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

April 2, 1993

Docket No. 50-317

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 EXIGENT AMENDMENT FOR CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1 (TAC NO. M85939)

The Commission has issued the enclosed Amendment No.180 to Facility Operating License No. DPR-53 for the Calvert Cliffs Nuclear Power Plant, Unit No. 1. This amendment consists of changes to the Technical Specifications (TS) in response to your application transmitted by letter dated March 9, 1993.

The amendment revises Technical Specifications 3/4.2, "Power Distribution Limits," and 3/4.3, "Instrumentation," to relax the requirements for the number and distribution of operable incore detectors for the remainder of Operating Cycle 11. The changes also apply penalties to the values measured by the incore detectors prior to their comparison with TS limits to assure that the TS limits monitored by the incore detectors will continue to be valid.

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. 180to DPR-53
2. Safety Evaluation

cc w/enclosures:
See next page

CP 1

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Baltimore Gas & Electric Company

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DATED: April 2, 1993

AMENDMENT NO. 180 TO FACILITY OPERATING LICENSE NO. DPR-53-CALVERT CLIFFS UNIT 1

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-WF
D. Hagan, 3302 MNBB
G. Hill (2), P1-22
Wanda Jones, P-370
C. Grimes, 11/F/23
R. Jones, 8/E/23
T. Collins, 8/E/23
M. Chatterton, 8/E/23
ACRS (10)
OPA
OC/LFDCB
PD plant-specific file
C. Cowgill, Region I

cc: Plant Service list

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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. 180
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 March 9, 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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P PDR

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 180, 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 to 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: April 2, 1993

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 180 FACILITY OPERATING LICENSE NO. DPR-53

DOCKET NO. 50-317

Revise Appendix A as follows:

Remove Pages	Insert Pages
3/4 2-2	3/4 2-2
3/4 2-6	3/4 2-6
3/4 2-11	3/4 2-11
3/4 2-12	3/4 2-12
3/4 3-31	3/4 3-31
3/4 3-32	3/4 3-32
*3/4 3-33 thru - 60	3/4 3-33 thru - 61

*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 the text.

SURVEILLANCE REQUIREMENTS (Continued)

c. Verifying at least once per 31 days that the **AXIAL SHAPE INDEX** is maintained within the limits of Figure 3.2.1-2, where 100 percent of the allowable power represents the maximum **THERMAL POWER** allowed by the following expression:

M x N

where:

1. M is the maximum allowable **THERMAL POWER** level for the existing Reactor Coolant Pump combination.

2. N is the maximum allowable fraction of **RATED THERMAL POWER** as determined by the F^{T}_{xy} curve of Figure 3.2.1-3.

4.2.1.4 Incore Detector Monitoring System - The Incore Detector Monitoring System may be used for monitoring the core power distribution by verifying that the incore detector Local Power Density alarms:

a. Are adjusted to satisfy the requirements of the core power distribution map which shall be updated at least once per 31 days* of accumulated operation in **MODE** 1.

b. Have their alarm setpoint adjusted to less than or equal to the limits shown on Figure 3.2.1-1 when the following factors are appropriately included in the setting of these alarms:

1. A measurement-calculational uncertainty factor of 1.062,**

2. An engineering uncertainty factor of 1.03,

3. A linear heat rate uncertainty factor of 1.002 due to axial fuel densification and thermal expansion, and

4. A **THERMAL POWER** measurement uncertainty factor of 1.02.

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* For Unit 1 Cycle 11 only, when the percentage of **OPERABLE** incore detector locations (e.g., strings) falls below 75%, this surveillance shall be performed at least once per 15 days of accumulated operation in **MODE** 1.

** For Unit 1 Cycle 11 only, when the percentage of **OPERABLE** incore detector locations (e.g., strings) falls below 75%, the measurement-calculational uncertainty factor on linear heat rate shall be increased by 1% (from 1.062 to 1.072) prior to comparison with the Technical Specification limits.

3/4.2 POWER DISTRIBUTION LIMITS

3/4.2.2 TOTAL PLANAR RADIAL PEAKING FACTOR - F^T_{xy}

LIMITING CONDITION FOR OPERATION

3.2.2.1 The calculated value of F^T_{xy} shall be limited to $\leq$ 1.70.**

APPLICABILITY: **MODE** 1*.

ACTION: With F^T_{xy} > 1.70, within 6 hours either:

a. Withdraw and maintain the full length CEAs at or beyond the Long Term Steady State Insertion Limits of Specification 3.1.3.6 and reduce **THERMAL POWER** as follows:

1. Reduce **THERMAL POWER** to bring the combination of **THERMAL POWER** and F^T_{xy} within the limits of Figure 3.2.2-1, or

2. Reduce **THERMAL POWER** to less than or equal to the limit established by the Better Axial Shape Selection System (BASSS) as a function of F^T_{xy}, or

b. Be in at least **HOT STANDBY**.

SURVEILLANCE REQUIREMENTS

4.2.2.1.1 The provisions of Specification 4.0.4 are not applicable.

4.2.2.1.2 F^T_{xy} shall be calculated as $F^T_{xy} = F_{xy}$ using a full core power distribution system. F^T_{xy} shall be determined to be within its limit at the following intervals:

a. Prior to operation above 70 percent of **RATED THERMAL POWER** after each fuel loading,

b. At least once per 31 days*** of accumulated operation in **MODE** 1, and

c. Within four hours if the **AZIMUTHAL POWER TILT** (T_q) is > 0.030.

** For Unit 1 Cycle 11 only, when the percentage of **OPERABLE** incore detector locations (e.g., strings) falls below 75%, the calculated value of F^T_{xy} shall be increased by 1% prior to comparison with the limit.

* See Special Test Exception 3.10.2.

*** For Unit 1 Cycle 11 only, when the percentage of **OPERABLE** incore detector locations (e.g., strings) falls below 75%, this surveillance shall be performed at least once per 15 days of accumulated operation in **MODE** 1.

