

OCT 23 1984

Docket Nos. 50-317
50-318

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

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Dear Mr. Lundvall:

We are in the process of reviewing your June 6, 1984 submittal concerning the Calvert Cliffs Safety Parameter Display System. In order that we may complete our review, we require additional information. Please respond to the enclosed request within 30 days following receipt of this letter.

This request for information affects fewer than 10 respondents; therefore OMB clearance is not required under P.L. 96-511.

Sincerely,

Original signed by:

James R. Miller, Chief
Operating Reactors Branch #3
Division of Licensing

Enclosure:
As stated

cc w/enclosure:
As stated

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PDR ADDCK 05000317
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10/2/84

REQUEST FOR ADDITIONAL INFORMATION

CONCERNING THE

CALVERT CLIFFS 1 & 2

SAFETY PARAMETER DISPLAY SYSTEM

Each operating reactor shall be provided with a Safety Parameter Display System (SPDS). The Commission approved requirements for an SPDS are defined in NUREG-0737, Supplement 1. In the Regional Workshops on Generic Letter 82-33 held during March 1983, the NRC discussed these requirements and the staff's review of the SPDS.

Prompt implementation of the SPDS in operating reactors is a design goal of prime importance. The staff's review of SPDS documentation for operating reactors called for in NUREG-0737, Supplement 1 is designed to avoid delays resulting from the time required for NRC staff review. The NRC staff will not review operating reactor SPDS designs for compliance with the requirements of Supplement 1 of NUREG-0737 prior to implementation unless a pre-implementation review has been specifically requested by licensees. The licensee's Safety Analysis and SPDS Implementation Plan will be reviewed by the NRC staff only to determine if a serious safety question is posed or if the analysis is seriously inadequate. The NRC staff review to accomplish this will be directed at (a) confirming the adequacy of the parameters selected to be displayed to detect critical safety functions, (b) confirming that means are provided to assure that the data displayed are valid, (c) confirming that the licensee has committed to a human factors program to ensure that the displayed information can be readily perceived and comprehended so as not to mislead the operator, and (d) confirming that the SPDS will be suitably isolated from electrical and electronic interference with equipment and sensors that are used in safety systems. If, based on this review, the staff identifies a serious safety question or seriously inadequate analysis, the Director of IE or the Director of NRR may request or direct the licensee to cease implementation.

The staff reviewed the SPDS safety analysis provided by Baltimore Gas and Electric (Reference 1). The staff was unable to complete its evaluation because of insufficient information. The following additional information is required to continue and complete the SPDS evaluation:

Isolation Devices

- a. For each type of device used to accomplish electrical isolation, describe the specific testing performed to demonstrate that the device is acceptable for its application(s). This description should include elementary diagrams when necessary to indicate the test configuration and how the maximum credible faults were applied to the devices.
- b. Data to verify that the maximum credible faults applied during the test were the maximum voltage/current to which the device could be exposed, and define how the maximum voltage/current was determined.

- c. Data to verify that the maximum credible fault was applied to the output of the device in the transverse mode (between signal and return) and other faults were considered (i.e., open and short circuits).
- d. Define the pass/fail acceptance criteria for each type of device
- e. Provide a commitment that the isolation devices comply with the environmental qualifications (10 CFR 50.49) and with seismic qualifications that were the basis for plant licensing.
- f. Provide a description of the measures taken to protect the safety systems from electrical interference (i.e., Electrostatic Coupling, EMI, Common Mode and Crosstalk) that may be generated by the SPDS.

Human Factors Program

Provide a description of the display system, with emphasis on its human factored design, and the methods and results of a human factors program to ensure that the displayed information can be readily perceived and comprehended so as not to mislead the operator. Color photographs or reproductions of display pages and interface devices may be helpful in supporting the discussion.

Data Validation

Describe the methods used to validate data displayed by the SPDS. Also describe how invalid data is defined to the operator. Please be specific and avoid phrases such as "to the extent possible."

Parameter Selection

Provide further discussion about the rationale of the Calvert Cliffs parameter set in relationship to the Critical Safety Functions. Discussion should include, or refer to, detailed analysis concerning parameter representativeness and responsiveness, and may include a discussion of parameters' relationships to Emergency Procedures.

Unreviewed Safety Questions

Provide a summary of the findings of the offsite Safety Review Committee meeting of June 21, 1984 (referred to in Ref. 1)

Implementation Plan

Provide a tentative schedule for full implementation of the SPDS including hardware, software, operator training, procedures and users manuals.

REFERENCES

1. Letter from A. Lundvall (B.G.&E) to H. Denton (NRC) with enclosure, dated June 6, 1984.