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Nuclear Energy

Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, Maryland 20657
410 495-4455



April 16, 1997

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Response to Questions Raised During the Reactor Systems Branch Review of
Calvert Cliffs License Amendment Request; Change to Reactor Coolant System
Flow Requirements to Allow Increased Steam Generator Tube Plugging
(TAC Nos. M97855 and M97856)

By Reference (a), Baltimore Gas and Electric Company (BGE) submitted a License Amendment Request to the Nuclear Regulatory Commission (NRC) to support operation of Calvert Cliffs Units 1 and 2 with up to 2500 tubes plugged in each steam generator. On March 20, 1997, the NRC Project Manager for Calvert Cliffs initiated a teleconference between BGE licensing and technical staff and staff from the NRC's Reactor Systems Branch. This letter provides BGE's response to the questions posed in that teleconference.

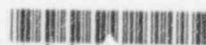
In addition to responding to the questions posed in the March 20 teleconference, this letter provides written confirmation of a change to the license amendment review schedule requested in Reference (a). As noted in Reference (a), implementation of this license amendment prior to start-up from the 1997 Unit 2 refueling outage would have been necessary if the steam generator tube inspections results necessitated plugging over 800 tubes in either Unit 2 steam generator. Based on the latest inspection results, it is now certain that we will not exceed the 800 plugged tube limit during this refueling outage. Therefore, it is now requested that this license amendment be approved by October 31, 1997, to allow sufficient time for planning our steam generator tube inspections/maintenance activities for the 1998 Unit 1 refueling outage.

NRC Question No. 1

Reference (a) included a methodology change to credit a three-second time delay between the time of the reactor trip and the subsequent coastdown of the reactor coolant pumps due to the resultant loss of offsite power (LOOP) following a Main Steam Line Break (MSLB). Please provide references indicating

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where a similar assumption has been approved by the NRC for the MSLB analysis. [It was noted that, unless this assumption has been previously reviewed and approved by the NRC, a detailed review of the three-second delay methodology change would be required, and that such a review may impact the review and approval schedule requested by BGE for the License Amendment Request in Reference (a).]

BGE Response

As noted in Reference (a), a similar assumption has been approved for the Seized Rotor Event for Combustion Engineering System 80 plants; however, to the best of our knowledge, BGE is the first licensee to request NRC approval of a time delay between the reactor trip and the resultant LOOP for the MSLB. Baltimore Gas and Electric Company has thoroughly reviewed the application of a three-second time delay in this analysis, and finds it to be well-supported by both the stable nature of the offsite electrical grid and the operation of the reverse power relay on the output of the turbine generator. This relay ensures the turbine generator and the reactor coolant pumps remain connected to the 500 kV network for 20 seconds after power flow from the 500 kV network to the turbine generator is detected. It is therefore requested that the NRC continue to review the three-second time delay methodology change and the associated MSLB analysis presented in Reference (a). Nuclear Regulatory Commission approval of this methodology change will allow BGE to maintain a degree of margin so that the assumptions used in this analysis do not become operationally limiting in the future.

NRC Question No. 2

Provide dates of NRC Safety Evaluation Reports (SERs) for other Combustion Engineering (CE) plants approving the use of the HERMITE Code for the Loss of Flow Event analysis.

BGE Response

Combustion Engineering has provided the following information regarding the SERs for other CE plants which approved the Loss of Flow analysis, including the use of the HERMITE Code. Because the SERs do not specifically discuss the use of the HERMITE Code, the dates of the associated licensee submittals are also provided.

SERs for CE Plants Using HERMITE for Loss of Flow Analyses

Plant	Unit Nos.	SER Date	Submittal Dates	Amendment / Cycle Nos.
San Onofre Nuclear Generating Station	2 & 3	May 16, 1986	October 9, 1985	47 & 36 Cycle 3
Waterford	3	January 16, 1987	August 29, 1986 and October 1, 1986	N/A Cycle 2
Palo Verde Nuclear Generating Station	1	October 21, 1987	June 29, 1987, as supplemented by: - June 29, 1987 - July 13, 1987 - August 20, 1987 - September 4, 1987 - October 1, 1987	24 Cycle 2

NRC Question No. 3

Provide documentation indicating NRC approval of Calvert Cliffs' approach for sizing primary and secondary side safety valves.

BGE Response

The design of the primary and secondary safety valves was approved by the NRC in Calvert Cliffs' original Safety Evaluation Report, Reference (b). Section 3.2.1.3, Reactor Coolant System, states, "The reactor pressure vessel, steam generator primary and secondary sides, pressurizer and reactor coolant pumps were designed, fabricated, and inspected to Class A requirements of Section III of the [American Society of Mechanical Engineers] Boiler and Pressure Vessel Code, 1965 edition including the Winter 1967 Addenda." American Society of Mechanical Engineers (ASME) Section III, Article 9, Paragraph N-910, Subparagraph N-910.2 requires the preparation of a summary technical report setting out the degree of overpressure protection provided for each vessel. The report must also address the capacity for relief and dissipation related to the thermal and overall system characteristics, based on both the assumptions made and the analysis of that transient condition which dictated the maximum pressure relieving requirements.

