dCS MS-016

FEB 8 1982

Docket Nos. 50-317
and 50-318

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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 Amendments No. 67 and 49 to Facility Operating Licenses No. DPR-53 and DPR-69 for Calvert Cliffs Nuclear Power Plant, Units No. 1 and 2. These amendments consists of changes to the Technical Specifications in response to your application dated December 21, 1981.

The amendments require operability and verification of the auxiliary feedwater system throttle valves.

In addition to providing Technical Specifications regarding ~~auxiliary~~ feedwater system throttle valves, we herein conclude our evaluation of NUREG-0737 Item II.E.1.1, "Auxiliary feedwater system evaluation". In our safety evaluation report dated May 8, 1981, prepared in support of Calvert Cliffs' License Amendment Nos. 54 and 37, we provided our evaluation of the Calvert Cliffs Units 1 and 2 auxiliary feedwater systems using the criteria of NUREG-0737, Item II.E.1.1. In addition, by letter dated June 29, 1981, we provided our evaluation of the Calvert Cliffs Units 1 and 2 auxiliary feedwater system using the criteria of Recommendation GL-2 of our November 7, 1979 letter. By letter dated May 29, 1981 we requested that BG&E submit proposed Technical Specifications which would provide an acceptable range of auxiliary feedwater system automatic flow initiation, via the throttle valves. Accordingly, with issuance of these License Amendments, we have concluded our evaluation of NUREG-0737, Item II.E.1.1.

cp
1

Copies of the related Safety Evaluation and Notice of Issuance are also enclosed.

Sincerely,

Original signed by:

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

Enclosures:
See next page

OFFICE							
SURNAME	8203040329 820208						
DATE	PDR ADOCK 05000317 P PDR						

Enclosures:
1. Amendment Nos. 67 and 49 to DPR-53 and DPR-69
2. Safety Evaluation
3. Notice of Issuance

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DATE	2/3/82	2/3/82	2/3/82	2/4/82	2/5/82		

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

DISTRIBUTION:
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PMKreutzer

Docket No. 50-317/318

Docketing and Service Section
Office of the Secretary of the Commission

SUBJECT: BALTIMORE GAS AND ELECTRIC COMPANY, Clavert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2

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 Nos. 67 and 49

~~Referenced documents have been provided PDR.~~

Division of Licensing
Office of Nuclear Reactor Regulation

Enclosure:
As Stated

OFFICE→	ORB#3:DL					
SURNAME→	PMKreutzer/pn					
DATE→	2/9/82					

NRC FORM 102 7—79

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

February 8, 1982

Docket Nos. 50-317
and 50-318

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 Amendments No. 67 and 49 to Facility Operating Licenses No. DPR-53 and DPR-69 for Calvert Cliffs Nuclear Power Plant, Units No. 1 and 2. These amendments consists of changes to the Technical Specifications in response to your application dated December 21, 1981.

The amendments require operability and verification of the auxiliary feedwater system throttle valves.

In addition to providing Technical Specifications regarding auxiliary feedwater system throttle valves, we herein conclude our evaluation of NUREG-0737 Item II.E.1.1, "Auxiliary feedwater system evaluation". In our safety evaluation report dated May 8, 1981, prepared in support of Calvert Cliffs' License Amendment Nos. 54 and 37, we provided our evaluation of the Calvert Cliffs Units 1 and 2 auxiliary feedwater systems using the criteria of NUREG-0737, Item II.E.1.1. In addition, by letter dated June 29, 1981, we provided our evaluation of the Calvert Cliffs Units 1 and 2 auxiliary feedwater system using the criteria of Recommendation GL-2 of our November 7, 1979 letter. By letter dated May 29, 1981 we requested that BG&E submit proposed Technical Specifications which would provide an acceptable range of auxiliary feedwater system automatic flow initiation, via the throttle valves. Accordingly, with issuance of these License Amendments, we have concluded our evaluation of NUREG-0737, Item II.E.1.1.

Copies of the related Safety Evaluation and Notice of Issuance are also enclosed.

