



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

May 8, 1990

Docket

Docket No. 50-317

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

Dear Mr. Creel:

SUBJECT: JUSTIFICATION OF NON-REPAIR OF A MAIN STEAM LINE FLAW
CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1

REFERENCE: TAC Number 66454

By letter dated December 16, 1986, Baltimore Gas and Electric Company reported the discovery of a flaw in a main steam line of Unit 1 consisting of a smaller wall thickness than allowed by the original construction code, ANSI B31.1-1967. To justify continuing operation until the next refueling outage, March 1988, you requested the use of ASME Code Section XI, IWB-3600, 1983 Edition S83, which provides for an analytical evaluation of the flaw to determine its acceptability for continuing operation. Your evaluation showed that all relevant criteria were met, except for IWB-3610(b) for which relief was requested. This section requires that the primary stress limits be met. The primary longitudinal stress limit was met, but the primary hoop stress limit was not met. You further committed to provide assurance that the affected piping would meet all applicable requirements of Section XI, 1983, with S83 addenda. The staff granted the requested relief and ASME code update by letter dated March 26, 1987, which required you repair or replace the affected pipe at the next refueling outage.

By letter dated September 30, 1987, you indicated that relief from the requirement of ASME Section XI, IWB-3610(b) was no longer needed for the flaw. A detailed finite element analysis of the affected pipe, which demonstrated that the primary stress limits were being met under design pressure and dead weight loading as required by IWB-3610(a) was provided as the basis for your conclusion. Additional supporting documentation on the finite element analysis was also provided by letters dated May 4 and June 6, 1988. On this basis, you stated that the requirement that the affected pipe be repaired or replaced was no longer necessary nor applicable.

Your initial submittals also provided the results of a linear elastic fracture mechanics analysis to demonstrate that an adequate margin of safety existed while operating with the flaw. This analysis supported the temporary relief. By letter dated November 15, 1989, you withdrew the fracture mechanics analysis based on the final results of the finite element analysis

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which demonstrates that the intent of the original construction code is met. Your letter also addressed our concerns relating to procedures to prevent steam line over-pressurization due to steam generator tube ruptures.

The staff has reviewed your finite element analysis in relation to the requirements of IWB-3610(b) of the ASME Code, Section XI. The details and results of our review are included in the enclosed Safety Evaluation.

Based on our review, we have determined that the analysis is acceptable and have concluded that you have reasonably demonstrated that the intent of ASME B31.1, 1967, and the requirements of IWB 3610(b) have been met, i.e., the primary stresses in the affected pipe with the reduced wall thickness satisfy the primary stress limits. We, therefore, conclude that the repair or replacement of the effected portion of the Main Steam Line is not required. However, as indicated in your letter dated April 13, 1990, you have stated that the portion of the pipe with the flaw will be subjected to non-destructive examination at each refueling outage due to the nature and location of the flaw. We consider this prudent and will provide enhanced assurance of the structural integrity of the pipe. You also indicated that we would be notified of any changes that you may propose to this inspection requirement in the future.

This completes our activities related to the referenced TAC Number.

Sincerely,

ORIGINAL SIGNED BY:

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

Enclosure:
Safety Evaluation

cc w/enclosure:
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Mr. G. C. Creel

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Calvert Cliffs Nuclear Power Plant

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