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ELECTRIC ENGINEERING  
DEPARTMENT

January 14, 1983

Mr. Ronald C. Haynes  
Office of Inspection and Enforcement  
Region I, U.S. NRC  
631 Park Avenue  
King of Prussia, PA 19406

50-317

Dear Mr. Haynes:

Subject: Calvert Cliffs Nuclear Power Plant  
Unit Nos. 1 and 2  
License Nos. DPR-53 and 69  
Nonroutine Radiological Environment  
Operating Report

Ref: G. R. Fuhrman's Letters dated October 11 and  
November 23, 1982 to Mr. Ronald C. Haynes - U.S. NRC

This report is being submitted to comply with the requirements of Appendix B. ETS Section 5.6.2.b. and a follow-up to my letters referenced above, with a review of the observed levels of Ag-110m in oyster samples collected during 1982.

Oyster samples were collected monthly from the designated locations during November and December 1982, and analyzed for complete gamma spectrum. The results of the analyses showed the presence of Ag-110m as follows:

<u>Location/Sample Data</u>	<u>Ag-110m pCi/Kg (wet)</u>
Camp Conoy - November 18, 1982	532 ± 12
Kenwood Beach - November 18, 1982	24 ± 5
Camp Conoy - December 14, 1982	458 ± 12
Kenwood Beach - December 14, 1982	14 ± 4

During 1982 the radioactive releases of all radionuclides were well within the limits specified in the Environmental Technical Specifications (ETS) for the Calvert Cliffs Units 1 and 2.

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The Calvert Cliffs Unit 1 was shut down on April 17, 1982 for a general inspection of the Unit, refueling, and retubing of the condensers. Following completion of the planned maintenance work, this Unit was brought on-line on July 5, 1982. For similar maintenance work, Unit 2 came off-line on October 16, 1982. This Unit is expected to be back on-line on February 14, 1983.

For the period of interest in 1982, the monthly per cent capacity factors for both Units were as follows:

	<u>Unit 1</u>	<u>Unit 2</u>
July	72.0	80.14
August	75.45	64.77
September	69.27	86.86
October	105.20	41.19 (Unit came off-line
November	101.61	- on Oct. 16, 1982)
December	100.59	-

During operation of Units 1 and 2, the circulating-water-pump data logs show that, on the average, at least five pumps (each rated at 200,000 GPM) per Unit were in operation. The processed radwaste from the combined waste processing system for Units 1 and 2 was released into the circulating water prior to the discharge into the Bay. The radwaste may be released at a design rate that can range from 10 GPM to a maximum of 120 GPM. In practice, the releases are made at a predetermined rate depending upon the measured concentration of radionuclides in the radwaste, the ETS limits, as well as the established ALARA objectives. At the maximum release rate the radwaste concentration is decreased at least by a factor of about  $8 \times 10^3$  prior to discharge into the Bay.

Based on the Plant effluent release data and other related factors, using assumptions per Reg. Guide 1.109, calculations were made to estimate the expected level of Ag-110m in oysters in the vicinity of the discharge area of the Bay. These calculations show the expected level of Ag-110m in oysters substantially higher than the measured levels, indicating that the assumptions used in the calculations are very conservative and thus yield an overestimate of concentrations in the environmental media of interest.

Oysters have a natural tendency to highly bioconcentrate environmental silver. As a result of the bioconcentration, oyster muscle tissue show radioactive silver at levels observed in a number of samples collected during 1982. These levels are reportable on the basis of the Calvert Cliffs ETS exceedance criterion which is "ten times the background," where "background" is the "minimum detectable concentration" in the control sample.

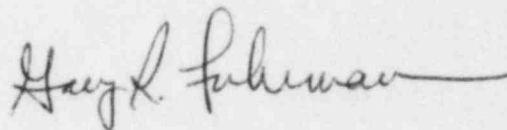
However, it should be pointed out that, based on model calculations, these levels would potentially result in doses to the whole body and the GI-Tract

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of a maximum individual which are a few per cent or less of the design objective doses of 10 CFR Part 50, Appendix I. The NRC Radiological Assessment Branch considers that "... a reporting level is exceeded if the potential annual dose to an individual is equal to or greater than the design objective doses of 10 CFR Part 50, Appendix I (Branch Technical Position Revision 1, November 1979). Based on this criterion, the observed levels of Ag-110m in oyster samples during 1982 would not be reportable.

Based on the average activity level of Ag-110m observed in oyster samples during 1982, the doses to the GI-Tract and the Whole Body of a maximum exposed individual (with the consumption rate of 5 Kilogram/year and the dose conversion factors as recommended in Reg. Guide 1.109) are estimated at less than 0.1 mrem/yr and less than  $0.1 \times 10^{-3}$  mrem/yr, respectively during 1982. These doses are small fractions of the permissible limit of 25 mrem/year to members of the general public as set forth in 40 CFR Part 190 "Environmental Radiation Protection Standards for Nuclear Power Operations," and are therefore considered to be of insignificant consequence to the health and safety of the public.

Very truly yours,



Gary R. Fuhrman, Director  
Environmental Studies & Monitoring

GRF/eml

cc: Director  
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Calvert Cliffs