution System shall be:

- a. Demonstrated **OPERABLE**, as follows:
1. For each 500 kV offsite circuit, at least once per 7 days by verifying correct breaker alignments and indicated power availability.

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 3/4.8.1 A.C. SOURCES

##### Shutdown

#### LIMITING CONDITION FOR OPERATION

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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 fuel oil day tank containing a minimum volume of 275 gallons of fuel,
  2. A common Fuel Storage System consisting of:
    - a. No. 21 Fuel Oil Storage Tank containing a minimum volume of 74,000 gallons of fuel oil, and
    - b. No. 11 Fuel Oil Storage Tank containing a minimum volume of 32,000 gallons of fuel oil, and
  3. A fuel transfer pump.

**APPLICABILITY:** MODES 5 and 6.

#### ACTION:

- a. With less than the above minimum required A.C. electrical power sources **OPERABLE** 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, and
  2. Immediately initiate corrective actions to restore the minimum A.C. electrical busses to **OPERABLE** status, and
  3. Establish containment penetration closure as identified in Specification 3.9.4 within 8 hours.

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

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 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.
- c. With No. 11 Fuel Oil Storage Tank inoperable, demonstrate the **OPERABILITY** of No. 21 Fuel Oil Storage Tank by: 1) performing Surveillance Requirement 4.8.1.1.2.a.2 (verifying 74,000 gallons) within 1 hour; and 2) verifying the flow path from No. 21 Fuel Oil Storage Tank to the diesel generator within 1 hour.
- d. With No. 21 Fuel Oil Storage Tank inoperable, restore No. 21 Fuel Oil Storage Tank to **OPERABLE** status within 72 hours or suspend all operations involving **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel and movement of heavy loads over irradiated fuel.

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

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### SURVEILLANCE REQUIREMENTS

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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 4.8.1.1.2.a.5.

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 3/4.8.2 ONSITE POWER DISTRIBUTION SYSTEMS

##### A.C. Distribution - Operating

#### LIMITING CONDITION FOR OPERATION

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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 or 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

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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

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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.

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

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 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

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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.

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 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  $\geq 1.200$ .

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### SURVEILLANCE REQUIREMENTS (Continued)

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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.
- 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

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### SURVEILLANCE REQUIREMENTS (Continued)

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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.

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 3/4.8.2 ONSITE POWER DISTRIBUTION SYSTEMS

##### D.C. Distribution - Shutdown

#### LIMITING CONDITION FOR OPERATION

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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

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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.

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

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### BASES

The **OPERABILITY** of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety related equipment required for 1) the safe shutdown of the facility and 2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of 10 CFR Part 50, Appendix A, General Design Criteria 17.

The **OPERABILITY** of No. 21 and No. 11 Fuel Oil Storage Tanks ensure that at least 7 days of fuel oil will be reserved below the internal tank standpipes for operation of one diesel generator on each unit, assuming one unit under accident conditions with a diesel generator load of 3,000 Kw, and the opposite unit under normal shutdown conditions with a diesel generator load of 2,500 Kw. Additionally, the **OPERABILITY** of No. 21 Fuel Oil Storage Tank ensures that in the event of a loss of offsite power, concurrent with a loss of the non-bunkered fuel oil storage tank (tornado/missile event), at least 7 days of fuel oil will be available for operation of one diesel generator on each unit, assuming both diesel generators are loaded to 2,500 Kw.

The **OPERABILITY** of the fuel oil day tanks ensures that at least one hour of diesel generator operation is available without makeup to the day tanks, assuming the associated diesel generator is loaded to 3,250 Kw.

The **ACTION** requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The **OPERABILITY** of the power sources are consistent with the initial condition assumptions of the accident analyses and are based upon maintaining at least one of each of the onsite A.C. and D.C. power sources and associated distribution systems **OPERABLE** during accident conditions coincident with an assumed loss of offsite power and single failure of the other onsite A.C. source.

The **OPERABILITY** of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the facility status.

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### BASES

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The **ACTION** requirements for LCOs 3.8.1.2 and 3.8.2.2 are associated with the performance of Surveillance 4.8.1.1.2.d.1 on No. 12 emergency diesel generator with Unit 1 shutdown and Unit 2 at power. This requires that No. 11 emergency diesel generator be aligned to Unit 2. The actions specified reduce the probability of a loss of offsite power by requiring the availability of two offsite power circuits. A temporary diesel is available which has sufficient capacity to carry all required shutdown loads. This **ACTION** only applies to the performance of Surveillance 4.8.1.1.2.d.1 on No. 12 emergency diesel generator. Performance of Surveillance 4.8.1.1.2.d.1 on No. 11 emergency diesel generator would not violate the LCOs for 3.8.1.2 and 3.8.2.2 because the No. 12 emergency diesel generator may be aligned to either unit.

