VIRGINIA ELECTRIC AND POWER COMPANY

RICHMOND, VIRGINIA 23261

May 8, 2000

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

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Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNIT 1
CYCLE 17 CORE OPERATING LIMITS REPORT

Pursuant to Surry Technical Specification 6.2.C, attached is a copy of the Virginia Electric and Power Company's Core Operating Limits Report for Surry Unit 1, Cycle 17 Pattern OT, Revision 0.

If you have any questions or require additional information, please contact us.

Very truly yours,

J. H. McCarthy, Manager
Nuclear Licensing and Operations Support

Attachment

Commitment Summary: There are no new commitments as a result of this letter.

cc: U. S. Nuclear Regulatory Commission
Region II
Atlanta Federal Center
61 Forsyth Street, SW, Suite 23 T85
Atlanta, GA 30303-3415

Mr. R. A. Musser
NRC Senior Resident Inspector
Surry Power Station

A001

CORE OPERATING LIMITS REPORT
Surry 1 Cycle 17 Pattern OT
Revision 0

April 2000

1.0 INTRODUCTION

This Core Operating Limits Report (COLR) for Surry Unit 1 Cycle 17 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 A-1.

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

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

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

$$where: P = \frac{Thermal\ Power}{Rated\ Power}$$

2.3.1 $CFQ = 2.20$

2.3.2 $K(z)$ is provided in Figure A-2.

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

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

$$where: P = \frac{Thermal\ Power}{Rated\ Power}$$

2.4.1 $CFDH = 1.56$ for Surry Improved fuel (SIF)

