

February 20, 1986

Docket Nos. 50-317  
and 50-318

Mr. J. A. Tiernan  
Vice President - Nuclear Energy  
Baltimore Gas & Electric Company  
P. O. Box 1475  
Baltimore, Maryland 21203

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Dear Mr. Tiernan:

The Commission has issued the enclosed Amendment Nos. 115 and 98 to Facility Operating License Nos. DPR-53 and DPR-69 for Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2. These amendments consist of changes to the Technical Specifications in response to your applications dated December 22, 1983 and March 26, 1984 as supplemented by your letters dated March 21, 1985 and August 9, 1985. This completes the action requested by your March 26, 1984 application. One item remains outstanding from your December 22, 1983 application and will be considered in a separate action.

The amendments revise provisions in the Technical Specifications (TS) to allow use of the 4-inch post-accident hydrogen purge line for containment purge during normal operation. The TS are changed as follows: (1) TS 3.6.1.8, "Containment Vent System," which requires the containment vent valves (MOV 6900 and 6901) to be closed during reactor operation will be deleted upon initial operability of the Containment Radiation Signal isolation input to motor operated valves (MOVs) 6900 and 6901; (2) the isolation times for MOVs 6900 and 6901 are decreased from less than or equal to 20 seconds to less than or equal to 15 seconds as required by TS 3.6.4.1, "Containment Isolation Valves"; (3) the notation at the end of TS Table 3.6-1, "Containment Isolation Valves", has been changed to reflect deletion of TS 3.6.1.8; and (4) a requirement has been added to TS Table 3.6-1 to limit the use of the containment vent valves to containment pressure control, containment radioactivity control, and surveillance purposes.

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A copy of the related Safety Evaluation and of the Notice of Issuance of Amendment are also enclosed. A copy of the Environmental Assessment related to this action was transmitted to you by letter dated December 31, 1985.

Sincerely,

/S/

David H. Jaffe, Project Manager  
PWR Project Directorate #8  
Division of PWR Licensing-B

Enclosures:

1. Amendment No. 115 to DPR-53
2. Amendment No. 98 to DPR-69
3. Safety Evaluation
4. Notice of Issuance

cc w/enclosures:

See next page

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PM Deutzer  
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D. Jaffe  
1/27/86

  
PBD#8  
ATHadani  
2/13/86

  
P.J. Gray  
2/18/86

Mr. J. A. Tiernan  
Baltimore Gas & Electric Company

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Annapolis, Maryland 21204



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. 115  
License No. DPR-53

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The applications for amendment by Baltimore Gas & Electric Company (the licensee) dated December 22, 1983 and March 26, 1984 as supplemented by letters dated March 21, 1985 and August 9, 1985, comply 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 applications, 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.

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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 Appendix A, as revised through Amendment No. 115, 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

  
Ashok C. Thadani, Director  
PWR Project Directorate #8  
Division of PWR Licensing-B

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: February 20, 1986

ATTACHMENT TO LICENSE AMENDMENT NO. 115

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 areas of change. The corresponding overleaf pages are provided to maintain document completeness.

Remove Pages

3/4 6-9e  
3/4 6-23  
3/4 6-25

Insert Pages

3/4 6-9e  
3/4 6-23  
3/4 6-25

CONTAINMENT SYSTEMS

CONTAINMENT PURGE SYSTEM

LIMITING CONDITION FOR OPERATION

---

3.6.1.7 The containment purge supply and exhaust isolation valves shall be closed by isolating air to the air operator and maintaining the solenoid air supply valve deenergized.

APPLICABILITY: MODES 1, 2, 3 and 4

ACTION:

- a. With one containment purge supply and/or one exhaust isolation valve open, close the open valve(s) within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one containment purge supply and/or one exhaust isolation valve inoperable due to high leakage, repair the valve(s) within 24 hours or be in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

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4.6.1.7 The 48-inch containment purge supply and exhaust isolation valves shall be determined closed at least once per 31 days, by verifying that power to the solenoid valve is removed.

CONTAINMENT SYSTEMS

CONTAINMENT VENT SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.8 The containment vent isolation valves MOV 6900 and MOV 6901 shall be maintained closed by tagging the motor power supply breakers open and maintaining the keyed hand switches locked in the closed position.\*

APPLICABILITY: MODES 1, 2, 3 and 4

ACTION:

With one or both containment vent isolation valves open, close the open valve(s) within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.8 The containment vent isolation valves shall be determined closed at least once per 31 days by verifying that power to the motor operators is removed and the valves indicate shut. \*

\*These requirements shall be deleted upon initial operability of the CRS isolation signal input to MOV 6900 and MOV 6901.

