

CORE OPERATING LIMITS REPORT
Surry 1 Cycle 16 Pattern UN
Revision 1

November, 1999

1.0 INTRODUCTION

This Core Operating Limits Report (COLR) for Surry Unit 1 Cycle 16 has been prepared in accordance with the requirements of Technical Specification 6.2.C.

The technical specifications affected by this report are:

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:

+6.0 pcm/°F at less than 50 percent of RATED POWER, or

+6.0 pcm/°F at 50% of Rated Power and linearly decreasing to 0 pcm/°F at Rated Power

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

2.2.1 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)

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

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

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

2.3.1 CFQ = 2.20

2.3.2 K(z) is provided in Figure 2.

2.4 Nuclear Enthalpy Rise Hot Channel Factor-FΔH(N) (TS 3.12.B.1)

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

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

2.4.1 CFDH = 1.56 for Surry Improved fuel (SIF)

2.4.2 PFDH = 0.3

Figure 1

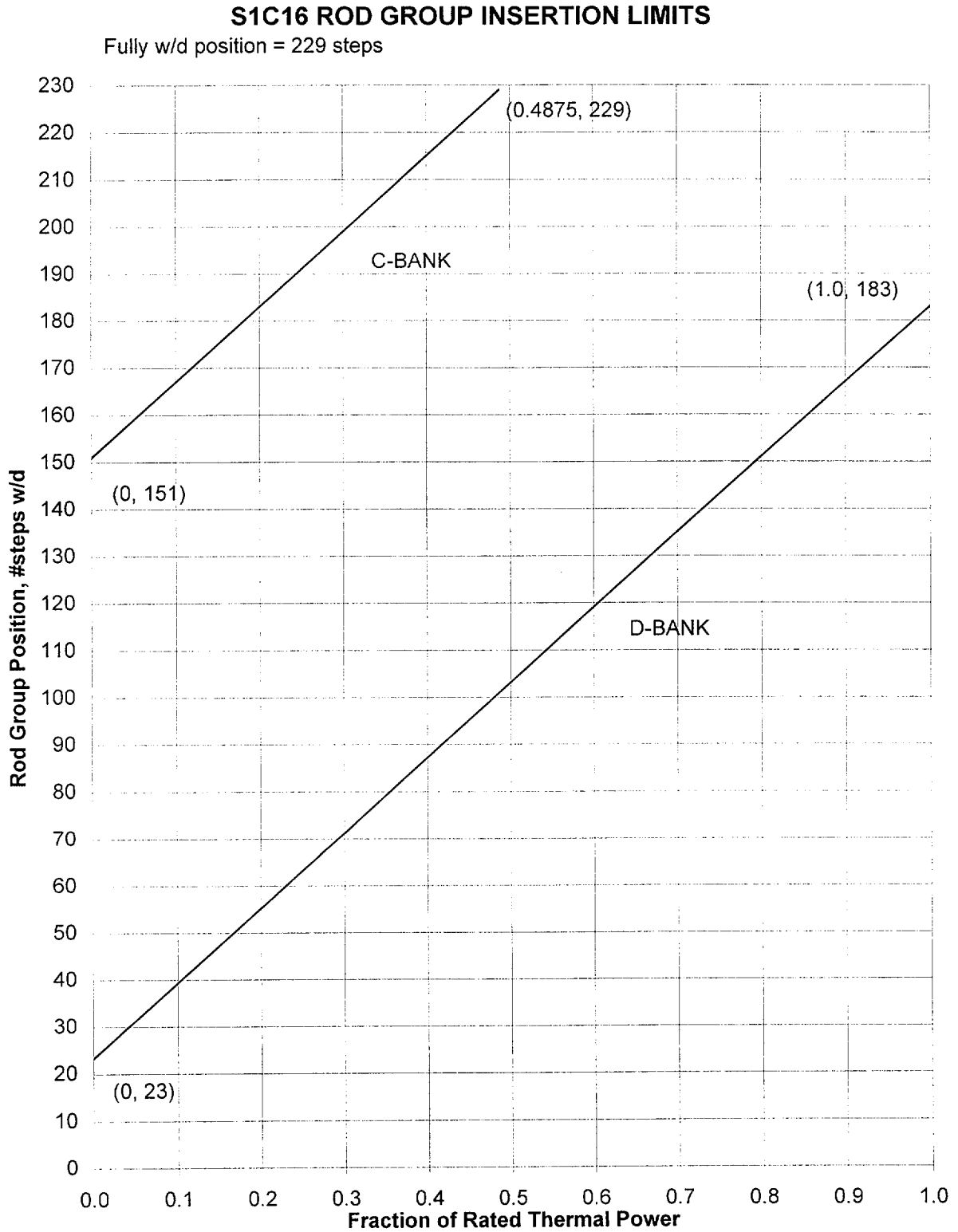


Figure 2
K(Z) - Normalized FQ as a Function of Core Height