3/4.2 POWER DISTRIBUTION LIMITS

3/4.2.3 TOTAL INTEGRATED RADIAL PEAKING FACTOR - F_r^I

LIMITING CONDITION FOR OPERATION

3.2.3 The calculated value of F_r^I shall be limited to $\leq$ 1.70.**

APPLICABILITY: **MODE** 1*.

ACTION: With F_r^I > 1.70, within 6 hours either:

a. Be in at least **HOT STANDBY**, or

b. Withdraw and maintain the full length CEAs at or beyond the Long Term Steady State Insertion Limits of Specification 3.1.3.6 and reduce **THERMAL POWER** as follows:

1. Reduce **THERMAL POWER** to bring the combination of **THERMAL POWER** and F_r^I within the limits of Figure 3.2.3-1, or

2. Reduce **THERMAL POWER** to less than or equal to the limit established by the Better Axial Shape Selection System (BASSS) as a function of F_r^I.

When the **THERMAL POWER** is determined from Figure 3.2.3-1, it shall be used to establish a revised upper **THERMAL POWER LEVEL** limit on Figure 3.2.3-2 (i.e., Figure 3.2.3-2 shall be truncated at the allowable fraction of **RATED THERMAL POWER** determined by Figure 3.2.3-1). Subsequent operation shall be maintained within the reduced acceptable operation region of Figure 3.2.3-2.

SURVEILLANCE REQUIREMENTS

4.2.3.1 The provisions of Specification 4.0.4 are not applicable.

4.2.3.2 F_r^I shall be calculated as $F_r^I = F_r$ using a full core power distribution mapping system. F_r^I shall be determined to be within its limit at the following intervals:

a. Prior to operation above 70 percent of **RATED THERMAL POWER** after each fuel loading,

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** For Unit 1 Cycle 11 only, when the percentage of **OPERABLE** incore detector locations (e.g., strings) falls below 75%, the calculated value of F_r^I shall be increased by 1% prior to comparison with the limit.

* See Special Test Exception 3.10.2.

SURVEILLANCE REQUIREMENTS (Continued)

b. At least once per 31 days*** of accumulated operation in **MODE** 1, and

c. Within four hours if the **AZIMUTHAL POWER TILT** (T_q) is > 0.030.

4.2.3.3 F_r^T shall be determined each time a calculation is required by using the incore detectors to obtain a power distribution map with all full length CEAs at or above the Long Term Steady State Insertion Limit for the existing Reactor Coolant Pump combination.

*** For Unit 1 Cycle 11 only, when the percentage of **OPERABLE** incore detector locations (e.g., strings) falls below 75%, this surveillance shall be performed at least once per 15 days of accumulated operation in **MODE** 1.

3/4.3 **INSTRUMENTATION**

3/4.3.3 MONITORING INSTRUMENTATION

Incore Detectors

LIMITING CONDITION FOR OPERATION

3.3.3.2 The Incore Detection System shall be **OPERABLE** with at least one **OPERABLE** detector segment in each core quadrant on each of the four axial elevations containing incore detectors and as further specified below:

a. For monitoring the **AZIMUTHAL POWER TILT:***

At least two quadrant symmetric incore detector segment groups at each of the four axial elevations containing incore detectors in the outer 184 fuel assemblies with sufficient **OPERABLE** detector segments in these detector groups to compute at least two **AZIMUTHAL POWER TILT** values at each of the four axial elevations containing incore detectors.

b. For recalibration of the Excore Neutron Flux Detector System:

1. At least 75%** of all incore detector segments,

2. A minimum of 9 **OPERABLE** incore detector segments at each detector segment level, and

3. A minimum of 2 **OPERABLE** detector segments in the inner 109 fuel assemblies and 2 **OPERABLE** segments in the outer 108 fuel assemblies at each segment level.

c. For monitoring the **UNRODDED PLANAR RADIAL PEAKING FACTOR**, the **UNRODDED INTEGRATED RADIAL PEAKING FACTOR**, or the linear heat rate:

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* For Unit 1 Cycle 11 only, the following requirements shall be substituted for Limiting Condition for Operation 3.3.3.2.a:

At least eight quadrant symmetric incore detector segment groups containing incore detectors in the outer 184 fuel assemblies with sufficient **OPERABLE** detector segments in these detector groups to compute at least one **AZIMUTHAL POWER TILT** value at each of the four axial elevations containing incore detectors and at least two **AZIMUTHAL POWER TILT** values at three axial elevations containing incore detectors.

** For Unit 1 Cycle 11 only, the following requirement shall be substituted for Limiting Condition for Operation 3.3.3.2.b.1:

At least 60% of all incore detector segments,

LIMITING CONDITION FOR OPERATION (Continued)

1. At least 75%*** of all incore detector locations,

2. A minimum of 9 **OPERABLE** incore detector segments at each detector segment level, and

3. A minimum of 2 **OPERABLE** detector segments in the inner 109 fuel assemblies and 2 **OPERABLE** segments in the outer 108 fuel assemblies at each segment level. An **OPERABLE** incore detector segment shall consist of an **OPERABLE** rhodium detector constituting one of the segments in a fixed detector string.An **OPERABLE** incore detector location shall consist of a string in which at least three of the four incore detector segments are **OPERABLE**.

An **OPERABLE** quadrant symmetric incore detector segment group shall consist of a minimum of three **OPERABLE** rhodium incore detector segments in 90° symmetric fuel assemblies.

APPLICABILITY: When the Incore Detection System is used for:

a. Monitoring the **AZIMUTHAL POWER TILT**,

b. Recalibration of the Excore Neutron Flux Detection System, or

c. Monitoring the **UNRODDED PLANAR RADIAL PEAKING FACTOR**, the **UNRODDED INTEGRATED RADIAL PEAKING FACTOR**, or the linear heat rate.

