



1650 CALVERT CLIFFS PARKWAY • LUSBY, MARYLAND 20657-4702

ROBERT E. DENTON  
VICE PRESIDENT  
NUCLEAR ENERGY  
(410) 260-4455

April 1, 1993

U. S. Nuclear Regulatory Commission  
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant  
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318  
License Amendment Request; Boric Acid Sources and Flowpaths

REFERENCES:

- (a) Letter from Mr. A. E. Lundvall, Jr. (BG&E) to Mr. J. R. Miller (NRC), dated February 22, 1985, Request for Amendment - Unit 1
- (b) Letter from Mr. A. E. Lundvall, Jr. (BG&E) to Mr. J. R. Miller (NRC), dated April 10, 1985, Request for Amendment - Unit 2
- (c) Letter from Mr. D. H. Jaffe (NRC) to Mr. A. E. Lundvall, Jr. (BG&E), dated May 20, 1985, Issuance of Amendment No. 104 for Unit 1
- (d) Letter from Mr. D. H. Jaffe (NRC) to Mr. A. E. Lundvall, Jr. (BG&E), dated August 30, 1985, Issuance of Amendment No. 89 for Unit 2

Gentlemen:

Pursuant to 10 CFR 50.90, the Baltimore Gas and Electric Company (BG&E) hereby requests an Amendment to Operating License Nos. DPR-53 and DPR-69 by the incorporation of the changes described below into the Technical Specifications for Calvert Cliffs Unit Nos. 1 and 2.

#### DESCRIPTION

The proposed amendment would revise the Technical Specifications for Units 1 and 2 to clarify the combination of borated water sources and flowpaths required in Mode 1 above 80% of Rated Thermal Power to mitigate a small break loss-of-coolant-accident (SBLOCA) and the combinations required in Modes 1 through 4 to provide emergency boration. The proposed amendment clarifies the existing requirements and will have the effect of eliminating combinations of water sources and flowpaths which do not meet the single-failure criterion and operator response time requirements for SBLOCAs. Therefore, this change is administrative in nature in that no requirements are modified and the intent of the Technical Specifications is preserved.

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This change is plant-specific as it pertains to how Calvert Cliffs uses charging pump flow for additional flow to mitigate a SBLOCA. The change does not conform to the Combustion Engineering Standard Technical Specifications (NUREG-0212, Revision 2 or NUREG-1432), nor is it generic to the industry.

## **BACKGROUND**

The Chemical Volume and Control System (CVCS) is designed to control the reactor coolant volume, regulate reactor coolant chemistry and maintain reactor coolant radioactivity at the desired levels. The boron concentration of the reactor coolant is controlled by the CVCS to optimize the position of the control element assemblies, compensate for reactivity changes caused by variations in the temperature of the reactor coolant and by core burnup, and to provide shutdown margin for maintenance, refueling or emergencies. The portion of the CVCS known as the Boration System consists of a batching tank for preparing boric acid solution, two tanks for storing the solution, and two pumps and two gravity feed lines for supplying boric acid solution to the makeup system. The Refueling Water Tank (RWT) also provides a source of borated water. (See Attachment 1 for a simplified diagram of the Boration System.)

The ability to inject borated water into the Reactor Coolant System ensures that negative reactivity control is available during each Mode of operation. Currently, the Boration System Technical Specifications are written to meet the requirements for providing emergency boration and the requirements for mitigating a SBLOCA. For emergency boration purposes, the Boration System is required to maintain a minimum 3.0% delta k/k Shutdown Margin from all operating conditions during xenon decay and cooldown to 200°F. The requirement for providing emergency boration capability in Modes 1 through 4 can be accomplished by having two of the three borated water sources operable.

Reference (a) revised the SBLOCA analysis to support Unit 1 Cycle 8 and submitted revised Technical Specifications to reflect the analysis assumptions. The analysis assumed a reduction in high pressure safety injection (HPSI) flow capacity which was compensated for by crediting flow from one charging pump. Charging pump flow was required when operating in Mode 1 above 80% of Rated Thermal Power.

