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August 2, 1994



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; Clarification of Actions to Restore Refueling
Shutdown Margin

Pursuant to 10 CFR 50.90, the Baltimore Gas and Electric Company 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

Technical Specification 3.9.1, "Refueling Operations, Boron Concentration", provides actions to be taken if the Reactor Coolant System (RCS) boron concentration falls below its limit. This Action statement needs clarification when the required refueling boron concentration is greater than 2300 ppm. In addition, Technical Specification 3.1.2.7, "Borated Water Sources - Shutdown," could be construed to allow the Mode 6 Refueling Water Tank boron concentration to be less than that required to restore the RCS boron concentration to its limit by the Action statement of Specification 3.9.1. This proposed license amendment will revise the Action of Technical Specification 3.9.1 and the requirements of Technical Specification 3.1.2.7 to clarify the requirements when the required refueling boron concentration is greater than 2300 ppm.

BACKGROUND

During refueling operations (e.g., Mode 6), Calvert Cliffs Technical Specification 3.9.1, "Refueling Operations - Boron Concentration," requires that the boron concentration of all filled portions of the RCS and the refueling pool be sufficient to maintain $k_{\text{eff}} \leq 0.95$. The boron concentration necessary to achieve this core reactivity is specified in the Core Operating Limits Report. This amount of shutdown margin is sufficient to ensure that the core will remain subcritical during core alterations and anticipated accidents. In the event that the boron concentration falls below the required concentration, the Action of

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Specification 3.9.1 requires that core alterations or positive reactivity changes be immediately ceased, and that boration ≥ 40 gpm of 2300 ppm boric acid, or its equivalent, be continued until the boron concentration is within its limit. (Forty gpm is the flow rate of one charging pump. The 2300 ppm value came from an earlier version of the Specification that required that the boron concentration be the greater of 2300 ppm or the concentration required to maintain a $k_{\text{eff}} \leq 0.95$.) If the boron concentration limit is greater than 2300 ppm, it is obvious that borating at 2300 ppm will not restore the required concentration. The operator must interpret the "or its equivalent" phrase in the Action to require boration at a higher concentration in order to restore the required refueling boron concentration.

Baltimore Gas and Electric Company expects higher capacity factors at Calvert Cliffs in the future, and reload cores may routinely require a shutdown boron concentration greater than 2300 ppm. Therefore, we propose to revise the Action of Specification 3.9.1 to eliminate a specific flow rate and boron concentration and, instead, require immediate boration until the boron concentration is restored within its limit. The proposed Action is the same as that in the corresponding Technical Specification in NUREG-1432, Standard Technical Specifications for Combustion Engineering Plants, September 1992.

Specification 3.1.2.7, "Borated Water Sources - Shutdown," gives the operability requirements for borated water sources including the Refueling Water Tank (RWT), in Modes 5 and 6. It specifies minimum water volume, minimum temperature, and minimum boron concentration. The minimum boron concentration is given as 2300 ppm. While this minimum value is correct for Mode 5, a larger boron concentration may be necessary in Mode 6. The RWT is the preferred borated water source for restoring the required boron concentration as required by the Action of Specification 3.9.1. Therefore, the RWT boron concentration in Mode 6 should at least be that required by Specification 3.9.1. The proposed change will separate the boron concentration requirements in Specification 3.1.2.7. In Mode 5, 2300 ppm will continue to be required. In Mode 6, the boron concentration limit for the RWT will be the boron concentration limit given in Specification 3.9.1.

These changes will clarify the actions and requirements on boron concentration when in Mode 6.

REQUESTED CHANGE

Revise Technical Specifications 3.9.1 and 3.1.2.7 and the BASES to Specification 3.1.2.7 as described in Attachments (1) and (2) for Calvert Cliffs Units 1 and 2, respectively.

SAFETY ANALYSIS

During refueling operations, the reactivity condition of the core is maintained consistent with the initial conditions assumed for the boron dilution event in the accident analysis (Updated Final Safety Analysis Report Section 14.3) and is sufficient to ensure the core remains subcritical during core alterations. The Technical Specifications require that the boron concentration be maintained to ensure a $k_{\text{eff}} \leq 0.95$.

Should the refueling boron concentration drop below the Technical Specifications limit, the current Technical Specifications require boration at ≥ 40 gpm of 2300 ppm boric acid solution, or its equivalent, until the boron concentration is restored to within its limit. However, the Technical Specifications also

allow the refueling boron concentration limit to be greater than 2300 ppm. In that circumstance, the operator must interpret the "or its equivalent" phrase to require boration at a boron concentration sufficient to restore the RCS boron concentration to within its limit. The proposed change will revise the action to explicitly require the operator to immediately initiate actions to restore the boron concentration to within its limit.

The proposed change has no effect on plant safety. The refueling shutdown margin and the initial conditions of the accident analysis will continue to be met. The specified flow rate and boric acid solution concentration have been removed from the Action. The specific flow rate has been replaced with a requirement to "immediately . . . initiate actions to restore the boron concentration to within its limit." This requires that the operator restore plant conditions to within the Technical Specification limit as quickly as possible, which is more restrictive than the current Action. The concentration of the boric acid solution to be used is dependent on the boron concentration limit given in the COLR, so a specific concentration should not be specified in the Action. The boron dilution analysis does not assume a specific reactivity insertion rate to mitigate the event. Therefore, the proposed change does not change the intent of the current Action statement.

