

### 3/4.2 POWER DISTRIBUTION LIMITS

#### 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.

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 HOT STANDBY within the next 6 hours.

#### SURVEILLANCE REQUIREMENTS

4.2.1.1 The provisions of Specification 4.0.4 are not applicable.

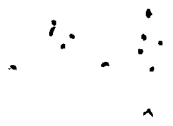
4.2.1.2 The linear heat rate shall be determined to be within its limits by continuously monitoring the core power distribution with either the excore detector monitoring system or with the incore detector monitoring system.

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- a. Verifying at least once per 12 hours that the full length CEAs are withdrawn to and maintained at or beyond the Long Term Steady State Insertion Limit of Specification 3.1.3.6.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 3.2-2.

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*\*Except during performance of Specification 4.1.1.4.2*



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POWER DISTRIBUTION LIMITS

SURVEILLANCE REQUIREMENTS (Continued)

- c. Verifying that the AXIAL SHAPE INDEX is maintained within the allowable limits of Figure 3.2-2, where 100 percent of maximum allowable power represents the maximum THERMAL POWER allowed by the following expression:

$$M \times N$$

where:

1. M is the maximum allowable THERMAL POWER level for the existing Reactor Coolant Pump combination.
2. N is the maximum allowable fraction of RATED THERMAL POWER as determined by the  $F_{xy}^T$  curve of Figure 3.2-3.

4.2.1.4 Incore Detector Monitoring System<sup>#</sup> - The incore detector monitoring system may be used for monitoring the core power distribution by verifying that the incore detector Local Power Density alarms:

- a. Are adjusted to satisfy the requirements of the core power distribution map which shall be updated at least once per 31 days of accumulated operation in MODE 1.
  - b. Have their alarm setpoint adjusted to less than or equal to the limits shown on Figure 3.2-1 when the following factors are appropriately included in the setting of these alarms:
    1. A measurement-calculational uncertainty factor of 1.07,
    2. An engineering uncertainty factor of 1.03,
    - ~~3. A linear heat rate uncertainty factor of 1.01 due to axial fuel densification and thermal expansion, and~~
- 3A.** A THERMAL POWER measurement uncertainty factor of 1.02.

#If the core system becomes inoperable, reduce power to M x N within 4 hours and monitor linear heat rate in accordance with Specification 4.2.1.

