

January 25, 1989

Docket Nos. 50-317
and 50-318

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Mr. J. A. Tiernan
Vice President - Nuclear Energy
Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
MD Rts. 2 & 4
P. O. Box 1535
Lusby, Maryland 20657

Dear Mr. Tiernan:

SUBJECT: ENVIRONMENTAL ASSESSMENT FOR FACILITY OPERATION WITH HIGHER
FUEL ENRICHMENT AND IRRADIATION LEVELS (TACS 68416 AND 68417)

Enclosed is a copy of an Environmental Assessment and Finding of No Significant Impact which relates to your June 9, 1988 application, as supplemented on October 25, November 17 and December 28, 1988, concerning your proposal to (1) increase the U-235 enrichment limits in the Units 1 and 2 Technical Specifications (TS) 5.6.1, "Criticality-Spent Fuel," and TS 5.6.2, "Criticality-New Fuel," from 4.1 to 5.0 weight percent and (2) restrict the TS 5.6.2 maximum limit for the effective multiplication factor (K_{eff}) to a limit of 0.95, vice the current limit of 0.98, with the addition of the full flood condition to the various densities of unborated water conditions that are assumed in determining K_{eff} .

This assessment shall also apply to any changes proposed in the reactor core U-235 enrichment limit, up to and including 5.0 weight percent, and to proposed increases in the average level of irradiation of fuel discharged from the reactors up to a batch average discharge burnup limit of 60,000 MWD/MT.

This assessment has been forwarded to the Office of the Federal Register for publication.

Sincerely,

Original signed by *DE LaBerge for*

Scott Alexander McNeil, Project Manager
Project Directorate I-1
Division of Reactor Projects I/II

Enclosure:
Environmental Assessment

cc w/enclosure:
See next page

PDI-1:LA *aw* PDI-1:PM *aw*
CVogan SAMcNeil:ah:vr
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Mr. J. A. Tiernan
Baltimore Gas & Electric Company

Calvert Cliffs Nuclear Power Plant

cc:

Mr. John M. Gott, President
Calvert County Board of
Commissioners
Prince Frederick, Maryland 20768

D. A. Brune, Esq.
General Counsel
Baltimore Gas and Electric Company
P. O. Box 1475
Baltimore, Maryland 21203

Mr. Jay E. Silberg, Esq.
Shaw, Pittman, Potts and Trowbridge
1800 M Street, NW
Washington, DC 20036

Mr. W. J. Lippold, General Supervisor
Technical Services Engineering
Calvert Cliffs Nuclear Power Plant
MD Rts 2 & 4, P. O. Box 1535
Lusby, Maryland 20657

Resident Inspector
c/o U.S. Nuclear Regulatory Commission
P. O. Box 437
Lusby, Maryland 20657

Department of Natural Resources
Energy Administration, Power Plant
Siting Program
ATTN: Mr. T. Magette
Tawes State Office Building
Annapolis, Maryland 21204

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406

UNITED STATES NUCLEAR REGULATORY COMMISSIONBALTIMORE GAS AND ELECTRIC COMPANYCALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2DOCKET NOS. 50-317 AND 50-318ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

The U. S. Nuclear Regulatory Commission (NRC or the Commission) is considering issuance of amendments to Facility Operating License Nos. DPR-53 and DPR-69, issued to the Baltimore Gas and Electric Company, (the licensee), for operation of the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, respectively, which are located in Calvert County, Maryland. The proposed amendments, submitted via the license application dated June 9, 1988, as supplemented on October 25 and November 17, 1988 would change the Units 1 and 2 Technical Specifications (TS) 5.6.1, "Criticality-Spent Fuel," and 5.6.2, "Criticality-New Fuel," to increase the maximum U-235 fuel enrichment limit from 4.1 to 5.0 weight percent and also, reduce the TS 5.6.2 maximum limit on the effective multiplication factor (K_{eff}) from 0.98 to 0.95. Additional information concerning expected core burnup levels was provided in a December 28, 1988 letter.

This assessment shall also apply to any changes proposed in the reactor core U-235 enrichment limit, up to and including 5.0 weight percent, and to proposed increases in the average level of irradiation of fuel discharged from the reactors up to a batch average discharge burnup limit of 60,000 MWD/MT.

NEED FOR ENVIRONMENTAL IMPACT STATEMENT

The Commission has found that the proposed amendments constitute no additional significant environmental impact and as has, therefore, determined not to prepare an environmental impact statement.