ACTION: With the Incore Detection System inoperable, do not use the system for the above applicable monitoring or calibration functions. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

*** For Unit 1 Cycle 11 only, the following requirement shall be substituted for Limiting Condition for Operation 3.3.3.2.c.1:

At least 60% of all incore detector locations,

SURVEILLANCE REQUIREMENTS

4.3.3.2 The Incore Detection System shall be demonstrated **OPERABLE**:

a. By performance of a **CHANNEL CHECK** within 24 hours prior to its use and at least once per 7 days thereafter when required for:

1. Monitoring the **AZIMUTHAL POWER TILT**.

2. Recalibration of the Excore Neutron Flux Detection System.

3. Monitoring the **UNRODDED PLANAR RADIAL PEAKING FACTOR**, the **UNRODDED INTEGRATED RADIAL PEAKING FACTOR**, or the linear heat rate.

b. At least once per **REFUELING INTERVAL** by performance of a **CHANNEL CALIBRATION** operation which exempts the neutron detectors but includes all electronic components. The neutron detectors shall be calibrated prior to installation in the reactor core.

3/4.3 **INSTRUMENTATION**

3/4.3.3 MONITORING INSTRUMENTATION

Seismic Instrumentation

LIMITING CONDITION FOR OPERATION

3.3.3.3 The seismic monitoring instrumentation shown in Table 3.3-7 shall be **OPERABLE.**

APPLICABILITY: At all times.

ACTION:

a. With one or more seismic monitoring instruments inoperable for more than 30 days, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 10 days outlining the cause of the malfunction and the plans for restoring the instrument(s) to **OPERABLE** status.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.3.1 Each of the above seismic monitoring instruments shall be demonstrated **OPERABLE** by the performance of the **CHANNEL CHECK, CHANNEL CALIBRATION** and **CHANNEL FUNCTIONAL TEST** operations at the frequencies shown in Table 4.3-4.

4.3.3.3.2 Each of the above seismic monitoring instruments actuated during a seismic event shall be restored to **OPERABLE** status within 24 hours and a **CHANNEL CALIBRATION** performed within 5 days following the seismic event. Data shall be retrieved from actuated instruments and analyzed to determine the magnitude of the vibratory ground motion. A Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 10 days describing the magnitude, frequency spectrum and resultant effect upon facility features important to safety.

TABLE 3.3-7

SEISMIC MONITORING INSTRUMENTATION

INSTRUMENTS AND SENSOR LOCATIONS	MEASUREMENT RANGE	MINIMUM INSTRUMENT OPERABLE
1. Triaxial Time-History Strong Motion Accelographs		
a. O-YE-001 Unit 1 Containment Base	0-1g	1
b. O-YE-002 Unit 1 Containment 69'	0-1g	1
c. O-YE-003 Auxiliary Bldg. Base	0-1g	1
d. O-YE-004 Intake Structure	0-1g	1
e. O-YE-005 Free Field	0-1g	1
2. Triaxial Seismic Switches		
a. O-YS-001 Unit 1 Containment Base	NA	1
b. O-YS-002 Unit 1 Containment 69'	NA	1
3. Seismic Acceleration Recorder		
a. O-YRC-001 Control Room	NA	1
b. O-YR-001 Control Room	NA	1

TABLE 4.3-4

SEISMIC MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENTS AND SENSOR LOCATIONS	CHANNEL CHECK**	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1. Triaxial Time-History Strong Motion Accelographs			
a. 0-YE-001 Unit 1 Containment Base	M*	R	SA
b. 0-YE-002 Unit 1 Containment 69'	M*	R	SA
c. 0-YE-003 Auxiliary Bldg. Base	M*	R	SA
d. 0-YE-004 Intake Structure	M*	R	SA
e. 0-YE-005 Free Field	M*	R	SA
2. Triaxial Seismic Switches			
a. 0-YS-001 Unit 1 Containment Base	M	R	SA
b. 0-YS-002 Unit 1 Containment 69'	M	R	SA
3. Seismic Acceleration Recorder			
a. 0-YRC-001 Control Room	M	R	SA
b. 0-YR-001 Control Room	M	R	SA

** Verify instrument energized.

* Except seismic trigger.

3/4.3 **INSTRUMENTATION**

3/4.3.3 MONITORING INSTRUMENTATION

Meteorological Instrumentation

LIMITING CONDITION FOR OPERATION

3.3.3.4 The meteorological monitoring instrumentation channels shown in Table 3.3-8 shall be **OPERABLE.**

APPLICABILITY: At all times.

ACTION:

a. With one or more required meteorological monitoring channels inoperable for more than 7 days, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 10 days outlining the cause of the malfunction and the plans for restoring the channel(s) to **OPERABLE** status.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.4 Each of the above meteorological monitoring instrumentation channels shall be demonstrated **OPERABLE** by the performance of the **CHANNEL CHECK** and **CHANNEL CALIBRATION** operations at the frequencies shown in Table 4.3-5.

TABLE 3.3-8

METEOROLOGICAL MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE
1. WIND SPEED	
a. Nominal Elev. 10M	1
b. Nominal Elev. 60M	1
2. WIND DIRECTION	
a. Nominal Elev. 10M	1
b. Nominal Elev. 60M	1
3. AIR TEMPERATURE - DELTA T (10M-60M)	1

TABLE 4.3-5

METEOROLOGICAL MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION
1. WIND SPEED		
a. Nominal Elev. 10M	D	SA
b. Nominal Elev. 60M	D	SA
2. WIND DIRECTION		
a. Nominal Elev. 10M	D	SA
b. Nominal Elev. 60M	D	SA
3. AIR TEMPERATURE - DELTA T (10M-60M)	D	SA

3/4.3 **INSTRUMENTATION**

3/4.3.3 MONITORING INSTRUMENTATION

Remote Shutdown Instrumentation

LIMITING CONDITION FOR OPERATION

3.3.3.5 The remote shutdown monitoring instrumentation channels shown in Table 3.3-9 shall be **OPERABLE** with readouts displayed external to the Control Room.

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

ACTION:

a. With the number of **OPERABLE** remote shutdown monitoring channels less than required by Table 3.3-9, either restore the inoperable channel to **OPERABLE** status within 30 days, or be in **HOT SHUTDOWN** within the next 12 hours.

b. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.5 Each remote shutdown monitoring instrumentation channel shall be demonstrated **OPERABLE** by performance of the **CHANNEL CHECK** and **CHANNEL CALIBRATION** operations at the frequencies shown in Table 4.3-6.

