



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

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-317

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 151  
License No. DPR-53

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Baltimore Gas and Electric Company (the licensee) dated February 8, 1991, 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. 151, 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 and shall be implemented upon receipt.

FOR THE NUCLEAR REGULATORY COMMISSION

*Edward G. Greenman*

Edward G. Greenman, Acting Assistant Director  
for Region I Reactors  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: February 20, 1991

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 151 FACILITY OPERATING LICENSE NO. DPR-53

DOCKET NO. 50-317

Revise Appendix A as follows:

Remove Pages

3/4 1-1  
3/4 1-2\*  
3/4 1-2a\*  
3/4 1-3  
3/4 1-17  
3/4 1-18  
3/4 1-19  
3/4 1-19A  
3/4 1-21  
3/4 1-22  
3/4 1-23  
3/4 1-24  
3/4 1-25  
3/4 1-26  
3/4 2-1  
3/4 2-6  
3/4 2-7  
3/4 2-8  
3/4 2-9  
3/4 2-10  
3/4 10-1

Insert Pages

3/4 1-1  
3/4 1-2\*  
3/4 1-2a\*  
3/4 1-3  
3/4 1-17  
3/4 1-18  
3/4 1-19  
3/4 1-19A  
3/4 1-21  
3/4 1-22  
3/4 1-23  
3/4 1-24  
3/4 1-25  
3/4 1-26  
3/4 2-1  
3/4 2-6  
3/4 2-7  
3/4 2-8  
3/4 2-9  
3/4 2-10  
3/4 10-1

\*Pages that did not change, but are overleaf

### 3/4.1 REACTIVITY CONTROL SYSTEMS

#### 3/4.1.1 BORATION CONTROL

SHUTDOWN MARGIN - T  $> 200^{\circ}\text{F}$   
avg

#### LIMITING CONDITION FOR OPERATION

3.1.1.1 The SHUTDOWN MARGIN shall be equal to or greater than the limit line of Figure 3.1-1b.

APPLICABILITY: MODES 1, 2\*\*, 3, and 4.

#### ACTION:

With the SHUTDOWN MARGIN less than the limit line of Figure 3.1-1b immediately initiate and continue boration at  $\geq 40$  gpm of 2300 ppm boric acid solution or equivalent until the required SHUTDOWN MARGIN is restored.

#### SURVEILLANCE REQUIREMENTS

4.1.1.1.1 The SHUTDOWN MARGIN shall be determined to be equal to or greater than the limit of Figure 3.1-1b:

- a. Within one hour after detection of an inoperable CEA(s)<sup>+</sup> and at least once per 12 hours thereafter while the CEA(s)<sup>+</sup> is inoperable. If the inoperable CEA is immovable or untrippable, the above required SHUTDOWN MARGIN shall be increased by an amount at least equal to the withdrawn worth of the immovable or untrippable CEA(s)<sup>+</sup>.
- b. When in MODES 1 or 2<sup>#</sup>, at least once per 12 hours by verifying that CEA group withdrawal<sup>+</sup> is within the Transient Insertion Limits of Specification 3.1.3.6.
- c. When in MODE 2<sup>##</sup>, within 4 hours prior to achieving reactor criticality by verifying that the predicted critical CEA position<sup>+</sup> is within the limits of Specification 3.1.3.6.
- d. Prior to initial operation above 5% RATED THERMAL POWER after each fuel loading, by consideration of the factors of e below, with the CEA groups<sup>+</sup> at the Transient Insertion Limits of Specification 3.1.3.6.

\* Adherence to Technical Specification 3.1.3.6 as specified in Surveillance Requirements 4.1.1.1.1 assures that there is sufficient available shutdown margin to match the shutdown margin requirements of the safety analyses.

\*\* See Special Test Exception 3.10.1.

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

## With  $K_{\text{eff}} < 1.0$

+ Excluding the center CEA during Cycle 10.