CALVERT CLIFFS - UNIT 1

3/4 6-23

Amendment No. 4/1, 8/8, 8/7, 115

TABLE 3.6-1 (Continued)  
CONTAINMENT ISOLATION VALVES

<u>PENETRATION NO.</u>	<u>ISOLATION CHANNEL</u>	<u>ISOLATION VALVE IDENTIFICATION NO.</u>	<u>FUNCTION</u>	<u>ISOLATION TIME (SECONDS)</u>
44	NA NA NA	FP-141-A FP-141-B FP-6200-MOV*	Fire Protection	NA NA NA
47A	NA NA	PS-6540A-SV* PS-6507A-SV*	Hydrogen Sample Outlet	NA NA
47B	NA NA	PS-6540E-SV* PS-6507E-SV*	Hydrogen Sample Outlet	NA NA
47C	NA NA	PS-6540F-SV* PS-6507F-SV*	Hydrogen Sample Outlet	NA NA
47D	NA NA	PS-6540G-SV* PS-6507G-SV*	Hydrogen Sample Return	NA NA
48A	SIAS-B SIAS-A	HP-6900-MOV (4) HP-6901-MOV (4)	Containment Vent Isolation	< 15 < 15

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

<u>PENETRATION NO.</u>	<u>ISOLATION CHANNEL</u>	<u>ISOLATION VALVE IDENTIFICATION NO.</u>	<u>FUNCTION</u>	<u>ISOLATION TIME (SECONDS)</u>
48B	NA NA	HP-104 HP-6903-MOV	Hydrogen Purge Inlet	NA NA
49A	NA NA	PS-6540B-SV* PS-6507B-SV*	Hydrogen Sample	NA NA
49B	NA NA	PS-6540C-SV* PS-6507C-SV*	Hydrogen Sample	NA NA
49C	NA NA	PS-6540D-SV* PS-6507D-SV*	Hydrogen Sample	NA NA
50	NA NA	Blind Flange Blind Flange	ILRT	NA NA
59	NA NA	SFP-170 SFP-171	Refueling Pool Inlet	NA NA
60	NA NA	ES-144 ES-142	Steam to Reactor Head Laydown	NA NA

TABLE 3.6-1 (Continued)  
CONTAINMENT ISOLATION VALVES

<u>PENETRATION NO.</u>	<u>ISOLATION CHANNEL</u>	<u>ISOLATION VALVE IDENTIFICATION NO.</u>	<u>FUNCTION</u>	<u>ISOLATION TIME (SECONDS)</u>
61	NA	SFP-176	Refueling Pool Outlet	NA
	NA	SFP-174		NA
	NA	SFP-172		NA
	NA	SFP-189		NA
62	SIAS A	PH-6579-MOV	Containment Heating Outlet	≤ 13
64	NA	PH-376	Containment Heating Outlet	NA

(1) Manual or remote manual valve which is closed during plant operation.

(2) May be opened below 300°F to establish shutdown cooling flow.

(3) Containment purge valves will be shut in MODES 1, 2, 3, and 4 per TS 3/4 6.1.7.

\* May be open on an intermittent basis under administrative control.

\*\* Containment purge isolation valves isolation times will only apply in MODE 6 when the valves are required to be OPERABLE and they are open. Isolation time for containment purge isolation valves is NA for MODES 1, 2, 3 and 4 per TS 3/4 6.1.7, during which time these valves must remain closed.

(4) Containment vent isolation valves shall be opened for containment pressure control, airborne radioactivity control, and surveillance testing purposes only.

CONTAINMENT SYSTEMS

3/4.6.5 COMBUSTIBLE GAS CONTROL

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

---

3.6.5.1 Two independent containment hydrogen analyzers shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

- a. With one hydrogen analyzer inoperable, restore the inoperable analyzer to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours.
- b. With both hydrogen analyzers inoperable, restore at least one inoperable analyzer to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

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4.6.5.1 Each hydrogen analyzer shall be demonstrated OPERABLE at least bi-weekly on a STAGGERED TEST BASIS by drawing a sample from the waste gas system through the hydrogen analyzer.

