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. 170
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 December 10, 1991, and supplemented on April 17, 1992, 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. 170, 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 to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Capra

Robert A. Capra, Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 26, 1992

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 170 FACILITY OPERATING LICENSE NO. DPR-53

DOCKET NO. 50-317

Revise Appendix A as follows:

Remove Pages	Insert Pages
2-11	2-11
3/4 1-1 thru 1-4	3/4 1-1 thru 1-4
3/4 1-24 thru 1-35	3/4 1-24 thru 1-35
3/4 2-1	3/4 2-1
3/4 2-3	3/4 2-3
3/4 2-5 thru 2-7	3/4 2-5 thru 2-7
3/4 2-9 thru 2-13	3/4 2-9 thru 2-13
3/4 2-16	3/4 2-16
3/4 2-17	3/4 2-17
3/4 10-1	3/4 10-1
B 3/4 1-4	B 3/4 1-4
B 3/4 1-5	B 3/4 1-5
B 3/4 7-3	B 3/4 7-3
5-4	5-4

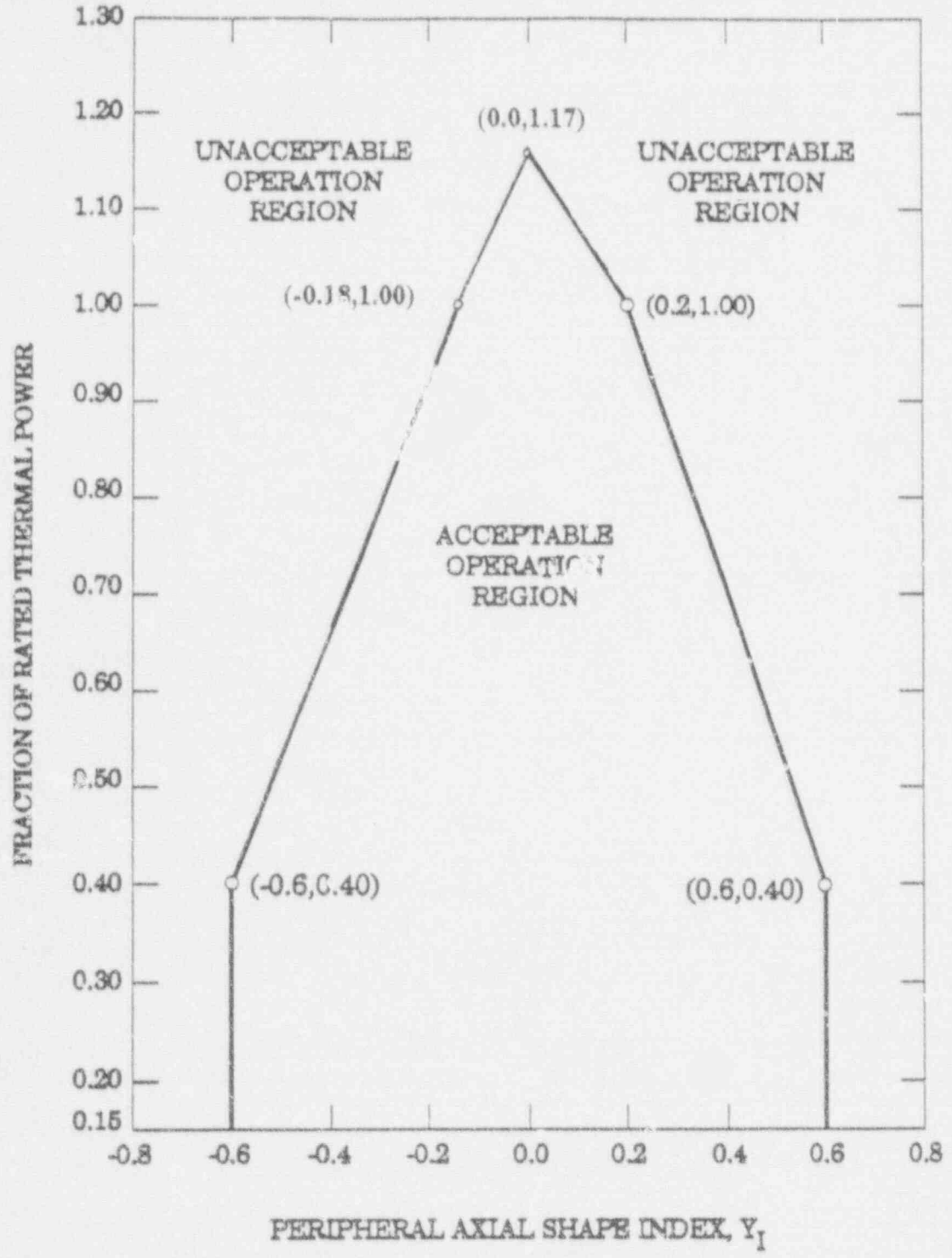

FIGURE 2.2-1

PERIPHERAL AXIAL SHAPE INDEX, Y_I
VS. FRACTION OF RATED THERMAL POWER

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.1 BORATION CONTROL

SHUTDOWN MARGIN - T_{avg} > 200°F

LIMITING CONDITION FOR OPERATION

3.1.1.1 The **SHUTDOWN MARGIN** shall be equal to or greater than the limit line of Figure 3.1.1-1*.

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

ACTION: With the **SHUTDOWN MARGIN** less than the limit line of Figure 3.1.1-1*, immediately initiate and continue boration at ≥ 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 line of Figure 3.1.1-1*:

a. Within one hour after detection of an inoperable CEA(s) and at least once per 12 hours thereafter while the CEA(s) 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).

b. When in **MODES** 1 or 2#, at least once per 12 hours by verifying that CEA group withdrawal is within the Transient Insertion Limits of Specification 3.1.3.6.