Specification 3.1.2.7 requires a minimum RWT boron concentration of 2300 ppm in Modes 5 and 6. In Mode 5, the borated water source requirements are based on providing sufficient shutdown margin after xenon decay and cooldown from 200°F to 140°F. In Mode 6, the borated water sources are needed to provide reactivity control. As described above, the core reactivity requirements for Mode 6 are given by Specification 3.9.1, so a RWT boron concentration greater than 2300 ppm may be required if the Specification 3.9.1 refueling boron concentration is greater than 2300 ppm. Therefore, we propose to split the boron concentration requirement in Specification 3.1.2.7. In Mode 5, 2300 ppm will still be the requirement. In Mode 6, the RWT boron concentration limit will be that required by Specification 3.9.1. This will ensure that the RWT is available as a borated water source in Mode 6 if called upon by the Action of Specification 3.9.1. Note that there is no equivalent specification in NUREG-1432.

The potential increase in boron concentration will not have an adverse effect on the RWT. The maximum boron concentration for the RWT is given in BASES 3/4.1.2 as 2700 ppm. Specification 3.9.1 boron concentration limits are not expected to exceed approximately 2500 ppm and will not exceed 2700 ppm without consideration of the impact on the RWT.

This change has no impact on plant safety. Currently, Baltimore Gas and Electric Company administratively requires that the RWT boron concentration be maintained above the limit in Specification 3.9.1. The proposed change, and the revision to the BASES of Specification 3.1.2.7, makes the relationship between Specifications 3.1.2.7 and 3.9.1 in Mode 6 explicit instead of implicit.

DETERMINATION OF SIGNIFICANT HAZARDS

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

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

During refueling operations, the reactivity condition of the core is maintained consistent with the initial conditions assumed for the boron dilution event in the accident analysis (Updated Final Safety Analysis Report Section 14.3) and is sufficient to ensure the core remains subcritical during core alterations. Technical Specification 3.9.1 requires that the boron concentration be maintained to ensure a $k_{\text{eff}} \leq 0.95$. Should the boron concentration drop below the Technical Specifications limit, the Action requires boration at a specified flow rate and boron concentration until the boron concentration is restored to within its limit. Refueling boron concentrations higher than the concentration specified by the Action in Specification 3.9.1 are allowed by the Technical Specifications and clarification of the Action for that circumstance is needed. The proposed change eliminates the specified flow rate and boron concentration in the Action and substitutes a directive to immediately initiate action to restore the boron concentration to within its limits. The accident analysis does not assume a specific boration rate, but only assumes that the operator acts to terminate the dilution. Therefore, the consequences of the event are unchanged. In addition, the proposed change revises the boron concentration limit on the Refueling Water Tank in Mode 6 to make the boron concentration limit on the tank the same as the boron concentration limit on the reactor coolant system. This will ensure that the RWT will contain water of a sufficient boron concentration to respond to a boron dilution event.

The proposed change does not change the boron concentration or shutdown margin required by Specification 3.9.1 and continues to meet the initial conditions of the boron dilution event. Therefore, the probability of a boron dilution event is not increased. Furthermore, the revised action ensures that the appropriate actions for a boron dilution event will be taken and that a borated water source of sufficient concentration is available to respond to that event. Therefore, the consequences of a boron dilution event are not increased.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

The proposed change does not represent a significant change in the configuration or operation of the plant. The proposed actions will result in the same operator actions as the current Technical Specifications. The minimum boron concentration of the Refueling Water Tank in Mode 6 may be increased above the current value, but the concentrations will be within the analyzed maximum concentration for that tank.

Therefore, the proposed change does not create the possibility of a new or different type of accident from any accident previously evaluated.

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

The margin of safety provided by Specification 3.9.1 is to ensure that the core remains subcritical during a boron dilution event and during core alterations. The proposed change does not alter the required shutdown margin or significantly change the actions to be taken if that shutdown margin is lost. The proposed change ensures that all assumed borated water sources will have sufficient boron concentration to respond to a boron dilution event.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

ENVIRONMENTAL ASSESSMENT

The proposed amendment would change 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 to 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 the proposed amendment.

SCHEDULE

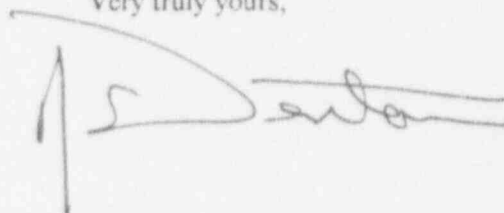
This change is requested to be approved and issued by January 3, 1994. We desire to clarify these requirements prior to the next refueling outage. However, issuance of this amendment is not currently identified as having an impact on outage completion or continued plant operation.

SAFETY COMMITTEE REVIEW

These proposed changes to the Technical Specifications and our determination of significant hazards have been reviewed by our Plant Operations and Safety Review Committee and Offsite 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 further questions regarding this matter, we will be pleased to discuss them with you.

Very truly yours,



STATE OF MARYLAND :
: TO WIT:
COUNTY OF CALVERT :

I hereby certify that on the 2nd day of August, 1994, 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:

Michelle D. Hall
Notary Public

My Commission Expires:

February 2, 1998
Date

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Attachments (1) Unit 1 Technical Specification Revised Pages
(2) Unit 2 Technical Specification Revised Pages

cc: D. A. Brune, Esquire
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