As a result of this change in the SBLOCA analysis, the Technical Specifications for the Boration System were modified to ensure charging pump flow availability when operating above 80% of Rated Thermal Power. The same revisions to the Unit 2 Technical Specifications were submitted in Reference (b). References (c) and (d) transmitted NRC approval of the changes to the SBLOCA analysis and the corresponding Technical Specification changes for Unit Nos. 1 & 2, respectively.

The current Technical Specifications for Borated Water Sources and Flowpaths (which are applicable above 80% of Rated Thermal Power) combine the requirements for providing emergency boration and the requirements for mitigating a SBLOCA. These Technical Specifications allow combinations of sources and flowpaths which may not meet the single failure criterion and the time response requirement of the Emergency Core Cooling System (ECCS) to provide charging pump flow in response to a SBLOCA. Technical Specification 3.1.2.8 requires both of the two Boric Acid Storage Tanks (BAST) or a combination of BAST 12 (22) and the RWT to be operable in Mode 1 above 80% of Rated Thermal Power. This requirement ensures that a borated water source is available to the charging pumps following a Safety Injection Actuation Signal (SIAS) despite any single active failure.

Technical Specification 3.1.2.2 and 3.1.2.8 could be interpreted such that there are combinations of sources and flowpaths that do not have independent power supplies and would also allow the RWT to be credited as a source of borated water for responding to a SBLOCA. The RWT was not credited as a safety injection source in the SBLOCA analysis because the valve from the RWT to the charging header requires operator action to open. Calvert Cliffs analysis does not credit operator action in the first ten minutes of an accident. Therefore, the RWT cannot be a source of borated water to supply the charging flow required to mitigate a SBLOCA. The RWT is, however, an acceptable source of borated water for emergency boration purposes.

The Boration System Technical Specifications need clarification to eliminate misinterpretation which could result in combinations of sources and flowpaths which do not meet single failure criteria and which could credit the RWT as a source of borated water to mitigate a SBLOCA.

#### REQUESTED CHANGE

The requested Technical Specification changes will clarify the borated water source and flowpath requirements above 80% of Rated Thermal Power. The changes will also distinguish between the requirements for providing emergency boration capability and the requirements for mitigating a SBLOCA.

Change Specifications 3.1.2.6, 3.1.2.8, and 3.1.2.9 of the Unit 1 and Unit 2 Technical Specifications as shown on the marked-up pages attached to this transmittal. These changes to the Technical Specifications include the following items:

1. For clarification, modify Limiting Condition for Operation (LCO) 3.1.2.6, Boric Acid Pumps - Operating, to include a reference to LCO 3.1.2.8, Charging Pump ECCS Subsystem.
2. For clarification, modify Technical Specification 3.1.2.8 so that it only contains the requirements which need to be met to mitigate the SBLOCA. This LCO will continue to be applicable in Mode 1 > 80 % of Rated Thermal Power. The requirements for providing emergency boration capability are moved to Technical Specification 3.1.2.9, Borated Water Sources - Operating.
3. Remove the footnote which makes LCO 3.1.2.9 applicable in Mode 1  $\leq$  80% of Rated Thermal Power. This LCO will now be applicable in Modes 1 through 4 and will provide the requirements needed for emergency boration purposes.

Bases changes are also included to support the requested changes to the Technical Specifications.

#### SAFETY ANALYSIS

The ability to inject boron into the reactor coolant ensures that negative reactivity control is available during each Mode of operation and during transient conditions. The Boration System Technical Specifications are written to meet the requirements for providing emergency boration and the requirements for mitigating a SBLOCA. The proposed changes are administrative in nature and will clarify changes which were previously made to credit charging pump flow during a SBLOCA when operating above 80% of Rated Thermal Power.

The proposed change will revise the Technical Specifications for the Boration System so that the requirements for providing emergency boration and the requirements for mitigating a SBLOCA will be separated. This is an administrative change which does not affect the safety functions of the Boration System. The change does not add, revise or delete any of the existing requirements. The Boration System will still provide emergency boration in Modes 1 through 4 and will still provide charging in Mode 1 > 80% of Rated Thermal Power. The change will ensure that the appropriate Boration System lineups are operable during the applicable Mode of operation.

