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Docket Nos. 50-317  
and 50-318

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

Dear Mr. Lundvall:

The Commission has issued the enclosed Amendment Nos. 63 and 45 to Facility Operating License Nos. DPR-53 and DPR-69 for Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2. These amendments consist of changes to the Technical Specifications in response to your application dated October 6, 1981.

These amendments revise the Technical Specifications to increase the maximum allowable enrichment for fuel stored in the fresh fuel storage racks from 4.0 to 4.1 weight percent.

Copies of our Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

Original signed by:

David H. Jaffe, Project Manager  
 Operating Reactors Branch #3  
 Division of Licensing

CP  
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Enclosures:

1. Amendment No. 63 to DPR-53
2. Amendment No. 45 to DPR-69
3. Safety Evaluation
4. Notice of Issuance

cc w/enclosures:  
 See next page



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*Continued to  
 PAClark 12/21/81*

*Amendment  
 FR  
 [Signature]*

OFFICE	ORB#3:DL	ORB#3:DL	ORB#3:DL	AD:OR:DL	OELD	
SURNAME	PKreutzer	DJaffe/pn	RAClark	TMevak	[Signature]	
DATE	12/14/81	12/14/81	12/14/81	12/14/81	12/16/81	

Baltimore Gas and Electric Company

cc:

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Baltimore Gas and Electric Company  
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Baltimore, MD 21203

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Plant Superintendent  
Calvert Cliffs Nuclear Power Plant  
Maryland Routes 2 & 4  
Lusby, MD 20657

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

Combustion Engineering, Inc.  
Attn: Mr. P. W. Kruse, Manager  
Engineering Services  
P. O. Box 500  
Windsor, CT 06095

Public Document Room  
Calvert County Library  
Prince Frederick, MD 20678

Director, Department of State Planning  
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Baltimore, MD 21201

Mr. R. M. Douglass, Manager  
Quality Assurance Department  
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P. O. Box 1475  
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Mr. T. L. Syndor, General Supervisor  
Operations Quality Assurance  
Calvert Cliffs Nuclear Power Plant  
Maryland Routes 2 & 4  
Lusby, MD 20657

Ms. Mary Harrison, President  
Calvert County Board of County Commissioners  
Prince Frederick, MD 20768

U. S. Environmental Protection Agency  
Region III Office  
Attn: Regional Radiation Representative  
Curtis Building (Sixth Floor)  
Sixth and Walnut Streets  
Philadelphia, PA 19106

Mr. Ralph E. Architzel  
Resident Reactor Inspector  
NRC Inspection and Enforcement  
P. O. Box 437  
Lusby, MD 20657

Mr. Charles B. Brinkman  
Manager - Washington Nuclear Operations  
Combustion Engineering, Inc.  
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Bethesda, MD 20014

Mr. J. A. Tierman, Manager  
Nuclear Power Department  
Calvert Cliffs Nuclear Power Plant  
Maryland Routes 2 & 4  
Lusby, MD 20657

Mr. W. J. Lippold, Supervisor  
Nuclear Fuel Management  
Baltimore Gas and Electric Company  
Calvert Cliffs Nuclear Power Plant  
P. O. Box 1475  
Baltimore, Maryland 21203

Mr. R. E. Denton, General Supervisor  
Training & Technical Services  
Calvert Cliffs Nuclear Power Plant  
Maryland Routes 2 & 4  
Lusby, MD 20657

cc w/enclosure(s) and incoming  
dated: 10/6/81

Administrator, Power Plant Siting Program  
Energy and Coastal Zone Administration  
Department of Natural Resources  
Tawes State Office Building  
Annapolis, MD 21204



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

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-317

CALVERT CLIFFS NUCLEAR POWER PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 63  
License No. DPR-53

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Baltimore Gas & Electric Company (the licensee) dated October 6, 1981, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.


2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-53 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 63, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Robert A. Clark, Chief  
Operating Reactors Branch #3  
Division of Licensing

Attachment:  
Changes to the  
Technical Specifications

Date of Issuance: December 21, 1981

ATTACHMENT TO LICENSE AMENDMENT NO. 63

FACILITY OPERATING LICENSE NO. DPR-53

DOCKET NO. 50-317

Replace the following page of the Appendix A Technical Specifications with the enclosed page as indicated. The revised page is identified by Amendment number and contains vertical lines indicating the area of change. The corresponding overleaf page is also provided to maintain document completeness.

Page

5-5

## DESIGN FEATURES

### VOLUME

5.4.2 The total water and steam volume of the reactor coolant system is 10,614 ± 460 cubic feet at a nominal  $T_{avg}$  of 532°F.