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* Adherence to Technical Specification 3.1.3.6 as specified in Surveillance Requirement 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 $K_{eff} \geq 1.0$.

SURVEILLANCE REQUIREMENTS (Continued)

c. When in **MODE** 2##, within 4 hours prior to achieving reactor criticality by verifying that the predicted critical CEA position 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 at the Transient Insertion Limits of Specification 3.1.3.6.

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 ± 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.

With K_{eff} < 1.0.

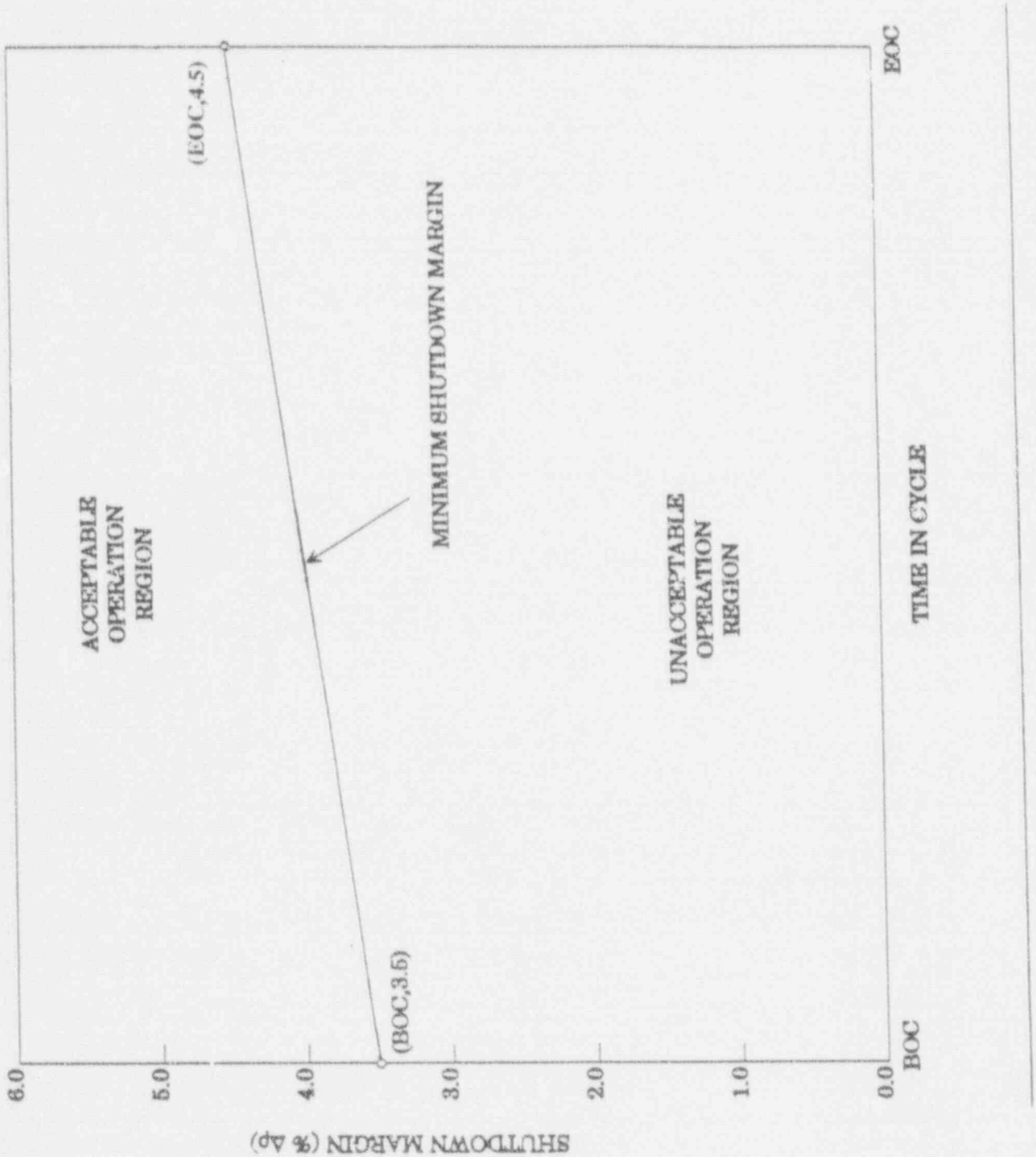
ACCEPTABLE OPERATION REGION
(EOC,4.5)
MINIMUM SHUTDOWN MARGIN
UNACCEPTABLE OPERATION REGION
(BOC,3.6)
EOC
BOC
TIME IN CYCLE
SHUTDOWN MARGIN (% Δρ)
6.0
5.0
4.0
3.0
2.0
1.0
0.0

FIGURE 3.1.1-1

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.1 BORATION CONTROL

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

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

4.1.1.2.1 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) and at least once per 12 hours thereafter while the CEA(s) 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).

b. At least once per 24 hours by consideration of the following factors:

1. Reactor Coolant System boron concentration,
2. CEA position,

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

Full Length CEA Position

LIMITING CONDITION FOR OPERATION

3.1.3.1 The CEA Motion Inhibit and all shutdown and regulating CEAs 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 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 in group 5 to less than 5% insertion, or

3. Be in at least **HOT STANDBY**.

c. With one CEA inoperable 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 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.

