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Docket No. 50-317

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Mr. A. E. Lundvall, Jr.  
 Vice President - Supply  
 Baltimore Gas & Electric Company  
 P.O. Box 1475  
 Baltimore, Maryland 21203

Dear Mr. Lundvall:

The Commission has issued the enclosed Amendment No. 78 to Facility Operating License No. DPR-53 for Calvert Cliffs Nuclear Power Plant, Unit No. 1. The amendment consists of changes to the Technical Specifications in response to your application dated August 6, 1982.

This amendment revises the Technical Specifications for Calvert Cliffs Unit 1 to provide for a revised auxiliary feedwater flow requirement under automatic start condition and an administrative change to the implementation of the flow requirement.

A copy of the Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

Original signed by

David H. Jaffe, Project Manager  
 Operating Reactors Branch #3  
 Division of Licensing

Enclosures:

1. Amendment No. 78 to DPR-53
2. Safety Evaluation
3. Notice of Issuance

cc: See next page

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*FRN: Atorby*  
*[Handwritten signatures]*

OFFICE	ORB#3:DL	ORB#3:DL	ORB#3:DL	AD. OR:DL	OELD	
SURNAME	PMKreutzer	DJaffe	RAClark	GCLamas		
DATE	9/14/82	9/14/82	9/14/82	9/15/82	9/15/82	



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

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Docket No. 50-317

Docketing and Service Section  
Office of the Secretary of the Commission

SUBJECT: BALTIMORE GAS AND ELECTRIC COMPANY, Calvert Cliffs Nuclear  
Power Plant, Unit No. 1.

Two signed originals of the Federal Register Notice identified below are enclosed for your transmittal to the Office of the Federal Register for publication. Additional conformed copies (12) of the Notice are enclosed for your use.

- Notice of Receipt of Application for Construction Permit(s) and Operating License(s).
- Notice of Receipt of Partial Application for Construction Permit(s) and Facility License(s): Time for Submission of Views on Antitrust Matters.
- Notice of Availability of Applicant's Environmental Report.
- Notice of Proposed Issuance of Amendment to Facility Operating License.
- Notice of Receipt of Application for Facility License(s); Notice of Availability of Applicant's Environmental Report; and Notice of Consideration of Issuance of Facility License(s) and Notice of Opportunity for Hearing.
- Notice of Availability of NRC Draft/Final Environmental Statement.
- Notice of Limited Work Authorization.
- Notice of Availability of Safety Evaluation Report.
- Notice of Issuance of Construction Permit(s).
- Notice of Issuance of Facility Operating License(s) or Amendment(s).
- Other: Amendment No. 78.  
Referenced documents have been provided PDR.

Division of Licensing  
Office of Nuclear Reactor Regulation

Enclosure:  
As Stated

OFFICE →	ORB#3:DL					
SURNAME →	PMKreutzer/pr					
DATE →	9/17/82					

Baltimore Gas and Electric Company

cc:

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Attn: Mr. J. C. Ventura  
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Gaithersburg, MD 20760

Combustion Engineering, Inc.  
Attn: Mr. P. W. Kruse, Manager  
Engineering Services  
P. O. Box 500  
Windsor, CT 06095

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Prince Frederick, MD 20678

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Baltimore, MD 21201

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Mr. S. M. Davis, General Supervisor  
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Lusby, MD 20657

Ms. Mary Harrison, President  
Calvert County Board of County Commissioners  
Prince-Frederick, MD 20768

U. S. Environmental Protection Agency  
Region III Office  
Attn: Regional Radiation Representative  
Curtis Building (Sixth Floor)  
Sixth and Walnut Streets  
Philadelphia, PA 19106

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Resident Reactor Inspector  
NRC Inspection and Enforcement  
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Mr. J. A. Tiernan, Manager  
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Mr. W. J. Lippold, Supervisor  
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Mr. R. E. Denton, General Supervisor  
Training & Technical Services  
Calvert Cliffs Nuclear Power Plant  
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cc w/enclosure(s) and incoming  
dated: 8/6/82

Administrator, Power Plant Siting Program  
Energy and Coastal Zone Administration  
Department of Natural Resources  
Tawes State Office Building  
Annapolis, MD 21204

Regional Administrator  
Nuclear Regulatory Commission, Region I  
Office of Executive Director for Operations  
631 Park Avenue  
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. 78  
License No. DPR-53

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Baltimore Gas & Electric Company (the licensee) dated August 6, 1982, 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.

