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

November 3, 1980

TERA

Docket No. 50-317

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

Dear Mr. Lundvall:

In the process of reviewing your Cycle 5 reload request dated September 22, 1980, we find that additional information as detailed in the enclosure is needed to complete our review. The additional information being requested was previously sent to Mr. J. Lippold of your staff by telecopy on October 23, 24, 29 and 31, 1980.

In order to meet the agreed upon schedule for this review, please provide the additional information by at least November 7, 1980.

Sincerely,

Robert A. Clark, Chief
Operating Reactors Branch #3
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Enclosure:
Request for Additional
Information

cc: w/enclosure
See next page

P

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Enclosure

REQUEST FOR ADDITIONAL INFORMATION NO. 11

CYCLE 5 RELOAD REVIEW

CALVERT CLIFFS, UNIT NO. 1

DOCKET NO. 50-317

1. In Section 1.0 of Appendix A, justify the statement that Loss to One Steam Generator caused by a Single Main Steam Isolation Valve (MSIV) closure is the most limiting event. What other events were analyzed?

2. Provide a comparison of the key parameters such as DNBR, Centerline Temperature to Melt (CTM), etc., for the most limiting event with and without Reactor Protection System Asymmetric Steam Generator Transient Protection Trip Function (RPS-ASGTPTF).

3. Clarify the logic used in the equations

(Figure 1) $$P_{VAR} = \alpha Q_{DNB} + \beta T_{CAL} + \gamma$$

$$T_{CAL} = T_C + K_C B T_{CAL}$$

$$Q = MAX (\phi, B)$$

4. For Table 2.2.1 of Section 9, provide the Supporting analysis for the following:

Item #	Functional Unit	Trip Set Point	Allowable Values
6.	Steam Generator Pressure - Low	$\geq$ 570 psia	$\geq$ 570 psia
	Trip Manually bypassed	$\geq$ 685 psia	$\geq$ 685 psia
9a	Steam Generator Pressure Difference - High	$\leq$ 135 psid	$\leq$ 135 psid

5. It has been the practice of CE and all other PWR vendors in the past to include a calculational uncertainty in the conservative direction in determining the total available CEA worth less allowances as shown in Table 5-2. In view of this and the requirement of Reg. Guide 1.70, Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants, for the presentation of required and expected shutdown margin as a function of time in cycle along with uncertainties in the shutdown margin, justify the exclusion of any calculational uncertainty in Table 5-2.

6. What is the change in power peaking resulting from the extension of the Cycle 4 shutdown window from 11,600 to 11,800 MWD/T?

7. What is the magnitude of the bias that is applied to fuel rod power peaking values to account for the increased peaking which occurs near water holes?

8. Is our assumption correct that the ROCS code was used to compute the same safety parameters for Cycle 5 as for Cycle 4, namely; fuel temperature coefficients, moderator temperature coefficients, boron worths, critical boron concentrations, and CEA reactivity worths?

9. Section 15.4.7 of the Standard Review Plan for the Review of Safety Analysis Reports (NUREG-75/087) requires an analysis of possible fuel loading errors such as the loading of one or more fuel assemblies into improper locations. Discuss the analysis for each misloading case (including the worst case) considered and show that either the error is detectable (and thus remedial) or that the error is inconsequential and within the nuclear uncertainty or that the offsite consequences of any core damage due to undetected errors are a small fraction of 10 CFR Part 100 guidelines.

10. A partial list of physics characteristics for Cycles 4 and 5 was presented in the Cycle 5 refueling application. Provide a list of final Cycle 5 physics characteristics if different from the original submittal (Tables 5-1 thru 5-6) including the maximum radial power peaks expected to occur (F_r and F_{xy} with uncertainties and biases).

11. (Section 7.1.2) Boron Dilution

    For both the Cold Shutdown and the Refueling modes

    (a) What is the initial boron concentration? Why is homogeneous dilution conservative?

    (b) What is the minimum RCS active volume? If this volume includes the steam generator, justify.

    (c) What is the maximum dilution rate (i.e., how many pumps, the discharge of each pump)?

    (d) Are the times provided in Table 7.1.2-2 calculated beginning at alarm indication? What are those alarms?

12. (Section 7.1.6) Loss of Feedwater Flow

    Explain why is it concluded that no steam generator dryout occurs during a loss of feedwater event in Cycle 5? What is the basis for the 10 minute period discussed in this section?

13. (Section 7.1.7) Excess Heat Removal Due to Feedwater Malfunction

This section indicates that loss of high pressure feedwater heaters is equivalent to a "small" increase in turbine demand. This argument is given as a reason for the excess load event ("large" increase in turbine demand) to be a bounding event. In this instance, approximately what is the percentage increase in turbine demand that corresponds to a "small" increase and a "large" increase?