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ENVIRONMENTAL ASSESSMENT

Identification of Proposed Amendments

Currently, the maximum permitted enrichment limit for (1) stored new and spent fuel and (2) fuel in the reactor core at Calvert Cliffs Units 1 and 2 is 4.1 weight percent U-235. The licensee is in the process of shifting its core design to incorporate higher enrichment fuel assemblies to support full 24-month operating cycles. The first Unit 1 24-month cycle commenced in Spring 1988, with a reload planned for April 1990, while the first Unit 2 24-month cycle is nearing its March 1989 completion date. These first 24-month cycle cores were transitional designs provided to economically utilize the lower enrichment fuel (4.0 to 4.85 weight percent U-235) located onsite that had already experienced irradiation and burnup during the previous 18-month cycles at each unit. Subsequent to the use of this lower enrichment fuel, the licensee intends to utilize cores with up to 5.0 weight percent U-235 enrichment levels to better support 24 months of continuous power operation without refueling. Consequently, the licensee has proposed changes to increase the U-235 enrichment limits in TS 5.6.1, "Criticality-Spent Fuel," and TS 5.6.2, "Criticality-New Fuel," from 4.1 to 5.0 weight percent.

In addition, the licensee has proposed to restrict the maximum value of K_{eff} to a limit of 0.95, vice the current limit of 0.98, and add the full flood condition to the various densities of unborated water conditions that are assumed in determining K_{eff} . The reduction of the maximum limit for K_{eff} for fully flooded conditions was proposed solely to place the Calvert Cliffs TS limits on new fuel criticality in full accord with the NRC guidance

provided in Section 9.1.1., "New Fuel Storage," of the Standard Review Plan (NUREG-0800). This restrictive change would provide more conservative criticality determinations for new fuel storage than those currently required by TS.

Need for the Proposed Amendments:

The proposed changes are needed to allow the licensee to support future 24-month full power operating cycles.

Environmental Impact of the Proposed Amendments:

The Commission has completed its evaluation of the proposed revisions to the TS and the proposed increase in the burnup limits for the fuel. The staff has concluded that such changes would not adversely affect plant safety. The proposed changes have no significant adverse effects upon the probability of any analyzed accident. The increased burnup may alter slightly the mix of fission products that could be released in the event of a serious accident but such small changes would not significantly affect the consequences of said serious accidents. In addition, no changes would result in the types or amounts of any radiological effluents that may be released offsite. Finally, these changes would not contribute to any significant increase in individual or cumulative occupational radiation exposure.

Regarding the potential non-radiological impact of reactor operation with higher enrichment fuel and increased levels of irradiation, the proposed changes involve systems located within the restricted area, as defined in 10 CFR Part 20. They do not affect non-radiological plant effluents and have no other non-radiological environmental impact.

The potential environmental impact resulting from the transportation of higher fuel enrichment and burnup levels is discussed in the staff assessment

entitled, "NRC Assessment of the Environmental Effects of Extended Fuel Enrichment and Irradiation," which was published in the FEDERAL REGISTER on August 11, 1988 (53 FR 30355) in connection with the Shearon Harris Nuclear Power Plant, Unit 1, Environmental Assessment and Finding of No Significant Impact. As indicated therein, the environmental cost contribution of the transportation, due to the increases in the fuel enrichment up to 5% and irradiation limits up to 60,000 MWD/MT are either unchanged or may, in fact, be reduced from those summarized in Table S-4 as set forth in 10 CFR 51.52(c). These findings are applicable to these amendments for the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2.

Therefore, the Commission concludes that the proposed amendments pose no significant radiological or non-radiological environmental impact.

Alternatives to the Proposed Amendments:

Since the Commission concluded that there are no significant environmental effects that would result from the proposed changes, any alternatives with equal or greater environmental impacts need not be evaluated.

The principal alternative would be to deny the requested fuel enrichment and burnup increases. This would not reduce environmental impact of plant operation and would result in reduced operational flexibility.

Alternative Use of Resources:

This action does not involve the use of any resources not previously considered in the "Final Environmental Statement Related to the Operation of Calvert Cliffs Nuclear Power Plant, Units 1 and 2," dated April 1973.

Agencies and Persons Consulted:

The NRC staff reviewed the licensee's request and did not consult with other agencies or persons.


FINDING OF NO SIGNIFICANT IMPACT

Based upon the foregoing environmental assessment, we conclude that the proposed amendments will not have a significant effect on the quality of the human environment.

For further details with respect to this action, see (1) the application for license amendments dated June 9, 1988, as supplemented on October 25 and November 17, 1988, and (2) the licensee's letter of December 28, 1988, which are available for public inspection at the Commission's Public Document Room, 2120 L Street, N.W., Washington, D.C. and at the Calvert County Library, Prince Frederick, Maryland.

Dated at Rockville, Maryland, this 25th day of January 1989.

FOR THE NUCLEAR REGULATORY COMMISSION


Joseph D. Neighbors, Acting Director
Project Directorate I-1
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation