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February 13, 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
Supplement to License Amendment Request; Change to Reactor Coolant System
Flow Requirements to Allow Increased Steam Generator Tube Plugging

REFERENCE: (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

In Reference (a), Baltimore Gas and Electric Company (BGE) submitted a request for Nuclear Regulatory Commission (NRC) approval of Technical Specification changes, an Unreviewed Safety Question (USQ), and analysis methodology changes to support operation of Calvert Cliffs Units 1 and 2 with up to 2500 steam generator tubes plugged in each steam generator. In that letter, we concluded that no environmental effect statement or environmental assessment is needed, as the proposed amendment is eligible for categorical exclusion as set forth in 10 CFR 51.22(c)(9). Upon further consideration, we have determined that the conditions for categorical exclusion as specified in 10 CFR 51.22 do not apply to this activity; therefore, this supplement is submitted to support the determination that the activity proposed in Reference (a) will not have a significant effect on the quality of the human environment. This submittal does not change the content or conclusions of the "Determination of Significant Hazards" submitted in Reference (a).

DESCRIPTION OF THE PROPOSED ACTIVITY

The accident analyses for Calvert Cliffs Units 1 and 2 currently assume a maximum of 800 tubes plugged in each of the units' two steam generators. Baltimore Gas and Electric Company is proposing a change to the Technical Specifications for Calvert Cliffs Units 1 and 2 to accommodate a larger number of plugged steam generator tubes (up to 2500 plugged tubes per steam generator) for future operating cycles. Specifically, these changes will: (1) reduce the minimum Reactor Coolant System (RCS) total

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flow rate from 370,000 gpm to 340,000 gpm; (2) reduce the Limiting Safety System Setting for Reactor Coolant Flow - Low trip function from $\geq 95\%$ to $\geq 92\%$ of design reactor coolant flow; (3) revise the Reactor Core Thermal Safety Limit lines to indicate operation at the lower reactor coolant flow rate; and (4) decrease the maximum allowable lift settings for the eight highest set Main Steam Safety Valves from 1065 psig to 1050 psig.

Additionally, it was determined through the reanalysis of the accident analyses affected by these changes that lowering the RCS total flow rate limit to 340,000 gpm involves a USQ. The USQ is associated with the potential for an increased fuel cladding failure rate for the Main Steam Line Break (MSLB) and Seized Rotor Events. For both of these events, the established NRC acceptance criteria were not exceeded. However, since both of these events involved an increase in the calculated post-accident dose, it was concluded that this activity does not meet the categorical exclusion criteria for environmental assessments.

NEED FOR THE PROPOSED ACTIVITY

During the 1997 Unit 2 refueling outage, BGE will perform extensive steam generator tube inspections. Tubes that experience excessive degradation reduce the integrity of the primary-to-secondary pressure boundary. Eddy current examination is used to measure the extent of tube degradation. When the reduction in tube wall thickness reaches the plugging or repair limit, as specified in the Technical Specifications, the tube is considered defective and a corrective action is taken.

Currently, the Calvert Cliffs Technical Specifications allow defective tubes to be plugged and removed from service, or to be repaired using a laser-welded sleeving technique developed by Westinghouse Electric Corporation. The most widely used tube maintenance technique at many pressurized water reactors, including Calvert Cliffs, is removal of the degraded tube from service by installing plugs at both ends of the tube. The installation of steam generator tube plugs removes the heat transfer surface of the plugged tube from service, and the increased flow resistance leads to a reduction in the primary coolant flow available for core cooling. The minimum primary coolant flow requirements in the Technical Specifications are based upon operation with no more than 800 plugged tubes in each steam generator. There is a possibility that the results of steam generator tube inspections in the upcoming refueling outage will necessitate exceeding the 800 plugged tube criteria in at least one of the Unit 2 steam generators. If this is the case, BGE will require implementation of the proposed Technical Specifications changes and approval of the USQ prior to Mode 2 entry following the 1997 Unit 2 refueling outage.

ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTIVITY

The environmental impact of increasing the number of plugged steam generator tubes results from the increased RCS temperature and the reduced RCS flow rate expected to result from this activity. Reanalysis of the MSLB Event and Seized Rotor Event analyses have indicated a greater percentage of fuel pin failures would be expected during these Postulated Accidents due to the revised coolant temperature and flow rates.

The results of the MSLB reanalysis with reduced RCS flow indicate a reduction in the 0 - 2 hour thyroid dose at the Exclusion Area Boundary (EAB) from 81 REM to 40 REM, and an increase in the 0 - 2 hour whole body dose at the EAB from 0.3 REM to 1.3 REM. The results of the Seized Rotor Event

reanalysis indicate the resultant 0 - 2 hour EAB thyroid dose increases by approximately 3.3 times from 3.6 REM to 12 REM, whereas the whole body dose at the EAB is reduced from 0.4 REM to 0.06 REM. The 10 CFR Part 100 limits are 300 REM to the thyroid and 25 REM to the whole body at the EAB.

Even though the percentage increase in whole body dose for the MSLB and thyroid dose for the Seized Rotor Event are not small, the actual total doses are a fraction of the limits of 10 CFR Part 100, as noted above. In evaluating the impact of the increased doses, it is important to view these results in light of the low probability of these accidents. This change does not significantly affect the risk of any dominant accident scenario, and the effect on overall risk of an accident at Calvert Cliffs Nuclear Power Plant is insignificant.

This change has no effect on normal environmental releases during power operation. The release limits are controlled by Calvert Cliffs Offsite Dose Calculation Manual for each of the Calvert Cliffs units. Therefore, operation of the Calvert Cliffs units with up to 2500 tubes plugged in each steam generator will result in no additional environmental impact for non-accidental releases.

ALTERNATIVES TO THE PROPOSED ACTIVITY

The principal alternative to approving the license amendment request needed to allow plugging up to 2500 tubes per steam generator would be to deny the request and retain the current coolant flow limitations. However, this alternative may prevent a Unit 2 start-up following the upcoming refueling outage, if the steam generator tube inspections necessitate plugging greater than 800 tubes in either of the unit's two steam generators. Furthermore, this alternative would not significantly enhance the protection of the environment. As noted above, the total doses based on the reanalysis are similar to those in the current analysis of record in the Updated Final Safety Analysis Report. The doses are based upon conservative calculational methodology, and are a fraction of the 10 CFR Part 100 limits.

ALTERNATE USE OF RESOURCES


This activity does not involve the use of any resources not previously considered in the April 1973 Final Environmental Statement for the Calvert Cliffs Nuclear Power Plant, Units 1 and 2.

CONCLUSION

Based upon the above discussion, BGE concludes that the proposed action will not have a significant effect on the quality of the human environment.

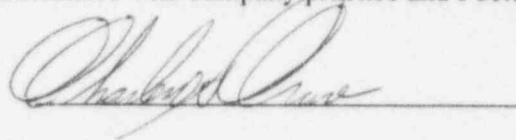
Should you have questions regarding this matter, we will be pleased to discuss them with you.

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 License Amendment Request 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.

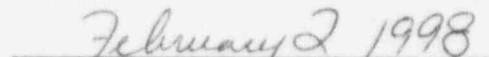


Subscribed and sworn before me, a Notary Public in and for the State of Maryland and County of Calvert, this 13 day of February, 1997.

WITNESS my Hand and Notarial Seal:


Notary Public

My Commission Expires:


Date

CHC/NH/dlm

cc: D. A. Brune, Esquire
J. E. Silberg, Esquire
Director, Project Directorate I-1, NRC
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