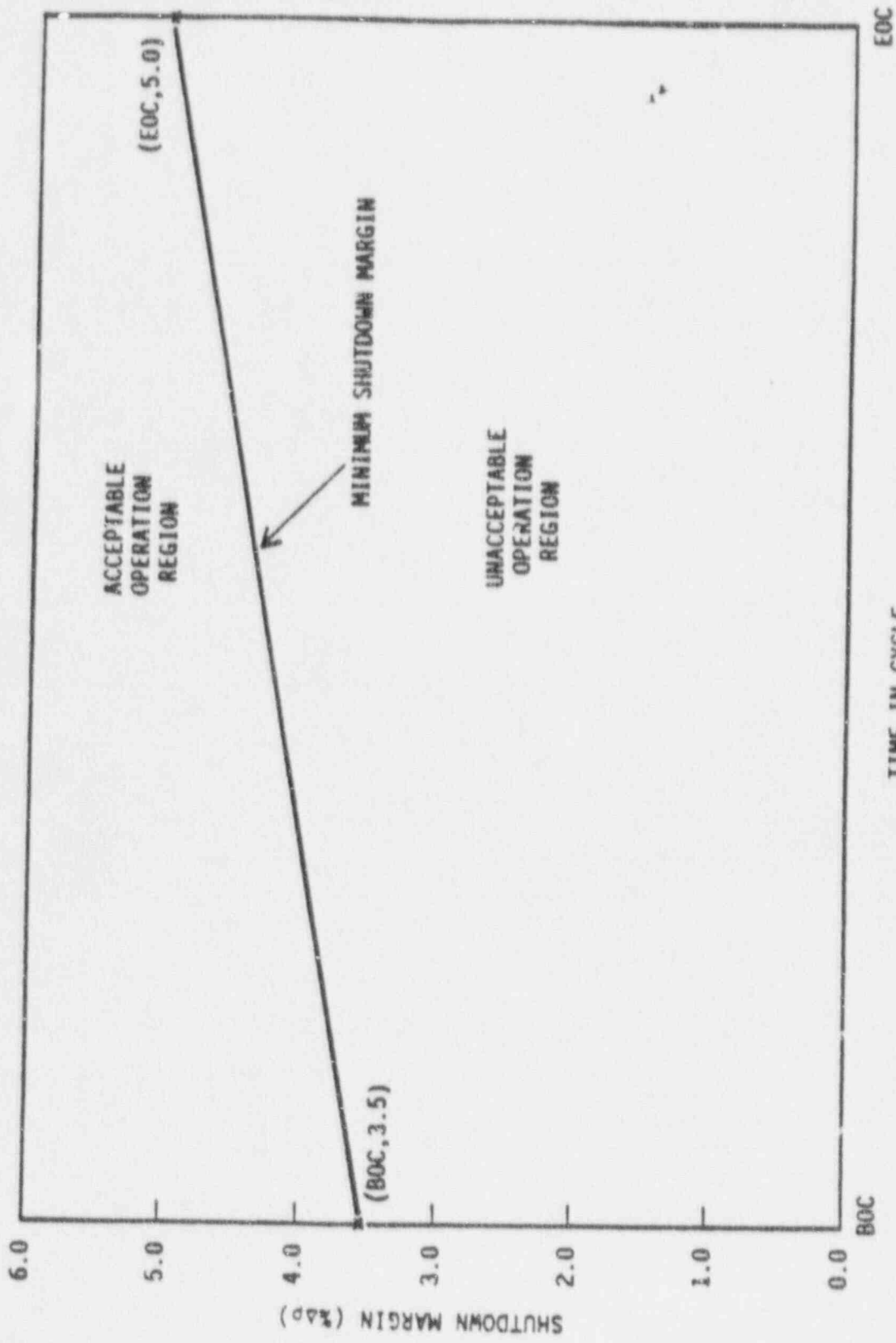
## REACTIVITY CONTROL SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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- e. When in MODES 3 or 4, at least once per 24 hours by consideration of the following factors:
1. Reactor coolant system boron concentration,
  2. CEA position,
  3. Reactor coolant system average temperature,
  4. Fuel burnup based on gross thermal energy generation,
  5. Xenon concentration, and
  6. Samarium concentration.

4.1.1.1.2 The overall core reactivity balance shall be compared to predicted values to demonstrate agreement within  $\pm 1.0\% \Delta k/k$  at least once per 31 Effective Full Power Days (EFPD). This comparison shall consider at least those factors stated in Specification 4.1.1.1.1.e, above. The predicted reactivity values shall be adjusted (normalized) to correspond to the actual core conditions prior to exceeding a fuel burnup of 60 Effective Full Power Days after each fuel loading.