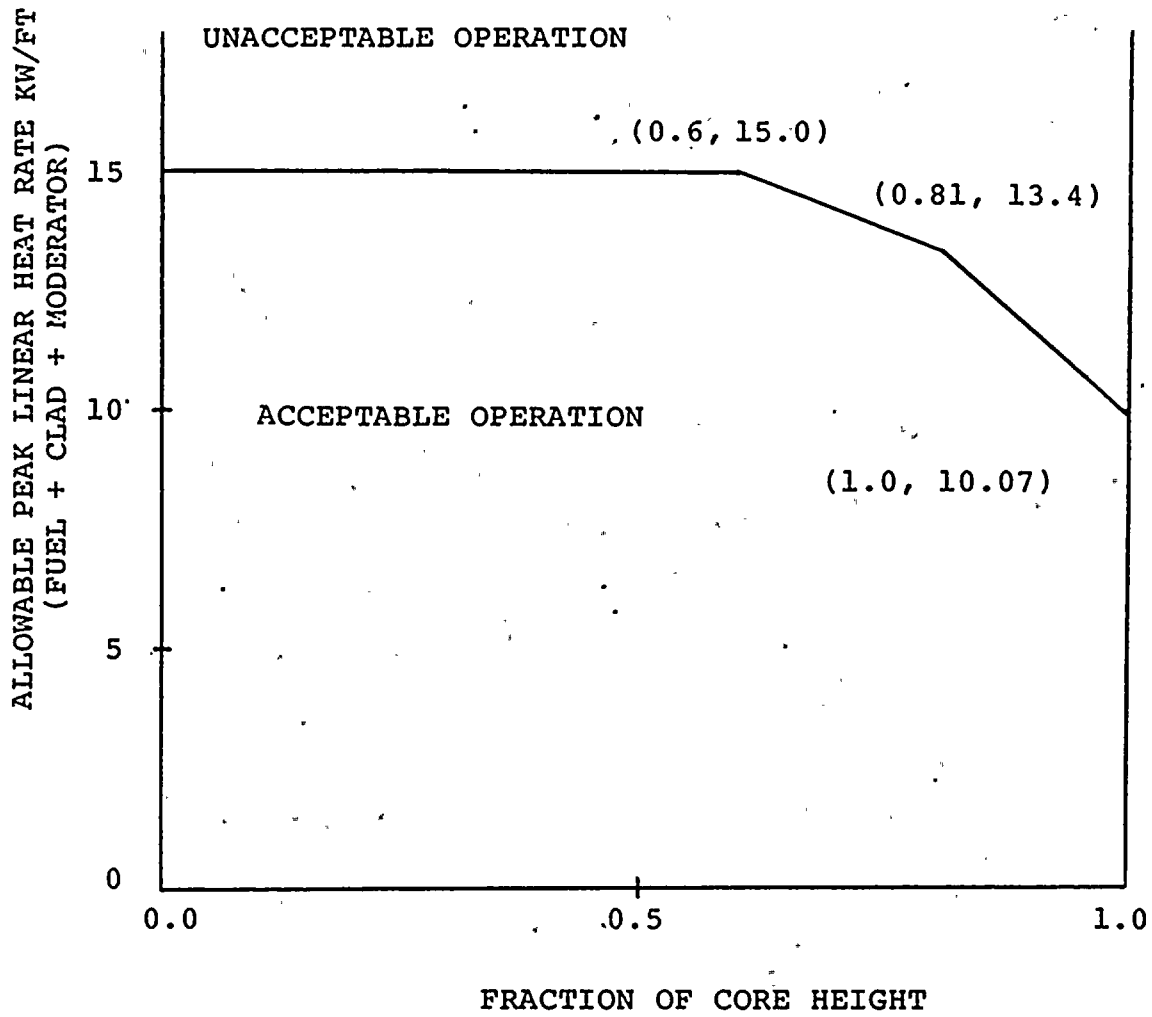


FIGURE 3.2-1 ALLOWABLE PEAK LINEAR HEAT RATE VERSUS FRACTION OF CORE HEIGHT

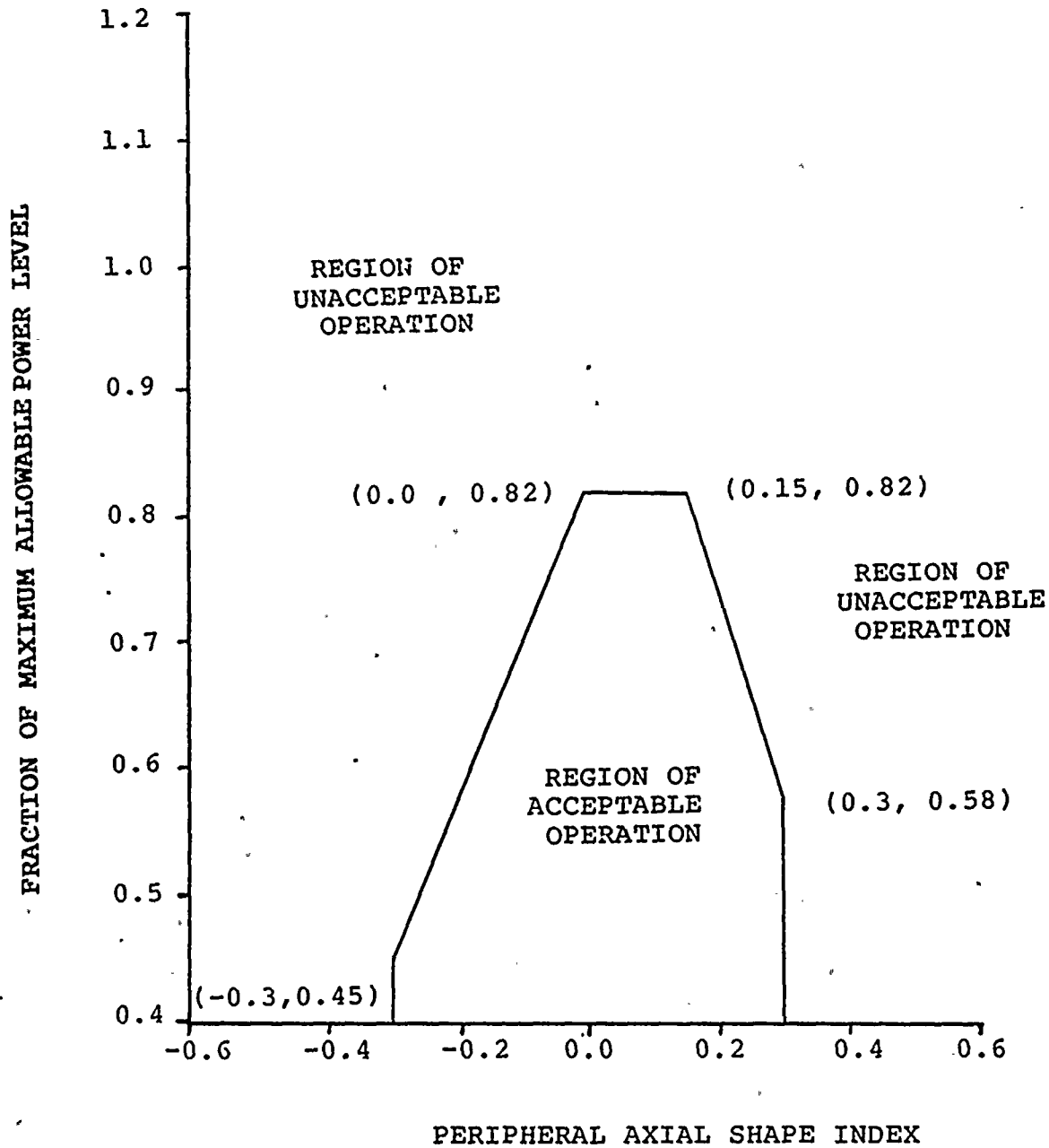


FIGURE 3.2-2

AXIAL SHAPE INDEX vs. MAXIMUM ALLOWABLE POWER LEVEL PER SPECIFICATION 4.2.1.3

## 3/4.2 POWER DISTRIBUTION LIMITS

### BASES

#### 3/4.2.1 LINEAR HEAT RATE

The limitation on linear heat rate ensures that in the event of a LOCA, the peak temperature of the fuel cladding will not exceed 2200°F.

Either of the two core power distribution monitoring systems, the Excore Detector Monitoring System and the Incore Detector Monitoring System, provides adequate monitoring of the core power distribution and is capable of verifying that the linear heat rate does not exceed its limits. The Excore Detector Monitoring System performs this function by continuously monitoring the AXIAL SHAPE INDEX with the OPERABLE quadrant symmetric excore neutron flux detectors and verifying that the AXIAL SHAPE INDEX is maintained within the allowable limits of Figure 3.2-2. In conjunction with the use of the excore monitoring system and in establishing the AXIAL SHAPE INDEX limits, the following assumptions are made: 1) the CEA insertion limits of Specifications 3.1.3.5 and 3.1.3.6 are satisfied; 2) the AZIMUTHAL POWER TILT restrictions of Specification 3.2.4 are satisfied, and 3) the TOTAL PLANAR RADIAL PEAKING FACTOR does not exceed the limits of Specification 3.2.2.