LIMITING CONDITION FOR OPERATION (Continued)

e. With one or more CEAs misaligned from any other CEAs in its group by more than 7.5 inches but less than 15 inches, operation in **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 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 in the group with the inoperable CEA shall be aligned to within 7.5 inches of the inoperable CEA while maintaining the allowable CEA sequence and insertion limits shown on Figure 3.1.3-2; the **THERMAL POWER** level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation.

f. With one CEA misaligned from any other CEA in its group by 15 inches or more, operation in **MODES** 1 and 2 may continue, provided that the misaligned CEA is positioned within 7.5 inches of the other CEAs in its group in accordance with the time allowance determined by the Better Axial Shape Selection System (BASSS) or, if the BASSS time allowance is unavailable, the time allowance shown in Figure 3.1.3-1. If Figure 3.1.3-1 is used, the pre-misaligned F_T^Q value used to determine the allowable time to realign the CEA from Figure 3.1.3-1 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_T^Q of 1.70 shall be assumed.

LIMITING CONDITION FOR OPERATION (Continued)

g. With one CEA misaligned from any other CEA in its group by 15 inches or more at the conclusion of the permitted time allowance, 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:

a) 50% of **RATED THERMAL POWER**

b) 75% of the **THERMAL POWER** level prior to the misalignment

within one hour after exceeding the permitted time allowance.

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 to within the above specified alignment requirements, or

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 $\leq$ 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 3.1.3-2; the **THERMAL POWER** level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation.

h. With more than one CEA 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.

LIMITING CONDITION FOR OPERATION (Continued)

i. For the purposes of performing the CEA 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.

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each 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 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).

