

Socket Nos. 50-317
and 50-318

JAN 6 1978

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

Gentlemen:

The Commission has issued the enclosed Amendment Nos. 28 and 13 to Facility Operating License Nos. DPR-53 and DPR-69 for the Calvert Cliffs Nuclear Power Plant Unit Nos. 1 and 2, respectively. The amendments are in response to your December 23, 1977 application and supplements thereto dated January 4 and 6, 1978.

The amendments change the Technical Specifications by modifying the Limiting Conditions for Operation (LCO) on Control Element Assembly (CEA) positions for reactor operation. The change authorizes the insertion of all CEAs a nominal 3 inches from their present position. It is our intention that the CEAs will not be withdrawn above this new normal operating position. If other operating conditions should require the CEAs to be withdrawn above this new normal operating position, you should promptly notify the NRC project manager. Additionally, you should modify the administrative procedures that implement Specification 4.1.3.1.2 to assure that approximately one fourth of the full length CEAs are determined to be operable each week. This will provide earlier detection of any anomalous CEA behavior.

This interim action is being taken pending completion of a long term program to address guide tube wear that is under development. We understand that you intend to evaluate the guide tube wear of the Unit No. 1 Cycle 1 fuel now in the Calvert Cliffs spent fuel pool in mid-January 1978. We request that you promptly provide us with the results of the evaluation of that inspection.

Cont. 1
(S)

OFFICE >					
SURNAME >					
DATE >					

JAN 6 1978

Some portions of the proposed technical specifications have been modified to meet our requirements. These modifications have been discussed with and agreed to by your staff.

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

Sincerely,

**Original Signed by
Don K. Davis**

Don K. Davis, Acting Chief
Operating Reactors Branch #2
Division of Operating Reactors

Enclosures:

1. Amendment No. 28 to License No. DPR-53
2. Amendment No. 13 to License No. DPR-59
3. Safety Evaluation
4. Notice

cc w/enclosures:
See next page

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RBAer
LShao
TJCarter

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ACRS (16)
CMiles, OPA
DRoss
TBAbernathy
JRBuchanan

OELD

*For previous concurrences see attached yellows.

1/ /78

OFFICE >	DOR:ORB-2	DOR:ORB-2	DOR:STS	DOR:RS	DOR:EB	DOR:ORB-2
SURNAME >	MConner:rj	RMDiggs	JMcGough*	RBAer*	LShao	DKDavis
DATE >	1/ /78	1/ /78	1/ 6/78	1/ 4/78	1/ /78	1/ /78



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

January 6, 1978

Docket Nos. 50-317
and 50-318

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

Gentlemen:

The Commission has issued the enclosed Amendment Nos. 28 and 13 to Facility Operating License Nos. DPR-53 and DPR-69 for the Calvert Cliffs Nuclear Power Plant Unit Nos. 1 and 2, respectively. The amendments are in response to your December 23, 1977 application and supplements thereto dated January 4 and 6, 1978.

The amendments change the Technical Specifications by modifying the Limiting Conditions for Operation (LCO) on Control Element Assembly (CEA) positions for reactor operation. The change authorizes the insertion of all CEAs a nominal 3 inches from their present position. It is our intention that the CEAs will not be withdrawn above this new normal operating position. If other operating conditions should require the CEAs to be withdrawn above this new normal operating position, you should promptly notify the NRC project manager. Additionally, you should modify the administrative procedures that implement Specification 4.1.3.1.2 to assure that approximately one fourth of the full length CEAs are determined to be operable each week. This will provide earlier detection of any anomalous CEA behavior.

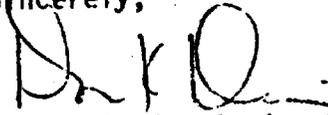
This interim action is being taken pending completion of a long term program to address guide tube wear that is under development. We understand that you intend to evaluate the guide tube wear of the Unit No. 1 Cycle 1 fuel now in the Calvert Cliffs spent fuel pool in mid-January 1978. We request that you promptly provide us with the results of the evaluation of that inspection.

January 6, 1978

Some portions of the proposed technical specifications have been modified to meet our requirements. These modifications have been discussed with and agreed to by your staff.