### 5.5 METEOROLOGICAL TOWER LOCATION

5.5.1 The meteorological tower shall be located as shown on Figure 5.1-1.

### 5.6 FUEL STORAGE

#### CRITICALITY - SPENT FUEL

5.6.1 The spent fuel storage racks are designed and shall be maintained with a minimum 10 3/32" x 10 3/32" center-to-center distance between fuel assemblies placed in the storage racks to ensure a  $k_{eff}$  equivalent to  $\leq 0.95$  with the storage pool filled with unborated water. The  $k_{eff}$  of  $\leq 0.95$  includes the conservative allowances for uncertainties described in Section 9.7.2 of the FSAR. The maximum fuel enrichment to be stored in the fuel pool will be 4.1 weight percent.

#### CRITICALITY - NEW FUEL

5.6.2 The new fuel storage racks are designed and shall be maintained with a nominal 18 inch center-to-center distance between new fuel assemblies such that  $k_{eff}$  will not exceed 0.98 when fuel having a maximum enrichment of 4.1 weight percent U-235 is in place and various densities of unborated water are assumed including aqueous foam moderation. The  $k_{eff}$  of  $\leq 0.98$  includes the conservative allowance for uncertainties described in Section 9.7.2 of the FSAR.

#### DRAINAGE

5.6.3 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 63 feet.

#### CAPACITY

5.6.4 The fuel storage pool is designed and shall be maintained with a combined storage capacity, for both Units 1 and 2, limited to no more than 1760 fuel assemblies.

### 5.7 COMPONENT CYCLIC OR TRANSIENT LIMITS

5.7.1 The components identified in Table 5.7-1 are designed and shall be maintained within the cyclic or transient limits of Table 5.7-1.

TABLE 5.7-1

COMPONENT CYCLIC OR TRANSIENT LIMITS

<u>Component</u>	<u>Cyclic or Transient Limit</u>	<u>Design Cycle or Transient</u>
Reactor Coolant System	500 heatup and cooldown cycles	70°F to 532°F to 70°F
	400 reactor trip cycles	100% to 0% RATED THERMAL POWER
	10 Primary Hydrostatic Tests	3125 psia and 60°F > NDTT
	320 Primary Leak Tests	2500 psia and 60°F > NDTT
Steam Generator	10 Secondary Hydrostatic Tests	1250 psia Secondary Side and temperature $\geq$ 100°F
	320 Secondary Leak Tests	1000 psia Secondary Side With Primary - Secondary $\Delta p$ of 820 psi and shell side temperature between 100°F and 200°F



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

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-318

CALVERT CLIFFS NUCLEAR POWER PLANT UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 45  
License No. DPR-69

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Baltimore Gas & Electric Company (the licensee) dated October 6, 1981, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.



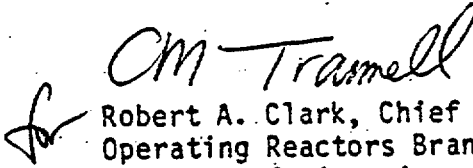
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-69 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 45, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Robert A. Clark, Chief  
Operating Reactors Branch #3  
Division of Licensing

Attachment:  
Changes to the  
Technical Specifications

Date of Issuance: December 21, 1981

ATTACHMENT TO LICENSE AMENDMENT NO. 45

FACILITY OPERATING LICENSE NO. DPR-69

DOCKET NO. 50-318

Replace the following page of the Appendix A Technical Specifications with the enclosed page as indicated. The revised page is identified by Amendment number and contains vertical lines indicating the area of change. The corresponding overleaf page is also provided to maintain document completeness.

Page

5-5

## DESIGN FEATURES

### VOLUME

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5.6.1 The spent fuel storage racks are designed and shall be maintained with a minimum 10 3/32" x 10 3/32" center-to-center distance between fuel assemblies placed in the storage racks to ensure a  $k_{eff}$  equivalent to  $\leq 0.95$  with the storage pool filled with unborated water. The  $k_{eff}$  of  $\leq 0.95$  includes the conservative allowances for uncertainties described in Section 9.7.2 of the FSAR. The maximum fuel enrichment to be stored in the fuel pool will be 4.1 weight percent.

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5.6.2 The new fuel storage racks are designed and shall be maintained with a nominal 18 inch center-to-center distance between new fuel assemblies such that  $k_{eff}$  will not exceed 0.98 when fuel having a maximum enrichment of 4.1 weight percent U-235 is in place and various densities of unborated water are assumed including aqueous foam moderation. The  $k_{eff}$  of  $\leq 0.98$  includes the conservative allowance for uncertainties described in Section 9.7.2 of the FSAR.

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5.6.3 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 63 feet.

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5.7.1 The components identified in Table 5.7-1 are designed and shall be maintained within the cyclic or transient limits of Table 5.7-1.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NOS. 63 AND 45 TO

FACILITY OPERATING LICENSE NOS. DPR-53 AND DPR-69

BALTIMORE GAS AND ELECTRIC COMPANY

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-317 AND 50-318

Introduction

By application dated October 6, 1981, the Baltimore Gas and Electric Company (BG&E) requested a change to the Technical Specifications (TS) for Calvert Cliffs Units 1 and 2. The proposed change would increase the maximum allowable enrichment for fuel storage in the fresh fuel storage racks from 4.0 to 4.1 weight percent as stated in TS 5.6.2.