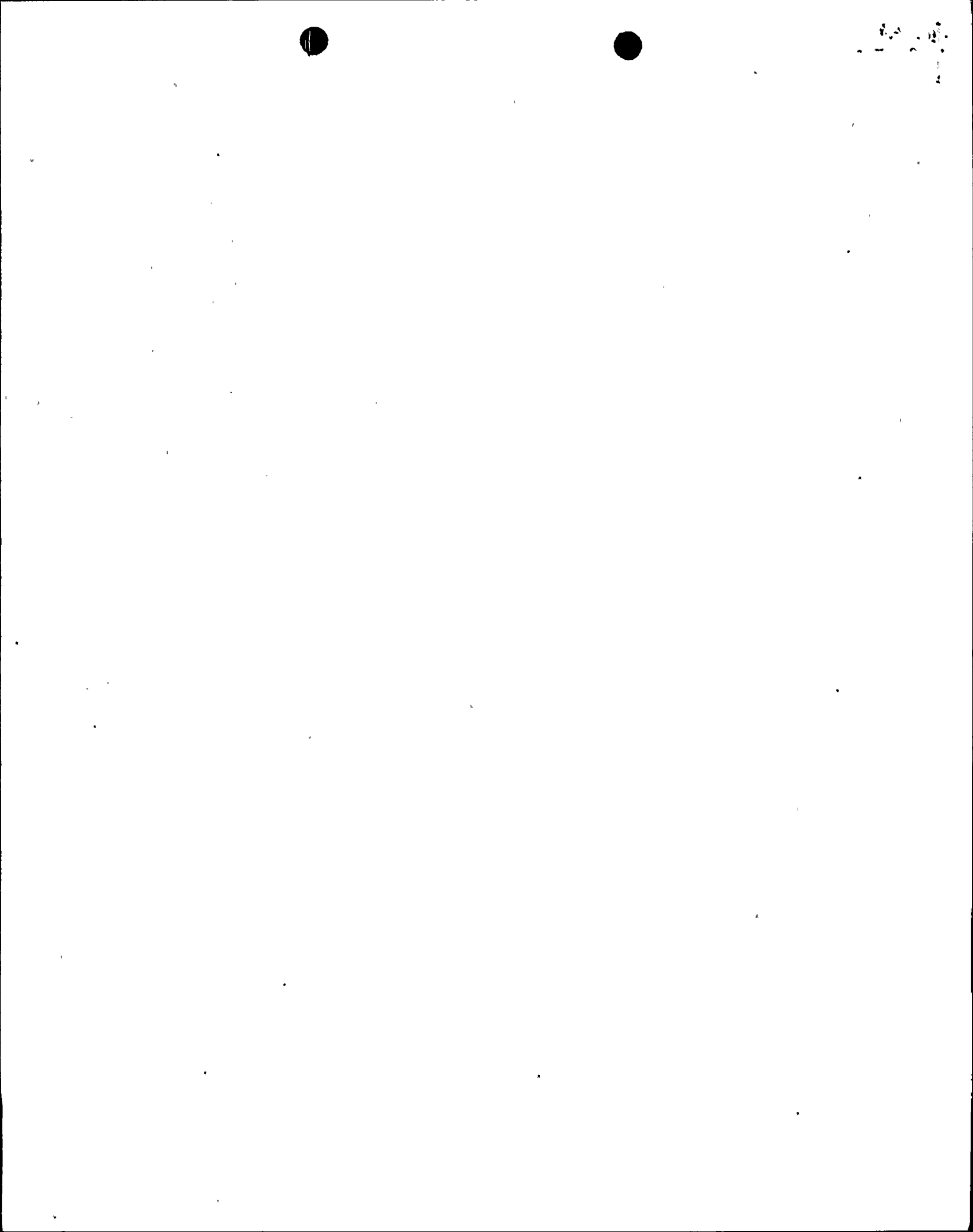
The Incore Detector Monitoring System continuously provides a direct measure of the peaking factors and the alarms which have been established for the individual incore detector segments ensure that the peak linear heat rates will be maintained within the allowable limits of Figure 3.2-1. The setpoints for these alarms include allowances, set in the conservative directions, for 1) a measurement-calculational uncertainty factor of 1.07, 2) an engineering uncertainty factor of 1.03, and 3) ~~an allowance of 1.01 for axial fuel densification and thermal expansion, and 4) a THERMAL POWER measurement uncertainty factor of 1.02.~~

#### 3/4.2.2, 3/4.2.3 and 3/4.2.4 TOTAL PLANAR AND INTEGRATED RADIAL PEAKING FACTORS - $F_{xy}^T$ AND $F_r^T$ AND AZIMUTHAL POWER TILT - $T_q$

The limitations on  $F_{xy}^T$  and  $T_q$  are provided to ensure that the assumptions used in the analysis for establishing the Linear Heat Rate and Local Power Density-High LCOs and LSSS setpoints remain valid during operation at the various allowable CEA group insertion limits. The limitations on  $F_r^T$  and  $T_q$  are provided to ensure that the assumptions



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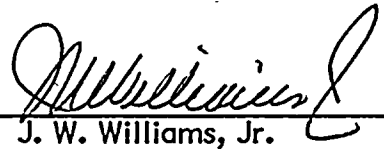


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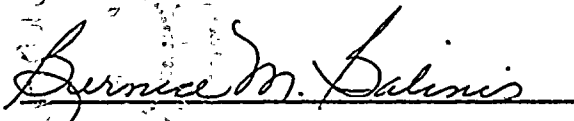
J. W. Williams, Jr. being first duly sworn, deposes and says:

That he is a Group Vice President of Florida Power & Light Company, the Licensee herein;

That he has executed the foregoing document; that the statements made in this document are true and correct to the best of his knowledge, information, and belief, and that he is authorized to execute the document on behalf of said Licensee.

  
\_\_\_\_\_  
J. W. Williams, Jr.

Subscribed and sworn to before me this  
17<sup>th</sup> day of October, 1985.

  
\_\_\_\_\_  
Bernard M. Salinas

NOTARY PUBLIC, in and for the County  
of Dade, State of Florida

NOTARY PUBLIC STATE OF FLORIDA  
MY COMMISSION EXP SEPT 18, 1989  
BONDED THRU GENERAL INS. UND.  
My Commission expires: \_\_\_\_\_