TIME IN CYCLE  
Figure 3.1-1b



## REACTIVITY CONTROL SYSTEMS

SHUTDOWN MARGIN -  $T_{avg} \leq 200^{\circ}F$

### LIMITING CONDITION FOR OPERATION

3.1.1.2 The SHUTDOWN MARGIN shall be  $\geq 3.0\% \Delta k/k$ .

#### APPLICABILITY: MODE 5

- a. Pressurizer level  $\geq 90$  inches from bottom of the pressurizer.
- b. Pressurizer level  $< 90$  inches from bottom of the pressurizer and all sources of non-borated water  $\leq 88$  gpm.

#### ACTION:

- a. With the SHUTDOWN MARGIN  $< 3.0\% \Delta k/k$ , immediately initiate and continue boration at  $\geq 40$  gpm of 2300 ppm boric acid solution or equivalent until the required SHUTDOWN MARGIN is restored.
- b. With the pressurizer drained to  $\leq 90$  inches and all sources of non-borated water  $> 88$  gpm, immediately suspend all operations involving positive reactivity changes while the SHUTDOWN MARGIN is increased to compensate for the additional sources of non-borated water or reduce the sources of non-borated water to  $\leq 88$  gpm.

### SURVEILLANCE REQUIREMENTS

4.1.1.2 The SHUTDOWN MARGIN shall be determined to be  $\geq 3.0\% \Delta k/k$ :

- a. Within one hour after detection of an inoperable CEA(s)<sup>+</sup> and at least once per 12 hours thereafter while the CEA(s)<sup>+</sup> is inoperable. If the inoperable CEA<sup>+</sup> is immovable or untrippable, the above required SHUTDOWN MARGIN shall be increased by an amount at least equal to the withdrawn worth of the immovable or untrippable CEA(s)<sup>+</sup>.
- b. At least once per 24 hours by consideration of the following factors:
  1. Reactor coolant system boron concentration,
  2. CEA position,
  3. Reactor coolant system average temperature,
  4. Fuel burnup based on gross thermal energy generation,
  5. Xenon concentration, and
  6. Samarium concentration.

4.1.1.2.2 With the pressurizer drained to  $\leq 90$  inches determine:

- a. Within one hour and every 12 hours thereafter that the level in the reactor coolant system is above the bottom of the hot leg nozzles, and
- b. Within one hour and every 12 hours thereafter that the sources of non-borated water are  $\leq 88$  gpm or the shutdown margin has compensated for the additional sources.

+ Excluding the center CEA during Cycle 10.

## REACTIVITY CONTROL SYSTEMS

### 3.4.1.3 MOVABLE CONTROL ASSEMBLIES

#### LIMITING CONDITION FOR OPERATION

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3.1.3.1 The CEA Motion Inhibit and all shutdown and regulating CEAs<sup>+</sup> shall be OPERABLE with each CEA of a given group positioned within 7.5 inches (indicated position) of all other CEAs in its group.

APPLICABILITY: MODES 1\* and 2\*

ACTION:

- a. With one or more CEAs<sup>+</sup> inoperable due to being immovable as a result of excessive friction or mechanical interference or known to be untrippable, be in at least HOT STANDBY within 6 hours.
- b. With the CEA Motion Inhibit inoperable, within 6 hours either:
  1. Restore the CEA Motion Inhibit to OPERABLE status, or
  2. Place and maintain the CEA drive system mode switch in either the "Off" or any "Manual Mode" position and fully withdraw all CEAs in groups 3 and 4 and withdraw the CEAs<sup>+</sup> in group 5 to less than 5% insertion, or
  3. Be in at least HOT STANDBY.
- c. With one CEA inoperable<sup>+</sup> due to causes other than addressed by ACTION a, above, and inserted beyond the Long Term Steady State Insertion Limits but within its above specified alignment requirements, operation in MODES 1 and 2 may continue for up to 7 days per occurrence with a total accumulated time of  $\leq 14$  days per calendar year.
- d. With one CEA inoperable<sup>+</sup> due to causes other than addressed by ACTION a, above, but within its above specified alignment requirements and either fully withdrawn or within the Long Term Steady State Insertion Limits if in CEA group 5, operation in MODES 1 and 2 may continue.

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\* See Special Test Exceptions 3.10.2 and 3.10.4.

+ Excluding the center CEA during Cycle 10.



## REACTIVITY CONTROL SYSTEMS

### LIMITING CONDITION FOR OPERATION

- e. With one or more CEAs<sup>+</sup> misaligned from any other CEAs in its group by more than 7.5 inches but less than 15 inches, operation in ~~MODES~~ MODES 1 and 2 may continue, provided that within one hour the misaligned CEA(s) is either:
1. Restored to OPERABLE status within its above specified alignment requirements, or
  2. Declared inoperable. After declaring the CEA<sup>+</sup> inoperable operation in MODES 1 and 2 may continue for up to 7 days per occurrence with a total accumulated time of  $\leq 14$  days per calendar year provided all of the following conditions are met:
    - a. The THERMAL POWER level shall be reduced to  $\leq 70\%$  of the maximum allowable THERMAL POWER level for the existing Reactor Coolant Pump combination within one hour; if negative reactivity insertion is required to reduce THERMAL POWER, boration shall be used.
    - b. Within one hour after reducing the THERMAL POWER as required by a) above, the remainder of the CEAs<sup>+</sup> in the group with the inoperable CEA<sup>+</sup> shall be aligned to within 7.5 inches of the inoperable CEA<sup>+</sup> 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.
- f. With one CEA<sup>+</sup> misaligned from any other CEA<sup>+</sup> in its group by 15 inches or more, operation in ~~MODES~~ MODES 1 and 2 may continue, provided that the misaligned CEA<sup>+</sup> is positioned within 7.5 inches of the other CEAs<sup>+</sup> in its group in accordance with the time allowance shown in Figure 3.1-3. The pre-misaligned  $F_r^T$  value used to determine the allowable time to realign the CEA<sup>+</sup> from Figure 3.1-3 shall be the latest measurement taken within 5 days prior to the CEA misalignment. If no measurements were taken within 5 days prior to the misalignment, a pre-misaligned  $F_r^T$  of 1.65 shall be assumed.
- g. With one CEA<sup>+</sup> misaligned from any other CEA<sup>+</sup> in its group by 15 inches or more at the conclusion of the time allowance permitted in Figure 3.1-3, immediately start to implement the following actions:
1. If the THERMAL POWER level prior to the misalignment was greater than 50% of RATED THERMAL POWER, THERMAL POWER shall be reduced to less than the greater of:

+ Excluding the center CEA during Cycle 10.

## REACTIVITY CONTROL SYSTEMS

### LIMITING CONDITION FOR OPERATION

- a) 50% of RATED THERMAL POWER
  - b) 75% of the THERMAL POWER level prior to the misalignment within one hour after exceeding the time allowance permitted by Figure 3.1-3.
2. If the THERMAL POWER level prior to the misalignment was  $\leq$  50% of RATED THERMAL POWER, maintain THERMAL POWER no higher than the value prior to the misalignment.

If negative reactivity insertion is required to reduce THERMAL POWER, boration shall be used. Within one hour after establishing the appropriate THERMAL POWER as required above, either:

1. Restore the CEA<sup>+</sup> to within the above specified alignment requirements, or
  2. Declare the CEA<sup>+</sup> inoperable. After declaring the CEA inoperable, POWER OPERATION may continue for up to 7 days per occurrence with a total accumulated time of  $\leq$  14 days per calendar year provided the remainder of the CEAs<sup>+</sup> 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.
- h. With more than one CEA<sup>+</sup> inoperable or misaligned from any other CEA in its group by 15 inches (indicated position) or more, be in at least HOT STANDBY within 6 hours.
- i. For the purposes of performing the CEA<sup>+</sup> operability test of TS 4.1.3.1.2, if the CEA has an inoperable position indication channel, the alternate indication system (pulse counter or voltage dividing network) will be used to monitor position. If a direct position indication (full out reed switch or voltage dividing network) cannot be restored within ten minutes from the commencement of CEA motion, or CEA withdrawal exceeds the surveillance testing insertion by  $>$  7.5 inches, the position of the CEA shall be assumed to have been  $>$  15 inches from its group at the commencement of CEA motion.

