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February 20, 1986

U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D. C. 20555

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

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Comments on PRA Reports

REFERENCES: (a) Letter from Mr. Ashok C. Thadani, NRC, to Mr. J. A. Tiernan, BG&E, dated January 10, 1986; Reports on PRA Insights
(b) Letter from Mr. A. E. Lundvall, Jr., BG&E, to Mr. J. R. Miller, NRC, dated March 26, 1985, regarding the Interim Reliability Evaluation Program

Gentlemen:

The Baltimore Gas and Electric Company submits to the staff the following comments in response to the enclosures in Reference (a). We are providing comments on "Insights Gained From Probabilistic Risk Assessments," but due to the relatively short time frame provided for review, we have no detailed remarks on "Probabilistic Risk Assessment (PRA) Insights." On the surface, the conclusions drawn by the Brookhaven National Laboratory team seem reasonable.

This study, "Insights Gained From Probabilistic Risk Assessments," utilizies the Calvert Cliffs Unit 2 Reactor Safety Study Methodology Applications Program (RSSMAP) analysis to typify the risk profile for the plant. The continued use of RSSMAP is of concern to us because:

1) RSSMAP is not a Probabilistic Risk Assessment in the conventional sense, and;

2) The results of the RSSMAP analysis grossly overestimate the expected frequency of core melt for Calvert Cliffs.

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The unusually high estimate of core melt frequency ($2x10^{-3}$ per year) for Calvert Cliffs Unit 2 should be attributed to inherent weaknesses in the RSSMAP methodology. We feel that the RSSMAP analysis should not be used as an accurate (best estimate) measure of absolute core melt frequency for Calvert Cliffs.

The RSSMAP was initiated as a cost effective answer to the PRA methodology developed in the WASH-1400 study, but because of the simplistic and overly conservative assumptions made for plant-specific characteristics, it has shown itself to be a very poor predictor of absolute core melt frequency.

This weakness as a predictor of core melt frequency became apparent when Calvert Cliffs Unit 1, very similar to the Calvert Cliffs Unit 2 modeled in RSSMAP, was analyzed as a part of the Interim Reliability Evaluation Program (IREP). The more detailed plant-specific IREP analysis calculated the core melt frequency to be $1.3x10^{-4}$ per year. This estimate is approximately 30% above the safety goal threshold of $1x10^{-4}$ per year for new plants, but is 15 times lower than that estimated by RSSMAP.

It is expected that when the mandated changes to the reactor trip system are completed in the future, the calculated core melt frequency for Calvert Cliffs will drop below $1x10^{-4}$ per year. Other modifications to plant systems and procedures have been implemented, as noted in Reference (b), which have contributed to lowering the frequency.

As a point of interest, it is important to note in the IREP analysis results that the system failure probability contribution to overall core melt frequency originates with the aggregation of many varied multiple failure combinations, rather than with the failure of single identifiable components.

Should you have any questions regarding these comments, we would be pleased to discuss them with you.

Very truly yours,

J.A. Tiernan
Vice President - Nuclear Energy

JAT/SRC/dlm

cc: D. A. Brune, Esquire
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