4.6.5.2 Each hydrogen analyzer shall be demonstrated OPERABLE at least once per 92 days on a STAGGERED TEST BASIS by performing a CHANNEL CALIBRATION using sample gases in accordance with manufacturers' recommendations.



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

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-318

CALVERT CLIFFS NUCLEAR POWER PLANT UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 98  
License No. DPR-69

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The applications for amendment by Baltimore Gas & Electric Company (the licensee) dated December 22, 1983 and March 26, 1984 as supplemented by letters dated March 21, 1985 and August 9, 1985, comply 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 applications, 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.

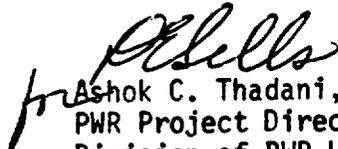
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.2 of Facility Operating License No. DPR-69 is hereby amended to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 98, 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

  
Ashok C. Thadani, Director  
PWR Project Directorate #8  
Division of PWR Licensing-B

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: February 20, 1986

ATTACHMENT TO LICENSE AMENDMENT NO. 98

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 areas of change. The corresponding overleaf pages are provided to maintain document completeness.

Remove Pages

3/4 6-9b  
3/4 6-23  
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Insert Pages

3/4 6-9b  
3/4 6-23  
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CONTAINMENT SYSTEMS

CONTAINMENT VENT SYSTEM

LIMITING CONDITION FOR OPERATION

---

3.6.1.8 The containment vent isolation valves MOV 6900 and MOV 6901 shall be maintained closed by tagging the motor power supply breakers open and maintaining the keyed hand switches locked in the closed position.\*

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one or both containment vent isolation valves open, close the open valve(s) within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

---

4.6.1.8 The containment vent isolation valves shall be determined closed at least once per 31 days by verifying that power to the motor operators is removed and the valves indicate shut.\*

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\* These requirements shall be deleted upon initial operability of the CRS isolation signal input to MOV 6900 and MOV 6901.

CALVERT CLIFFS - UNIT 2

3/4 6-23

Amendment No. 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

<u>PENETRATION NO.</u>	<u>ISOLATION CHANNEL</u>	<u>ISOLATION VALVE IDENTIFICATION NO.</u>	<u>FUNCTION</u>	<u>ISOLATION TIME (SECONDS)</u>
44	NA NA NA	FP-145-A FP-145-B FP-6200-MOV*	Fire Protection	NA NA NA
47A	NA NA	PS-6540A-SV* PS-6507A-SV*	Hydrogen Sample Outlet	NA NA
47B	NA NA	PS-6540E-SV* PS-6507E-SV*	Hydrogen Sample Outlet	NA NA
47C	NA NA	PS-6540F-SV* PS-6507F-SV*	Hydrogen Sample Outlet	NA NA
47D	NA NA	PS-6540G-SV* PS-6507G-SV*	Hydrogen Sample Return	NA NA
48A	SIAS A SIAS B	HP-6900-MOV (4) HP-6901-MOV (4)	Containment Vent Isolation	≤ 15 ≤ 15

CALVERT CLIFFS - UNIT 2

3/4 6-24

Amendment No. 1/1/78, 85

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

<u>PENETRATION NO.</u>	<u>ISOLATION CHANNEL</u>	<u>ISOLATION VALVE IDENTIFICATION NO.</u>	<u>FUNCTION</u>	<u>ISOLATION TIME (SECONDS)</u>
48B	NA NA	HP-104 HP-6903-MOV	Hydrogen Purge Inlet	NA NA
49A	NA NA	PS-6540B-SV* PS-6507B-SV*	Hydrogen Sample	NA NA
49B	NA NA	PS-6540C-SV* PS-6507C-SV*	Hydrogen Sample	NA NA
49C	NA NA	PS-6540D-SV* PS-6507D-SV*	Hydrogen Sample	NA NA
50	NA NA	Blind Flange Blind Flange	ILRT	NA NA
59	NA NA	SFP-178 SFP-179	Refueling Pool Inlet	NA NA
60	NA NA	ES-144 ES-142	Steam to Reactor Head Laydown	NA NA

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

<u>PENETRATION NO.</u>	<u>ISOLATION CHANNEL</u>	<u>ISOLATION VALVE IDENTIFICATION NO.</u>	<u>FUNCTION</u>	<u>ISOLATION TIME (SECONDS)</u>
61	NA	SFP-184	Refueling Pool Outlet	NA
	NA	SFP-182		NA
	NA	SFP-180		NA
	NA	SFP-186		NA
62	SIAS A	PH-6579-MOV	Containment Heating Outlet	≤13
64	NA	PH-387	Containment Heating Inlet	NA

