APPENDIX B

CORE OPERATING LIMITS REPORT (COLR)
FOR SURRY 2 CYCLE 12

SURRY 2 CYCLE 12 CORE OPERATING LIMITS REPORT
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1.0 CORE OPERATING LIMITS REPORT

This Core Operating Limits Report (COLR) for Surry Unit 2 Cycle 12 has been prepared in accordance with the requirements of Technical Specification (TS) 6.2.C.

The Technical Specifications affected by this report are listed below:

TS 3.1.E and TS 5.3.A.6.b - Moderator Temperature Coefficient

TS 3.12.A.2 and TS 3.12.A.3 - Control Bank Insertion Limits

TS 3.12.B.1 and TS 3.12.B.2 - Power Distribution Limits

2.0 OPERATING LIMITS

The cycle-specific parameter limits for the specifications listed in section 1.0 are presented in the following subsections. These limits have been developed using the NRC-approved methodologies specified in Technical Specification 6.2.C.

2.1 Moderator Temperature Coefficient (TS 3.1.E and TS 5.3.A.6.b)

2.1.1 The Moderator Temperature Coefficient (MTC) limits are:

The MTC shall be less positive than or equal to +3.0 pcm/°F below 50 percent of RATED POWER

The MTC shall be less positive than or equal to 0.0 pcm/°F at or above 50 percent of RATED POWER