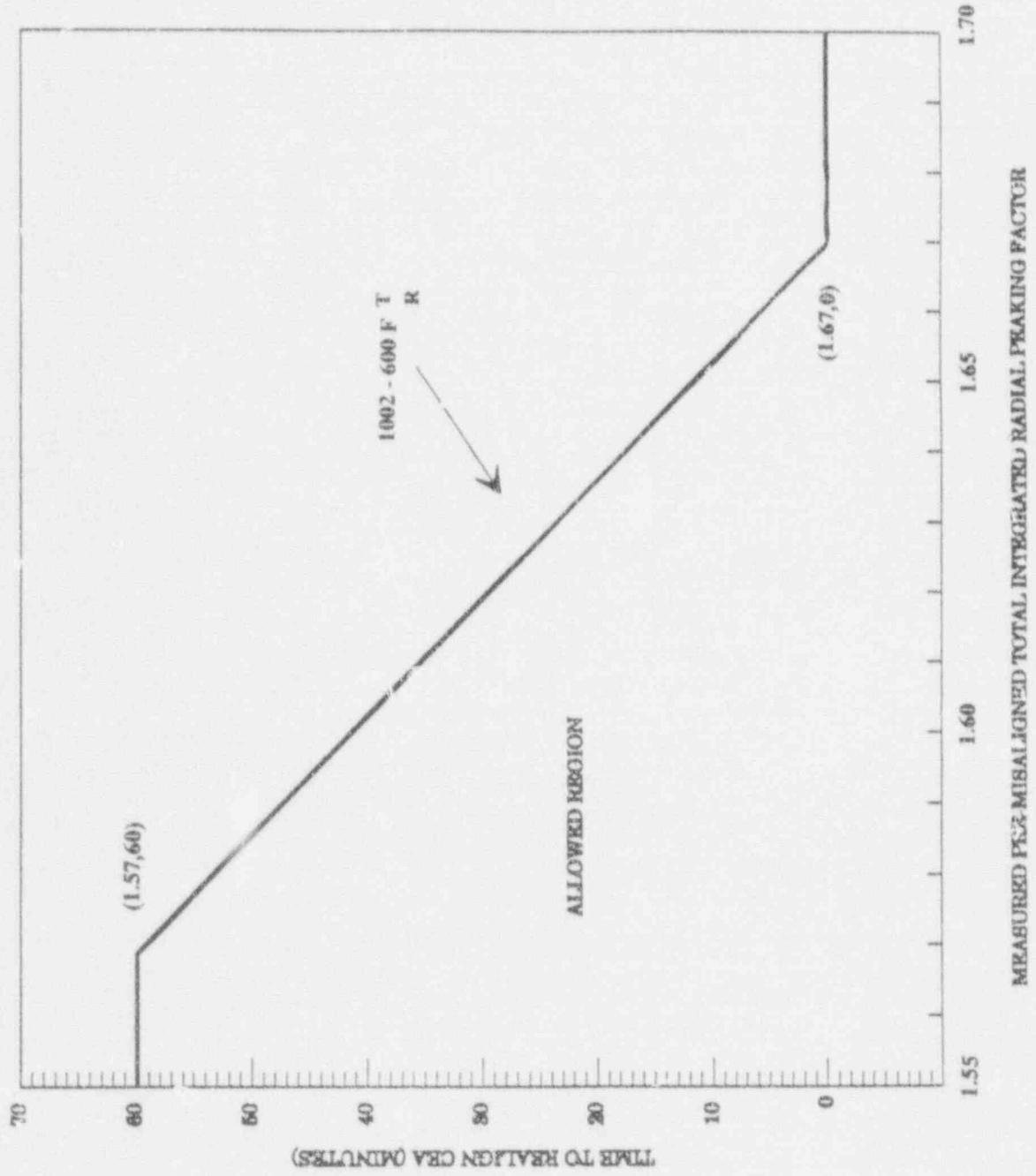

FIGURE 3.1.3-1

ALLOWABLE TIME TO REALIGN CEA VERSUS
INITIAL TOTAL INTEGRATED RADIAL PEAKING FACTOR

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

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:

a. CEA voltage divider reed switch position indicator channel, capable of determining the absolute CEA position within ± 1.75 inches;

b. 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

c. CEA pulse counting position indicator channel.

APPLICABILITY: **MODES** 1 and 2.

ACTION:

a. With a maximum of one CEA 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:

1. Within 6 hours

a) Restore the inoperable position indicator channel to **OPERABLE** status, or

b) Be in at least **HOT STANDBY**, or

c) Reduce **THERMAL POWER** to ≤ 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:

1) The CEA group(s) with the inoperable position indicator is fully withdrawn while maintaining

LIMITING CONDITION FOR OPERATION (Continued)

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

2) The CEA group(s) 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 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.

or,

2. If the failure existed before entry into **MODE** 2 or occurs prior to an "all CEAs out" configuration, the CEA group(s) 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 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

LIMITING CONDITION FOR OPERATION (Continued)

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 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 position indicator channels shall be made at least once per 4 hours.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

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 $\leq$ 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. $T_{avg} \geq 515°F$, 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 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**.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

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.

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* See Special Test Exception 3.10.2.

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

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

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 3.1.3-2 (regulating CEAs are considered to be fully withdrawn in accordance with Figure 3.1.3-2 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. ≤ 4 hours per 24 hour interval,

b. ≤ 5 Effective Full Power Days per 30 Effective Full Power Day interval, and

c. ≤ 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 Figure 3.1.3-2.

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 3.1.3-2 are not exceeded, or

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* See Special Test Exceptions 3.10.2 and 3.10.4.

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

LIMITING CONDITION FOR OPERATION (Continued)

2. Any subsequent increase in **THERMAL POWER** is restricted to ≤ 5% of **RATED THERMAL POWER** per hour.

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.

3/4.2 POWER DISTRIBUTION LIMITS

3/4.2.1 LINEAR HEAT RATE

LIMITING CONDITION FOR OPERATION

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

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 3.2.1-2, 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

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 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 3.2.1-2.