3/4 6-25

- (1) Manual or remote manual valve which is closed during plant operation.
- (2) May be opened below 300°F to establish shutdown cooling flow.
- (3) Containment purge valves will be shut in MODES 1, 2, 3 and 4 per TS 3/4 6.1.7.
  - \* May be open on an intermittent basis under administrative control.
  - \*\* Containment purge isolation valves isolation times will only apply in MODE 6 when the valves are required to be OPERABLE and they are open. Isolation time for containment purge isolation valves is NA for MODES 1, 2, 3 and 4 per TS 3/4 6.1.7, during which time these valves must remain closed.
- (4) Containment vent isolation valves shall be opened for containment pressure control, airborne radioactivity control, and surveillance testing purposes only.

CONTAINMENT SYSTEMS

3/4.6.5 COMBUSTIBLE GAS CONTROL

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

---

3.6.5.1 Two independent containment hydrogen analyzers shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

- a. With one hydrogen analyzer inoperable, restore the inoperable analyzer to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours.
- b. With both hydrogen analyzers inoperable, restore at least one inoperable analyzer to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

---

4.6.5.1 Each hydrogen analyzer shall be demonstrated OPERABLE at least biweekly on a STAGGERED TEST BASIS by drawing a sample from the Waste Gas System through the hydrogen analyzer indicator.

4.6.5.2 Each hydrogen analyzer shall be demonstrated OPERABLE at least once per 92 days on a STAGGERED TEST BASIS by performing a CHANNEL CALIBRATION using sample gases in accordance with manufacturers' recommendations.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 115 AND 98

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 applications for license amendments dated December 22, 1983 and March 26, 1984, as supplemented by letters dated March 21, 1985 and August 9, 1985, Baltimore Gas and Electric Company (BG&E) requested changes to the Technical Specifications (TS) for Calvert Cliffs Units 1 and 2.

The proposed amendments would revise provisions in the TS to allow use of the 4-inch post-accident hydrogen purge line for containment purge during normal operation. The TS would be changed as follows: (1) TS 3.6.1.8, "Containment Vent System," which requires the containment vent valves (MOV 6900 and 6901) to be closed during reactor operation would be deleted upon initial operability of the Containment Radiation Signal isolation input to motor operated valves (MOVs) 6900 and 6901; (2) the isolation times for MOVs 6900 and 6901 would be decreased from less than or equal to 20 seconds to less than or equal to 15 seconds as required by TS 3.6.4.1, "Containment Isolation Valves;" (3) the notation at the end of TS Table 3.6-1, "Containment Isolation Valves," would be changed to reflect deletion of TS 3.6.1.8; and (4) a requirement would be added to TS Table 3.6-1 to limit the use of the containment vent valves to containment pressure control, containment radioactivity control, and surveillance purposes.

System Description

The hydrogen purge system is described in Section 6.8.3, "Hydrogen Purge System," of the Calvert Cliffs Final Safety Analysis Report (FSAR). The hydrogen purge system piping was designed and installed per ASME Nuclear Class 2, seismic Category 1. It consists of a 4-inch schedule 40 pipe, running from inside containment through the containment penetration and leading to the penetration room exhaust system. Inside containment, the line contains a moisture separator (with fixed blades) and an automatic isolation valve, MOV-6900. Outside containment, the line contains an automatic isolation valve, MOV-6901 and a flow meter. At the flow meter, the line reduces to a 2-inch diameter.

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The penetration room exhaust system, which discharges to the plant vent, is seismic Category 1 and uses continuously welded duct, drawing air from the penetration rooms and the hydrogen purge system. All of the components in this system are qualified to operate under post loss-of-coolant accident (LOCA) environmental conditions. High efficiency particulate, roughing, and charcoal filters are provided in the system. The following changes to the hydrogen purge system have been made, or will be made, to make the system suitable for use as an operational containment purge path:

- Remove line restriction - At the present time, BG&E plans to remove the 2-inch restriction at the flow meter, outside containment, and install 4-inch pipe and a new flow meter. This modification does not impact any analyses considered herein and thus completion of this modification is not required for operability of the proposed containment vent path.
- Install additional isolation signal - The automatic isolation valves MOVs 6900 and 6901 are closed on a Safety Injection Actuation Signal (SIAS). BG&E will modify the valve isolation logic for MOVs 6900 and 6901 to add an additional isolation signal which will result in the valves closing on a high containment radiation signal. This modification has been completed for Calvert Cliffs Unit 2.