+ Excluding the center CEA during Cycle 10.

## REACTIVITY CONTROL SYSTEMS

### SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each CEA<sup>+</sup> 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 CEA<sup>+</sup> 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).<sup>+</sup>

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+ Excluding the center CEA during Cycle 10.

## REACTIVITY CONTROL SYSTEMS

### POSITION INDICATOR CHANNELS

#### LIMITING CONDITION FOR OPERATION

- 3.1.3.3 At least two of the following three CEA position indicator channels shall be OPERABLE for each shutdown and regulating CEA<sup>+</sup>:
- CEA voltage divider reed switch position indicator channel, capable of determining the absolute CEA position within  $\pm 1.75$  inches;
  - CEA "Full Out" or "Full In" reed switch position indicator channel, only if the CEA is fully withdrawn or fully inserted, as verified by actuation of the applicable position indicator; and
  - CEA pulse counting position indicator channel.

APPLICABILITY: MODES 1 and 2.

ACTION:

- With a maximum of one CEA<sup>+</sup> per group having its voltage divider reed switch position indicator channel or its pulse counting position indicator channel inoperable and the CEA(s) with the inoperable position indicator channel partially inserted, either:
  - Within 6 hours
    - Restore the inoperable position indicator channel to OPERABLE status, or
    - Be in at least HOT STANDBY, or
    - Reduce THERMAL POWER to  $\leq 70\%$  of the maximum allowable THERMAL POWER level for the existing Reactor Coolant Pump combination; if negative reactivity insertion is required to reduce THERMAL POWER, boration shall be used. Operation at or below this reduced THERMAL POWER level may continue provided that within the next 4 hours either:
      - The CEA group(s)<sup>+</sup> with the inoperable position indicator is fully withdrawn while maintaining the withdrawal sequence required by Specification 3.1.3.6 and when this CEA group reaches its fully withdrawn position, the "Full Out" limit of the CEA with the inoperable position indicator is actuated and verifies this CEA to be fully withdrawn. Subsequent to fully withdrawing this CEA group(s), the THERMAL POWER level may be returned to a level consistent with all other applicable specifications and operation may continue per Specification 3.1.3.3 above; or
      - The CEA group(s)<sup>+</sup> with the inoperable position indicator is fully inserted, and subsequently maintained fully inserted, while maintaining the withdrawal sequence and THERMAL POWER level required by Specification 3.1.3.6 and when this CEA group reaches its fully

+ Excluding the center CEA during Cycle 10.

## REACTIVITY CONTROL SYSTEMS

### POSITION INDICATOR CHANNELS

#### LIMITING CONDITION FOR OPERATION

inserted position, the "Full In" limit of the CEA with the inoperable indicator is actuated and verifies this CEA to be fully inserted. Subsequent operation shall be within the limits of Specification 3.1.3.6, and may continue per Specification 3.1.3.3 above.

2. or, if the failure existed before entry into **MODE 2** or occurs prior to an "all CEAs out" configuration, the CEA groups(s)<sup>+</sup> with inoperable position indicator channel must be moved to the "Full Out" position and verified to be fully withdrawn via a "Full Out" indicator. These actions must be completed within 10 hours of entry into **MODE 2** and prior to exceeding 70% of the maximum allowable **THERMAL POWER** level for the existing Reactor Coolant Pump combination. The provisions of Specification 3.0.4 are not applicable. Once these actions are completed, operation may continue per Specification 3.1.3.3 above.
- b. With more than one CEA<sup>+</sup> per group having its CEA pulse counting position indicator channel and either (1) the "Full Out" or "Full In" position indicator, or (2) the voltage divider position indicator channel inoperable, operation in **MODES 1** and **2** may continue for up to 24 hours provided that for the affected CEAs, either:
  1. The CEA voltage divider reed switch position indicator channels are **OPERABLE**, or
  2. The CEA "Full Out" or "Full In" reed switch position indicator channels are **OPERABLE**, with the CEA fully withdrawn or fully inserted as verified by actuation of the applicable position indicator.