FIGURE 3.2.1-1

ALLOWABLE PEAK LINEAR HEAT RATE VS. TIME IN CYCLE

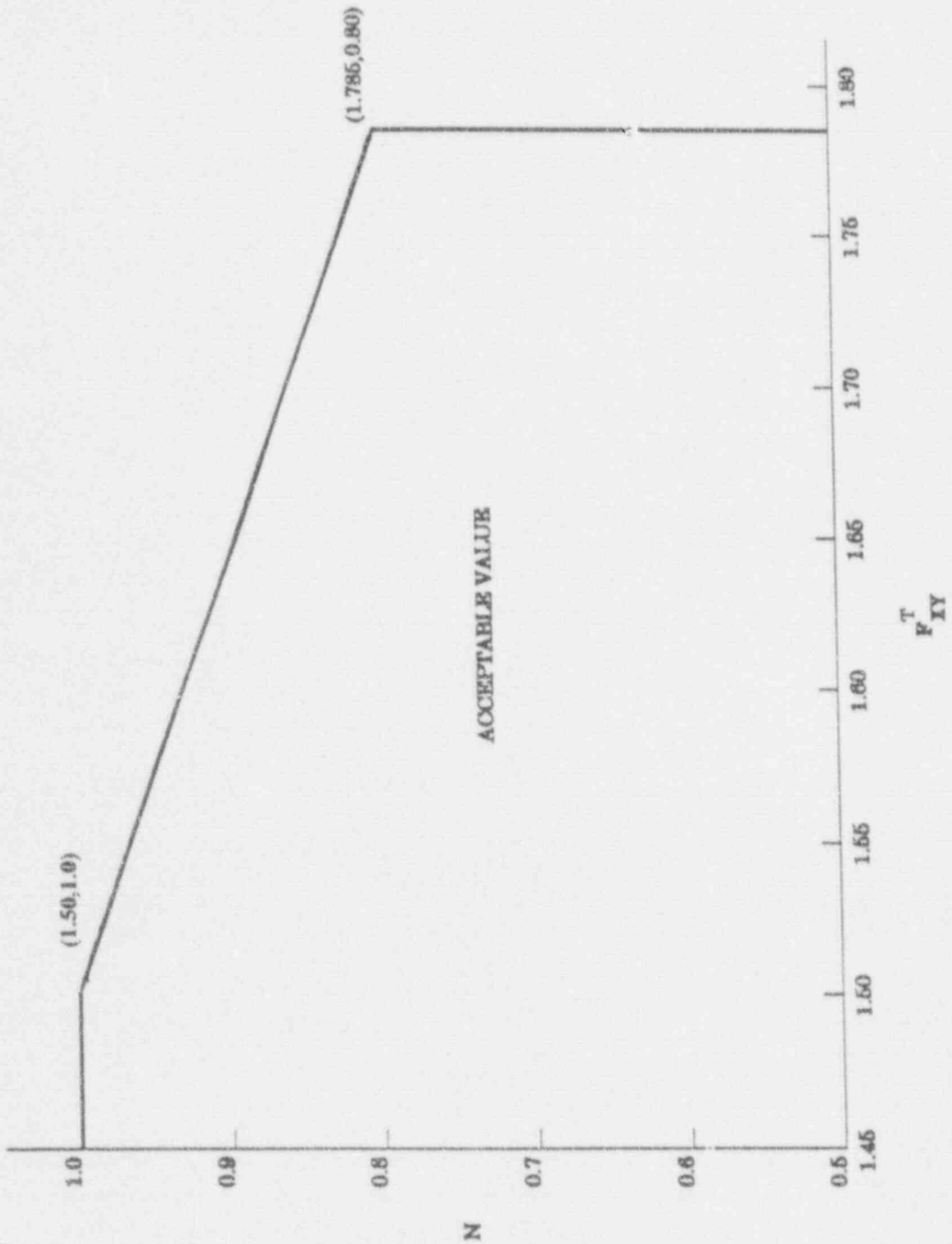

FIGURE 3.2.1-3

TOTAL PLANAR RADIAL PEAKING FACTOR VS. N

3/4.2 POWER DISTRIBUTION LIMITS

3/4.2.2 TOTAL PLANAR RADIAL PEAKING FACTOR - F^T_{xy}

LIMITING CONDITION FOR OPERATION

3.2.2.1 The calculated value of F^T_{xy} shall be limited to $\leq$ 1.70.

APPLICABILITY: **MODE 1***.

ACTION: With F^T_{xy} > 1.70, within 6 hours either:

a. Withdraw and maintain the full length CEAs at or beyond the Long Term Steady State Insertion Limits of Specification 3.1.3.6 and reduce **THERMAL POWER** as follows:

1. Reduce **THERMAL POWER** to bring the combination of **THERMAL POWER** and F^T_{xy} within the limits of Figure 3.2.2-1, or

2. Reduce **THERMAL POWER** to less than or equal to the limit established by the Better Axial Shape Selection System (BASSS) as a function of F^T_{xy}; 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^T_{xy} shall be calculated as $F^T_{xy} = F_{xy}$ using a full core power distribution system. F^T_{xy} 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.

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* See Special Test Exception 3.10.2.

SURVEILLANCE REQUIREMENTS (Continued)

4.2.2.1.3 F^T_{xy} shall be determined each time a calculation is required by using the incore detectors to obtain a power distribution map with all full length CEAs 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.

3/4.2 POWER DISTRIBUTION LIMITS

3/4.2.2 TOTAL PLANAR RADIAL PEAKING FACTOR - F^T_{xy}

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 3.2.1-3.

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 3.2.1-3, within 6 hours either:

a. Reduce the value of N used in Specification 4.2.1.3 to within the limits of Figure 3.2.1-3; 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^T_{xy} shall be calculated as $F^T_{xy} = F_{xy}$ using a full core power distribution mapping system. N shall be determined to be within its limit by monitoring F^T_{xy} 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.

SURVEILLANCE REQUIREMENTS (Continued)

4.2.2.2.3 F^T_{xy} shall be determined each time a calculation is required by using the incore detectors to obtain a power distribution map with all full length CEAs 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.

3/4.2 POWER DISTRIBUTION LIMITS

3/4.2.3 TOTAL INTEGRATED RADIAL PEAKING FACTOR - F_r^T

LIMITING CONDITION FOR OPERATION

3.2.3 The calculated value of F_r^T shall be limited to $\leq$ 1.70.

APPLICABILITY: **MODE 1***.

ACTION: With F_r^T > 1.70, within 6 hours either:

a. Be in at least **HOT STANDBY**, or

b. Withdraw and maintain the full length CEAs at or beyond the Long Term Steady State Insertion Limits of Specification 3 1.3.6 and reduce **THERMAL POWER** as follows:

1. Reduce **THERMAL POWER** to bring the combination of **THERMAL POWER** and F_r^T within the limits of Figure 3.2.3-1, or

2. Reduce **THERMAL POWER** to less than or equal to the limit established by the Better Axial Shape Selection System (BASSS) as a function of F_r^T.

