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Southern Nuclear Operating Company

the southern electric system

Docket No. 50-364

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Joseph M. Farley Nuclear Plant - Unit 2  
Radial Peaking Factor Limit Report

Gentlemen:

Enclosed is the Radial Peaking Factor Limit Report for Cycle 9 of Unit 2. This report is provided in accordance with Paragraph 6.9.1.11 of the Unit 2 Technical Specifications. Also enclosed is a copy of the elevation dependent peaking factor versus core height graph for Cycle 9 of Unit 2, which is being submitted in support of the subject report.

The enclosed Radial Peaking Factor Limit Report was evaluated using the Power Shape Sensitivity Model (PSSM) screening process to ensure that the cosine shape remains the limiting power distribution in the large break Loss of Coolant Accident (LOCA) analysis. (Reference WCAP-12935, May 1991.) The PSSM process eliminates the need for the currently applied penalty factor on the  $F_{xy}(z)$  surveillance data.

If you have any questions, please advise.

Respectfully submitted,

  
J. D. Woodard

JDW/MGE/AA:map

Enclosures

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TABLE 1  
RADIAL PEAKING FACTOR LIMIT REPORT

This Radial Peaking Factor Limit Report is provided in accordance with Paragraph 6.9.1.11 of the Joseph M. Farley Unit 2 Technical Specifications.

The  $F_{xy}^{RTP}$  limits for RATED THERMAL POWER within specified core planes for Cycle 9 shall be:

For VANTAGE 5 fuel:

1.  $F_{xy}^{RTP}$  less than or equal to 2.400 for all core planes containing Bank "D" control rods.

2. For all unrodded core planes:

$F_{xy}^{RTP}$  less than or equal to 1.940 up to core elevations of 4.7 ft.

$F_{xy}^{RTP}$  less than or equal to 1.810 for core elevations above 4.7 ft.

For Low-Parasiti (LOPAR) fuel:

1.  $F_{xy}^{RTP}$  less than or equal to 2.300 for all core planes containing Bank "D" control rods.

2. For all unrodded core planes:

$F_{xy}^{RTP}$  less than or equal to 1.855 up to core elevations of 4.7 ft.

$F_{xy}^{RTP}$  less than or equal to 1.770 for core elevations above 4.7 ft.

TABLE 1 (continued)  
RADIAL PEAKING FACTOR LIMIT REPORT

These  $F_{xy}(z)$  limits are used to confirm that the heat flux hot channel factor  $F_q(z)$  will be limited to the Technical Specification values of:

VANTAGE 5 fuel:

$$F_q(z) \leq \left[ \frac{2.45}{P} \right] [K(z)] \text{ for } P > 0.5 \text{ and,}$$

$$F_q(z) \leq 4.90 [K(z)] \text{ for } P \leq 0.5$$

Low-Parasitic fuel (LOPAR):

$$F_q(z) \leq \left[ \frac{2.32}{P} \right] [K(z)] \text{ for } P > 0.5 \text{ and,}$$

$$F_q(z) \leq 4.64 [K(z)] \text{ for } P \leq 0.5$$

assuming the most limiting axial power distributions expected to result from the insertion and removal of Control Banks C and D during operation, including the accompanying variations in the axial xenon and power distributions as described in the "Power Distribution Control and Load Following Procedures," WCAP-8385, September 1974. Therefore, these  $F_{xy}$  limits provide assurance that the initial conditions assumed in the LOCA analysis are met and the ECCS acceptance criterion limit of 2200°F for peak clad temperature is not exceeded.