Sincerely,

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

Enclosures:
See next page

Baltimore Gas and Electric Company

cc:
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Baltimore Gas and Electric Company
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Baltimore, MD 21203

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Plant Superintendent
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Chief Nuclear Engineer
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Combustion Engineering, Inc.
Attn: Mr. P. W. Kruse, Manager
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Windsor, CT 06095

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Calvert County Library
Prince Frederick, MD 20678

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Quality Assurance Department
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Mr. T. L. Syndor, General Supervisor
Operations Quality Assurance
Calvert Cliffs Nuclear Power Plant
Maryland Routes 2 & 4
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

Mr. Ralph E. Architzel
Resident Reactor Inspector
NRC Inspection and Enforcement
P. O. Bos 437
Lusby, MD 20657

Mr. Charles B. Brinkman
Manager - Washington Nuclear Operations
Combustion Engineering, Inc.
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Mr. W. J. Lippold, Supervisor
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Baltimore, Maryland 21203

Mr. R. E. Denton, General Supervisor
Training & Technical Services
Calvert Cliffs Nuclear Power Plant
Maryland Routes 2 & 4
Lusby, MD 20657

cc w/enclosure(s) and incoming
dated: 12/21/81

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 Inspection and Enforcement
631 Park Avenue
King of Prussia, Pennsylvania 19406

Enclosures:
1. Amendment Nos. 67 and 49
   to DPR-53 and DPR-69
2. Safety Evaluation
3. Notice of Issuance

cc: w/enclosures
See next page

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

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-317

CALVERT CLIFFS NUCLEAR POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 67
License Nos. 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 December 21, 1981, 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. 67, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective within 30 days after entering MODE 1, as defined by Technical Specification 1.4, following completion of the reload for operation during Cycle 6.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Clark

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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 8, 1982

ATTACHMENT TO LICENSE AMENDMENT NO. 67

FACILITY OPERATING LICENSE NO. DPR-53

DOCKET NO. 50-317

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. 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.

Pages

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

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 area 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.