TABLE 3.3-9

REMOTE SHUTDOWN MONITORING INSTRUMENTATION

INSTRUMENT	READOUT LOCATION	MEASUREMENT RANGE	MINIMUM CHANNELS OPERABLE
1. Wide Range Neutron Flux	1C43*	0.1 cps-200% power*	1*
2. Reactor Trip Breaker Indication	Cable Spreading Room	OPEN-CLOSE	1/trip breaker
3. Reactor Coolant Cold Leg Temperature	1C43	212-705°F	1
4. Pressurizer Pressure	1C43	0-4000 psia	1
5. Pressurizer Level	1C43	0-360 inches	1
6. Steam Generator Pressure	1C43	0-1200 psig	1/steam generator
7. Steam Generator Level	1C43	-401 to +63.5 inches	1/steam generator

* When the 1C43 instrumentation is inoperable, the wide range neutron flux monitors located in the auxiliary feedwater pump room may be utilized to meet this requirement. During the period when the instruments are utilized to meet the above requirement, they will be subject to the surveillance requirements of Table 4.3-6.

TABLE 4.3-6

REMOTE SHUTDOWN MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION
1. Wide Range Neutron Flux	M	NA
2. Reactor Trip Breaker Indication	M	NA
3. Reactor Coolant Cold Leg Temperature	M	R
4. Pressurizer Pressure	M	R
5. Pressurizer Level	M	R
6. Steam Generator Level (Wide Range)	M	R
7. Steam Generator Pressure	M	R

3/4.3 **INSTRUMENTATION**

3/4.3.3 MONITORING INSTRUMENTATION

Post-Accident Instrumentation

LIMITING CONDITION FOR OPERATION

3.3.3.6 The post-accident monitoring instrumentation channels shown in Table 3.3-10 shall be **OPERABLE.**

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

ACTION:

a. As shown in Table 3.3-10.

b. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.6 Each post-accident monitoring instrumentation channel shall be demonstrated **OPERABLE** by performance of the **CHANNEL CHECK** and **CHANNEL CALIBRATION** operations at the frequencies shown in Table 4.3-10.

TABLE 3.3-10

POST-ACCIDENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	ACTION
1. Containment Pressure	2	31
2. Wide Range Logarithmic Neutron Flux Monitor	2	31
3. Reactor Coolant Outlet Temperature	2	31
4. Pressurizer Pressure	2	31
5. Pressurizer Level	2	31
6. Steam Generator Pressure	2/steam generator	31
7. Steam Generator Level (Wide Range)	2/steam generator	31
8. Auxiliary Feedwater Flow Rate	2/steam generator	31
9. RCS Subcooled Margin Monitor	1	31
10. PORV/Safety Valve Acoustic Flow Monitoring	1/valve	31
11. PORV Solenoid Power Indication	1/valve	31
12. Feedwater Flow	2	31
13. Containment Water Level (Wide Range)	2	32, 33
14. Reactor Vessel Water Level	2*	34, 35
15. Core Exit Thermocouple System	2 locations/core quadrant	31

* A channel has eight sensors in a probe. A channel is **OPERABLE** if four or more sensors, one or more in the upper three and three or more in the lower five, are **OPERABLE**.

TABLE 3.3-10 (Continued)

ACTION STATEMENTS

ACTION 31 - With the number of **OPERABLE** post-accident monitoring channels less than required by Table 3.3-10, either restore the inoperable channel to **OPERABLE** status within 30 days or be in **HOT SHUTDOWN** within the next 12 hours.

ACTION 32 - With the number of **OPERABLE** post-accident monitoring channels one less than the Minimum Channels **OPERABLE** requirement in Table 3.3-10, operation may proceed provided the inoperable channel is restored to **OPERABLE** status at the next outage of sufficient duration.

ACTION 33 - With the number of **OPERABLE** post-accident monitoring channels two less than required by Table 3.3-10, either restore one inoperable channel to **OPERABLE** status within 30 days or be in **HOT SHUTDOWN** within the next 12 hours.

ACTION 34 - With the number of **OPERABLE** post-accident monitoring channels one less than the Minimum Channels **OPERABLE** requirement in Table 3.3-10, either restore the system to **OPERABLE** status within 7 days if repairs are feasible without shutting down or prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 30 days following the event, outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to **OPERABLE** status.

ACTION 35 - With the number of **OPERABLE** channels two less than required by Table 3.3-10, either restore the inoperable channel(s) to **OPERABLE** status within 48 hours if repairs are feasible without shutting down or:

1. Initiate an alternate method of monitoring for core and Reactor Coolant System voiding;

2. Prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 30 days following the event, outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to **OPERABLE** status; and

3. Restore the system to **OPERABLE** status at the next scheduled refueling.

TABLE 4.3-10

POST-ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION
1. Containment Pressure	M	R
2. Wide Range Logarithmic Neutron Flux Monitor	M	NA
3. Reactor Coolant Outlet Temperature	M	R
4. Pressurizer Pressure	M	R
5. Pressurizer Level	M	R
6. Steam Generator Pressure	M	R
7. Steam Generator Level (Wide Range)	M	R
8. Auxiliary Feedwater Flow Rate	M	R
9. RCS Subcooled Margin Monitor	M	R
10. PORV/Safety Valve Acoustic Monitor	NA	R
11. PORV Solenoid Power Indication	NA	NA
12. Feedwater Flow	M	R
13. Containment Water Level (Wide Range)	M	R
14. Reactor Vessel Water level	M	NA
15. Core Exit Thermocouple System	M	R*

* The performance of a **CHANNEL CALIBRATION** operation exempts the Core Exit Thermocouple but includes all electronic components. The Core Exit Thermocouple shall be calibrated prior to installation in the reactor core.

3/4.3 INSTRUMENTATION

3/4.3.3 MONITORING INSTRUMENTATION

Fire Detection Instrumentation

LIMITING CONDITION FOR OPERATION

3.3.3.7 As a minimum, the fire detection instrumentation for each fire detection zone shown in Table 3.3-11 shall be **OPERABLE**.