FIGURE 1

VANTAG' 5

MAXIMUM (FQT x Pret) VERSUS CORE HEIGHT  
DURING NORMAL OPERATION

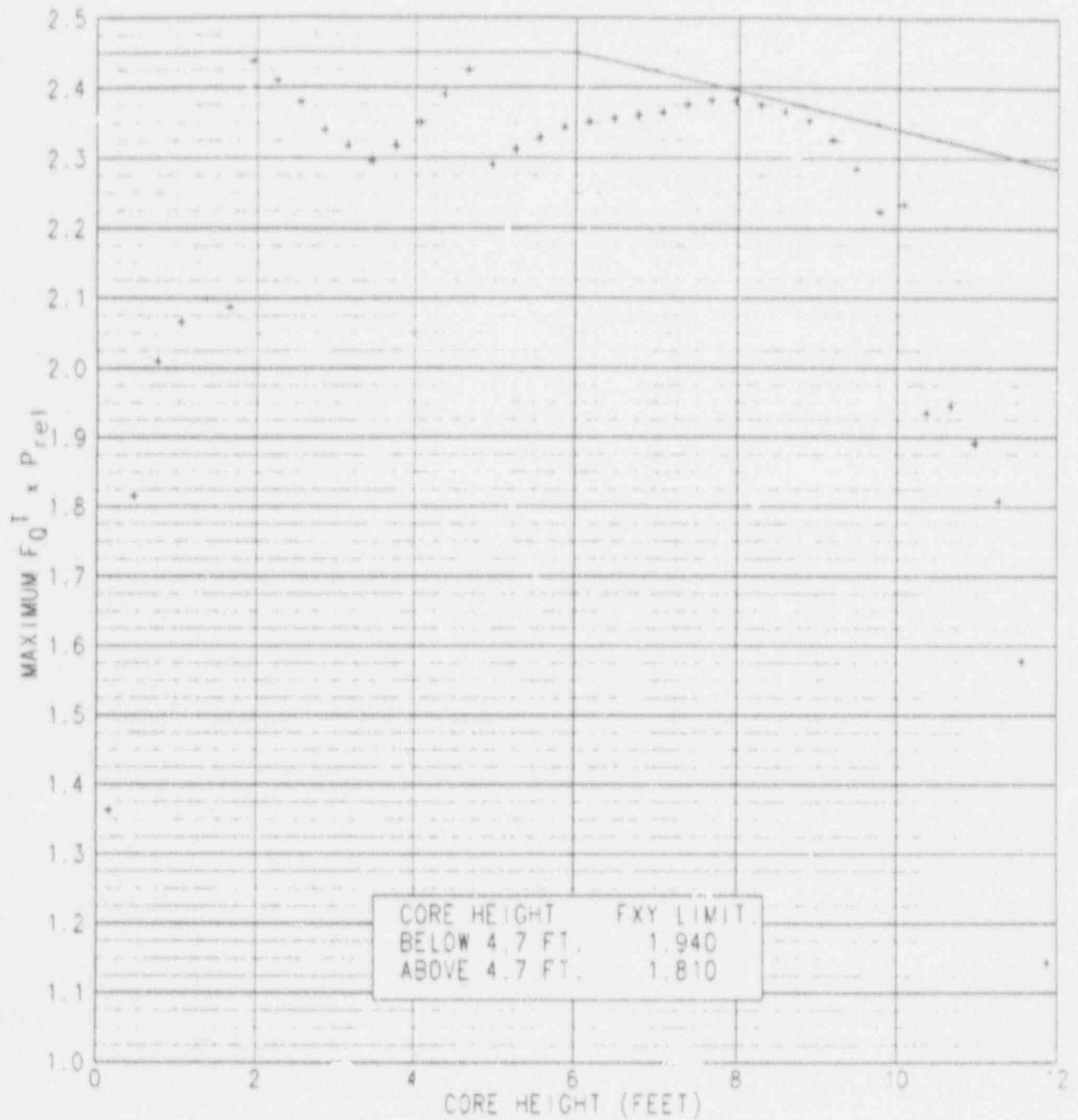


FIGURE 2

LOPAR

MAXIMUM (FQT x Prel) VERSUS CORE HEIGHT  
DURING NORMAL OPERATION