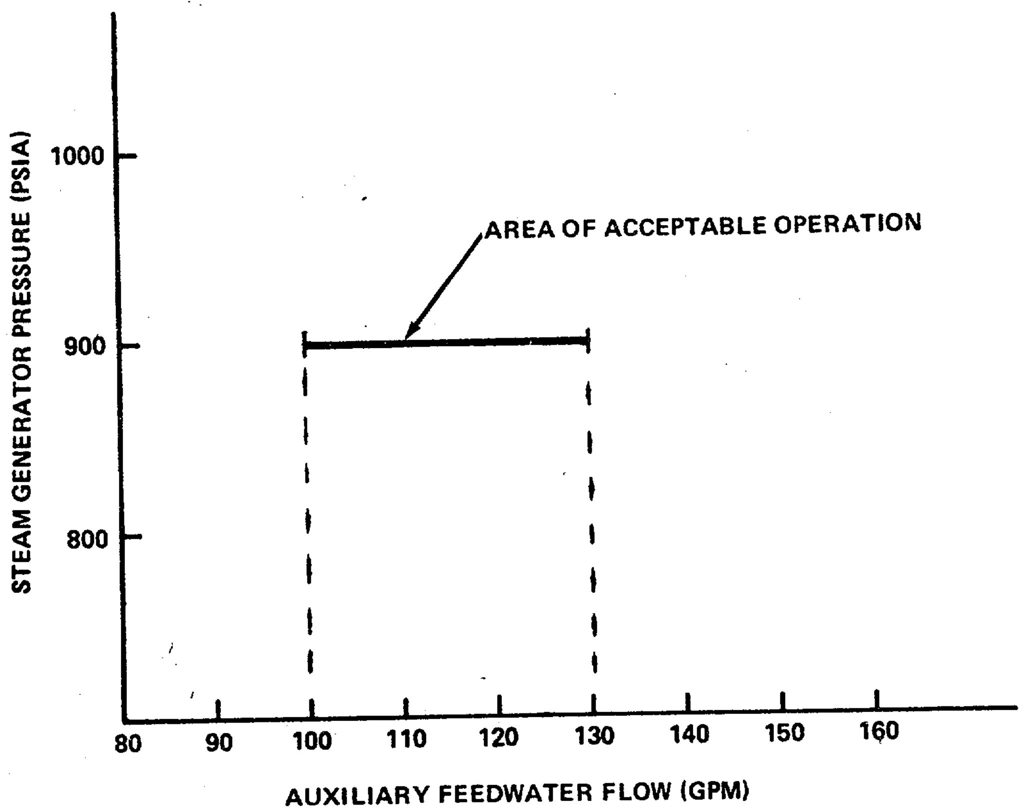

Figure 3.7-1
Steam Generator Pressure vs. Auxiliary Feedwater Flow

CONDENSATE STORAGE TANK

LIMITING CONDITION FOR OPERATION

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

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.

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 12.18×10^6 lbs/hr which is 108 percent of the total secondary steam flow of 11.23×10^6 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

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 (plus 12 gpm for instrument error) and a maximum flow of 142 gpm (minus 12 gpm for instrument error) 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. Figure 3.7-1 shows the allowable minimum and maximum flows.

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.

3/4.7.1.3 CONDENSATE STORAGE TANK

The OPERABILITY of the condensate storage tank with the minimum water volume ensures that sufficient water is available to maintain the RCS at HOT STANDBY conditions for 6 hours with steam discharge to atmosphere with concurrent and total loss of offsite power. The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

3/4.7.1.4 ACTIVITY

The limitations on secondary system specific activity ensure that the resultant off-site radiation dose will be limited to a small fraction of 10 CFR Part 100 limits in the event of a steam line rupture. This dose also includes the effects of a coincident 1.0 GPM primary to secondary tube leak in the steam generator of the affected steam line and a concurrent loss of offsite electrical power. These values are consistent with the assumptions used in the accident analyses.

3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVES

The OPERABILITY of the main steam line isolation valves ensures that no more than one steam generator will blowdown in the event of a steam line rupture. This restriction is required to 1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and 2) limit the pressure rise within containment in the event the steam line rupture occurs within containment. The OPERABILITY of the main steam isolation valves within the closure times of the surveillance requirements are consistent with the assumptions used in the accident analyses.

3/4.7.1.6 SECONDARY WATER CHEMISTRY

The secondary water chemistry program is designed to provide maximum protection to both the steam generator and secondary system internals. The most damaging chemical reactants enter the system via condenser cooling water ingress. Accumulation of these impurities in the steam generators may lead to loss of metallurgical integrity and/or eventual component failure. The limits presented in Table 3.7-3 are those prescribed by the NSSS supplier as "limited-operation" chemistry parameters and are consistent with the most recent industry standards. By routine monitoring of these parameters, plant personnel are able to rapidly detect and limit the duration of ingress of chemically detrimental species and thereby maintain steam generator tube integrity.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

The limitation on steam generator pressure and temperature ensures that the pressure induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations of 70°F and 200 psig are based on a steam generator RT_{NDT} of 50°F and are sufficient to prevent brittle fracture.

3/4.7.3 COMPONENT COOLING WATER SYSTEM

The OPERABILITY of the component cooling water system ensures that sufficient cooling capacity is available for continued operation of safety related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident analyses.

3/4.7.4 SERVICE WATER SYSTEM

The OPERABILITY of the service water system ensures that sufficient cooling capacity is available for continued operation of equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident analyses.

3/4.7.5 SALT WATER SYSTEM

The OPERABILITY of the salt water system ensures that sufficient cooling capacity is available for continued operation of equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident analyses.

3/4.7.6 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

The OPERABILITY of the control room emergency ventilation system ensures that 1) the ambient air temperature does not exceed the allowable temperature for continuous duty rating for the equipment and instrumentation cooled by this system and 2) the control room will remain habitable for operations personnel during and following all credible accident conditions. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less whole body, or its equivalent. This limitation is consistent with the requirements of General Design Criteria 10 of Appendix "A", 10 CFR 50.