APPLICABILITY: Whenever equipment in that fire detection zone is required to be **OPERABLE**.

ACTION: With one or more of the fire detection instrument(s) shown in Table 3.3-11 inoperable:

a. Within 1 hour establish a fire watch patrol to inspect the zone(s) with the inoperable instrument(s) at least once per hour, unless the instrument(s) is located inside the containment, then inspect the containment at least once per 8 hours or monitor the containment air temperature at least once per hour at the locations listed in Specification 4.6.1.5; or unless the instrument(s) is located in fire detection zones equipped with automatic wet pipe sprinkler systems alarmed and supervised to the Control Room, then within 1 hour and at least per 24 hours thereafter, inspect the zone(s) with inoperable instruments and verify that the Automatic Sprinkler System, including the water flow alarm and supervisory system, is **OPERABLE** by **CHANNEL FUNCTIONAL TEST**.

b. Restore the inoperable instrument(s) to **OPERABLE** status within 14 days or prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 30 days outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the instrument(s) to **OPERABLE** status.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.7.1 At least once per 6 months, at least 25% of the above required fire detection instruments which are accessible during plant operation shall be demonstrated **OPERABLE** by performance of a **CHANNEL FUNCTIONAL TEST**. Detectors selected for testing shall be selected on a rotating basis such

SURVEILLANCE REQUIREMENTS (Continued)

that all detectors will be tested over a two year period. If in any detection zone there are less than four detectors, at least one different detector in that zone shall be tested every six months. For each detector found inoperable during functional testing, at least an additional 10% of all detectors or 10 detectors, whichever is less, shall also be tested. Fire detectors which are inaccessible during plant operation shall be demonstrated **OPERABLE** by the performance of a **CHANNEL FUNCTIONAL TEST** during each **COLD SHUTDOWN** exceeding 24 hours unless performed during the previous six months.

4.3.3.7.2 The NFPA Code 72D Class B supervised circuits supervision associated with the detector alarms of each of the above required fire detection instruments shall be demonstrated **OPERABLE** at least once per 6 months.

4.3.3.7.3 The non-supervised circuits, associated with detector alarms, between the instrument and the Control Room shall be demonstrated **OPERABLE** at least once per 31 days.

TABLE 3.3-11

FIRE DETECTION INSTRUMENTS
UNIT 1

ROOM/AREA AUX BLDG.	INSTRUMENT LOCATION	MINIMUM INSTRUMENTS OPERABLE* HEAT	FLAME	SMOKE
100/103/ 104/116	Corridors - Elev (-)10"-0"			5
110	Coolant Waste Rec & Mon. Tk Pp Rm			2
111	Waste Processing Control Rm			1
112/114	Coolant Waste Rec Tank		4	
113	Misc. Waste Receiver Tank Room			1
115	Charging Pump Room			3
118/122	ECCS Pump Room			7
119/123	ECCS Pump Room			7
200/202	Corridors, &			
209/210	Corridors &			
212/219	Corridors			13
207/208	Waste Gas Equip Rm			3
216	Reactor Coolant Make-up Pumps			1
217	Boric Acid Tank & Pump Room			2
218	Volume Control Tank Room			1
220	Degasifier Pump Room			1
221/326	West Piping Penetration Room		2	3
222	Hot Instrument Shop			2
223	Hot Machine Shop			4
224	East Piping Area			10
225	Rad Exhaust Vent Equip Rm			4
226	Service Water Pump Rm		3	6
227/316	East Piping Penetration Rm		3	5
228	Component Cooling Pump Rm			8
301/304/300	Battery Room & Corridor			3

* Detection instruments located within the containment are not required to be **OPERABLE** during the performance of Type A Containment Leakage Rate Tests.

TABLE 3.3-11 (Continued)

FIRE DETECTION INSTRUMENTS
UNIT 1

ROOM/AREA AUX BLDG.	INSTRUMENT LOCATION	MINIMUM INSTRUMENTS OPERABLE* HEAT	FLAME	SMOKE
306/1C	Cable Spreading Rm & Cable Chase**	2		10
308	N/S Corridor			6
315	Main Steam Piping Area			6
317	Switchgear Room, Elev 27'-0"**			6
318	Purge Air Supply Room			2
319/325	West Passage and Vestibule			6
320	Spent Fuel Heat Exchanger Room			3
323	Passage 27' Valve Alley & Filter Rm			3
324	Letdown Heat Exchanger Rm			1
Elev. 27'-0"	Switchgear Vent Duct	1		
1A	Cable Chase 1A			1
1B	Cable Chase 1B			1
405	Control Room			6
410	N/S Corridor			4
417/418	Solid Waste Processing		2	3
413/419/420	Cask and Equip Loading Area &			
424/425/426	Cask and Equip Loading Area		3	22
421	Diesel Generator No. (12)**	2		
422	Diesel Generator No. (11)**	2		
423	West Electrical Pen Rm			3
428	East Piping Area			7
429	East Electrical Pen Rm			3
430	Switchgear Room Elev 45'-0"**			8
439	Refueling Water Tank Pump Rm			2
441	Spent Resin Metering Tank Rm			1
Elev 45'-0"	Switchgear Vent Duct	1		

* Detection instruments located within the containment are not required to be **OPERABLE** during the performance of Type A Containment Leakage Rate Tests.