#### SURVEILLANCE REQUIREMENTS

4.1.3.3.1 Each required CEA<sup>+</sup> position indication channel shall be determined to be **OPERABLE** by determining CEA positions as follows at least once per 12 hours, by:

- a. Verifying the CEA pulse counting position indicator channels and the CEA voltage divider reed switch position indicator channels agree within 4.5 inches, or
- b. Verifying the CEA pulse counting position indicator channels and the CEA "Full Out" or "Full In" reed switch position indicator channels agree within 4.5 inches, or
- c. Verifying the CEA voltage divider reed switch position indicator channels and the CEA "Full Out" or "Full In" reed switch position indicator channels agree within 4.5 inches.

4.1.3.3.2 During time intervals when the deviation circuit is inoperable, the above verification of required CEA<sup>+</sup> position indicator channels shall be made at least once per 4 hours.

+ Excluding the center CEA during Cycle 10.



## REACTIVITY CONTROL SYSTEMS

### CEA DROP TIME

#### LIMITING CONDITION FOR OPERATION

3.1.3.4 The individual full length (shutdown and control) CEA<sup>+</sup> drop time, from a fully withdrawn position, shall be  $\leq 3.1$  seconds from when the electrical power is interrupted to the CEA drive mechanism until the CEA reaches its 90 percent insertion position with:

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

APPLICABILITY: **MODES 1 and 2.**

#### ACTION:

- a. With the drop time of any full length CEA<sup>+</sup> 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<sup>+</sup> 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 individual 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 refueling interval.

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+ Excluding the center CEA during Cycle 10.



## REACTIVITY CONTROL SYSTEMS

### SHUTDOWN CEA INSERTION LIMIT

#### LIMITING CONDITION FOR OPERATION

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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

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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<sup>†</sup> 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  $K_{eff} \geq 1.0$

+ Excluding the center CEA during Cycle 10.

## REACTIVITY CONTROL SYSTEMS

### REGULATING CEA INSERTION LIMITS

#### LIMITING CONDITION FOR OPERATION

3.1.3.6 The regulating CEA<sup>+</sup> 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<sup>+</sup> 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 Figure 3.1-2.
- b. With the regulating CEA<sup>+</sup> 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  $K_{eff} \geq 1.0$ .

+ The center CEA may be excluded from the determination of Bank 5 position during Cycle 10.

## REACTIVITY CONTROL SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

- c. With the regulating CEA<sup>+</sup> 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<sup>+</sup> 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.

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- + The center CEA may be excluded from the determination of Bank 5 position during Cycle 10.

### 3/4.2 POWER DISTRIBUTION LIMITS

#### LINEAR HEAT RATE

#### LIMITING CONDITION FOR OPERATION

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3.2.1 The linear heat rate shall not exceed the limits shown on Figure 3.2-1.

APPLICABILITY:        **MODE 1.**

#### ACTION:

With the linear heat rate exceeding its limits, as indicated by four or more coincident incore channels or by the **AXIAL SHAPE INDEX** outside of the power dependent control limits of Figure 3.2-2, within 15 minutes initiate corrective action to reduce the linear heat rate to within the limits and either:

- a. Restore the linear heat rate to within its limits within one hour, or
- b. Be in at least **HOT STANDBY** within the next 6 hours.

#### SURVEILLANCE REQUIREMENTS

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4.2.1.1 The provisions of Specification 4.0.4 are not applicable.

4.2.1.2 The linear heat rate shall be determined to be within its limits by continuously monitoring the core power distribution with either the excore detector monitoring system or with the incore detector monitoring system.

4.2.1.3 Excore Detector Monitoring System - The excore detector monitoring system may be used for monitoring the core power distribution by:

- a. Verifying at least once per 12 hours that the full length CEAs<sup>+</sup> are withdrawn to and maintained at or beyond the Long Term Steady State Insertion Limit of Specification 3.1.3.6.
- b. Verifying at least once per 31 days that the **AXIAL SHAPE INDEX** alarm setpoints are adjusted to within the limits shown on Figure 3.2-2.

<sup>+</sup> Excluding the center CEA during Cycle 10.