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

Sincerely,



Don K. Davis, Acting Chief
Operating Reactors Branch #2
Division of Operating Reactors

Enclosures:

1. Amendment No. 28 to
License No. DPR-53
2. Amendment No. 13 to
License No. DPR-69
3. Safety Evaluation
4. Notice

cc w/enclosures:
See next page

cc w/enclosures:

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Bechtel Power Corporation
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Gaithersburg, Maryland 20760

Combustion Engineering, Inc.
ATTN: Mr. J. A. Honey
Project Manager
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Windsor, Connecticut 06095

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Prince Frederick, Maryland 20678

Administrator, Power Plant Siting Program (4) -- w/cy of BG&E 12/23/77 Appl.
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Department of Natural Resources
Tawes State Office Building
Annapolis, Maryland 21401

Mr. Bernard Fowler
President, Board of County
Commissioners
Prince Frederick, Maryland 20768

Chief, Energy Systems Analyses
Branch (AW-459)
Office of Radiation Programs
U. S. Environmental Protection Agency
Room 645, East Tower
401 M Street, S. W.
Washington, D. C. 20460

U. S. Environmental Protection Agency
Region III Office
ATTN: EIS COORDINATOR
Curtis Building (Sixth Floor)
Sixth & Walnut Streets
Philadelphia, Pennsylvania 19106



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

BALTIMORE GAS & ELECTRIC COMPANY

DOCKET NO. 50-317

CALVERT CLIFFS UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 28
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 December 23, 1977, as supplemented by filings dated January 4 and 6, 1978, 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.

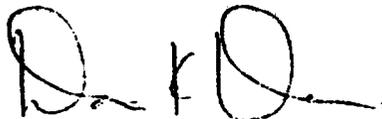
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C(2) of Facility License No. DPR-53 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 28, 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



Don K. Davis, Acting Chief
Operating Reactors Branch #2
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: January 6, 1978

ATTACHMENT TO LICENSE AMENDMENT NO. 28

FACILITY OPERATING LICENSE NO. DPR-53

DOCKET NO. 50-317

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

Pages

3/4 1-19
3/4 1-20
3/4 1-24
3/4 1-25

REACTIVITY CONTROL SYSTEMS

LIMITING CONDITION FOR OPERATION

2. Declare the CEA inoperable. After declaring the CEA inoperable, POWER OPERATION may continue for up to 7 days per occurrence with a total accumulated time of < 14 days per calendar year provided the remainder of the CEAs in the group with the inoperable CEA are aligned to within 7.5 inches of the inoperable CEA while maintaining the allowable CEA sequence and insertion limits shown on Figure 3.1-2; the THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation.

- g. With more than one full length CEA inoperable or misaligned from any other CEA in its group by 15 inches (indicated position) or more, be in at least at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each full length CEA shall be determined to be within 7.5 inches (indicated position) of all other CEAs in its group at least once per 12 hours except during time intervals when the Deviation Circuit and/or CEA Motion Inhibit are inoperable, then verify the individual CEA positions at least once per 4 hours.

4.1.3.1.2 Each full length CEA not fully inserted shall be determined to be OPERABLE by inserting it at least 7.5 inches at least once per 31 days.

4.1.3.1.3 The CEA Motion Inhibit shall be demonstrated OPERABLE at least once per 31 days by a functional test which verifies that the circuit maintains the CEA group overlap and sequencing requirements of Specification 3.1.3.6 and that the circuit also prevents any CEA from being misaligned from all other CEAs in its group by more than 7.5 inches (indicated position).

REACTIVITY CONTROL SYSTEMS

PART LENGTH CEA INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.2 All part length CEAs shall be withdrawn to at least 129.0 inches.

APPLICABILITY: MODES 1* and 2*.

ACTION:

With a maximum of one PLCEA withdrawn to less than 129.0 inches, either:

- a. Withdraw the PLCEA to at least 129.0 inches within one hour,
or
- b. Be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.2 Each part length CEA shall be determined withdrawn to at least 129.0 inches by:

- a. Verifying the positions of the PLCEAs prior to increasing THERMAL POWER above 5% of RATED THERMAL POWER, and
- b. Verifying, at least once per 31 days, that electric power has been disconnected from its drive mechanism by maintaining the feeder breaker open under administrative control.

* See Special Test Exceptions 3.10.1 and 3.10.2.

REACTIVITY CONTROL SYSTEMS

CEA DROP TIME

LIMITING CONDITION FOR OPERATION

3.1.3.4 The individual full length (shutdown and control) CEA drop time, from a fully withdrawn position, shall be ≤ 3.0 seconds from when the electrical power is interrupted to the CEA drive mechanism until the CEA reaches its 90 percent insertion position with:

- a. $T_{avg} \geq 515^{\circ}\text{F}$, and
- b. All reactor coolant pumps operating.