Upon completion of the modification to the automatic valve isolation logic and receipt of permitting TS, BG&E will use the hydrogen purge system, redesignated as a containment vent, for operational control of containment pressure and airborne radiation. The containment vent would still be available as a hydrogen purge path although the hydrogen recombiners represent the primary post-accident hydrogen control capability.

#### Evaluation of Valve Operability During a Loss-of-Coolant Accident (LOCA)

Demonstration of operability of MOVs 6900 and 6901, particularly the ability of these valves to close during a design basis accident, is necessary to assure containment isolation. This demonstration of operability is required by Branch Technical Position (BTP) CSB 6-4 and SRP 3-10 for containment purge and vent valves which are not sealed closed during reactor operation.

The valves identified as the containment isolation valves in the Containment Vent System are as follows:

<u>Valve Tag Number</u>	<u>Valve Size (Inches)</u>	<u>Operator</u>	<u>Valve Location</u>
1-MOV6900	4	Limitorque	Inside Containment
1-MOV6901	4	Limitorque	Outside Containment
2-MOV6900	4	Limitorque	Inside Containment
2-MOV6901	4	Limitorque	Outside Containment

The valves listed above are 4-inch gate valves manufactured by the Velan Engineering Company equipped with Limitorque SMB-00-5 operators and used for venting containment.

BG&E has provided operability demonstration information for MOVs 6900 and 6901 in their letters dated December 22, 1983, October 5, 1984, and April 8, 1985.

BG&E states in their April 8, 1985 letter that the values for maximum pressure resulting from a LOCA range from 41.5 psig (at  $t = 8$  seconds,  $19.0 \text{ ft}^2$  break area) to 47.5 psig (at  $t = 45$  seconds,  $2.0 \text{ ft}^2$  break area). The maximum pressure resulting from a main steam line break is 49.2 psig (at  $t = 65$  seconds). The valves will close within 25 seconds, assuming a pipe break coincident with a loss of offsite power. Thus, the maximum pressure acting against the closing valve will be approximately 45 psig, considering all pipe break cases.

Velan Valve Corporation test results are provided for valve closure and opening against a 60 psi differential pressure. Velan Valve Corporation seismic stress analysis BB4-600 GL-300 describes the methodology used in the analysis and the combined load conditions assumed.

The licensee has demonstrated the ability of the 4-inch gate valves to close against a pressure differential of 50 psi with the performance test results provided by the Velan Valve Corporation. The 60 psi differential test pressure provides adequate torque margin since the peak LOCA containment pressure assumed is 45 psi for a 25-second valve closure time. Actual valve closure time during the Velan test was under 10 seconds. The tests also demonstrate that the torque absorption rating of the operators is not exceeded.

The stress analysis for the 4-inch valve critical parts and interfacing hardware furnished as an attachment to the BG&E April 8, 1985 submittal assumes a combination of seismic forces, differential pressure, stem thrust and torque, and gland packing friction loads. Calculated stresses are compared to the ASME Boiler and Pressure Vessel Code allowable stresses and are shown to be less than the allowable stresses for parts analyzed. The staff finds the methodology used and the results summarized acceptable.

Based upon the above, the staff concludes that, in the event of a design basis LOCA, MOVs 6900 and 6901 will maintain a degree of operability that is sufficient to assure containment integrity.

#### Electrical Override/Bypass Design Evaluation

By letter dated February 25, 1980, the NRC issued criteria to BG&E regarding electrical override/bypass for use in the NRC review of purge valves. The following criteria were contained in the February 25, 1980 letter:

- o The overriding of one type of safety actuation signal (e.g., radiation) should not cause the blocking of any other type of safety actuation signal (e.g., pressure) to the isolation valves.

The following definitions are given for clarity of use in this issue: Override - the signal is still present, and it is blocked in order to perform a function contrary to the signal; Reset - the signal has come and gone, and the circuit is being cleared to return to the normal condition.