#### DETERMINATION OF SIGNIFICANT HAZARDS

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

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

The Boration System provides borated water to the Reactor Coolant System to ensure that negative reactivity control is available during each Mode of Operation and during transient conditions. The current Technical Specifications combine the requirements for providing emergency boration and for mitigating a small break loss-of-coolant (SBLOCA). The proposed change will separate the requirements for emergency boration from those for a SBLOCA. The change does not add, revise, or delete any of the existing requirements, nor does it affect the safety function of the Boration System.

Separating the Boration System Technical Specifications to distinguish between the requirements for emergency boration purposes and the requirements to mitigate a SBLOCA will have no effect on the probability of an accident previously evaluated. These changes are administrative in nature and only clarify the existing requirements.

The proposed changes to the Boration System Technical Specifications will have no effect on the consequences of an accident previously evaluated. They will clarify the alignment of systems currently required to be operable. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

The proposed changes to the Boration System Technical Specifications are administrative in nature and, therefore, do not represent a significant change in the configuration or operation of the plant. Specifically, no new hardware is being added to the plant as part of the proposed change, no existing equipment is being modified, nor are any different types of operations being introduced. The proposed change will only clarify existing Technical Specifications. Therefore, this change would not create the possibility of a new or different type of accident from any accident previously evaluated.



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

The proposed changes to the Boration System Technical Specifications are administrative in nature and, as such, will maintain the existing margin of safety. Clarifying these Technical Specifications will distinguish between what borated water sources and flowpaths are required for emergency boration purposes and which ones are required to mitigate a SBLOCA. Therefore, the proposed change would not involve a significant reduction in the margin of safety.

#### ENVIRONMENTAL ASSESSMENT

The proposed amendment changes requirements with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes an inspection or surveillance requirement. We have determined that the proposed amendment involves no significant hazards consideration, and that operation with the proposed amendment would result in no significant change in the types or significant increases in the amounts of any effluents that may be released offsite, and in no significant increase in individual or cumulative occupational radiation exposure. Therefore, the proposed amendment is eligible for categorical exclusion as set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment is needed in connection with the approval of this amendment.

#### SCHEDULE

These changes are requested to be approved and issued by October 1, 1993. However, issuance of this amendment is not currently identified as having an impact on outage completion or continued plant operation.

#### SAFETY COMMITTEE REVIEW

The proposed changes to the Technical Specifications and our Determination of Significant Hazards have been reviewed by our Plant Operations and Safety Review Committee and Off-Site Safety Review Committee. They have concluded that implementation of these changes will not result in an undue risk to the health and safety of the public.

Should you have any questions regarding this matter, we will be pleased to discuss them with you.

Very truly yours,

*[Signature]*

STATE OF MARYLAND :  
COUNTY OF CALVERT : TO WIT :

I hereby certify that on the 1st day of April, 1993, before me, the subscriber, a Notary Public of the State of Maryland in and for Calvert County, personally appeared Robert E. Denton, being duly sworn, and states that he is Vice President of the Baltimore Gas and Electric Company, a corporation of the State of Maryland; that he provides the foregoing response for the purposes therein set forth; that the statements made are true and correct to the best of his knowledge, information, and belief; and that he was authorized to provide the response on behalf of said Corporation.

WITNESS my Hand and Notarial Seal:

Donna L. McCreedy  
Notary Public

My Commission Expires: \_\_\_\_\_

January 1, 1994  
Date

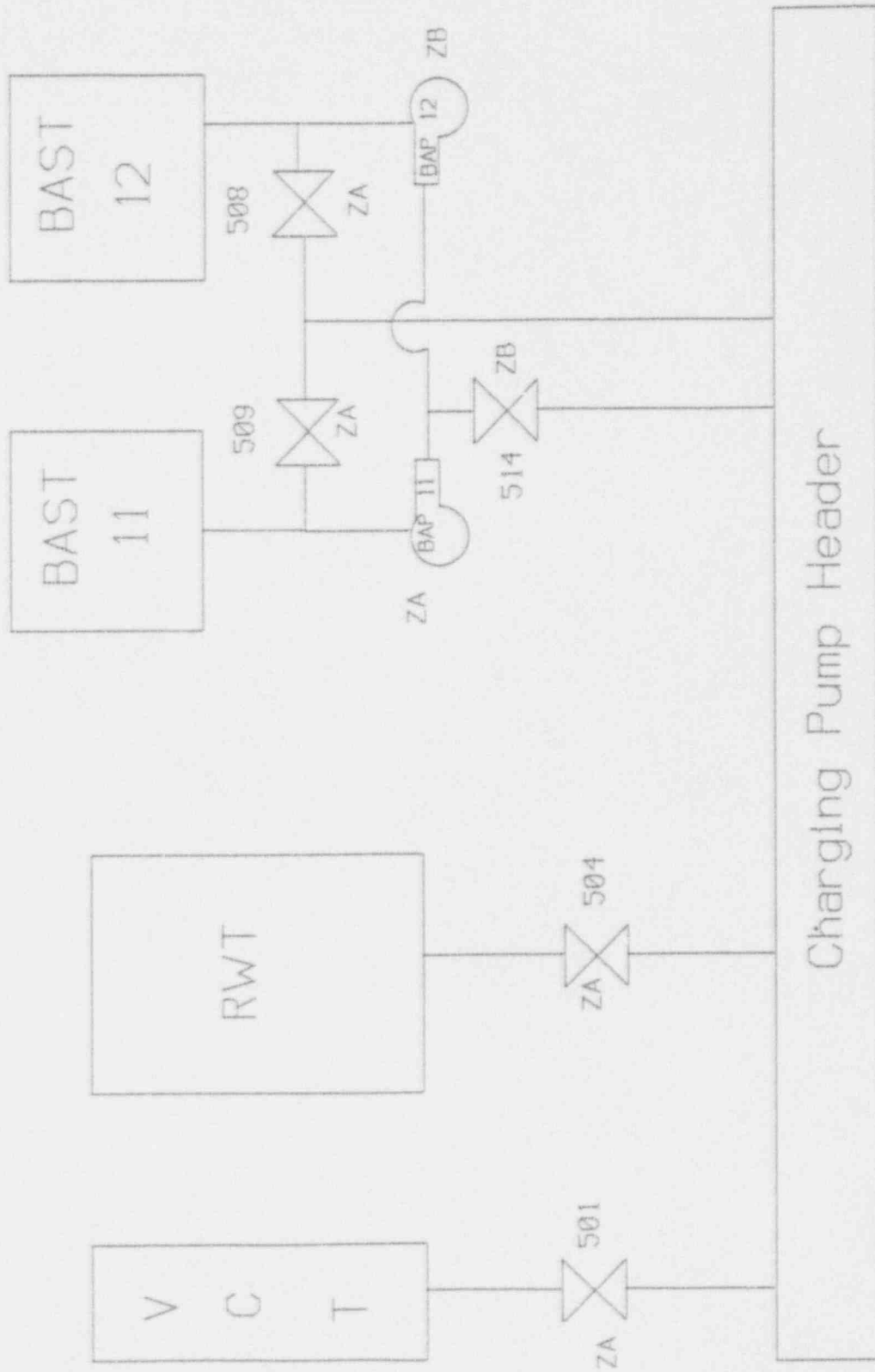
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Attachments: (1) Boration System  
(2) Unit 1 Technical Specification Pages  
(3) Unit 2 Technical Specification Pages

cc: D. A. Brune, Esquire  
J. E. Silberg, Esquire  
R. A. Capra, NRC  
D. G. McDonald, Jr., NRC  
T. T. Martin, NRC  
P. R. Wilson, NRC  
R. I. McLean, DNR  
J. H. Walter, PSC

# ATTACHMENT (1)

## BORATION SYSTEM



### LEGEND

BAST	-	Boric Acid Storage Tank
BAP	-	Boric Acid Pumps
RWT	-	Refueling Water Tank
VCT	-	Volume Control Tank
ZA	-	"A" Train Power
ZB	-	"B" Train Power