APPLICABILITY: MODES 1 and 2.

ACTION:

- a. With the drop time of any full length CEA determined to exceed the above limit, restore the CEA drop time to within the above limit prior to proceeding to MODE 1 or 2.
- b. With the CEA drop times within limits but determined at less than full reactor coolant flow, operation may proceed provided THERMAL POWER is restricted to less than or equal to the maximum THERMAL POWER level allowable for the reactor coolant pump combination operating at the time of CEA drop time determination.

SURVEILLANCE REQUIREMENTS

4.1.3.4 The CEA drop time of full length CEAs shall be demonstrated through measurement prior to reactor criticality:

- a. For all CEAs following each removal of the reactor vessel head,
- b. For specifically affected individuals CEAs following any maintenance on or modification to the CEA drive system which could affect the drop time of those specific CEAs, and
- c. At least once per 18 months.

REACTIVITY CONTROL SYSTEMS

SHUTDOWN CEA INSERTION LIMIT

LIMITING CONDITION FOR OPERATION

3.1.3.5 All shutdown CEAs shall be withdrawn to at least 129.0 inches.

APPLICABILITY: MODES 1 and 2*#.

ACTION:

With a maximum of one shutdown CEA withdrawn, except for surveillance testing pursuant to Specification 4.1.3.1.2, to less than 129.0 inches, within one hour either:

- a. Withdraw the CEA to at least 129.0 inches, or
- b. Declare the CEA inoperable and apply Specification 3.1.3.1.

SURVEILLANCE REQUIREMENTS

4.1.3.5 Each shutdown CEA shall be determined to be withdrawn to at least 129.0 inches:

- a. Within 15 minutes prior to withdrawal of any CEAs in regulating groups during an approach to reactor criticality, and
- b. At least once per 12 hours thereafter.

* See Special Test Exception 3.10.2.

#With $K_{eff} \geq 1.0$.

REACTIVITY CONTROL SYSTEMS

REGULATING CEA INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.6 The regulating CEA groups shall be limited to the withdrawal sequence and to the insertion limits shown on Figure 3.1-2 (regulating CEAs are considered to be fully withdrawn in accordance with Figure 3.12 when withdrawn to at least 129.0 inches) with CEA insertion between the Long Term Steady State Insertion Limits and the Transient Insertion Limits restricted to:

- a. \leq 4 hours per 24 hour interval,
- b. \leq 5 Effective Full Power Days per 30 Effective Full Power Day interval, and
- c. \leq 14 Effective Full Power Days per calendar year.

APPLICABILITY: MODES 1* and 2*#.

ACTION:

- a. With the regulating CEA groups inserted beyond the Transient Insertion Limits, except for surveillance testing pursuant to Specification 4.1.3.1.2, within two hours either:
 1. Restore the regulating CEA groups to within the limits, or
 2. Reduce THERMAL POWER to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the CEA group position using the above figure:
- b. With the regulating CEA groups inserted between the Long Term Steady State Insertion Limits and the Transient Insertion Limits for intervals $>$ 4 hours per 24 hour interval, except during operations pursuant to the provisions of ACTION items c. and e. of Specification 3.1.3.1, operation may proceed provided either:
 1. The Short Term Steady State Insertion Limits of Figure 3.1-2 are not exceeded, or
 2. Any subsequent increase in THERMAL POWER is restricted to \leq 5% of RATED THERMAL POWER per hour.

* See Special Test Exceptions 3.10.2 and 3.10.4.

With $K_{eff} \geq 1.0$.

REACTIVITY CONTROL SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

- c. With the regulating CEA groups inserted between the Long Term Steady State Insertion Limits and the Transient Insertion Limits for intervals > 5 EFPD per 30 EFPD interval or > 14 EFPD per calendar year, except during operations pursuant to the provisions of ACTION items c. and e. of Specification 3.1.3.1, either:
1. Restore the regulating groups to within the Long Term Steady State Insertion Limits within two hours, or
 2. Be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.6 The position of each regulating CEA group shall be determined to be within the Transient Insertion Limits at least once per 12 hours except during time intervals when the PDIL Alarm Circuit is inoperable, then verify the individual CEA positions at least once per 4 hours. The accumulated times during which the regulating CEA groups are inserted beyond the Steady State Insertion Limits but within the Transient Insertion Limits shall be determined at least once per 24 hours.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20545

BALTIMORE GAS & ELECTRIC COMPANY

DOCKET NO. 50-318

CALVERT CLIFFS UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 13
License No. DFR-69

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Baltimore Gas & Electric Company (the licensee) dated December 23, 1977, as supplemented by filings dated January 4 and 6, 1978, 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 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. 13, 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



Don K. Davis, Acting Chief
Operating Reactors Branch #2
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: January 6, 1978

ATTACHMENT TO LICENSE AMENDMENT NO. 13

FACILITY OPERATING LICENSE NO. DFR-69

DOCKET NO. 50-318

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

Pages

3/4 1-19
3/4 1-20
3/4 1-24
3/4 1-25

REACTIVITY CONTROL SYSTEMS

LIMITING CONDITION FOR OPERATION

2. Declare the CEA inoperable. After declaring the CEA inoperable, POWER OPERATION may continue for up to 7 days per occurrence with a total accumulated time of ≤ 14 days per calendar year provided the remainder of the CEAs in the group with the inoperable CEA are aligned to within 7.5 inches of the inoperable CEA while maintaining the allowable CEA sequence and insertion limits shown on Figure 3.1-2; the THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation.
- g. With more than one full length CEA inoperable or misaligned from any other CEA in its group by 15 inches (indicated position) or more, be in at least at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each full length CEA shall be determined to be within 7.5 inches (indicated position) of all other CEAs in its group at least once per 12 hours except during time intervals when the Deviation Circuit and/or CEA Motion Inhibit are inoperable, then verify the individual CEA positions at least once per 4 hours.

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REACTIVITY CONTROL SYSTEMS

PART LENGTH CEA INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.2 All part length CEAs shall be withdrawn to at least 129.0 inches.

APPLICABILITY: MODES 1* and 2*.

ACTION:

With a maximum of one PLCEA withdrawn to less than 129.0 inches, either:

- a. Withdraw the PLCEA to at least 129.0 inches within one hour,
or
- b. Be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.2 Each part length CEA shall be determined withdrawn to at least 129.0 inches by:

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* See Special Test Exceptions 3.10.1 and 3.10.2.

REACTIVITY CONTROL SYSTEMS

CEA DROP TIME

LIMITING CONDITION FOR OPERATION

3.1.3.4 The individual full length (shutdown and control) CEA drop time, from a fully withdrawn position, shall be < 3.0 seconds from when the electrical power is interrupted to the CEA drive mechanism until the CEA reaches its 90 percent insertion position with:

- a. $T_{avg} \geq 515^{\circ}\text{F}$, and
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APPLICABILITY: MODES 1 and 2.

ACTION:

- a. With the drop time of any full length CEA determined to exceed the above limit, restore the CEA drop time to within the above limit prior to proceeding to MODE 1 or 2.
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SURVEILLANCE REQUIREMENTS

4.1.3.4 The CEA drop time of full length CEAs shall be demonstrated through measurement prior to reactor criticality:

- a. For all CEAs following each removal of the reactor vessel head,
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- c. At least once per 18 months.

REACTIVITY CONTROL SYSTEMS

SHUTDOWN CEA INSERTION LIMIT

LIMITING CONDITION FOR OPERATION

3.1.3.5 All shutdown CEAs shall be withdrawn to at least 129.0 inches.

APPLICABILITY: MODES 1 and 2*#.

ACTION:

With a maximum of one shutdown CEA withdrawn, except for surveillance testing pursuant to Specification 4.1.3.1.2, to less than 129.0 inches, within one hour either:

- a. Withdraw the CEA to at least 129.0 inches, or
- b. Declare the CEA inoperable and apply Specification 3.1.3.1.

SURVEILLANCE REQUIREMENTS

4.1.3.5 Each shutdown CEA shall be determined to be withdrawn to at least 129.0 inches:

- a. Within 15 minutes prior to withdrawal of any CEAs in regulating groups during an approach to reactor criticality, and
- b. At least once per 12 hours thereafter.

* See Special Test Exception 3.10.2.

#With $K_{eff} \geq 1.0$

REACTIVITY CONTROL SYSTEMS

REGULATING CEA INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.6 The regulating CEA groups shall be limited to the withdrawal sequence and to the insertion limits shown on Figure 3.1-2 (regulating CEAs are considered to be fully withdrawn in accordance with Figure 3.1-2 when withdrawn to at least 129.0 inches) with CEA insertion between the Long Term Steady State Insertion Limits and the Transient Insertion Limits restricted to:

- a. \leq 4 hours per 24 hour interval,
- b. \leq 5 Effective Full Power Days per 30 Effective Full Power Day interval, and
- c. \leq 14 Effective Full Power Days per calendar year.

APPLICABILITY: MODES 1* and 2*#.

ACTION:

- a. With the regulating CEA groups inserted beyond the Transient Insertion Limits, except for surveillance testing pursuant to Specification 4.1.3.1.2, within two hours either:
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 2. Reduce THERMAL POWER to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the CEA group position using the above figure.
- b. With the regulating CEA groups inserted between the Long Term Steady State Insertion Limits and the Transient Insertion Limits for intervals $>$ 4 hours per 24 hour interval, except during operations pursuant to the provisions of ACTION items c. and e. of Specification 3.1.3.1, operation may proceed provided either:
 1. The Short Term Steady State Insertion Limits of Figure 3.1-2 are not exceeded, or
 2. Any subsequent increase in THERMAL POWER is restricted to \leq 5% of RATED THERMAL POWER per hour.

* See Special Test Exceptions 3.10.2 and 3.10.4.

With $K_{eff} \geq 1.0$.

REACTIVITY CONTROL SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

- c. With the regulating CEA groups inserted between the Long Term Steady State Insertion Limits and the Transient Insertion Limits for intervals > 5 EFPD per 30 EFPD interval or > 14 EFPD per calendar year, except during operations pursuant to the provisions of ACTION items c. and e. of Specification 3.1.3.1, either:
 1. Restore the regulating groups to within the Long Term Steady State Insertion Limits within two hours, or
 2. Be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.6 The position of each regulating CEA group shall be determined to be within the Transient Insertion Limits at least once per 12 hours except during time intervals when the PDIL Alarm Circuit is inoperable, then verify the individual CEA positions at least once per 4 hours. The accumulated times during which the regulating CEA groups are inserted beyond the Steady State Insertion Limits but within the Transient Insertion Limits shall be determined at least once per 24 hours.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 28 TO LICENSE NO. DPR-53 AND

AMENDMENT NO. 13 TO LICENSE NO. 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

Baltimore Gas and Electric Company (BG&E) has requested that Operating Licenses DPR-53 and DPR-69 for Calvert Cliffs Nuclear Power Plant (CCNPP) Unit Nos. 1 and 2, respectively, be amended by changes to the Technical Specifications to permit the insertion limits of the control element assemblies (CEA) to be extended 3 inches farther into the reactor core. BG&E proposed these changes to the specifications after being advised by Combustion Engineering (CE), their NSSS supplier, that repositioning the CEAs would minimize the probability of excessive local guide tube wear and improve assurance that control rods would insert. Notice of these precautionary measures was provided by CE to the owners of all operating CE reactors after observing significant guide tube wear at Millstone 2 during the first scheduled refueling and maintenance outage initiated on November 20, 1977.

DISCUSSION AND EVALUATION

Indications of wear damage in the CEA guide tubes of control rodded fuel assemblies were discovered by CE during a visual fuel inspection program at Millstone 2 in conjunction with routine refueling operations. A meeting was held on December 19, 1977, in Bethesda, Maryland, between CE and the NRC staff with affected licensees in attendance to discuss the wear damage on the guide tubes discovered at Millstone 2, and the susceptibility of other CE reactors to similar problems. CE concluded that although other reactors were susceptible, continued operation would not endanger the health and safety of the public. (See letter from A. E. Scherer to V. Stello and proprietary Attachment 1 - CEA Guide Tube Wear Report, dated December 23, 1977). CE recommended that the proposed interim solution of inserting the control rods 3" farther into the reactor core be adopted for 90 days until a program for addressing long term guide tube wear could be provided.

The CEA guide tubes serve in a dual capacity as the primary structural members of the fuel assembly and as guiding channels for the control rods during insertion. Guide tube wear has occurred as a result of rubbing between the Inconel 625 control rod and the softer Zircaloy-4 guide tube. Although the mechanism for the observed rubbing has not yet been determined, CE has evaluated the consequences and has shown that guide tubes degraded to a calculated maximum are able to withstand the mechanical loads to which they are or may be subjected. This evaluated maximum wear is based on limits imposed by the geometry of the reactor internals.

The mechanical integrity of the guide tubes was evaluated by CE for this worst case wear for loadings during normal operation, anticipated operational occurrences, accidents and refueling.

This excessive guide tube wear has only been observed at the location of the control rod tips in the "full up" position. Similar wear has been identified by CE in an out-of-pile hot loop test facility. It has also been found on several guide tubes at Maine Yankee. The wear process is time dependent and relatively slow. Complete through wall local wear was experienced at Millstone 2 after approximately 14,000 hours of operation. Repositioning the control rods will provide a new wearing surface and thus delay further local wall thinning at the old "full out" position. Significant wear at the new location for an interim period of time, until a long term solution is developed, is not expected to occur based upon observations of the rate of wear at Millstone 2 and at the CE hot loop test facility.

Scrammability of the control rods in worn guide tubes was also evaluated and was determined to be acceptable. Nevertheless, to provide further assurance that scram will not be impaired, CE has recommended the new position to ensure that a rod will not hang up on the worn area of the guide tube wall. The staff concurs that the 3 inch insertion of the CEAs will provide interim assurance that the CEAs will insert upon demand. Upon completion of the CE program for addressing the long term guide tube wear problem (approximately 90 days hence), an evaluation will be made regarding a permanent solution of this problem.

The licensee has performed reactivity calculations modeling shutdown and regulating control rod banks in their fully withdrawn position and inserted 3 inches into the active fuel region of the core. The predicted incremental reactivity worth is approximately 0.035% $\Delta\rho$ at beginning of cycle (BOC) and increases to 0.07% $\Delta\rho$ at end of cycle (EOC). This decrease in shutdown worth is readily accommodated by available excess shutdown reactivity (excess over requirements used in steam line break analysis) of 0.8-1.1% $\Delta\rho$ and hence is considered acceptable by the staff. It is noted that the small insertion of the shutdown and regulating banks will incrementally decrease scram reactivity times.

The licensee has evaluated the effect of the inserted rods on predicted axial power distribution. Licensee calculations show a small change of approximately 0.5% in the calculated nominal full power distribution at BOC conditions when power peaks are most limiting. They state that "the increased peak is well within the bounds of the power distributions used in the Reactor Protective System setpoint analysis." The axial power distributions used in the setpoint analysis were generated assuming load follow operations and free running Xenon oscillations. Hence the family of curves considered in the setpoint analysis would span the subset of anticipated axial power distribution corresponding to the revised rod positions. Based on these reasons, the staff concurs with the licensee's assertion.

The insertion of the shutdown and regulating CEA groups will increase ultimate control rod tip fluence and concomittant rod tip burnup and internal gas pressures. Increased control rod tip fluence has not been addressed by the licensee nor need it be addressed in the immediate future. Should the revised insertion limits be applicable to future fuel cycles revised fluence estimates should be made and factored into the assessment of the CEA design lifetimes.

ENVIRONMENTAL CONSIDERATION

We have determined that these 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 the planned 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 planned amendments will not be inimical to the common defense and security or to the health and safety of the public.

Date: January 6, 1978

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NOS. 50-317 AND 50-318

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. 28 and 13 to Facility Operating License Nos. DPR-53 and DPR-69 (respectively), issued to Baltimore Gas & Electric Company (the licensee), which revised the licenses and their appended Technical Specifications for operation of the Calvert Cliffs Nuclear Power Plant Unit Nos. 1 and 2 (the facilities) located in Calvert County, Maryland. The amendments are effective as of their date of issuance.

The amendments change the Technical Specifications by modifying the Limiting Conditions for Operation (LCO) on Control Element Assembly (CEA) positions for reactor operation. The change authorizes the insertion of all CEAs a nominal 3 inches from their present position. Deeper insertion of the CEAs will provide a new wearing surface for the CEA guide tubes. This interim action is being taken pending completion of the program to address the long term guide tube wear problem under development.

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.

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 these amendments.

For further details with respect to this action, see (1) the application for amendments dated December 23, 1977, and supplements thereto dated January 4 and 6, 1978, (2) Amendment No. 28 to License No. DPR-53 and Amendment No. 13 to License No. 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 20678. A single copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C., Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this sixth day of January, 1978.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in dark ink, appearing to read 'Don K. Davis', is written over a horizontal line.

Don K. Davis, Acting Chief
Operating Reactors Branch #2
Division of Operating Reactors