- Sufficient physical features (e.g., key lock switches) should be provided to facilitate adequate administrative controls.
- The system-level annunciation of the overridden status should be provided for every safety system impacted when an override is active.
- At least two diverse signals should be provided to initiate isolation of the containment ventilation system. Specifically, containment high radiation, safety injection actuation, and/or containment high pressure should automatically initiate containment isolation.
- The instrumentation and control systems provided to initiate containment isolation should be designed and qualified as safety-grade equipment.
- The overriding or resetting of the isolation actuation signal should not cause the automatic reopening of any isolation/purge valve.

By letter dated November 15, 1985, BG&E responded to our letter of February 25, 1980 as the above criteria are applicable to MOVs 6900 and 6901. Based upon the staff's review of BG&E's letter of November 15, 1985, it concludes that MOVs 6900 and 6901 meet the intent of the requirements regarding electrical override and bypass for containment purge and vent valves.

#### Isolation Signal Evaluation

NUREG-0737, "Clarification of TMI Action Plan Requirements," Item II.E.4.2 requires, in part, that containment isolation systems conform to Standard Review Plan (SRP) 6.2.4 with regard to diversity of containment isolation signals. The requirements in SRP 6.2.4 regarding containment isolation signals are contained in Sections II.6.1 and II.6.m as follows:

1. There should be diversity in the parameters sensed for the initiation of containment isolation to satisfy the requirement of General Design Criterion 54 for reliable isolation capability.
- m. To improve the reliability of the isolation function, which is addressed in General Design Criterion 54, system lines which provide an open path from the containment to the environs (e.g., purge and vent lines which are addressed in Item II.E.4.2 of NUREG-0737 and NUREG-0718) should be equipped with radiation monitors that are capable of isolating these lines upon a high radiation signal. A high radiation signal should not be considered one of the diverse containment isolation parameters.

With regard to item "1" above, MOVs 6900 and 6901 are automatically isolated on a SIAS signal. As indicated in Calvert Cliffs FSAR Section 7.3.2.2, "Actuation Subsystems", a SIAS is generated as a result of either two-out-of-four pressurizer sensor channel trip signals (pressurizer pressure-low), two-out-of-four containment pressure sensor channel trip signals (containment pressure-high) or manual initiation from the control room. Based upon the above, the staff concludes that the isolation signals for MOVs 6900 and 6901 have sufficient diversity.

As indicated previously, a containment radiation signal (CRS) will be, or has been, added to the isolation logic for MOVs 6900 and 6901. Since the staff believes that incorporation of the CRS signal in the valve isolation logic adds a substantial margin of safety to assure prompt valve closure, a condition will appear in the TS to prohibit use of the containment vent, during operation, until the CRS modification is complete. Based upon the above, the staff concludes that provisions for the isolation of MOVs 6900 and 6901 on high radiation, in containment, are adequate.

### Technical Specifications

BG&E has requested several changes to the TS in order to utilize the proposed containment vent path during reactor operation. The most significant change involves the proposed deletion of TS 3/4 6.1.8 upon completion of the CRS modification. At the present time, TS 3/4.6.1.8 requires MOVs 6900 and 6901 to remain closed and isolated during reactor operation.

BG&E, in their letter of August 9, 1985, has provided an analysis of the consequences of a design basis LOCA initiated with MOVs 6900 and 6901 in the open position. The LOCA-while-venting accident analysis was performed assuming a 30-second release period commencing at time = 0. This analysis considered realistic flow losses due to pipe friction, elbows, valves and the moisture separator. The resultant site boundary doses were 30.9 rem thyroid and 0.8 rem whole body. When these doses are added to the original calculations of LOCA site boundary doses (Chapter 14 of the Updated FSAR), the total doses are 124.9 rem thyroid and 3.0 rem whole body. These results show substantial margin to the 25 rem whole body and 300 rem thyroid limits of 10 CFR Part 100, Section 100.11. The NRC staff has reviewed the referenced BG&E calculation and concludes that the calculation is suitably conservative and the results are acceptable. Accordingly, the staff further concludes that the requirements of TS 3/4.6.1.8 should be deleted upon completion of the CRS modification; the following footnote will appear in the TS as proposed by the licensee: "These requirements shall be deleted upon initial operability of the CRS isolation input to MOV-6900 and MOV-6901."