** Detectors which automatically actuate Fire Suppression Systems.

TABLE 3.3-11 (Continued)

FIRE DETECTION INSTRUMENTS
UNIT 1

ROOM/AREA AUX BLDG.	INSTRUMENT LOCATION	MINIMUM INSTRUMENTS OPERABLE* HEAT	FLAME	SMOKE
Elev 69'-0"	Control Room Vent Duct "A"			1
Elev 69'-0"	Cable Spreading Room Vent Duct			1
512	Control Room HVAC Equipment			4
586/588/589/590	Radiation Chemistry Area,			
592/593	Radiation Chemistry Area,			
595/596/597	Radiation Chemistry Area,			
587	Frisker Area,			
591	Clothing Disposal, and			
523/594	Corridors			20
520	Spent Fuel Pool Area Vent Equip Rm			2
524	Main Plant Exhaust Equip Rm			8
525	Cntmt Access Area			3
529	Electrical Equip. Room			3
530/531/533	Spent Fuel Pool Area		5	17
536/537	Misc Waste Evaporator & Equip Rm			3
Elev 83'-0"	Cable Tunnel			4
603	Auxiliary Feedwater Pump Rm			2
Containment Bldg.				
U-1	RCP Bay East*	16		
U-1	RCP Bay West*	16		
U-1	East Electric Pen Area*	***		
U-1	West Electric Pen Area*	***		
Intake Structure	Elev 3'-0" Unit 1 Side			24

* Detection instruments located within the containment are not required to be **OPERABLE** during the performance of Type A Containment Leakage Rate Tests.

*** Monitored by four protecto wires.

3/4.3 INSTRUMENTATION

3/4.3.3 MONITORING INSTRUMENTATION

Radioactive Gaseous Effluent Monitoring Instrumentation

LIMITING CONDITION FOR OPERATION

3.3.3.9 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.3-12 shall be **OPERABLE** with their alarm/trip setpoints set to ensure that the limits of Specification 3.11.2.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the **ODCM**.

APPLICABILITY: As shown in Table 3.3-12.

ACTION:

a. With a radioactive gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above Specification, without delay suspend the release of radioactive gaseous effluents monitored by the affected channel, or declare the channel inoperable, or change the setpoint so it is acceptably conservative.

b. With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels **OPERABLE**, take the **ACTION** shown in Table 3.3-12. Exert best efforts to return the instruments to **OPERABLE** status within 30 days and, if unsuccessful, explain in the next Semiannual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.9 Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated **OPERABLE** by performance of the **CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION** and **CHANNEL FUNCTIONAL TEST** operations at the frequencies shown in Table 4.3-11.

TABLE 3.3-12

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
1. WASTE GAS HOLDUP SYSTEM			
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release	1	*	35
b. Effluent System Flow Rate Measuring Device	1	*	36
2. MAIN VENT SYSTEM			
a. Noble Gas Activity Monitor	1	*	37
b. Iodine Sampler	1	*	38
c. Particulate Sampler	1	*	38

TABLE 3.3-12 (Continued)

TABLE NOTATION

* At all times.

ACTION STATEMENTS

ACTION 35 - With the number of channels **OPERABLE** less than required by the Minimum Channels **OPERABLE** requirement, the contents of the tank(s) may be released to the environment:

a. Using the main vent monitor as a backup and recording RMS readings every 15 minutes during the release, or

b. Provided that prior to initiating the release, at least two independent samples of the tank's contents are analyzed, and at least two technically qualified members of the Facility Staff independently verify the release rate calculations and two qualified operators verify the discharge valve lineup.

Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 36 - With the number of channels **OPERABLE** less than required by the Minimum Channels **OPERABLE** requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours.

ACTION 37 - With the number of channels **OPERABLE** less than required by the Minimum Channels **OPERABLE** requirement, effluent releases via this pathway may continue provided either (1) grab samples are taken and analyzed for gross activity at least once per 24 hours, or (2) an equivalent monitor is provided.

ACTION 38 - With the number of channels **OPERABLE** less than required by the Minimum Channels **OPERABLE** requirement, effluent releases via the affected pathway may continue provided samples are continuously collected as required in Table 4.11-2 with auxiliary sampling equipment.

TABLE 4.3-11

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. WASTE GAS HOLDUP SYSTEM					
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release	P	P	R(3)	SA(1)	*
b. Effluent System Flow Rate Measuring Device	D(4)	NA	R	NA	*
2. MAIN VENT SYSTEM					
a. Noble Gas Activity Monitor	D	M	R(3)	SA(2)	*
b. Iodine Sampler	W	NA	NA	NA	*
c. Particulate Sampler	W	NA	NA	NA	*

3/4.3 **INSTRUMENTATION**

3/4.3.3 MONITORING INSTRUMENTATION

Radioactive Liquid Effluent Monitoring Instrumentation

LIMITING CONDITION FOR OPERATION

3.3.3.10 The radioactive liquid effluent monitoring instrumentation channels shown in Table 3.3-13 shall be **OPERABLE** with their alarm/trip setpoints set to ensure that the limits of Specification 3.11.1.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the **OFFSITE DOSE CALCULATION MANUAL (ODCM)**.

APPLICABILITY: At all times.

ACTION:

a. With a radioactive liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above Specification, without delay suspend the release of radioactive liquid effluents monitored by the affected channel, or declare the channel inoperable, or change the setpoint so it is acceptably conservative.

b. With less than the minimum number of radioactive liquid effluent monitoring instrumentation channels **OPERABLE**, take the **ACTION** shown in Table 3.3-13. Exert best efforts to return the instruments to **OPERABLE** status within 30 days and, if unsuccessful, explain in the next Semiannual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.10 Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated **OPERABLE** by performance of the **CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION** and **CHANNEL FUNCTIONAL TEST** operations at the frequencies shown in Table 4.3-12.

TABLE 3.3-13

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	ACTION
1. GROSS RADIOACTIVITY MONITORS PROVIDING ALARM AND AUTOMATIC TERMINATION OF RELEASE		
a. Liquid Radwaste Effluent Line	1	28
b. Steam Generator Blowdown Effluent Line	1	29
2. FLOW RATE MEASUREMENT DEVICES		
a. Liquid Radwaste Effluent Line	1	30
b. Steam Generator Blowdown Effluent Line	1	30

TABLE 3.3-13 (Continued)

ACTION STATEMENTS

ACTION 28 - With the number of channels **OPERABLE** less than required by the Minimum Channels **OPERABLE** requirement, effluent releases may continue provided that prior to initiating a release:

a. At least two independent samples are analyzed in accordance with Specification 4.11.1.1.1, and

b. At least two technically qualified members of the Facility Staff independently verify the release rate calculations and two qualified operators verify the discharge valve line up.