DESIGNATED ORIGINAL

Certified By

*Patricia J. Noonan*

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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. 78, 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.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert A. Clark, Chief  
Operating Reactors Branch #3  
Division of Licensing

Attachment:  
Changes to the  
Technical Specifications

Date of Issuance: September 27, 1982

ATTACHMENT TO LICENSE AMENDMENT NO. 78

FACILITY OPERATING LICENSE NO. DPR-53

DOCKET NO. 50-317

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages as indicated. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

Page

3/4 7-5  
3/4 7-5b  
B 3/4 7-2

## PLANT SYSTEMS

### AUXILIARY FEEDWATER SYSTEM

#### LIMITING CONDITION FOR OPERATION

3.7.1.2 At least two steam turbine driven steam generator auxiliary feedwater pumps and associated flow paths shall be OPERABLE and capable of automatically initiating flow, within the limits of acceptable operation of Figure 3.7-1, to each steam generator.

APPLICABILITY: MODES 1, 2 and 3\*.

#### ACTION:

- a. With one auxiliary feedwater pump inoperable, restore at least two auxiliary feedwater pumps to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.
- b. Whenever a subsystem is inoperable for the performance of periodic testing (i.e., manual discharge valve closed for pump discharge head test) a dedicated operator will be stationed at the local station (i.e., closed valve), with direct communication to the Control Room, to return the subsystem to normal upon instruction from the Control Room. Upon completion of any testing, the subsystem (valve) will be returned to its proper position and verified in its proper position by an independent operator check.

#### SURVEILLANCE REQUIREMENTS

4.7.1.2 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

- a. At least once per 31 days by:
  1. Verifying that each steam turbine driven pump develops a Total Dynamic Head of  $\geq 2800$  ft. on recirculation flow when the secondary steam supply pressure is greater than 800 psig.
  2. Cycling each testable, remote operated valve that is not in its operating position through at least one complete cycle.
  3. Verifying that each valve (manual, power operated or automatic) in the direct flow path is in its correct position.
- b. Before entering MODE 3 after a COLD SHUTDOWN of at least 14 days by completing a flow test that verifies the flow path from the condensate storage tank to the steam generators.
- c. At least once per 18 months by:
  1. Verifying that each automatic valve in the flow path actuates to its correct position upon receipt of each auxiliary feedwater actuation test signal.
  2. Verifying that each auxiliary feedwater pump starts as designed automatically upon receipt of each auxiliary feedwater actuation test signal.

\* Automatic flow initiation need not be OPERABLE during MODE 3.

PLANT SYSTEMS

AUXILIARY FEEDWATER SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying, upon automatic initiation of auxiliary feedwater, a flow within the acceptable operating limits of Figure 3.7-1, Steam Generator Pressure Versus Auxiliary Feedwater Flow.
- \*d. Upon repositioning of 1/2-CV-4511 and/or 1/2-CV-4512 the valve shall be realigned to provide flow consistent with Figure 3.7-1.

\* Only applicable during MODES 1 and 2.