BG&E has proposed that the required isolation time for MOVs 6900 and 6901, as contained in TS Table 3.6-1, be reduced from (less than or equal to) 20 seconds to (less than or equal to) 15 seconds. The NRC staff has reviewed BG&E's selection of a valve closure time of 15 seconds and agrees that it is consistent with the overall closure response time of 30 seconds assumed in the analysis as follows: 2.4 seconds for containment pressure buildup, instrument response and SIAS delay, 10 seconds for emergency diesel generator startup, and 15 seconds for valve stroke time. An additional margin of 2.6 seconds is included for conservatism/margin. Accordingly, the staff concludes that the proposed change to TS Table 3.6.-1 is acceptable.

BG&E has proposed the following restriction on use of the containment vent to be incorporated in TS Table 3.6-1:

"(4) Containment vent isolation valves shall be opened for containment pressure control, airborne radioactivity control, and surveillance testing purposes only."

This proposed change to the TS is consistent with the NRC staff position on containment venting, as stated in our letter to BG&E of April 22, 1985, and is acceptable.

Finally, BG&E has proposed the deletion of wording in TS Table 3.6-1 that requires MOVs 6900 and 6901 to remain closed during reactor operation per TS 3/4.6.1.8. This wording can be deleted since TS 3/4.6.1.8 will remain in effect until completion of the CRS modification. Accordingly, the proposed change to TS Table 3.6-1 is acceptable.

#### Environmental Consideration

The NRC staff has evaluated the environmental consequences of normal and accidental releases of effluents as a result of utilizing the containment vent. An Environmental Assessment and Finding of No Significant Impact, associated with this action, was published in the Federal Register on January 8, 1986 (51 FR 791).

#### Conclusion

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Date: February 20, 1986

#### Principal Contributors:

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U. S. NUCLEAR REGULATORY COMMISSION  
BALTIMORE GAS AND ELECTRIC COMPANY  
DOCKET NOS. 50-317 AND 50-318  
NOTICE OF ISSUANCE OF AMENDMENTS TO  
FACILITY OPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment Nos. 115 and 98 to Facility Operating License Nos. DPR-53 and DPR-69, issued to Baltimore Gas and Electric Company (the licensee), which revised the Technical Specifications for operation of the Calvert Cliffs Nuclear Power Plant, Units 1 and 2 (the facility), located in Calvert County, Maryland. The amendments were effective as of the date of their issuance.

The amendments revise provisions in the Technical Specifications (TS) to allow use of the 4-inch post-accident hydrogen purge line for containment purge during normal operation. The TS are changed as follows: (1) TS 3.6.1.8, "Containment Vent System," which requires the containment vent valves (MOV 6900 and 6901) to be closed during reactor operation will be deleted upon initial operability of the Containment Radiation Signal isolation input to motor operated valves (MOVs) 6900 and 6901; (2) the isolation times for MOVs 6900 and 6901 are decreased from less than or equal to 20 seconds to less than or equal to 15 seconds as required by TS 3.6.4.1, "Containment Isolation Valves"; (3) the notation at the end of TS Table 3.6-1, "Containment Isolation Valves," has been changed to reflect deletion of TS 3.6.1.8; and (4) a requirement has been added to TS Table 3.6-1 to limit the use of the containment vent valves to containment pressure control, containment radioactivity control, and surveillance purposes.

The applications for the amendments comply 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.

Notice of Consideration of Issuance of Amendments and Opportunity for Prior Hearing in connection with this action was published in the FEDERAL REGISTER on March 11, 1985 (50 FR 9733) and December 13, 1985 (50 FR 50973). No request for a hearing or petition for leave to intervene was filed following this notice.

The Commission has prepared an Environmental Assessment and Finding of No Significant Impact related to the action and has concluded that an environmental impact statement is not warranted because there will be no environmental impact attributable to the action significantly beyond that which has been predicted and described in the Commission's Final Environmental Statement for the facility dated April 1973.

For further details with respect to the action see (1) the applications for amendments dated December 22, 1983 and March 26, 1984, (2) Amendment Nos. 115 and 98 to Facility Operating License Nos. DPR-53 and DPR-69, (3) the Commission's related Safety Evaluation dated February 20, 1986, and (4) the Environmental Assessment dated December 31, 1985. 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), (3) and (4) may be obtained

upon request addressed to the U. S. Nuclear Regulatory Commission,  
Washington, D. C. 20555, Attention: Director, Division of PWR Licensing-B.  
Dated at Bethesda, Maryland, this 20th day of February, 1986.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Donald E. Sells, Acting Director  
PWR Project Directorate #8  
Division of PWR Licensing-B