When the **THERMAL POWER** is determined from Figure 3.2.3-1, it shall be used to establish a revised upper **THERMAL POWER LEVEL** limit on Figure 3.2.3-2 (i.e., Figure 3.2.3-2 shall be truncated at the allowable fraction of **RATED THERMAL POWER** determined by Figure 3.2.3-1). Subsequent operation shall be maintained within the reduced acceptable operation region of Figure 3.2.3-2.

SURVEILLANCE REQUIREMENTS

4.2.3.1 The provisions of Specification 4.0.4 are not applicable.

4.2.3.2 F_r^T shall be calculated as $F_r^T = F_r$ using a full core power distribution mapping system. 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.

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* See Special Test Exception 3.10.2.

SURVEILLANCE REQUIREMENTS (Continued)

4.2.3.3 F_T^L shall be determined each time a calculation is required by using the incore detectors to obtain a power distribution map with all full length CEAs at or above the Long Term Steady State Insertion Limit for the existing Reactor Coolant Pump combination.

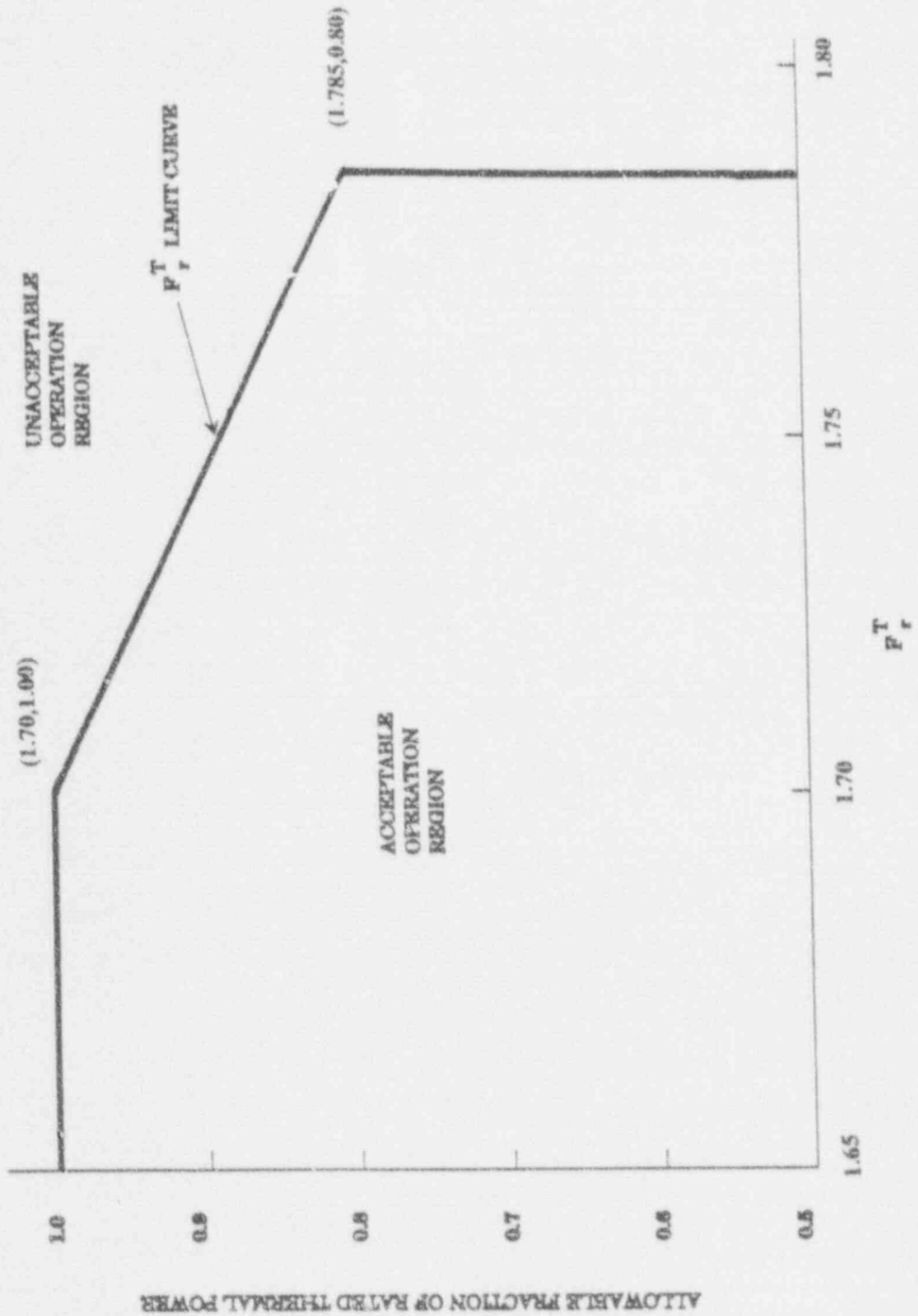

FIGURE 3.2.3-1

TOTAL INTEGRATED RADIAL PEAKING FACTOR VS.
ALLOWABLE FRACTION OF RATED THERMAL POWER

3/4.2 POWER DISTRIBUTION LIMITS

3/4.2.5 DNB PARAMETERS

LIMITING CONDITION FOR OPERATION

3.2.5 The following DNB related parameters shall be maintained within the limits shown on Table 3.2-1:

a. Cold Leg Temperature

b. Pressurizer Pressure

c. Reactor Coolant System Total Flow Rate

d. **AXIAL SHAPE INDEX, THERMAL POWER.**

APPLICABILITY: **MODE 1.**

ACTION: With any of the above parameters exceeding its limit, restore the parameter to within its limit within 2 hours or reduce **THERMAL POWER** to less thar 5% of **RATED THERMAL POWER** within the next 4 hours.