2.4.2 $PFDH = 0.3$

Figure A-1

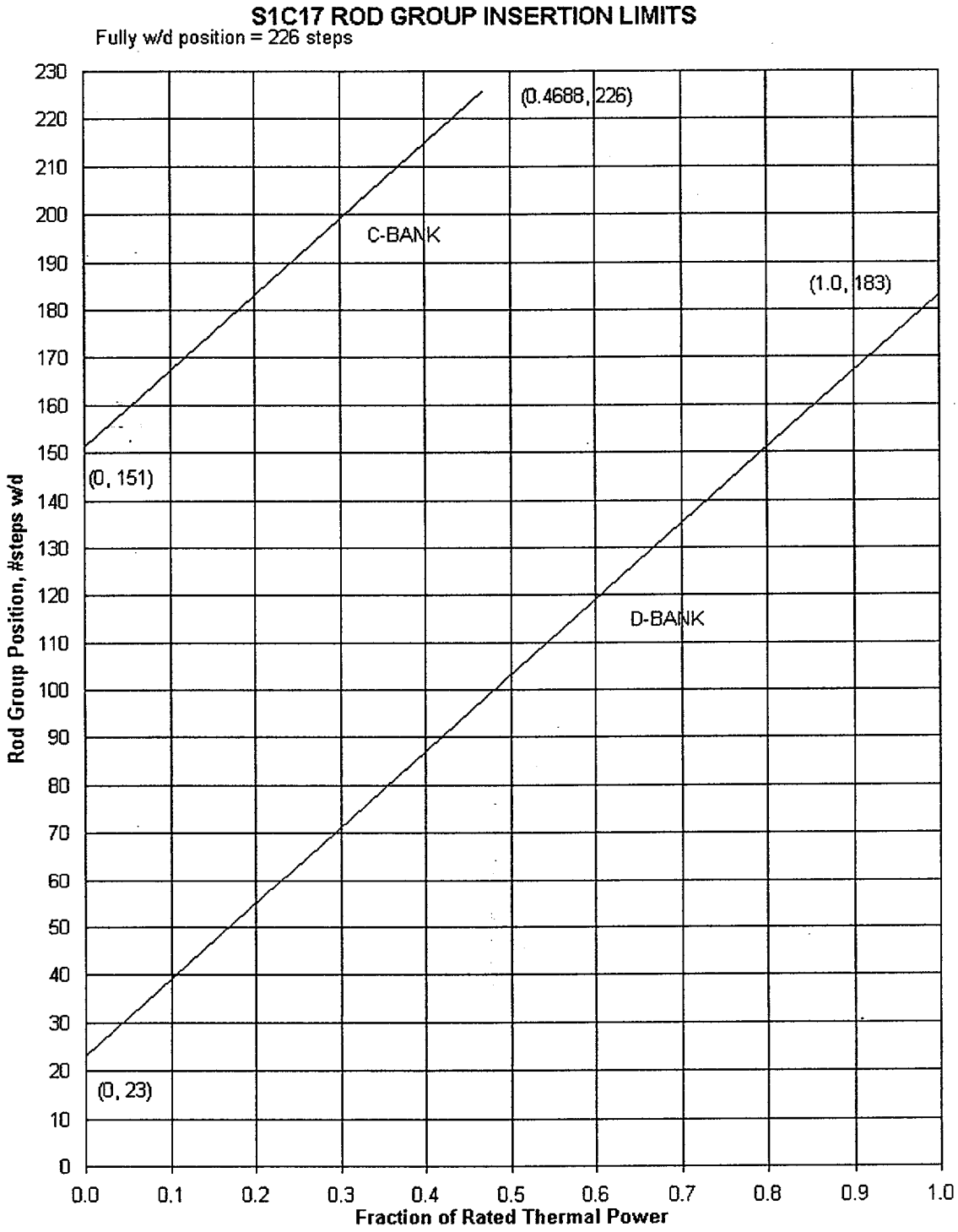
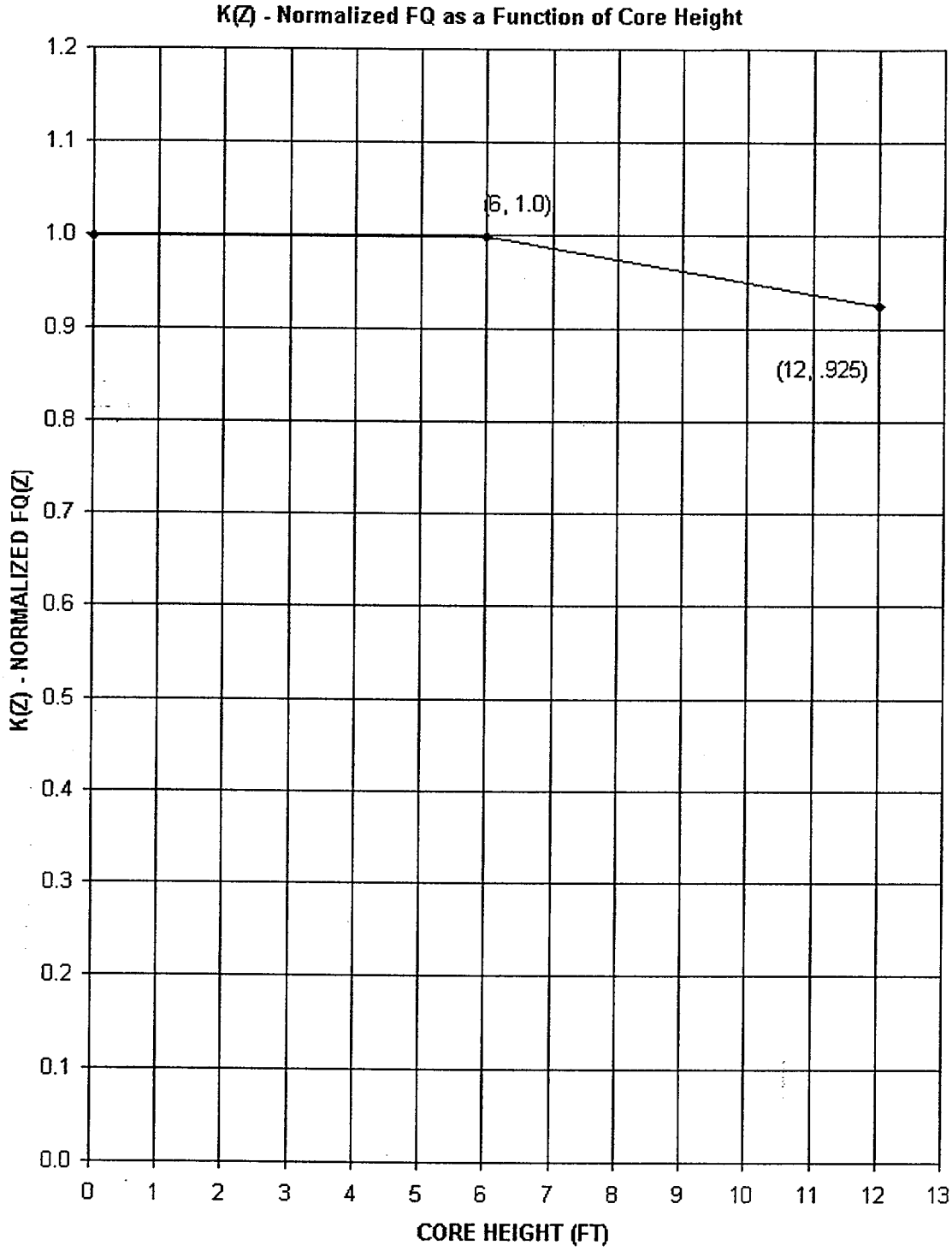

S1C17 ROD GROUP INSERTION LIMITS
Fully w/d position = 226 steps
(0.4688, 226)
C-BANK
(1.0, 183)
(0, 151)
D-BANK
(0, 23)
Rod Group Position, #steps w/d
Fraction of Rated Thermal Power
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0

Figure A-2


K(Z) - Normalized FQ as a Function of Core Height
K(Z) - NORMALIZED FQ(Z)
CORE HEIGHT (FT)
(6, 1.0)
(12, .925)
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
1
2
3
4
5
6
7
8
9
10
11
12
13