SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION

UNIT 1 CYCLE 3

CORE OPERATING LIMITS REPORT

REVISION 0

MAY 1, 1990

SOUTH TEXAS UNIT 1 CYCLE 3

1.0 Core Operating Limits

This Core Operating Limits Report for STPEGS Unit 1 Cycle 3 has been prepared in accordance with the requirements of Technical Specification 6.9.1.6. The core operating limits have been developed using the NRC-approved methodologies specified in Reference 1 and 2.

The following cycle-specific core operating limits required by Technical Specifications are included in this report:

1) Control Rod Insertion Limits (Figure 1) as required by Technical Specification 3.1.3.6. Fully withdrawn for all control and shutdown banks shall be 259 steps.

2) AFD Limits as required by Technical Specification 3.2.1 are determined by CAOC Operations with a Delta-I allowable operating band throughout Cycle 3 life of +3,-12%.

3) Radial Peaking Factor Limits as required by Technical Specification 4.2.2.2 are provided for Cycle 3 operation in Figure 2.

2.0 References

1. Westinghouse Reload Safety Evaluation Methodology", WCAP-9272-P-A, July 1985.

2. "Power Distribution and Load Following Procedures", WCAP-8385, September, 1974.

3. NUREG-1346, Technical Specifications, South Texas Project, Unit Nos. 1 and 2.

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FIGURE 1

CONTROL ROD INSERTION LIMITS VERSUS POWER LEVEL

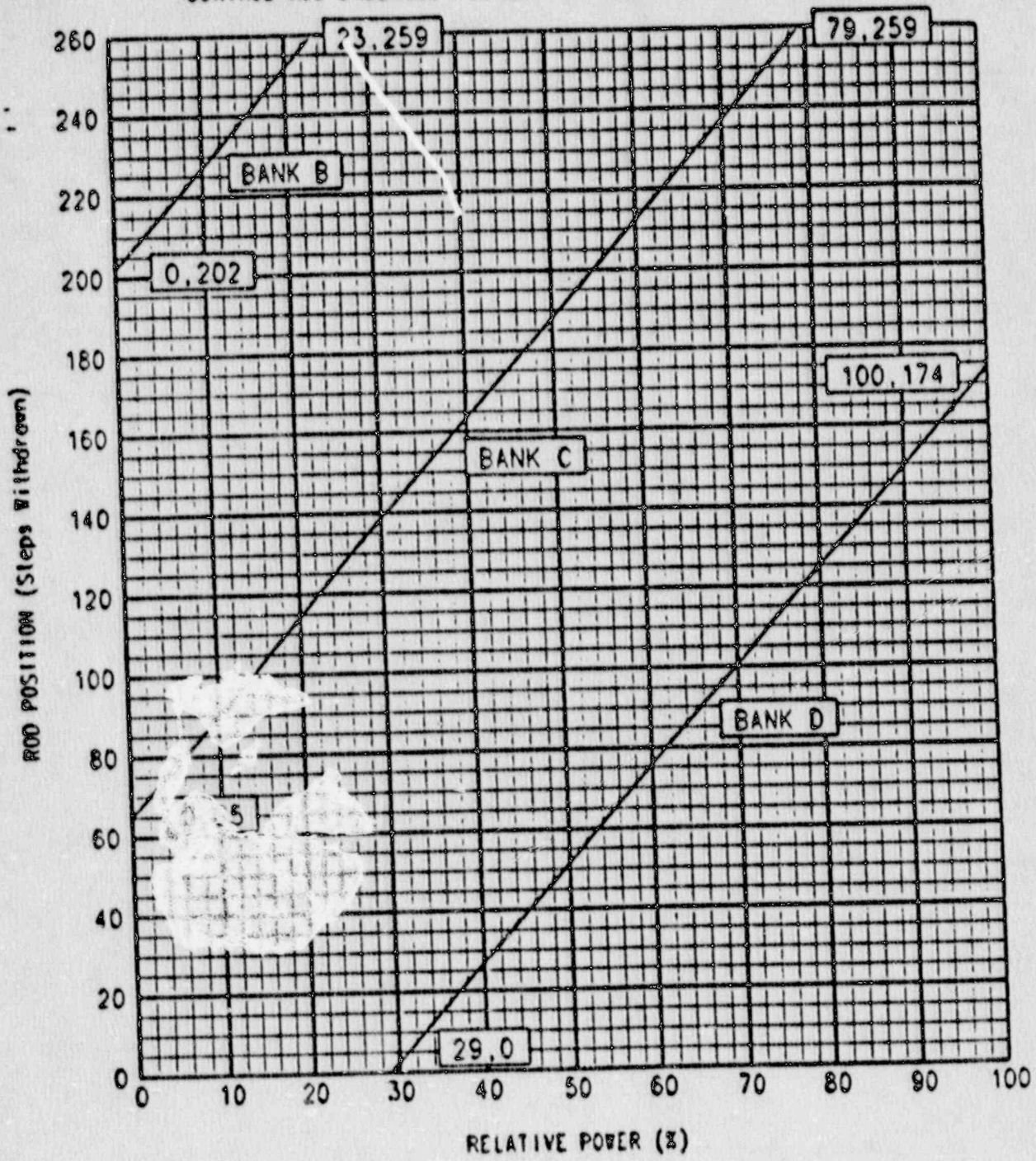

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FIGURE 2

RADIAL PEAKING FACTOR LIMITS

The F^{RTP}_{xy} limits for RATED THERMAL POWER within specific core planes shall be:

1. F^{RTP}_{xy} less than or equal to 1.94 for all core planes containing bank "D" control rods, and

2. F^{RTP}_{xy} less than or equal to 1.64 for all unrodded core planes.

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

$$F_Q(z) \leq [2.50/P]\ [K(z)] \quad \text{for } P > 0.5 \text{ and,}$$
$$F_Q(z) \leq [5.00]\ [K(z)] \quad \text{for } P \leq 0.5$$

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 Reference 2. Therefore, these F_{xy} limits provide assurance that the initial conditions assumed in the LOCA analysis are met, along with the ECCS acceptance criteria of 10CFR50.46.

The function K(z) is given in Figure 3.2-2 of the Technical Specifications.