## POWER DISTRIBUTION LIMITS

TOTAL PLANAR RADIAL PEAKING FACTOR -  $F_{xy}^T$

### LIMITING CONDITION FOR OPERATION

3.2.2.1 The calculated value of  $F_{xy}^T$ , defined as  $F_{xy}^T = F_{xy}(1+T_q)$ , shall be limited to  $\leq 1.70$ .

APPLICABILITY: MODE 1\*.

#### ACTION:

With  $F_{xy}^T > 1.70$ , within 6 hours either:

- a. Reduce THERMAL POWER to bring the combination of THERMAL POWER and  $F_{xy}^T$  to within the limits of Figure 3.2-3a and withdraw the full length CEAs<sup>+</sup> to or beyond the Long Term Steady State Insertion Limits of Specification 3.1.3.6; or
- b. Be in at least HOT STANDBY.

### SURVEILLANCE REQUIREMENTS

4.2.2.1.1 The provisions of Specification 4.0.4 are not applicable.

4.2.2.1.2  $F_{xy}^T$  shall be calculated by the expression  $F_{xy}^T = F_{xy}(1+T_q)$  and  $F_{xy}^T$  shall be determined to be within its limit at the following intervals:

- a. Prior to operation above 70 percent of RATED THERMAL POWER after each fuel loading,
- b. At least once per 31 days of accumulated operation in MODE 1, and
- c. Within four hours if the AZIMUTHAL POWER TILT ( $T_q$ ) is  $> 0.030$ .

\* See Special Test Exception 3.10.2.

+ Excluding the center CEA during Cycle 10.



## POWER DISTRIBUTION LIMITS

### SURVEILLANCE REQUIREMENTS (Continued)

4.2.2.1.3  $F_{xy}$  shall be determined each time a calculation of  $F_{xy}^T$  is required by using the incore detectors to obtain a power distribution map with all full length CEAs<sup>+</sup> at or above the Long Term Steady State Insertion Limit for the existing Reactor Coolant Pump combination. This determination shall be limited to core planes between 15% and 85% of full core height inclusive and shall exclude regions influenced by grid effects.

4.2.2.1.4  $T_q$  shall be determined each time a calculation of  $F_{xy}^T$  is required and the value  $T_q$  used to determine  $F_{xy}^T$  shall be the measured value of  $T_q$ .

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+ Excluding the center CEA during Cycle 10.



## POWER DISTRIBUTION LIMITS

TOTAL PLANAR RADIAL PEAKING FACTOR -  $F_{xy}^T$

### LIMITING CONDITION FOR OPERATION

3.2.2.2 The value of N presently used in Specification 4.2.1.3 shall be in accordance with Figure 3.2-3b.

APPLICABILITY: MODE 1 when operating in accordance with Specification 4.2.1.3.

#### ACTION:

With the value of N presently used in Specification 4.2.1.3 exceeding the limit shown in Figure 3.2-3b, within 6 hours either:

- a. Reduce the value of N used in Specification 4.2.1.3 to within the limits of Figure 3.2-3b; or
- b. Be in at least HOT STANDBY.

### SURVEILLANCE REQUIREMENTS

4.2.2.2.1 The provisions of Specification 4.0.4 are not applicable.

4.2.2.2.2  $F_{xy}^T$  shall be calculated by the expression  $F_{xy}^T = F_{xy}(1+T_q)$  and N shall be determined to be within its limit by monitoring  $F_{xy}^T$  at the following intervals:

- a. Prior to operation above 70 percent of RATED THERMAL POWER after each fuel loading,
- b. At least once per 3 days of accumulated operation in MODE 1.

4.2.2.2.3  $F_{xy}$  shall be determined each time a calculation of  $F_{xy}^T$  is required by using the incore detectors to obtain a power distribution map with all full length CEAs<sup>+</sup> at or above the Long Term Steady State Insertion Limit for the existing Reactor Coolant Pump combination. This determination shall be limited to core planes between 15% and 85% of full core height inclusive and shall exclude regions influenced by grid effects.

4.2.2.2.4  $T_q$  shall be determined each time a calculation of  $F_{xy}^T$  is required and the value of  $T_q$  used to determine  $F_{xy}^T$  shall be the measured value of  $T_q$ .