2.2 Control Bank Insertion Limits (TS 3.12.A.2)

2.3.1 The control rod banks shall be limited in physical insertion as shown in Figure 1.

2.3 Heat Flux Hot Channel Factor-FQ(Z) (TS 3.12.B.1)

$$FQ(Z) \leq \frac{CFQ}{P} * K(Z) \quad \text{for } P > 0.5$$

$$FQ(Z) \leq \frac{CFQ}{0.5} * K(Z) \quad \text{for } P \leq 0.5$$

where: $$P = \frac{\text{THERMAL POWER}}{\text{RATED POWER}}$$

2.3.1 CFQ = 2.32

2.3.2 K(Z) is provided in Figure 2.

2.4 Nuclear Enthalpy Rise Hot Channel Factor - $F_{\Delta H}(N)$
(TS 3.12.B.1)

$$F_{\Delta H}(N) \leq CFDH * (1 + PFDH * (1 - P))$$

where: $$P = \frac{\text{THERMAL POWER}}{\text{RATED POWER}}$$

2.4.1 CFDH = 1.56

2.4.2 PFDH = 0.3

FIGURE 1
CONTROL ROD BANK INSERTION LIMITS VS. PERCENT RATED THERMAL POWER

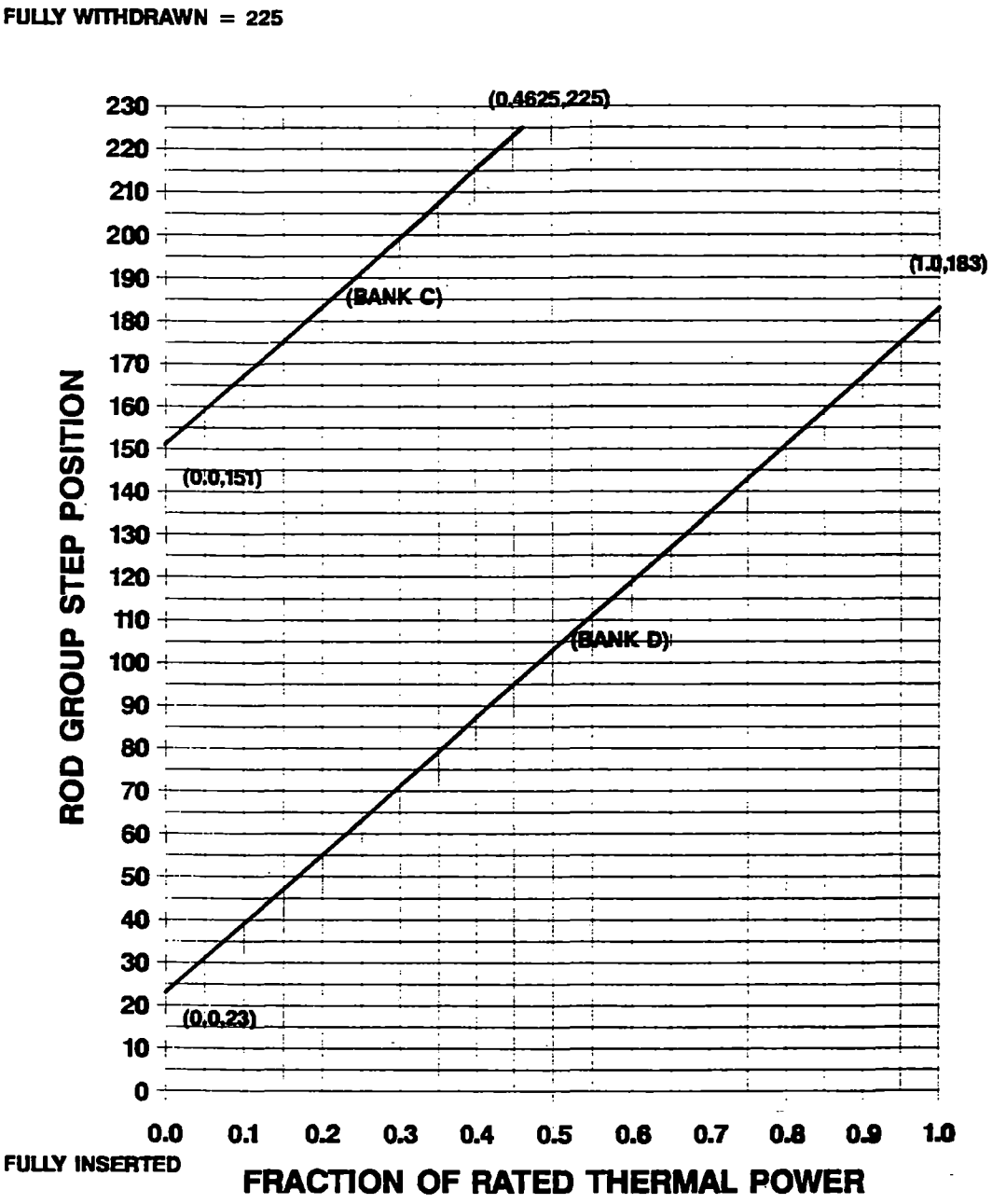
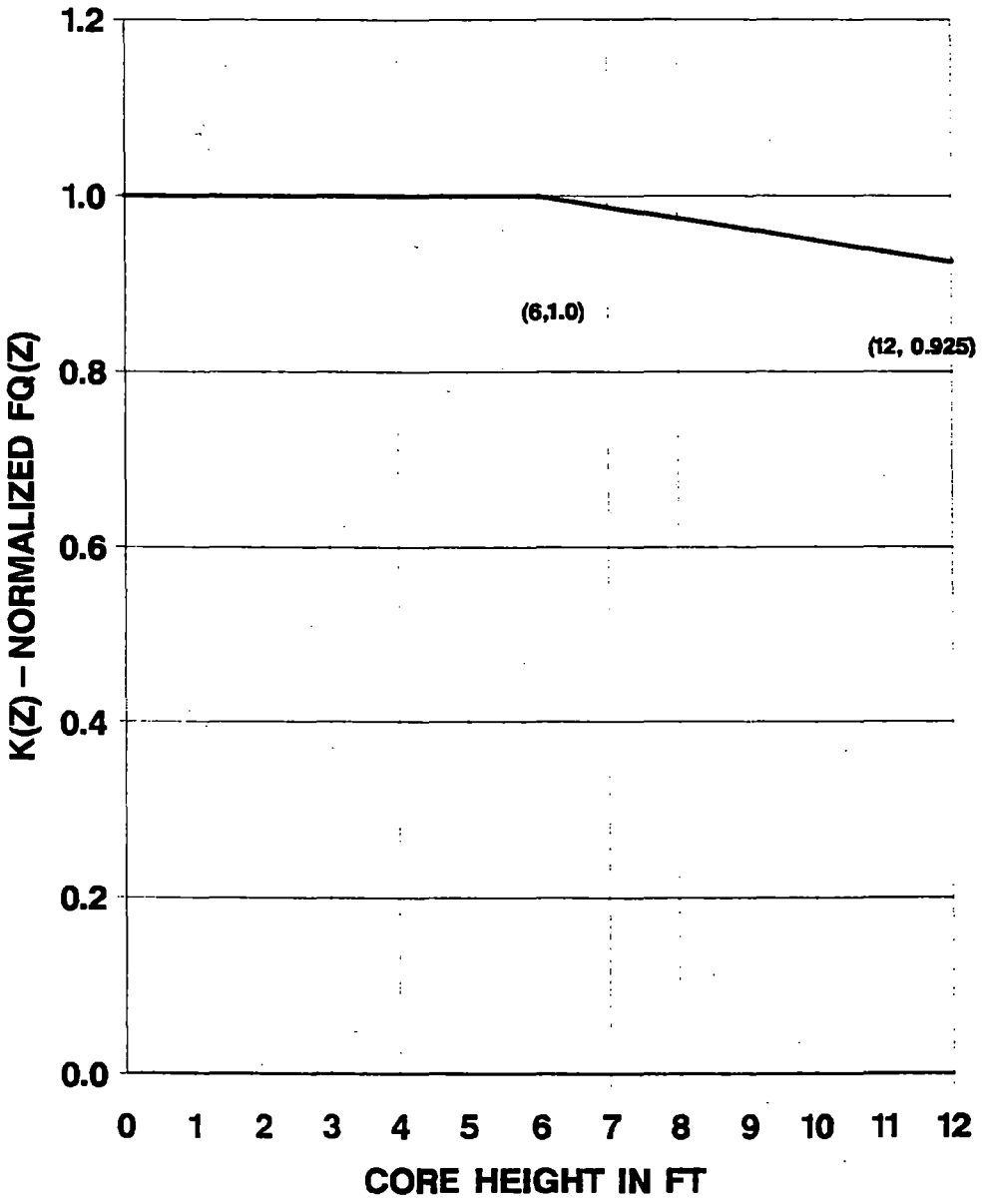


