BALTIMORE GAS AND ELECTRIC COMPANY

P.O. BOX 1475

BALTIMORE, MARYLAND 21203

ARTHUR E. LUNDVALL, JR.
VICE PRESIDENT
SUPPLY

January 30, 1981

Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

ATTENTION: Mr. R. A. Clark, Chief
Operating Reactors Branch #3
Division of Licensing

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit No. 2, Docket No. 50-318
Amendment to Operating License DPR-69
Fourth Cycle License Application
Responses to NRC Staff Questions

Gentlemen:

Enclosed are our responses to questions posed by NRC staff on the subject application.

Very truly yours,

BALTIMORE GAS AND ELECTRIC COMPANY

A. E. Lundvall, Jr.
Vice President - Supply

AEL/WJL/mit

Copy To: J. A. Biddison, Esquire (w/out Encl.)
G. F. Trowbridge, Esquire (w/out Encl.)
Messrs. E. L. Conner, Jr., NRC
P. W. Kruse, CE

ENCLOSURE

QUESTION 1

Differential growth between fuel rods and the fuel assembly structure is burnup dependent and progresses in such a manner that mechanical interference will occur when the shoulder gap is consumed. Based on preliminary information, we estimate that Cycle 4 operation will involve extended burnups far beyond typical EOL exposures. Using approximate analytical methods, we have been unable to demonstrate that adequate shoulder gap clearance exists for these higher burnups. What assurance exists that the shoulder gap in the high-burnup fuel assemblies comprising the Cycle 4 core is adequate to preclude interference?

RESPONSE

Fuel rod shoulder gap clearances are reviewed as part of the preparation for each reload core. Clearance must be demonstrated for each fuel type included in the core. For the lead burnup fuel type in Cycle 4 (Batch D), the dimensional change correlations presented in CENPD-198 have been utilized. An EOC4 analysis of the lead exposure case has shown that no interference is predicted at a confidence level exceeding 95%. Since Batch E and Batch F fuel will have lower EOC 4 exposures, it has been concluded that all fuel types will have clearance at end of cycle.

QUESTION 2

What guide tube and sleeve designs will be employed in Cycle 4 to mitigate or investigate guide tube wear? Please provide a description for the Cycle 4 core inventory that identifies different fuel assembly designs. Indicate (a) the number of fuel assemblies in each category--sleeved, sleeve design, guide tube design, (b) the number of fuel assemblies in each category to reside under single and dual CEAs, and (c) previous wear or damage along with a statement as to why such wear or damage is acceptable.

RESPONSE

Fuel Assembly Category:	Standard with Sleeves(1)
Total Number in Cycle 4:	217
Number Under CEAs:	77

(1) The "standard" guide tube design is described in CEN-138(B)-P. The guide tube sleeves are described in CEN-83(B)-P.

QUESTION 3

Please provide the following burnup values:

a. The core average exposure increment achieved during Cycle 3.

b. Each batch average exposure for EOC3.

c. Each batch average exposure for EOC4.

RESPONSE

a. The actual core average exposure increment achieved during Cycle 3 is 11,153 MWD/T. Since this value exceeds the EOC3 exposure window of 10,000 to 11,000 MWD/T specified in the Calvert Cliffs II Cycle 4 license submittal, modifications to the Calvert Cliffs II Cycle 4 license submittal to extend the EOC3 exposure window to 11,200 MWD/T are being provided under separate cover.

b. Batch average exposure for EOC3 based on a Cycle 3 length of 11,200 MWD/T.

Batch	Exposure
B	34,800 MWD/T
C	34,200
D	22,200
E	10,400

c. Batch average exposure for EOC4 based on a Cycle 4 length of 17,300 MWD/T:

Batch	Exposure
D	36,900 MWD/T
E	28,100
F	17,700