+ Excluding the center CEA during Cycle 10.

POWER DISTRIBUTION LIMITS

TOTAL INTEGRATED RADIAL PEAKING FACTOR -  $F_r^T$

LIMITING CONDITION FOR OPERATION

3.2.3 The calculated value of  $F_r^T$ , defined as  $F_r^T = F_r(1+T_q)$ , shall be limited to  $\leq 1.650$ .

APPLICABILITY: MODE 1\*.

ACTION:

With  $F_r^T > 1.650$  within 6 hours either:

- a. Be in at least HOT STANDBY, or
- b. Reduce THERMAL POWER to bring the combination of THERMAL POWER and  $F_r^T$  to within the limits of Figure 3.2.3c, withdraw the full length CEAs<sup>+</sup> to or beyond the Long Term Steady State Limits of Specification 3.1.3.6, and insert new value of  $F_r^T$  in BASSS; or
- c. Reduce THERMAL POWER to bring the combination of THERMAL POWER and  $F_r^T$  to within the limits of Figure 3.2-3c and withdraw the full length CEAs<sup>+</sup> to or beyond the Long Term Steady State Insertion Limits of Specification 3.1.3.6. The THERMAL POWER limit determined from Figure 3.2-3c shall then be used to establish a revised upper THERMAL POWER level limit on Figure 3.2-4 (truncate Figure 3.2-4 at the allowable fraction of RATED THERMAL POWER determined by Figure 3.2-3c) and subsequent operation shall be maintained within the reduced acceptable operation region of Figure 3.2-4.

SURVEILLANCE REQUIREMENTS

4.2.3.1 The provision of Specification 4.0.4 are not applicable.

4.2.3.2  $F_r^T$  shall be calculated by the expression  $F_r^T = F_r(1+T_q)$  and  $F_r^T$  shall be determined to be within its limit at the following intervals:

- a. Prior to operation above 70 percent of RATED THERMAL POWER after each fuel loading,
- b. At least once per 31 days of accumulated operation in MODE 1, and
- c. Within four hours if the AZIMUTHAL POWER TILT ( $T_q$ ) is  $> 0.030$ .

\* See Special Test Exception 3.10.2.

+ Excluding the center CEA during Cycle 10.

SURVEILLANCE REQUIREMENTS (Continued)

4.2.3.3  $F_r$  shall be determined each time a calculation of  $F_r^T$  is required by using the incore detectors to obtain a power distribution map with all full length CEAs<sup>+</sup> at or above the Long Term Steady State Insertion Limit for the existing Reactor Coolant Pump combination.

4.2.3.4  $T_q$  shall be determined each time a calculation of  $F_r^T$  is required and the value of  $T_q$  used to determine  $F_r^T$  shall be the measured value of  $T_q$ .

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+ Excluding the center CEA during Cycle 10.

## 3/4.10 SPECIAL TEST EXCEPTIONS

### SHUTDOWN MARGIN

#### LIMITING CONDITION FOR OPERATION

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3.10.1 The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 may be suspended for measurement of CEA worth and shutdown margin provided reactivity equivalent to at least the highest estimated CEA worth is available for trip insertion from OPERABLE CEA(s).

APPLICABILITY: MODE 2.

#### ACTION:

- a. With any full length CEA<sup>+</sup> not fully inserted and with less than the above reactivity equivalent available for trip insertion, immediately initiate and continue boration at  $\geq 40$  gpm of 2300 ppm boric acid solution or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.
- b. With all full length CEAs<sup>+</sup> inserted and the reactor subcritical by less than the above reactivity equivalent, immediately initiate and continue boration at  $\geq 40$  gpm of 2300 ppm boric acid solution or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.

#### SURVEILLANCE REQUIREMENTS

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4.10.1.1 The position of each full length CEA<sup>+</sup> required either partially or fully withdrawn shall be determined at least once per 2 hours.

4.10.1.2 Each CEA<sup>+</sup> not fully inserted shall be demonstrated capable of full insertion when tripped from at least the 50% withdrawn position within 7 days prior to reducing the SHUTDOWN MARGIN to less than the limits of Specification 3.1.1.1.

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\* Excluding the center CEA during Cycle 10.