As discussed in the Calvert Cliffs Overpressure Protection Report, analyses of all reactor and steam plant events that cause pressure excursions were performed to determine the degree of overpressure protection required. These analyses are performed consistent with the assumptions and methodologies used in Chapter 14 of Calvert Cliffs Updated Final Safety Analysis Report. The original worst-case event, Loss of Load Event, became the design basis for the Calvert Cliffs primary safety valves. To support the installation of a safety grade Auxiliary Feedwater Actuation System, the NRC later requested BGE to analyze the Feed Line Break Event. The Feed Line Break analyses were submitted in References (c) and (d), and approved by the NRC in References (e) and (f), for Units 1 and 2, respectively. The Feed Line Break analysis showed that this event was more limiting than the Loss of Load Event with respect to peak primary system transient pressure. As a result, the Feed Line Break Event became a design basis event for overpressure protection of the Reactor Coolant System and steam generator secondary side. Both the Feed Line Break and Loss of Load Events were reanalyzed with up to 2500 plugged tubes per steam generator, as discussed in Reference (a). The results of these revised analyses demonstrate that the sizing of the primary and secondary side safety valves is adequate per Section III of the ASME Boiler and Pressure Vessel Code. The Overpressure Protection Report is in the process of being re-certified for these analyses.

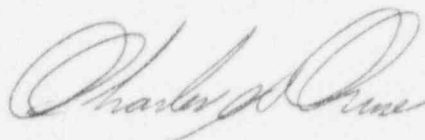
Based on the above discussion, use of Section III of the ASME Boiler and Pressure Vessel Code for the design of primary and secondary side overpressure protection was approved by the NRC in Reference (b). Maintaining the primary and secondary side overpressure protection requirements in the Calvert Cliffs Overpressure Protection Report meets the ASME Code requirements.

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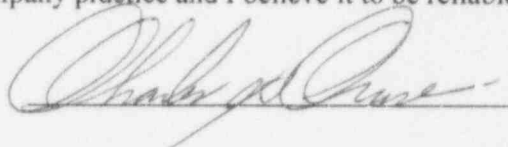
This additional information does not change the Significant Hazards Determination presented in Reference (a). Should you have further questions regarding this matter, we will be pleased to discuss them with you.

Very truly yours,




STATE OF MARYLAND :
: TO WIT:
COUNTY OF CALVERT :

I, Charles H. Cruse, being duly sworn, state that I am Vice President, Nuclear Energy Division, Baltimore Gas and Electric Company (BGE), and that I am duly authorized to execute and file this response on behalf of BGE. To the best of my knowledge and belief, the statements contained in this document are true and correct. To the extent that these statements are not based on my personal knowledge, they are based upon information provided by other BGE employees and/or consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.



Subscribed and sworn before me, a Notary Public in and for the State of Maryland and County of Calvert, this 16th day of April, 1997.

WITNESS my Hand and Notarial Seal:


Notary Public

My Commission Expires:

2/2/98
Date

CHC/NH/dlm

cc: R. S. Fleishman, Esquire
J. E. Silberg, Esquire
A. W. Dromerick, NRC
Director, Project Directorate I-1, NRC

H. J. Miller, NRC
Resident Inspector, NRC
R. I. McLean, DNR
J. H. Walter, PSC

- References:
- (a) Letter from Mr. C. H. Cruse (BGE) to NRC Document Control Desk, dated January 31, 1997, License Amendment Request; Change to Reactor Coolant System Flow Requirements to Allow Increased Steam Generator Tube Plugging
 - (b) Safety Evaluation by the Directorate of Licensing U.S. Atomic Energy Commission in the Matter of Baltimore Gas and Electric Company; Calvert Cliffs Nuclear Station, Units 1 and 2; Docket Nos. 50-317 and 50-318, dated August 28, 1972
 - (c) Letter from Mr. A. E. Lundvall, Jr. (BGE) to Mr. J. R. Miller (NRC), dated September 1, 1983, Amendment to Operating License DPR 53; Supplement 1 to Seventh Cycle License Application
 - (d) Letter from Mr. A. E. Lundvall, Jr. (BGE) to Mr. R. A. Clark (NRC), dated November 17, 1982, Amendment to Operating License DPR-69, Supplement 1 to Fifth Cycle License Application
 - (e) Letter from Mr. D. H. Jaffe (NRC) to Mr. A. E. Lundvall, Jr. (BGE), dated November 17, 1983, Issuance of License Amendment No. 88 to Facility Operating License No. DPR-53
 - (f) Letter from Mr. D. H. Jaffe (NRC) to Mr. A. E. Lundvall, Jr. (BGE), dated January 10, 1983, Issuance of License Amendment No. 61 to Facility Operating License No. DPR-69