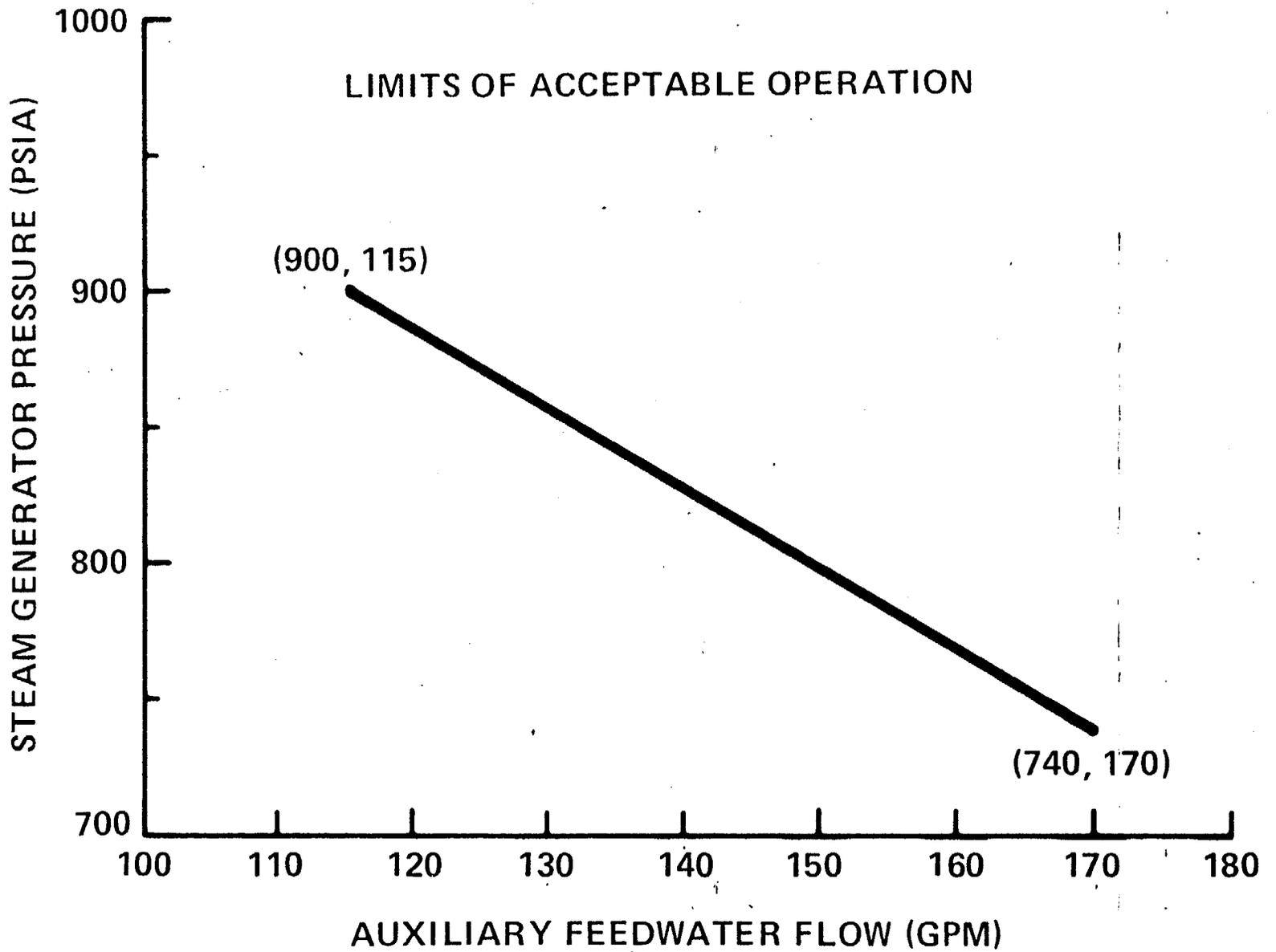


Figure 3.7-1  
Steam Generator Pressure vs. Auxiliary Feedwater Flow

## PLANT SYSTEMS

### CONDENSATE STORAGE TANK

#### LIMITING CONDITION FOR OPERATION

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3.7.1.3 The No. 12 condensate storage tank (CST) shall be OPERABLE with a minimum contained water volume of 150,000 gallons per unit.

APPLICABILITY: MODES 1, 2 and 3.

#### ACTION:

With the No. 12 condensate storage tank inoperable, within 4 hours either:

- a. Restore the CST to OPERABLE status or be in HOT SHUTDOWN within the next 12 hours, or
- b. Demonstrate the OPERABILITY of the No. 11 condensate storage tank as a backup supply to the auxiliary feedwater pumps and restore the No. 12 condensate storage tank to OPERABLE status within 7 days or be in HOT SHUTDOWN within the next 12 hours.

#### SURVEILLANCE REQUIREMENTS

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4.7.1.3.1 The No. 12 condensate storage tank shall be demonstrated OPERABLE at least once per 12 hours by verifying the contained water volume is within its limits when the tank is the supply source for the auxiliary feedwater pumps.

4.7.1.3.2 The No. 11 condensate storage tank shall be demonstrated OPERABLE at least once per 12 hours by verifying that the tank contains a minimum of 150,000 gallons of water and by verifying that the flow path for taking suction from this tank is OPERABLE with the manual valves in this flow path open whenever the No. 11 condensate storage tank is the supply source for the auxiliary feedwater pumps.