ACTION 29 - With the number of channels **OPERABLE** less than required by the Minimum Channels **OPERABLE** requirement, effluent releases via this pathway may continue provided grab samples are analyzed for gross radioactivity (beta or gamma) at the lower limit of detection defined in Table 4.11-1:

a. At least once per 12 hours when the specific activity of the secondary coolant is greater than 0.01 microcurie/gram **DOSE EQUIVALENT I-131.**

b. At least once per 48 hours when the specific activity of the secondary coolant is less than or equal to 0.01 microcurie/gram **DOSE EQUIVALENT I-131.**

ACTION 30 - With the number of channels **OPERABLE** less than required by the Minimum Channels **OPERABLE** requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours during actual releases. Pump performance curves may be used to estimate flow.

TABLE 4.3-12

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1. GROSS RADIOACTIVITY MONITORS PROVIDING ALARM AND AUTOMATIC TERMINATION OF RELEASE				
a. Liquid Radwaste Effluent Line	D	P	R(2)	SA(1)
b. Steam Generator Blowdown Effluent Line	D	P	R(2)	SA(1)
2. FLOW RATE MEASUREMENT DEVICES				
a. Liquid Radwaste Effluent Line	D(3)	NA	R	NA
b. Steam Generator Blowdown Effluent Line	D(3)	NA	R	NA

TABLE 4.3-12 (Continued)

TABLE NOTATION

(1) The **CHANNEL FUNCTIONAL TEST** shall also demonstrate that automatic isolation of this pathway and/or Control Room alarm annunciation occur if the appropriate following condition(s) exists:

1. Instrument indicates measured levels above the alarm/trip setpoint.
2. Circuit failure.
3. Instrument indicates a downscale failure.

(2) The initial **CHANNEL CALIBRATION** shall be performed using one or more of the reference standards traceable to the National Bureau of Standards or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards shall permit calibrating the system within its intended range of energy and measurement range. For subsequent **CHANNEL CALIBRATION**, sources that have been related to the initial calibration can be used.

(3) **CHANNEL CHECK** shall consist of verifying indication of flow during periods of release. **CHANNEL CHECK** shall be made at least once per 24 hours on days on which effluent releases are made.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 180 TO FACILITY OPERATING LICENSE NO. DPR-53

BALTIMORE GAS AND ELECTRIC COMPANY

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1

DOCKET NO. 50-317

1.0 INTRODUCTION

By letter dated March 9, 1993, Baltimore Gas and Electric Company (the licensee) submitted a request for changes to the Calvert Cliffs Nuclear Power Plant, Unit No. 1, Technical Specifications (TSs). The requested changes would change the number of required in-core detectors necessary for continued operation for the remainder of Operating Cycle 11 only. The proposed changes are necessary because the plant has experienced an unexpectedly large number of failures, thus far, in Operating Cycle 11 and further failures could result in the shutdown of the unit.

The In-Core Instrumentation system at Calvert Cliffs consists of 45 neutron detector strings positioned in the center of selected fuel assemblies. Each detector string consists of 4 rhodium neutron detector segments located at 20, 40, 60, and 80% of core height. The neutron flux indicated by the detector segments is processed by a full-core power distribution system (CECOR) to determine the peak linear heat rate, peak pin power, radial peaking factors, and azimuthal power tilt for comparison to the TS limits.

Presently 32 of the 180 detector segments (17.8%) are inoperable. Three TS limits are threatened by additional failures. Any 14 additional detector segment failures would exceed the TS 3.3.3.2.b limit on the percentage of operable segments. Two selected detector segments failures would exceed the TS 3.3.3.2.a limit on the distribution of symmetric groups for measuring azimuthal power tilt. Three additional segment failures could exceed the TS 3.3.3.2.c limit on the number of operable strings. Based on the pattern of failures, TS 3.3.3.2.c would most likely be the first to be challenged by additional failures.

2.0 EVALUATION

Essentially all PWR TSs contain a requirement for operability of 75% of the incore detector locations for mapping of the core power distribution. On a number of occasions, for various reasons, failures of detector strings in operating PWRs have approached or exceeded 25%, and relaxation of the 75% requirement has been permitted for the duration of the affected operating cycle.

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In-core detector data is used to calculate power peaking factors which are used to verify compliance with fuel performance limits. As the number of inoperable detector segments increases, the uncertainties in the CECOR power distribution calculation increase. Asea Brown Boveri-Combustion Engineering (ABB-CE) has previously analyzed similar situations including Fort Calhoun Unit 1, Cycle 6, St. Lucie Unit 1, Cycle 4, and Calvert Cliffs Unit 1, Cycle 8. These analyses showed the increase in the CECOR uncertainties for extreme instrument failure rates of 60 to 75% was in the range of 0.5 to 1%. The analyzed cases are similar to and bound the extrapolated failure patterns of up to 40% failed detector segments in Calvert Cliffs Unit 1, Operating Cycle 11. As a conservative measure in the absence of explicit evaluation of Operating Cycle 11 uncertainties, if the percentage of operable detector strings falls below 75%, the linear heat rate, total planar radial peaking factor and total integrated radial peaking factor calculated by CECOR will be increased by 1% before they are compared to the values given in the TSs.

Another safety concern relating to degradation of incore mapping ability is the ability to detect anomalous conditions in the core. The current TSs 3.3.3.2.a requires at least eight azimuthal power tilt estimates with a minimum of two estimates of each of the four detector segment axial elevations. The proposed revision still requires at least eight azimuthal power tilt estimates, but requires only one estimate at each elevation and two estimates at three of the four elevations. These changes preserve the statistical validity of the tilt estimates and ensure adequate core coverage since the requirement that there be at least one operable segment in each quadrant at each elevation is maintained. This is sufficient because azimuthal tilts at one elevation are seen at adjacent levels.

In addition the proposed changes will require that the full core power distribution mapping frequency be increased to at least once per 15 days of accumulated operation in MODE 1 from the present requirement of once per 31 days of accumulated MODE 1 operation, if the number of operable strings falls below 75%.