3/4.7.7 ECCS PUMP ROOM EXHAUST AIR FILTRATION SYSTEM

The OPERABILITY of the ECCS pump room exhaust air filtration system ensures that radioactive materials leaking from the ECCS equipment within the pump room following a LOCA are filtered prior to reaching the

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

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-318

CALVERT CLIFFS NUCLEAR POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 49
License Nos. 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 December 21, 1981, 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.49 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective within 30 days after entering MODE 1, as defined by Technical Specification 1.4, following completion of the reload for operation during Cycle 5.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Clark

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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 8, 1982

ATTACHMENT TO LICENSE AMENDMENT NO. 49

FACILITY OPERATING LICENSE NO. DPR-69

DOCKET NO. 50-318

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. 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.

Pages

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

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.

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 area 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.

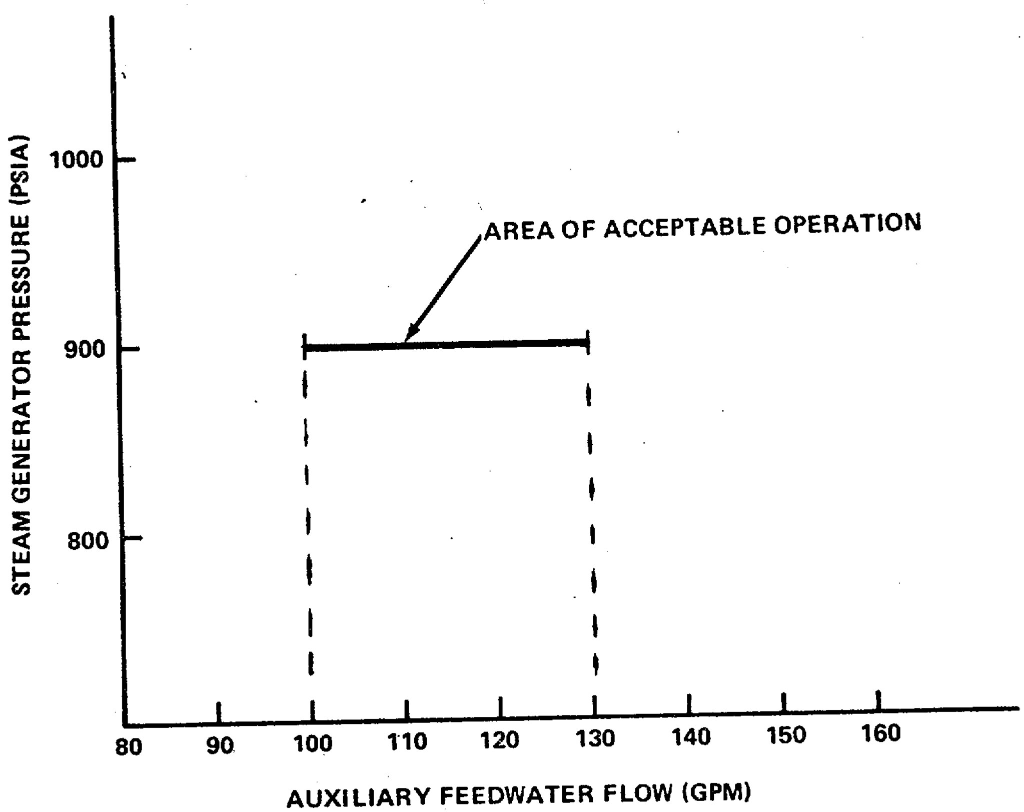

Figure 3.7-1
Steam Generator Pressure vs. Auxiliary Feedwater Flow

PLANT SYSTEMS

CONDENSATE STORAGE TANK

LIMITING CONDITION FOR OPERATION

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. 21 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

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. 21 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. 21 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 12.18×10^6 lbs/hr which is 108 percent of the total secondary steam flow of 11.23×10^6 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

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 (plus 12 gpm for instrument error) and a maximum flow of 142 gpm (minus 12 gpm for instrument error) 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. Figure 3.7-1 shows the allowable minimum and maximum flows.

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.