Discussion and Evaluation

In order to accommodate the extended burnup due to an 18-month operating cycle for the Calvert Cliffs units, fuel of higher enrichment is required. The actual enrichment is expected to be within an envelope from 3.95 weight percent (w/o) to 4.05 w/o U-235. A proposed modification to TS 5.6.2 has, therefore, been proposed by BG&E in order to increase the fresh (new) fuel storage rack maximum fuel assembly enrichment from the currently approved 4.0 w/o U-235 value to 4.1 w/o U-235.

The new fuel storage facility is not affected by the proposed TS change. New fuel for Calvert Cliffs 1 and 2 is stored in a common area adjacent to the spent fuel storage pools, in the Auxiliary Building. The new fuel storage facility provides dry storage for approximately 2/3 of a core which is approximately 144 fuel assemblies. The facility consists of two rows of storage modules, each of which consists of a double row of six storage locations. Fuel assemblies are centered in each storage location. The storage facility is enclosed by a concrete wall that is one foot thick. The floor is of concrete, but there is no concrete structure immediately above the facility.

The two by six arrays of fuel assembly storage racks are separated by aisles that are two to three feet wide and the center-to-center spacing of assemblies within each two by six array is approximately 17 inches. One-quarter inch thick full-length stainless steel angles, two inches by two inches, are at the corner of each storage rack.

We have reviewed the revised new fuel rack criticality analysis to determine whether margin exists to permit storage of these higher enrichment fuel assemblies. The analysis included assuming the inundation of the fresh fuel rack, containing fuel with 4.1 w/o U-235, in unborated water having effective densities in the range of 0.04 to 1.0 gram/cc. The low density water moderation could conceivably arise during fire-fighting operations through the use of fire hoses and aqueous foam generators. We find the range of moderator water density investigated adequately covers all conceivable values and is, therefore, acceptable.

Criticality (k-effective) calculations were performed with the Monte Carlo code KENO-IV using neutron cross-sections generated by the CEPAC code. These are analytical techniques that have been used in the past and are, therefore, acceptable.

The KENO-IV calculations yield a K-effective of 0.89 for full density water and 0.75 for a secondary peak at a water density of about 0.08 gm/cc. These values provide a 10% margin to the limiting value of 0.98 required by TS 5.6.2. We consider this margin to be adequate to conservatively allow for calculational uncertainties. Accordingly, we find that neither the probability nor the consequences associated with criticality of the new fuel storage facility have increased as a result of an increase from 4.0 w/o to 4.1 w/o enrichment of stored fuel. We, therefore, conclude that the Calvert Cliffs Units 1 and 2 new (fresh) fuel storage racks can safely accommodate 4.1 w/o U-235 14x14 fuel assemblies.

Based upon the above, we find it appropriate to increase the maximum allowable new fuel storage enrichment from 4.0 w/o to 4.1 w/o as provided by TS 5.6.2. In addition, it is appropriate to indicate in TS 5.6.2 that, for supporting calculations, "...various densities of unborated water are assumed, including aqueous foam moderation."

#### Environmental Consideration

We have determined that the amendments do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendments involve an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendments do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the amendments do not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Date: December 21, 1981

UNITED STATES NUCLEAR REGULATORY COMMISSION  
DOCKET NOS. 50-317 AND 318  
BALTIMORE GAS AND ELECTRIC COMPANY  
NOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY  
OPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment Nos. 63 and 45 to Facility Operating Licenses Nos. DPR-53 and DPR-69, issued to Baltimore Gas and Electric Company, which revised Technical Specifications for operation of the Calvert Cliffs Nuclear Power Plant, Units Nos. 1 and 2. The amendments are effective as of the date of issuance.

These amendments revise the Technical Specifications to increase the maximum allowable enrichment for fuel stored in the fresh fuel storage racks from 4.0 to 4.1 weight percent.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of the amendments was not required since the amendments do not involve a significant hazards consideration.



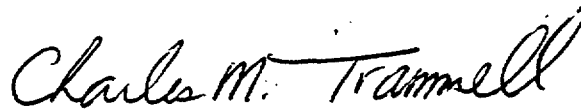
- 2 -

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of the amendments.

For further details with respect to this action, see (1) the application for amendment dated October 6, 1981, (2) Amendment Nos. 63 and 45 to License Nos. DPR-53 and DPR-69, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D.C. and at the Calvert County Library, Prince Frederick, Maryland. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland, this 21st day of December, 1981.

FOR THE NUCLEAR REGULATORY COMMISSION



Charles M. Trammell, Acting Chief  
Operating Reactors Branch #3  
Division of Licensing