### 3/4.7 PLANT SYSTEMS

#### BASES

#### 3/4.7.1 TURBINE CYCLE

##### 3/4.7.1.1 SAFETY VALVES

The OPERABILITY of the main steam line code safety valves ensures that the secondary system pressure will be limited to within its design pressure of 1000 psig during the most severe anticipated system operational transient. The maximum relieving capacity is associated with a turbine trip from 100% RATED THERMAL POWER coincident with an assumed loss of condenser heat sink (i.e., no steam bypass to the condenser).

The specified valve lift settings and relieving capacities are in accordance with the requirements of Section III of the ASME Boiler and Pressure Code, 1971 Edition. The total relieving capacity for all valves on all of the steam lines is  $12.18 \times 10^6$  lbs/hr which is 108 percent of the total secondary steam flow of  $11.23 \times 10^6$  lbs/hr at 100% RATED THERMAL POWER. A minimum of 2 OPERABLE safety valves per steam generator ensures that sufficient relieving capacity is available for removing decay heat.

STARTUP and/or POWER OPERATION is allowable with safety valves inoperable within the limitations of the ACTION requirements on the basis of the reduction in secondary system steam flow and THERMAL POWER required by the reduced reactor trip settings of the Power Level-High channels. The reactor trip setpoint reductions are derived on the following bases:

For two loop operation

$$SP = \frac{(X) - (Y)(V)}{X} \times 106.5$$

For single loop operation (two reactor coolant pumps  
operating in the same loop)

$$SP = \frac{(X) - (Y)(U)}{X} \times 46.8$$

where:

SP = reduced reactor trip setpoint in percent of RATED  
THERMAL POWER

V = maximum number of inoperable safety valves per steam  
line

## PLANT SYSTEMS

### BASES

- U = maximum number of inoperable safety valves per operating steam line
- 106.5 = Power Level-High Trip Setpoint for two loop operation
- 46.8 = Power Level-High Trip Setpoint for single loop operation with two reactor coolant pumps operating in the same loop
- X = Total relieving capacity of all safety valves per steam line in lbs/hour
- Y = Maximum relieving capacity of any one safety valve in lbs/hour

### 3/4.7.1.2 AUXILIARY FEEDWATER SYSTEM

The OPERABILITY of the auxiliary feedwater system ensures that the Reactor Coolant System can be cooled down to less than 300°F from normal operating conditions in the event of a total loss of offsite power.

Each steam driven auxiliary feedwater pump is capable of delivering a total feedwater flow of 700 gpm at a Total Dynamic Head of 2490 ft to the entrance of the steam generators. A capacity of 450 gpm, however, is sufficient to ensure that adequate feedwater flow is available to remove decay heat and reduce the Reactor Coolant System temperature to less than 300°F when the shutdown cooling system may be placed into operation.

A minimum flow of 88 gpm and a maximum flow of 142 gpm to each steam generator when automatically initiating AFW flow for a steam generator pressure of 900 psia is required to ensure sufficient time for operator action to maintain an adequate heat sink for the reactor. A nominal flow setting of 115 gpm at 900 psia is used to account for instrument error and system flow repeatability. Figure 3.7-1 shows the allowable flow as a function of steam generator pressure.

The minimum flow is adequate enough to allow 20 minutes before the operator is required to increase AFW flow to 450 gpm. At the same time the maximum flow is low enough to ensure 20 minutes for the operator to turn off AFW flow if main feedwater is available. Failure to turn off AFW, in this case, would result in safety injection actuation due to the rapid cooldown of the RCS.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 78

FACILITY OPERATING LICENSE NO. DPR-53

BALTIMORE GAS AND ELECTRIC COMPANY

CALVERT CLIFFS NUCLEAR POWER PLANT UNIT NO. 1

DOCKET NO. 50-317

Introduction

By application for license amendment dated August 6, 1982, Baltimore Gas and Electric Company (BG&E) requested a change to the Technical Specifications (TS) for Calvert Cliffs Unit 1. The proposed change to TS 3/4.7.1.2, "Auxiliary Feedwater System", would provide for a revised auxiliary feedwater flow requirement under automatic start conditions. The proposed TS would also provide an administrative change to the implementation of the flow requirement.