3/4.7.1.3 CONDENSATE STORAGE TANK

The OPERABILITY of the condensate storage tank with the minimum water volume ensures that sufficient water is available to maintain the RCS at HOT STANDBY conditions for 6 hours with steam discharge to atmosphere with concurrent and total loss of offsite power. The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

3/4.7.1.4 ACTIVITY

The limitations on secondary system specific activity ensure that the resultant off-site radiation dose will be limited to a small fraction of 10 CFR Part 100 limits in the event of a steam line rupture. This dose also includes the effects of a coincident 1.0 GPM primary to secondary tube leak in the steam generator of the affected steam line and a concurrent loss of offsite electrical power. These values are consistent with the assumptions used in the accident analyses.

3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVES

The OPERABILITY of the main steam line isolation valves ensures that no more than one steam generator will blowdown in the event of a steam line rupture. This restriction is required to 1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and 2) limit the pressure rise within containment in the event the steam line rupture occurs within containment. The OPERABILITY of the main steam isolation valves within the closure times of the surveillance requirements are consistent with the assumptions used in the accident analyses.

3/4.7.1.6 SECONDARY WATER CHEMISTRY

The secondary water chemistry program is designed to provide maximum protection to both the steam generator and secondary system internals. The most damaging chemical reactants enter the system via condenser cooling water ingress. Accumulation of these impurities in the steam generators may lead to loss of metallurgical integrity and/or eventual component failure. The limits presented in Table 3.7-3 are those prescribed by the NSSS supplier as "limited-operation" chemistry parameters and are consistent with the most recent industry standards. By routine monitoring of these parameters, plant personnel are able to rapidly detect and limit the duration of ingress of chemically detrimental species and thereby maintain steam generator tube integrity.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

The limitation on steam generator pressure and temperature ensures that the pressure induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations of 70°F and 200 psig are based on a steam generator RT_{NDT} of 50°F and are sufficient to prevent brittle fracture.

3/4.7.3 COMPONENT COOLING WATER SYSTEM

The OPERABILITY of the component cooling water system ensures that sufficient cooling capacity is available for continued operation of safety related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident analyses.

3/4.7.4 SERVICE WATER SYSTEM

The OPERABILITY of the service water system ensures that sufficient cooling capacity is available for continued operation of equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident analyses.

3/4.7.5 SALT WATER SYSTEM

The OPERABILITY of the salt water system ensures that sufficient cooling capacity is available for continued operation of equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident analyses.

3/4.7.6 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

The OPERABILITY of the control room emergency ventilation system ensures that 1) the ambient air temperature does not exceed the allowable temperature for continuous duty rating for the equipment and instrumentation cooled by this system and 2) the control room will remain habitable for operations personnel during and following all credible accident conditions. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less whole body, or its equivalent. This limitation is consistent with the requirements of General Design Criteria 10 of Appendix "A", 10 CFR 50.

3/4.7.7 ECCS PUMP ROOM EXHAUST AIR FILTRATION SYSTEM

The OPERABILITY of the ECCS pump room exhaust air filtration system ensures that radioactive materials leaking from the ECCS equipment within the pump room following a LOCA are filtered prior to reaching the

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NOS. 67 AND 49 TO

FACILITY OPERATING LICENSE NOS. DPR-53 AND DPR-69

BALTIMORE GAS AND ELECTRIC COMPANY

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-317 AND 50-318

Introduction

By application dated December 21, 1981, the Baltimore Gas and Electric Company (BG&E) requested changes to the Technical Specifications (TS) for Calvert Cliffs Units 1 and 2. The proposed changes to TS 3.7.1.2 and 4.7.1.2 would require operability and verification of the auxiliary feedwater system throttle valves. The application of December 21, 1981 was submitted in response to our letter of May 29, 1981.

Discussion and Evaluation

License Amendment 54 and 37 for Calvert Cliffs Units 1 and 2 provided augmented TS for operability and surveillance for the Calvert Cliffs Units 1 and 2 auxiliary feedwater (AFW) systems. Subsequent review of TS 3.7.1.2 and 4.7.1.2 indicated that no requirements existed for the operability, setting, and verification of the AFW throttle valves. By letter dated May 29, 1981, we requested that BG&E propose TS that would assure operability and proper setting of the AFW throttle valves. The BG&E application dated December 21, 1981 meets our requirements, in this regard.