SURVEILLANCE REQUIREMENTS

4.2.5.1 Each of the parameters of Table 3.2-1 shall be verified to be within their limits at least once per 12 hours.

4.2.5.2 The Reactor Coolant System total flow rate shall be determined to be within its limit by measurement at least once per 18 months.

4.2.5.3 The Better Axial Shape Selection System (BASSS) may be used for monitoring **THERMAL POWER** as a function of **AXIAL SHAPE INDEX.** BASSS monitoring shall be limited to CEA insertions of the lead bank ≤ 55%.

TABLE 3.2-1

DNB PARAMETERS

PARAMETER	LIMITS			
	FOUR REACTOR COOLANT PUMPS OPERATING	THREE REACTOR COOLANT PUMPS OPERATING	TWO REACTOR COOLANT PUMPS OPERATING-SAME LOOP	TWO REACTOR COOLANT PUMPS OPERATING-OPPOSITE LOOP
Cold Leg Temperature	≤ 548°F	**	**	**
Pressurizer Pressure	≥ 2200 psia*	**	**	**
Reactor Coolant System Total Flow Rate	≥ 370,000 gpm	**	**	**
AXIAL SHAPE INDEX, THERMAL POWER	***	**	**	**

* Limit not applicable during either a **THERMAL POWER** ramp increase in excess of 5% of **RATED THERMAL POWER** per minute or a **THERMAL POWER** step increase of greater than 10% of **RATED THERMAL POWER**.

** These values left blank pending NRC approval of ECCS analyses for operation with less than four reactor coolant pumps operating.

*** The **AXIAL SHAPE INDEX, THERMAL POWER** shall be maintained within the limits established by the Better Axial Shape Selection System (BASSS) for CEA insertions of the lead bank of < 55% when BASSS is **OPERABLE**, or within the limits of Figure 3.2.3-2 for CEA insertions specified by Figure 3.1.3-2.

3/4.10 SPECIAL TEST EXCEPTIONS

3/4.10.1 SHUTDOWN MARGIN

LIMITING CONDITION FOR OPERATION

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 not fully inserted and with less than the above reactivity equivalent available for trip insertion, immediately initiate and continue boration at ≥ 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 inserted and the reactor subcritical by less than the above reactivity equivalent, immediately initiate and continue boration at ≥ 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

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

4.10.1.2 Each CEA 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.

BASES

The **ACTION** statements applicable to a stuck or untrippable CEA and to a large misalignment (≥ 15 inches) of two or more CEAs, require a prompt shutdown of the reactor since either of these conditions may be indicative of a possible loss of mechanical functional capability of the CEAs and in the event of a stuck or untrippable CEA, the loss of **SHUTDOWN MARGIN**.

For small misalignments (< 15 inches) of the CEAs, there is 1) a small degradation in the peaking factors relative to those assumed in generating LCOs and LSSS setpoints for DNBR and linear heat rate, 2) a small effect on the time dependent long term power distributions relative to those used in generating LCOs and LSSS setpoints for DNBR and linear heat rate, 3) a small effect on the available **SHUTDOWN MARGIN**, and 4) a small effect on the ejected CEA worth used in the safety analysis. Therefore, the **ACTION** statement associated with the small misalignment of a CEA permits a one hour time interval during which attempts may be made to restore the CEA to within its alignment requirements prior to initiating a reduction in **THERMAL POWER**. The one hour time limit is sufficient to (1) identify causes of a misaligned CEA, (2) take appropriate corrective action to realign the CEAs and (3) minimize the effects of xenon redistribution.

Overpower margin is provided to protect the core in the event of a large misalignment (≥ 15 inches) of a CEA. However, this misalignment would cause distortion of the core power distribution. The Reactor Protective System would not detect the degradation in radial peaking factors and since variations in other system parameters (e.g., pressure and coolant temperature) may not be sufficient to cause trips, it is possible that the reactor could be operating with process variables less conservative than those assumed in generating LCO and LSSS setpoints. The **ACTION** statement associated with a large CEA misalignment requires prompt action to realign the CEA to avoid excessive margin degradation. If the CEA is not realigned within the given time constraints, **ACTION** is specified which will preserve margin, including reductions in **THERMAL POWER**.

For a single CEA misalignment, the time allowance to realign the CEA (Figure 3.1.3-1 or as determined by BASSS) is permitted for the following reasons:

1. The margin calculations which support the power distribution LCOs for DNBR are based on a steady-state F_T as specified in Technical Specification 3.2.3.

2. When the actual F_T is less than the Technical Specification value, additional margin exists.

3. This additional margin can be credited to offset the increase in F_T^L with time that will occur following a CEA misalignment due to xenon redistribution.