The specific TS changes proposed are:

TSs 3.2.2.1, 3.2.3 and 4.2.1.4.b.1 - A footnote requires that when the percentage of OPERABLE incore detector locations fall below 75%, the measured values be increased by 1% prior to being compared to the technical specification limits.

Surveillance requirements 4.2.1.4.a, 4.2.2.1.2.b, and 4.2.3.2.b - A footnote requires that when the percentage of OPERABLE incore detector locations falls below 75% the full core power distribution mapping frequency be increased to at least once per 15 days of accumulated operation in MODE 1.

TS 3.3.3.2.a - A footnote changes the requirement from two quadrant symmetric incore detector segment groups at each axial location to a total of eight quadrant symmetric incore detector segment groups. The current requirement for at least two azimuthal power tilt values at each detector segment axial

elevation is changed to at least one azimuthal power tilt value at each detector segment axial elevation and at least two azimuthal power tilt values at three detector segment axial elevations.

TSs 3.3.3.2.b.1 and 3.3.3.2.c.1 - A footnote is added to change the minimum number of operable detector segments and strings to be 60%.

Based on the staff evaluation in Section 2.0 above, the staff concludes that the proposed Technical Specification changes are acceptable. These changes are for the remainder of Operating Cycle 11 only.

3.0 STATEMENT OF EXIGENT CIRCUMSTANCES

The licensee states that exigent circumstances pursuant to 10 CFR 50.91 exist with respect to the need for consideration of the proposed amendment. The need for this change could not have been foreseen in that 19 of the 45 incore detector strings were replaced during the previous outage and one was removed and not replaced due to mechanical problems. Prior to reaching 100% power following the refueling outage, 20 detectors had failed. There have been eight additional detector failures since reaching 100% power. All 28 of these detector failures were in the group of new detector strings installed during the outage. Adding the 4 detectors which were not replaced, 32 of the 180 available detectors (17.8%) are inoperable. The TSs require that 75% of the detector strings be operable and specific groups be operable for azimuthal power tilt monitoring.

During a phone call on March 26, 1993, the licensee stated that it completed a study and Root Cause Analysis in December of 1992 that justified 60% operable incore detector locations, but was unable to identify the cause of the detector failures nor account for the unexpected large number of failures of the newly installed detectors. The licensee assumed that the failure rate would decrease and proceeded to initiate a normal TS amendment request because no additional failures had occurred for a 2 month period. However, 3 additional detector failures occurred with the last one being on March 1, 1993. At that point, the licensee determined that the TS limits could be exceeded earlier than expected and that exigent circumstances existed. The licensee further notes that it is impossible to predict when, or if, additional incore detector failures will occur. The time between failures has varied from as much as 62 days to as little as 10 days. As noted in Section 1.0, Introduction, additional failures or combination of failures could result in the shutdown of the unit.

Based on the above, the NRC staff has determined that the licensee has used best efforts to make a timely application and that exigent circumstance are present which warrant processing the requested amendment pursuant to 10 CFR 50.91(a)(6).

4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION

The Commission has provided standards for determining whether a significant hazards consideration exists (10 CFR 50.92(c)). A proposed amendment to an

operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of and accident previously evaluation; or (2) create the possibility of a new or different kind of accident from an accident previously evaluated; or (3) involved a significant reduction in a margin of safety.

The following evaluation, by the licensee and with which we agree, demonstrates that the proposed amendment does not involve a significant hazards consideration.

The proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to not involve a significant hazards consideration, in that operation of the facility in accordance with the proposed amendments:

1. Would not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed change would relax requirements for the number and distribution of operable incore detectors. The safety function of the incore detectors is to verify that the core power distribution is consistent with the assumptions used in the safety analyses. Sufficient measurements will be required to adequately verify compliance with power distribution Technical Specification limits. Penalties will be applied to the values measured by the incore detectors prior to comparison with the Technical Specifications limits when the number of operable detector strings falls below the current requirement. This will ensure that all current Technical Specification and fuel design limits are protected and the core power distribution assumptions in all analyses remain valid. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Would not create the possibility of a new difference type of accident from any accident previously evaluated.

   The proposed change does not represent a change in the configuration or operation of the plant. The current Technical Specifications limits measured by the incore detector system will still be met. Therefore, the proposed change does not create the possibility of a new or different type of accident from any accident previously evaluated.

3. Would not involve a significant reduction in a margin of safety.

   The proposed changes will continue to protect the current power distribution Technical Specification limits. When the number of operable incore detector strings fall below the current Technical Specification requirement, a penalty will be added to the measured values before they are compared with the Technical Specification

limits. This penalty has been shown by prior analysis to be greater than the increased uncertainty. This penalty ensures that the Technical Specifications limits monitored using the incore detectors will continue to be protected. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the foregoing, the Commission has concluded that the standards of 10 CFR 50.92 are satisfied. Therefore, the Commission has made a final determination that the proposed amendment does not involve a significant hazards consideration.

5.0 STATE CONSULTATION

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

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20, and changes surveillance requirements. The NRC staff has determined that the amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (58 FR 14594). Accordingly, the amendment meets 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 amendment.

7.0 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor:
M. Chatterton

Date: April 2, 1993

April 2, 1993

Docket No. 50-317

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 EXIGENT AMENDMENT FOR CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1 (TAC NO. M85939)

The Commission has issued the enclosed Amendment No. 180 to Facility Operating License No. DPR-53 for the Calvert Cliffs Nuclear Power Plant, Unit No. 1. This amendment consists of changes to the Technical Specifications (TS) in response to your application transmitted by letter dated March 9, 1993.

The amendment revises Technical Specifications 3/4.2, "Power Distribution Limits," and 3/4.3, "Instrumentation," to relax the requirements for the number and distribution of operable incore detectors for the remainder of Operating Cycle 11. The changes also apply penalties to the values measured by the incore detectors prior to their comparison with TS limits to assure that the TS limits monitored by the incore detectors will continue to be valid.

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. 180 to DPR-53
2. Safety Evaluation

cc w/enclosures:
See next page

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