### 3/4.7 PLANT SYSTEMS

#### SURVEILLANCE REQUIREMENTS (Continued)

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3. Verifying that each high pressure pump starts (sequentially) to maintain the Fire Suppression Water System pressure  $\geq 80$  psig.

g. At least once per **REFUELING INTERVAL** by: (1) performing a flow test of the system in accordance with Chapter 5, Section 11 of the Fire Protection Handbook, 14th Edition, published by the National Fire Protection Association, and (2) performing a system functional test which includes simulated automatic actuation of the system throughout its operating sequence and cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel.

4.7.11.1.2 The fire pump diesel engine shall be demonstrated **OPERABLE**:

a. At least once per 31 days by verifying:

1. The diesel fuel oil day storage tank contains at least 174 gallons of fuel, and
2. The diesel starts from ambient conditions and operates for at least 30 minutes. This test shall be performed on a **STAGGERED TEST BASIS** with the test required by Specification 4.7.11.1.1.b.

b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank, obtained in accordance with ASTM-D270-65, is within the acceptable limits specified in Table 1 of ASTM D975-81 when checked for viscosity, water and sediment.

c. At least once per 18 months by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for the class of service, and
2. Verifying the diesel starts from ambient conditions on the auto-start signal and operates for  $\geq 20$  minutes while loaded with the fire pump.

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 3/4.8.1 A.C. SOURCES

##### Operating

#### LIMITING CONDITION FOR OPERATION

---

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

- a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E Distribution System consisting of either:
  1. Two 500 kV offsite power circuits, or as necessary
  2. The 69 kV SMECO offsite power circuit described in the January 14, 1977 Safety Evaluation and one 500 kV offsite power circuit;

and

- b. Two separate and independent diesel generators (one of which may be a swing diesel generator capable of serving either Unit 1 or Unit 2) with:
  1. Separate fuel oil day tanks containing a minimum volume of 275 gallons of fuel for each diesel generator,
  2. A common Fuel Storage System consisting of:
    - a. No. 21 Fuel Oil Storage Tank containing a minimum volume of 74,000 gallons of fuel oil, and
    - b. No. 11 Fuel Oil Storage Tank containing a minimum volume of 32,000 gallons of fuel oil, and
  3. A separate fuel transfer pump for each diesel generator.

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

#### ACTION:

- a. With two offsite circuits of the above required A.C. electrical power sources inoperable, demonstrate the **OPERABILITY** of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; and 4.8.1.1.2.a.4 within 24 hours, unless the diesel generators are already operating. Restore at least two

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### LIMITING CONDITION FOR OPERATION (Continued)

- 2 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours. Restore at least two diesel generators to **OPERABLE** status within 72 hours from time of initial loss or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.
- f. With the No. 21 Fuel Oil Storage Tank inoperable, during the period from:
1. October 1 to March 31, demonstrate the **OPERABILITY** of the No. 11 Fuel Oil Storage Tank by: 1) performing Surveillance Requirement 4.8.1.1.2.a.2 (verifying 74,000 gallons) within 1 hour and at least once per 8 hours thereafter; and 2) verifying the flow path from the No. 11 Fuel Oil Storage Tank to the diesel generators within 1 hour. Restore No. 21 Fuel Oil Storage Tank to **OPERABLE** status within 72 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.
  2. April 1 to September 30, demonstrate the **OPERABILITY** of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore No. 21 Fuel Oil Storage Tank 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.
- g. With No. 11 Fuel Oil Storage Tank inoperable, demonstrate the **OPERABILITY** of No. 21 Fuel Oil Storage Tank by 1) performing Surveillance Requirement 4.8.1.1.2.a.2 (verifying 74,000 gallons) within 1 hour and at least once per 8 hours thereafter, and 2) verifying the flow path from No. 21 Fuel Oil Storage Tank to the diesel generators within 1 hour. Restore No. 11 Fuel Oil Storage Tank to **OPERABLE** status within 7 days or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours.

#### SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each required independent circuit between the offsite transmission network and the onsite Class 1E Distribution System shall be:

- a. Demonstrated **OPERABLE**, as follows:
1. For each 500 kV offsite circuit, at least once per 7 days by verifying correct breaker alignments and indicated power availability.

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 3/4.8.1 A.C. SOURCES

##### 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 fuel oil day tank containing a minimum volume of 275 gallons of fuel,
  2. A common Fuel Storage System consisting of:
    - a. No. 21 Fuel Oil Storage Tank containing a minimum volume of 74,000 gallons of fuel oil, and
    - b. No. 11 Fuel Oil Storage Tank containing a minimum volume of 32,000 gallons of fuel oil, and
  3. A fuel transfer pump.

APPLICABILITY: **MODES 5 and 6.**

#### ACTION:

- a. With less than the above minimum required A.C. electrical power sources **OPERABLE** 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, and
  2. Immediately initiate corrective actions to restore the minimum A.C. electrical power sources to **OPERABLE** status, and
  3. Establish containment penetration closure as identified in Specification 3.9.4 within 8 hours.

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

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 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.
- c. With No. 11 Fuel Oil Storage Tank inoperable, demonstrate the **OPERABILITY** of No. 21 Fuel Oil Storage Tank by: 1) performing Surveillance Requirement 4.8.1.1.2.a.2 (verifying 74,000 gallons) within 1 hour; and 2) verifying the flow path from No. 21 Fuel Oil Storage Tank to the diesel generator within 1 hour.
- d. With No. 21 Fuel Oil Storage Tank inoperable, restore No. 21 Fuel Oil Storage Tank to **OPERABLE** status within 72 hours or suspend all operations involving **CORE ALTERATIONS**, positive reactivity changes, movement of irradiated fuel and movement of heavy loads over irradiated fuel.

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

### **3/4.8 ELECTRICAL POWER SYSTEMS**

#### **SURVEILLANCE REQUIREMENTS**

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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.

### 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 or 24B
- 480 volt Emergency Bus #24A or 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

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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.

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

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 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.

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\*\* 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**

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**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.

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 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  $\geq 1.200$ .

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### SURVEILLANCE REQUIREMENTS (Continued)

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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.
- 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

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### SURVEILLANCE REQUIREMENTS (Continued)

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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.

### 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

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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.

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

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### **BASES**

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The **OPERABILITY** of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety related equipment required for 1) the safe shutdown of the facility and 2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of 10 CFR Part 50, Appendix A, General Design Criteria 17.

The **OPERABILITY** of No. 21 and No. 11 Fuel Oil Storage Tanks ensures that at least 7 days of fuel oil will be reserved below the internal tank standpipes for operation of one diesel generator on each unit, assuming one unit under accident conditions with a diesel generator load of 3,000 Kw, and the opposite unit under normal shutdown conditions with a diesel generator load of 2,500 Kw. Additionally, the **OPERABILITY** of No. 21 Fuel Oil Storage Tank ensures that in the event of a loss of offsite power, concurrent with a loss of No. 11 Fuel Oil Storage Tank (tornado/missile event), at least 7 days of fuel oil will be available for operation of one diesel generator on each unit, assuming both diesel generators are loaded to 2,500 Kw.

The **OPERABILITY** of the fuel oil day tanks ensures that at least one hour of diesel generator operation is available without makeup to the day tanks, assuming the associated diesel generator is loaded to 3,250 Kw.

The **ACTION** requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The **OPERABILITY** of the power sources are consistent with the initial condition assumptions of the accident analyses and are based upon maintaining at least one of each of the onsite A.C. and D.C. power sources and associated distribution systems **OPERABLE** during accident conditions coincident with an assumed loss of offsite power and single failure of the other onsite A.C. source.

The **OPERABILITY** of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the facility status.

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### BASES

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The **ACTION** requirements for LCOs 3.8.1.2 and 3.8.2.2 are associated with the performance of Surveillance 4.8.1.1.2.d.1 on No. 12 emergency diesel generator with Unit 2 shutdown and Unit 1 at power. This requires that No. 21 emergency diesel generator be aligned to Unit 1. The actions specified reduce the probability of a loss of offsite power by requiring the availability of two offsite power circuits. A temporary diesel is available which has sufficient capacity to carry all required shutdown loads. This **ACTION** only applies to the performance of Surveillance 4.8.1.1.2.d.1 on No. 12 emergency diesel generator. Performance of Surveillance 4.8.1.1.2.d.1 on No. 21 emergency diesel generator would not violate the LCOs for 3.8.1.2 and 3.8.2.2 because the No. 12 emergency diesel generator may be aligned to either unit.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 177 TO FACILITY OPERATING LICENSE NO. DPR-53  
AND AMENDMENT NO. 154 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 October 9, 1992, 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 regarding the diesel fuel oil requirements. The requested changes are divided into three specific areas.

