

TERA



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

August 27, 1979

~~NRC PDR~~

Docket No. 50-317

Mr. A. E. Lundvall, Jr.
Vice President - Supply
Baltimore Gas & Electric Company
P. O. Box 1475
Baltimore, Maryland 21203

Dear Mr. Lundvall:

In the process of reviewing your July 3, 1979 request regarding Spent Fuel Pool Modification for Calvert Cliffs Unit No. 1, we find that additional information as detailed in the enclosure is needed to complete our review.

In order to complete our review in a timely manner, please provide the additional information at your earliest convenience.

Sincerely,

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Enclosure:
Request for Additional
Information

POOR
ORIGINAL

7909270 525

1042 229

Baltimore Gas & Electric Company

cc:

James A. Biddison, Jr.
General Counsel
G and E Building
Charles Center
Baltimore, Maryland 21203

Mr. R. M. Douglass, Manager
Quality Assurance Department
Room 923 Gas & Electric Building
P. O. Box 1475
Baltimore, Maryland . 21203

George F. Trowbridge, Esquire
Shaw, Pittman, Potts and
Trowbridge
1800 M Street, N.W.
Washington, D. C. 20036 .

Mr. R. C. L. Olson
Baltimore Gas and Electric Company
Room 922 - G and E Building
Post Office Box 1475
Baltimore, Maryland 21203

Mr. Leon B. Russell, Chief Engineer
Calvert Cliffs Nuclear Power Plant
Baltimore Gas and Electric Company
Lusby, Maryland 20657

Bechtel Power Corporation
ATTN: Mr. J. C. Judd
Chief Nuclear Engineer
15740 Shady Grove Road
Gaithersburg, Maryland 20760

Combustion Engineering, Inc.
ATTN: Mr. P. W. Kruse, Manager
Engineering Services
Post Office Box 500
Windsor, Connecticut 06095

Calvert County Library
Prince Frederick, Maryland 20678

POOR
ORIGINAL

1042 230

REQUEST FOR ADDITIONAL INFORMATIONSPENT FUEL POOL CAPACITY EXPANSIONCALVERT CLIFFS NUCLEAR POWER PLANT

- A. The amount of boron that you are proposing to put in the plates in the proposed racks does not appear to be sufficient to keep the k_{eff} in the proposed racks at or below 0.95 for a fuel assembly loading limit of 48.5 grams of uranium-235 per axial centimeter of fuel assembly. In view of this please provide the following additional information:
1. Provide the change in your calculated k_{eff} for the proposed storage lattice when the fuel assembly loading is changed from 48.5 to 43.8 grams of uranium-235 per axial centimeter of fuel assembly.
 2. Provide a description of the calculations you made for the above change in fuel loading and also the one for the k_{eff} of the minimum lattice pitch (i.e., 9.625"). Include a statement on whether or not you generated a neutron energy spectrum for each of the above cases to get accurate, effective, neutron reaction cross sections for every case.
 3. Since it is our understanding that the 16 group Hansen-Roach cross section set was developed for fast spectrum reactors, provide justification and verification of its use in a primarily thermal neutron energy spectrum.
 4. Provide a proof that the effective boron region cross sections you used in the KENO-IV verification calculation are accurate.
 5. Provide a copy of NES 81A0567, "Nuclear Design Analysis Report for the Calvert Cliffs Unit #1 Nuclear Plant High Density Spent Fuel Storage Racks," dated March 1979, which is referenced in your submittal.
 6. The NRC requires verification that the amount of boron used for the calculations is actually in all of the storage containers which are put into the spent fuel pool. Part of this required verification is an on-site neutron attenuation test for missing plates. Provide a description of the way you will verify that the amount of boron you used in your calculations is actually in the storage containers. Include a description of the on-site neutron attenuation test that you will perform.
 7. The NRC requires the licensee to have a method to verify that the amount of boron used for the calculations remains in the plates throughout the life of the racks. Provide a description of this verification method.

POOR
ORIGINAL

1042 231

- B. The following information regarding personnel radiation exposure, waste handling and cask drop analysis is needed.
1. A collective dose of 3.75 man-rem has been estimated for modification of the North pool. Provide a breakdown of this estimation in accordance with a) the number of workers involved in each phase of the operation, b) the exposure rate (mr/hr) to the workers during each phase of the operation and c) the time the workers will spend in this radiation field. Include in your breakdown the exposure rate from the contaminated racks and commensurate exposure to workers during removal, decontamination, crating and shipping of the racks.
 2. Provide the additional occupational exposure (man-rem/yr.) that will be received by workers in the SFP area during normal operations, including refueling, as a result of the modification.
 3. Provide the estimated volume of contaminated material (e.g., spent fuel racks, seismic restraints) expected to be shipped from the plant because of the pool modification to a licensed burial site.
 4. Discuss in some detail the impact of the proposed pool modification on radioactive liquid and gaseous effluents and solid radwaste shipments from the plant. Include a discussion of the pool leak collection system and history of leakage from the pool.
 5. Provide the estimated failed fuel fraction for each fuel cycle at Calvert Cliffs Units 1 and 2.
 6. Identify any heavy load or cask drop analyses performed to date for your facility. Provide a copy of all such analyses not previously submitted to the NRC staff.
 7. Provide a list of all objects that are required to be moved over or near the spent fuel storage pool. For each object listed, provide its approximate weight and size, a diagram or description of the transfer path utilized, and the frequency of movement.

POOR
ORIGINAL

1042 232