



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 3, 1993

Docket Nos. 50-317
and 50-318

Mr. Robert. E. Denton
Vice President - Nuclear Energy
Baltimore Gas & Electric Company
Calvert Cliffs Nuclear Power Plant
MD Rts. 2 & 4
P.O. Box 1535
Lusby, Maryland 20657

Dear Mr. Denton:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION CONCERNING EVALUATION OF
ISOLATION PROVISIONS FOR THE SERVICE WATER SYSTEM - CALVERT CLIFFS
NUCLEAR POWER PLANT, UNIT NO. 1 (TAC NO. M87189) AND UNIT NO. 2
(TAC NO. M87190)

By letter dated July 7, 1993, Baltimore Gas and Electric Company (BG&E) provided an evaluation of the isolation provisions for the service water (SRW) system at Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2. The SRW system is divided into safety-related (SR) portions and nonsafety-related (NSR) portions. The NSR portion of the system serves equipment in the turbine building, whereas the SR portion is located in the auxiliary building.

During a system design review conducted in 1989, BG&E identified a potential vulnerability to the loss of the SR portion of the SRW system during a Safe-Shutdown Earthquake (SSE). There are two isolation valves in series between the SR and NSR portions. These valves close automatically upon receipt of a safety injection actuation signal and loss of instrument air. However, these valves do not close automatically during a seismic event. This was the concern identified in Licensee Event Report 89-23, in which BG&E indicated that it would resolve the issue by installing a diverse isolation signal to these valves. BG&E has since determined that automatic isolation of the NSR portion of the system during a seismic event would not be a practical solution.

BG&E's recent evaluation provided an alternative way of resolving the concern. BG&E stated that its initial assumption of gross failure of the NSR SRW system during a seismic event was unrealistic and overly conservative. BG&E also determined that the turbine building and the NSR piping housed therein were rugged enough to withstand an SSE without collapse or gross rupture and, therefore, would satisfy the appropriate licensing basis criteria for Calvert Cliffs.

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Mr. Robert E. Denton

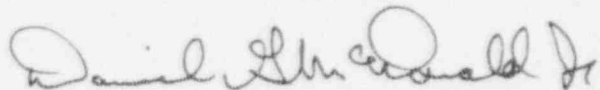
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November 3, 1993

The NRC staff is currently reviewing the July 7, 1993, submittal and has determined that additional information is needed to complete its review. Enclosed is the staff's request for additional information (RAI). We request that the response to the RAI be provided in a timely manner to allow the staff to complete its review.

This request affects one respondent and, therefore, is not subject to the Office of Management and Budget review under P.L. 96-511.

Sincerely,



Daniel G. McDonald, Senior Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
RAI

cc w/enclosure:
See next page

Mr. Robert E. Denton
Baltimore Gas & Electric Company

Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 and 2

cc:

Mr. Michael Moore, President
Calvert County Board of
Commissioners
175 Main Street
Prince Frederick, Maryland 20678

Mr. Joseph H. Walter
Engineering Division
Public Service Commission of
Maryland
American Building
231 E. Baltimore Street
Baltimore, Maryland 21202-3486

D. A. Brune, Esquire
General Counsel
Baltimore Gas and Electric Company
P.O. Box 1475
Baltimore, Maryland 21203

Kristen A. Burger, Esquire
Maryland People's Counsel
American Building, 9th Floor
231 E. Baltimore Street
Baltimore, Maryland 21202

Jay E. Silber, Esquire
Shaw, Pittman, Potts and Trowbridge
2300 N Street, NW
Washington, DC 20037

Patricia T. Birnie, Esquire
Co-Director
Maryland Safe Energy Coalition
P.O. Box 33111
Baltimore, Maryland 21218

Mr. G. L. Detter, Director, NRM
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, Maryland 20657-47027

Resident Inspector
c/o U.S. Nuclear Regulatory
Commission
P.O. Box 287
St. Leonard, Maryland 20685

Mr. Richard I. McLean
Administrator - Radioecology
Department of Natural Resources
580 Taylor Avenue
Tawes State Office Building
B3
Annapolis, Maryland 21401

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406

REQUEST FOR ADDITIONAL INFORMATION

ISOLATION PROVISIONS FOR SERVICE WATER PIPING AND COMPONENTS

CALVERT CLIFFS NUCLEAR POWER PLANT

GENERAL COMMENTS

1. Since the nonsafety-related (NSR) portion of the service water system (SRW) piping is expected to serve a safety-related (SR) function to mitigate the effects of the Safe-Shutdown Earthquake (SSE), including a pipe rupture, this NSR piping should be treated as safety related, along with all of the pertinent design basis requirements. Appendix A to 10 CFR Part 100 provides the regulatory position of how such system is to be designed. Section VI of Appendix A states, in part, "The engineering method used ... shall involve the use of either a suitable dynamic analysis or a suitable qualification test"

Provide the basis for how Baltimore Gas and Electric Company (BG&E) complies with this portion of the regulations.

2. The staff questions the acceptability of the walkdown approach proposed by BG&E for assuring the seismic adequacy of the service water system piping. The staff has not generically accepted such methodology, in lieu of a rigorous dynamic seismic analysis, for piping systems that are required to remain functional during and after an SSE. The staff, however, has, on a case-by-case basis, accepted the use of such methodology in the past under certain unique plant-specific environments. Under such conditions, licensees have been required to provide for staff review a detailed piping system configuration, as well as a detailed plant-specific walkdown procedure. In addition, the seismic experience data base, if used as a basis for qualifying the existing piping system, should be provided for staff review and approval prior to its use.

SPECIFIC COMMENTS

1. Clarify how locations of potential pipe rupture can be identified by walkdown alone without a detailed seismic analysis.
2. Clarify how flexibly supported SRW piping can withstand an SSE and still maintain its integrity. Provide for staff review a detailed description of the piping configuration including all the pertinent attributes. Information on the predominant frequencies of the piping system should also be provided.
3. Address the potential effects of the seismic anchor movement on the SRW piping, due to differential motions between the auxiliary building and turbine building.

4. Provide further justification that a double-ended guillotine break of the 14" main SRW pipe will not need to be considered as a credible failure. Since this event is a part of the plant design basis.
5. For the five small branch lines (in both units) which were identified as being vulnerable to seismic-induced damage, provide the technical basis of how they were identified. In addition, provide for these branch lines the detailed information on the modifications performed, as well as the analytical basis for concluding that their final configurations are acceptable.
6. Based on the review of the turbine building structural design, it is concluded that the turbine building would maintain its integrity during a seismic event. Provide a detailed summary of the review performed to reach this conclusion. Include a discussion of the assumptions and criteria used in previous or new analyses performed as part of the review effort.

Mr. Robert E. Denton

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Sincerely,

Original signed by:

Daniel G. McDonald, Senior Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
RAI

cc w/enclosure:
See next page

Distribution:

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