Change No. 1 would revise TS 3.8.1.1 to: increase the required volume of fuel maintained in each fuel oil storage tank (FOST), clarify the FOST requirements during periods of high tornado probability, and would remove the requirement to maintain an 8,000-gallon alternate source of fuel onsite whenever a FOST is inoperable. This change would also revise TS 3.8.1.2 to more clearly specify the action requirements for an inoperable FOST in MODES 5 and 6.

Change No. 2 would revise TSs 3.8.1.1.b.1 and 3.8.1.2.b.2 to change the required minimum volume of fuel oil maintained in the day tanks from 375 to 275 gallons.

Change No. 3 would revise TS 4.7.11.1.2.b surveillance requirements for the diesel-driven fire pump fuel oil chemistry requiring it to be within the acceptable limits specified in American Society for Testing and Materials (ASTM) D975-81.

2.0 EVALUATION

The design of the Emergency Diesel Generator (EDG) fuel oil system is based on a fuel oil capacity of 7 days. Specifically, Institute of Electrical and Electronics Engineers (IEEE)-308 recommends that sufficient fuel oil be available to run on EDG for 7 days (or the time needed to replenish fuel oil from an offsite source following a design basis event, whichever is longer).

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The two FOSTs (No. 11 and No. 21) contain a volume of fuel oil well in excess of that needed to satisfy this requirement. Each tank is sized to hold approximately 107,000 gallons of usable fuel oil. Normally, the volume of fuel maintained in each tank is between 90,000 and 107,000 gallons.

Currently, the TS require 18,250 gallons of fuel oil to be maintained in each FOST, for a total of 36,500 gallons. During a review of the custom TS issued with the original license, the licensee was able to clarify that this requirement applies to each unit, such that 73,000 gallons is the minimum onsite volume that should be maintained to support two-unit operation.

The licensee is requesting that the allowable out-of-service time for No. 11 FOST be increased from 72 hours to 7 days. This will permit the tank to be drained, inspected and repaired as necessary. In order to compensate for this increase, the licensee proposes that the minimum required volume for No. 21 FOST, which is bunkered to protect it against tornadoes, be increased to 74,000 gallons. This will ensure that sufficient fuel will be available in No. 21 FOST alone to satisfy the site's fuel demands for both design basis events or tornadoes.

The staff has determined that these proposed changes are acceptable. This determination is based on the fact that the minimum onsite fuel oil volume is being increased from 36,500 gallons to 106,000 gallons (74,000 gallons in No. 21 FOST and 32,000 gallons in No. 11 FOST), which is sufficient to adequately supply the diesels for 7 days following both design basis events and tornadoes, and to compensate for the increased allowable out-of-service time for No. 11 FOST.

As a part of the requested change, the licensee is proposing to delete the present requirement to provide an 8,000 gallon fuel oil source whenever a FOST is out-of-service. The licensee states that this is not a significant change because its inclusion in the TS has been determined to be inappropriate based upon a review of the licensing basis. This review indicates that the requirement was only appropriate as a temporary compensatory measure for planned maintenance involving out-of-service times longer than those allowed by the TS in 1984. However, this requirement was inappropriately incorporated into a subsequent TS amendment.

The staff finds this change acceptable based on the fact that the requirement for an 8,000 gallon alternate source is unnecessary, except under circumstances requiring extensive out-of-service times in excess of the proposed TS.

While in Modes 5 and 6, each unit is required to have at least one diesel generator operable and capable of providing power for normal shutdown loads. The licensee has decided that the Modes 5 and 6 TS should be revised to reflect tornado protection requirements as well. Limiting Condition for Operation 3.8.1.2 would be revised to require that both FOSTs meet the same

volume requirements as in Modes 1-4. Action Statements have also been added to clarify the requirements for inoperable FOSTs. The staff finds this change acceptable based on the fact that it will increase the required volume of fuel, and ensure consistency between the Modes 1-4 and the Modes 5 and 6 TS.