Discussion

On February 8, 1982, the NRC issued License Amendments 67 and 49 for Calvert Cliffs Units 1 and 2, respectively. The license amendments incorporated an auxiliary feedwater flow requirement (TS Figure 3.7-1) for automatic start conditions. This requirement provided for verification that the auxiliary feedwater system could provide between 88 and 142 gpm to each steam generator at 900 psia. The lower flow limit (88gpm) would provide 20 minutes following automatic start for the operator to increase flow should the auxiliary feedwater system be actually required to ensure maintenance of an adequate heat sink. The upper flow limit (142 gpm) would provide 20 minutes, following automatic start, for the operator to terminate auxiliary feedwater flow if this flow is not required to prevent overcooling of the primary system.

The proposed change to TS Figure 3.7-1, the auxiliary feedwater flow requirement, would provide a pressure dependent range of flows from 115 gpm at 900 psia to 170 gpm at 740 psia. Since steam generator pressure decreases at increasing power levels, the proposed change would allow BG&E to verify adequate auxiliary feedwater flow without returning the steam generator to 900 psia which corresponds to approximately zero power conditions.

A second change to TS 3/4.7.1.2 would modify the administrative implementation of TS Figure 3.7-1. The present TS.3.7.1.2 requires, in part, that the auxiliary feedwater system be "...capable of automatically initiating

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flow, within the area of acceptable operation of Figure 3.7-1, to each steam generator." In their August 6, 1982 application, BG&E indicated that the phrase "...area of acceptable operation" implies a two-dimensional "area" shown on Figure 3.7-1. In fact, Figure 3.7-1 contains a one-dimensional relationship; auxiliary feedwater flow is confined between the limits on this line. Accordingly, BG&E has proposed that the word "area" be replaced with the word "limits". We concur with BG&E that the proposed change more closely reflects the meaning of the TS.3.7.1.2 requirements. The change is administrative in nature and has no effect on the safety of the facility.

### Evaluation

During the recent refueling outage at Calvert Cliffs Unit 1, BG&E conducted a test to determine the relationship between steam generator pressure and auxiliary feedwater flow\*. The results of the test indicated that for a flow of 115 gpm at 900 psia, the flow increased in a very nearly linear fashion to 170 gpm at 740 psia. This experimentally determined relationship between auxiliary feedwater flow and steam generator pressure is the basis for BG&E's proposed change to TS.3/4.7.1.2. BG&E has shown, analytically, that a flow of 115 gpm (at 900 psia) and a flow of 170 gpm (at 740 psia) are each within a region of values which would allow the reactor operator 20 minutes to either terminate auxiliary feedwater flow or to increase the flow, as needed. The acceptability of this conclusion was the basis for License Amendments 67 and 49. Since there are no additional safety considerations associated with this TS change, we find this change to be within the bounds of previously reviewed safety considerations and therefore, acceptable.

### Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

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\*This test will be repeated during the upcoming refueling outage for Unit 2 and will represent the basis for a future request to change the Unit 2 TS.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: September 27, 1982

Principal Contributor:

D. H. Jaffe

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-317BALTIMORE GAS AND ELECTRIC COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITYOPERATING LICENSE

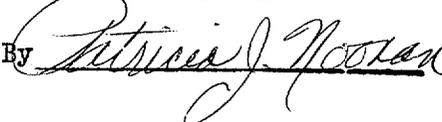
The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 78 to Facility Operating License No. DPR-53, issued to Baltimore Gas and Electric Company, which revised Technical Specifications for operation of the Calvert Cliffs Nuclear Power Plant, Unit No. 1. The amendment is effective as of the date of issuance.

This amendment revises the Technical Specifications for Calvert Cliffs Unit 1 to provide for a revised auxiliary feedwater flow requirement under automatic start condition and an administrative change to the implementation of the flow requirement.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of the amendment was not required since the amendment does not involve a significant hazards consideration.

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Certified By



The Commission has determined that the issuance of the amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of the amendment.

For further details with respect to this action, see (1) the application for amendment dated August 6, 1982, (2) Amendment No. 78 to License No. DPR-53, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D.C. and at the Calvert County Library, Prince Frederick, Maryland. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland, this 27th day of September, 1982.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert A. Clark, Chief  
Operating Reactors Branch #3  
Division of Licensing