The requirement to reduce power level after the time limit of Figure 3.1.3-1 or after the time limit determined by BASSS is reached offsets the continuing increase in F_T^L that can occur due to xenon redistribution. A power reduction is not required below 50% power. Below 50% power there is sufficient conservatism in the DNB power distribution LCOs to completely offset any, or any additional, xenon redistribution effects.

The **ACTION** statements applicable to misaligned or inoperable CEAs include requirements to align the **OPERABLE** CEAs in a given group with the inoperable CEA. Conformance with these alignment requirements brings the core, within a short period of time, to a configuration consistent with that assumed in generating LCO and LSSS setpoints. However, extended operation with CEAs significantly inserted in the core may lead to perturbations in 1) local burnup, 2) peaking factors, and 3) available **SHUTDOWN MARGIN** which are more adverse than the conditions assumed to exist in the safety analyses and LCO and LSSS setpoints determination. Therefore, time limits have been imposed on operation with inoperable CEAs to preclude such adverse conditions from developing.

OPERABILITY of the CEA position indicators is required to determine CEA positions and thereby ensure compliance with the CEA alignment and insertion limits and ensures proper operation of the rod block circuit. The CEA "Full In" and "Full Out" limits provide an additional independent means for determining the CEA positions when the CEAs are at either their fully inserted or fully withdrawn positions. Therefore, the **OPERABILITY** and the **ACTION** statements applicable to inoperable CEA position indicators permit continued operations when positions of CEAs with inoperable indicators can be verified by the "Full In" or "Full Out" limits.

CEA positions and **OPERABILITY** of the CEA position indicators are required to be verified on a nominal basis of once per 12 hours with more frequent verifications required if an automatic monitoring channel is inoperable. These verification frequencies are adequate for assuring that the applicable LCOs are satisfied.

The surveillance requirements affecting CEAs with inoperable position indication channels allow 10 minutes for testing each affected CEA. This time limit was selected so that 1) the time would be long enough for the required testing, and 2) if all position indication were lost during testing, the time would be short enough to allow a power reduction to 70% of maximum allowable **THERMAL POWER** within one hour from when the testing

In the spectrum of events analyzed in which automatic initiation of auxiliary feedwater occurs, the following flow conditions are allowed with an operator action time of 10 minutes.

(1)	Loss of Feedwater	0 gpm Auxiliary Feedwater Flow
(2)	Feedline Break	0 gpm Auxiliary Feedwater Flow
(3)	Main Steam Line Break	1550 gpm Auxiliary Feedwater Flow (This being the maximum flow through the AFW suction line, with one unit requiring flow, prior to pump cavitation due to low NPSH).

At 10 minutes after an Auxiliary Feedwater Actuation Signal the operator is assumed to be available to increase or decrease auxiliary feedwater flow to that required by the existing plant conditions.

3/4.7.1.3 Condensate Storage Tank

The **OPERABILITY** of the condensate storage tank with the minimum water volume ensures that sufficient water is available to maintain the RCS at **HOT STANDBY** conditions for 6 hours with steam discharge to atmosphere with concurrent and total loss of offsite power. The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

3/4.7.1.4 Activity

The limitations on Secondary System specific activity ensure that the resultant off-site radiation dose will be limited to a small fraction of 10 CFR Part 100 limits in the event of a steam line rupture. This dose also includes the effects of a coincident 1.0 GPM primary to secondary tube leak in the steam generator of the affected steam line and concurrent loss of offsite electrical power. These values are consistent with the assumptions used in the accident analyses.

3/4.7.1.5 Main Steam Line Isolation Valves

The **OPERABILITY** of the main steam line isolation valves ensures that no more than one steam generator will blowdown in the event of a steam line rupture. This restriction is required to 1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and 2) limit the pressure rise within containment in the event the steam line rupture occurs within containment. The **OPERABILITY** of

DESIGN PRESSURE AND TEMPERATURE

5.2.2 The reactor containment building is designed and shall be maintained for a maximum internal pressure of 50 psig and a temperature of 276°F.

5.3 REACTOR CORE

FUEL ASSEMBLIES

5.3.1 The reactor core shall contain 217 fuel assemblies with each fuel assembly containing a maximum of 176 fuel rods clad with Zircaloy-4. Each fuel rod shall have a nominal active fuel length of 136.7 inches and contain a maximum total weight of 3000 grams uranium. The initial core loading shall have a maximum enrichment of 2.99 weight percent U-235. Reload fuel shall be similar in physical design to the initial core loading and shall have a maximum enrichment of 4.35 weight percent U-235.

5.3.2 Except for special test as authorized by the NRC, all fuel assemblies under control element assemblies shall be sleeved with a sleeve design previously approved by the NRC.

CONTROL ELEMENT ASSEMBLIES

5.3.3 The reactor core shall contain 77 full length and no part length control element assemblies.

5.4 REACTOR COOLANT SYSTEM

DESIGN PRESSURE AND TEMPERATURE

5.4.1 The Reactor Coolant System is designed and shall be maintained:

a. In accordance with the code requirements specified in Section 4.2 of the FSAR with allowance for normal degradation pursuant of the applicable Surveillance Requirements,

b. For a pressure of 2500 psia, and

c. For a temperature of 650°F, except for the pressurizer which is 700°F.