With regard to change No. 2, each EDG is equipped with a fuel oil transfer pump and a fuel oil day tank having a maximum capacity of approximately 485 gallons. The fuel oil day tank level is normally maintained by automatic cycling of the fuel oil transfer pump. Operation of the transfer pump in automatic is controlled by start and stop level switches connected to the day tank. High and low day tank level alarms are also provided to warn operators of abnormal conditions. The fuel oil contained in the day tank allows sufficient operating time to correct most problems that may develop with the fuel oil transfer system, such as valve mis-alignments or level switch adjustments, before the EDG trips due to low fuel oil.

Current guidance (Regulatory Guide 1.137 and American National Standards Institute (ANSI) N195-1976) recommend a fuel oil volume equivalent to at least one hour of operation be maintained in the day tank. Change No. 2 would revise TS 3.8.1.1.b.1 and 3.8.1.2.b.1 to reduce the minimum volume of fuel required to be maintained in the day tanks from 375 to 275 gallons. The requested 275 gallons of fuel oil would provide approximately 65 minutes of operation based on the 7-day maximum rated load of 3,250 Kw. The basis for the requested change is that lowering the required TS volume in the day tank would permit the pump start level switch to be lowered, resulting in reduced cycling of the pumps and level switches. The licensee believes that this should result in reduced component wear and improved system reliability. Based on the most recent fuel oil consumption rate calculation, the time between each cycle of the fuel oil transfer pump could be doubled to approximately 30 minutes by adopting the proposed minimum TS volume of 275 gallons.

The staff agrees that the revised volume requirements for minimum day tank level are in accordance with the applicable guidance and, therefore, finds the requested change acceptable.

A minor change is requested to TS 4.7.11.1.2.b to correct an inconsistency between surveillance requirements concerning the diesel-driven fire pump fuel oil chemistry and the EDG fuel oil chemistry. Amendment No. 111 for Unit 1 and Amendment No. 94 for Unit 2, authorized use of ASTM D975-81, in place of ASTM D975-74, for determining acceptance of diesel fuel oil chemistry. This change should have been implemented for the diesel fire pump fuel oil chemistry surveillance as well, since the EDGs and the diesel-driven fire pump are supplied from a common source of fuel oil. Although the FOSTs provide a common source of fuel for the EDGs and the diesel fire pump, minimum volume requirements for the EDGs are maintained through the use of standpipes and administrative controls. In addition, the diesel-driven fire pump demands are small in comparison, so that the proposed minimum volume requirements for the EDGs (106,000 gallons total) are more than sufficient to accommodate any such demands. This proposed change to the TS reflects no actual change in the

fuel, as the fuel currently being used meets the 1981 standard. Therefore, the licensee is requesting that TS 4.7.11.1.2.b be revised to require fuel oil to meet the applicable limits of ASTM D975-81.

The staff finds this revision acceptable.

### 3.0 STATE CONSULTATION

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

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (57 FR 53783). 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: C. Orsini

Date: December 29, 1992

Mr. Robert E. Denton

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December 29, 1992

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: Chrisptopher Orsini For

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. 177 to DPR-53
- 2. Amendment No. 154 to DPR-69
- 3. Safety Evaluation

cc w/enclosures:  
See next page

PDI-1:LA	PDI-1	PDI-1:PM <i>[Signature]</i>	EELB <i>[Signature]</i>	SPLB <i>[Signature]</i>	EMCB <i>[Signature]</i>
CVogan <i>[Signature]</i>	COrsini: <i>[Signature]</i>	DMcDonald <i>[Signature]</i>	MBerlinger <i>[Signature]</i>	CMcCracken	JStrosnider <i>[Signature]</i>
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OGC <i>[Signature]</i>	PDI-1:D <i>[Signature]</i>				
	RACapra				
12/16/92	12/23/92				

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DATED: December 29, 1992

AMENDMENT NO. 177 TO FACILITY OPERATING LICENSE NO. DPR-53-CALVERT CLIFFS  
UNIT 1  
AMENDMENT NO. 154 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

C. Orsini

OGC

D. Hagan, 3302 MNBB

C. Liang, 8/E/23

G. Hill (8), P1-22

Wanda Jones, P-370

C. Grimes, 11/F/23

C. Berlinger, 8/D/22

C. McCracken, 8/D/1

J. Strosnider, 7/D/4

ACRS (10)

OPA

OC/LFMB

Plant File

C. Cowgill, Region I

cc: Plant Service list