As indicated in the December 21, 1981 BG&E application, an automatic AFW flow of between 88 gpm (plus 12 gpm for instrument error) and 142 gpm (minus 12 gpm for instrument error) provides an acceptable range of initial AFW flow to each steam generator at 900 psia. The lower limit of acceptable, automatic, AFW operation, 88 gpm, allows 20 minutes for the reactor operator to manually increase AFW flow to the desired value to maintain an adequate primary system heat sink, should AFW operation be required. The upper limit of acceptable, automatic, AFW operation, 142 gpm, allows 20 minutes for the reactor operator to terminate AFW operation should main feedwater be available; failure to terminate AFW operation, in this case, could lead to primary system overcooling and subsequent safety injection actuation. Based upon the above, it is appropriate to set the AFW throttle valves to deliver between 100 and 130 gpm per steam generator, at 900 psia and this requirement should be incorporated in the TS.

At the present time, TS 3.7.1.2 requires the operability of the AFW system and associated flow pathes. The BG&E application proposed that the automatic flow initiation feature, with throttle valves set between 100 and 130 gpm at 900 psia, also be required to be operable. Operability of this feature in Mode 3 (hot standby) is not proposed since under non-power conditions, the AFW need not be automatically initiated to maintain an adequate primary system heat sink. The Bases for TS 3.7.1.2 have been proposed for modification to relect the rationale for selection of AFW throttle valve settings.

In addition to the surveillance requirements of TS 4.7.1.2, BG&E has proposed two additional requirements. The 18 month AFW surveillance described in TS 4.7.1.2c would be augmented by adding proposed TS 4.7.1.2c.3 which requires verification of automatically initiated AFW flow to be between 100 and 130 gpm, per steam generator, at a steam pressure of 900 psia. In addition, TS 4.7.1.2d would be added to require verification of proper realignment of AFW throttle valve settings should these throttle valves be repositioned.

The requirements of TS 4.7.1.2d would not be applicable during MODE 3 since the automatic initiation features of the AFW is not required to be operable in MODE 3. It is our intent however, that the licensee realign the AFW throttle valves as soon as practicable following entry into MODE 2 (operation up to 5% power) if necessary.

Based upon our evaluation, we find that the proposed changes to the TS, and associated Bases, are acceptable. The TS, as amended, assure that the AFW throttle valves will be properly set such that sufficient time is permitted for the reactor operator to terminate AFW operation, or increase AFW flow, as required. In addition, the augmented surveillance requirements provide sufficient confidence that the AFW throttle valves will be properly adjusted and readjusted should their setting be altered. Accordingly, we conclude that the consequences of transients and accidents for which AFW operation is required, and for those transients and accidents for which AFW operation is not desirable, have not increased.

Environmental Consideration

We have determined that the amendments do 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 amendments involve 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 these amendments.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendments do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the amendments do 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 these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Date: February 8, 1982

Principal Contributor:

Dave Jaffe

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NOS. 50-317 AND 50-318

BALTIMORE GAS AND ELECTRIC COMPANY

NOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY OPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendments Nos. 67 and 49 to Facility Operating License Nos. DPR-53 and DPR-69 issued to the Baltimore Gas and Electric Company (the licensee), which revised Technical Specifications for operation of the Calvert Cliffs Nuclear Power Plant, Units Nos. 1 and 2 (the facility) located in Calvert County, Maryland. The amendments are effective within 30 days after entering MODE 1, as defined by Technical Specification 1.4, following completion of the reload for operation during Cycle 6 for Unit 1 and during Cycle 5 for Unit 2.

The amendments require operability and verification of the auxiliary feedwater system throttle valves.

The application for the amendments 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 amendments. Prior public notice of the amendments was not required since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of the amendments 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 amendments.

For further details with respect to this action, see (1) the application for amendment dated December 21, 1981, (2) Amendments Nos. 67 and 49 to License Nos. DPR-53 and DPR-69, 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 8th day of February, 1982.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Clark

Robert A. Clark, Chief
Operating Reactors Branch #3
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