FIGURE 2
K(Z) - NORMALIZED FQ AS A FUNCTION OF CORE HEIGHT



Significant Hazards Consideration

10 CFR 50.36 provides regulatory guidance for the development of Technical Specifications which define parameter limits and minimum functional requirements for plant equipment. The Technical Specification requirements reflect the parameters and system performance characteristics which have been demonstrated via safety analysis to ensure that safety analysis acceptance criteria are met. The methodologies used to calculate and evaluate these parameters have been reviewed and approved by the NRC.

Under the proposed Technical Specifications, parameter limits for certain reload-dependent parameters will be specified in the Core Operating Limits Report (COLR). The NRC-approved methodologies listed in the proposed Technical Specifications will be used to calculate and evaluate the parameter limits presented in the COLR for each reload core.

Virginia Electric and Power Company has reviewed the Technical Specification changes against the criteria of 10 CFR 50.92 and has concluded that the changes do not pose a significant hazards consideration. Specifically, operation of Surry Power Station in accordance with the Technical Specification changes will not:

1. involve a significant increase in the probability or consequences of an accident previously evaluated. The removal of cycle-specific core operating limits from the Surry Technical Specifications has no influence or impact on the probability or consequences of any accident

previously evaluated. The cycle-specific core operating limits, although not in Technical Specifications, will be followed in the operation of Surry. The proposed amendment still requires exactly the same actions to be taken when or if limits are exceeded as is required by the current Technical Specifications. Each accident analysis addressed in the Surry UFSAR will be examined with respect to changes in cycle-dependent parameters, which are determined by application of NRC-approved reload design methodologies. The impact of these parameter changes on transient results will be evaluated to ensure that the results remain bounded by respective transient analysis acceptance criteria. This examination, which will be performed per the requirements of 10 CFR 50.59, ensures that future reloads will not involve an increase in the probability or consequences of an accident previously evaluated.

2. create the possibility of a new or different kind of accident from any accident previously evaluated. As stated earlier, the removal of the cycle-specific core operating limits has no influence or impact, nor does it contribute in any way to the probability or consequences of any accident previously evaluated. No safety-related equipment, safety function, or plant operating characteristic will be altered as a result of the proposed changes. The cycle-specific variables are calculated using NRC-approved methods, and are submitted to the NRC for information in accordance with Technical Specification 6.2. The Technical Specifications will continue to require operation within the required core operating limits, and appropriate actions will be taken when or if limits are exceeded.

Therefore, the proposed amendment does not in any way create the possibility of a new or different kind of accident from any accident previously evaluated.

3. involve a significant reduction in a margin of safety. The margin of safety is not affected by the removal of cycle-specific core operating limits from the Technical Specifications. The margin of safety presently provided by current Technical Specifications remains unchanged. Appropriate measures exist to control the values of these cycle-specific limits. The proposed amendment continues to require operation within the core limits which were developed from the NRC-approved reload design methodologies. Further, the actions to be taken when or if limits are violated remain unchanged. Development of limits for future reloads will continue to conform to those methods described in NRC-approved documentation. In addition, each reload requires a 10 CFR 50.59 safety review to assure that operation of the unit within the cycle-specific limits will not involve a reduction in any margin of safety. Therefore, the proposed changes are administrative in nature and do not impact the operation of Surry in a manner that involves a reduction in a margin of safety.

Virginia Electric and Power Company concludes that the activities associated with these proposed Technical Specification changes satisfy the no significant hazards consideration criteria of 10 CFR 50.92 and, accordingly, a no significant hazards consideration finding is justified.