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September 14, 2000

LCV-1478

Docket Nos: 50-424
50-425

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Ladies and Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT
REVISION OF UNIT 1 AND UNIT 2
CORE OPERATING LIMITS REPORTS

Pursuant to the reporting requirements of Vogtle Electric Generating Plant (VEGP) Technical Specification 5.6.5, Southern Nuclear Operating Company (SNC) is submitting Revision 2 of the Unit 1 Cycle 9 Core Operating Limits Report (COLR) and Revision 1 of the Unit 2 Cycle 8 COLR.

Sincerely,

J. B. Beasley, Jr.

JBB/RJF

Attachment

cc: Southern Nuclear Operating Company
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U. S. Nuclear Regulatory Commission
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A001

VOGTLE ELECTRIC GENERATING PLANT (VEGP) UNIT 1 CYCLE 9

CORE OPERATING LIMITS REPORT

REVISION 2

AUGUST 2000

COLR for VEGP UNIT 1 CYCLE 9

1.0 CORE OPERATING LIMITS REPORT

This Core Operating Limits Report (COLR) for VEGP UNIT 1 CYCLE 9 has been prepared in accordance with the requirements of Technical Specification 5.6.5.

The Technical Requirement affected by this report is listed below:

13.1.1	SHUTDOWN MARGIN - MODES 1 and 2

The Technical Specifications affected by this report are listed below:

3.1.1	SHUTDOWN MARGIN - MODES 3, 4 and 5
3.1.3	Moderator Temperature Coefficient
3.1.5	Shutdown Bank Insertion Limits
3.1.6	Control Bank Insertion Limits
3.2.1	Heat Flux Hot Channel Factor - $F_Q(Z)$
3.2.2	Nuclear Enthalpy Rise Hot Channel Factor - $F^N_{\Delta H}$
3.2.3	Axial Flux Difference
3.9.1	Boron Concentration

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 NRC-approved methodologies, including those specified in Technical Specification 5.6.5.

2.1 SHUTDOWN MARGIN - MODES 1 AND 2 (Technical Requirement 13.1.1)

2.1.1 The SHUTDOWN MARGIN shall be greater than or equal to 1.30 percent $\Delta k/k$.

2.2 SHUTDOWN MARGIN - MODES 3, 4 AND 5 (Specification 3.1.1)

2.2.1 The SHUTDOWN MARGIN shall be greater than or equal to the limits shown in figures 1 and 2.

2.3 Moderator Temperature Coefficient (Specification 3.1.3)

2.3.1 The Moderator Temperature Coefficient (MTC) limits are:

The BOL/ARO/HZP - MTC shall be less positive than $+0.7 \times 10^{-4}$ $\Delta k/k/^{o}F$ for power levels up to 70 percent RTP with a linear ramp to 0 $\Delta k/k/^{o}F$ at 100 percent RTP.

The EOL/ARO/RTP-MTC shall be less negative than -5.50×10^{-4} $\Delta k/k/^{o}F$.[1]

2.3.2 The MTC Surveillance limits are:

The 300 ppm/ARO/RTP-MTC should be less negative than or equal to -4.75×10^{-4} $\Delta k/k/^{o}F$.[1]

The 60 ppm/ARO/RTP-MTC should be less negative than -5.35×10^{-4} $\Delta k/k/^{o}F$.[1]

where: BOL stands for Beginning of Cycle Life
ARO stands for All Rods Out
HZP stands for Hot Zero THERMAL POWER
EOL stands for End of Cycle Life
RTP stands for RATED THERMAL POWER

2.4 Shutdown Bank Insertion Limits (Specification 3.1.5)

2.4.1 The shutdown banks shall be withdrawn to a position greater than or equal to 225 steps.

2.5 Control Bank Insertion Limits (Specification 3.1.6)

2.5.1 The control banks shall be limited in physical insertion as shown in Figure 3.

[1]Applicable for full-power T-average of 586.4°F.

2.6 Heat Flux Hot Channel Factor - $F_Q(Z)$ (Specification 3.2.1)

2.6.1 $$F_Q(Z) \leq \frac{F_Q^{RTP}}{P} * K(Z) \quad \text{for } P > 0.5$$

$$F_Q(Z) \leq \frac{F_Q^{RTP}}{0.5} * K(Z) \quad \text{for } P \leq 0.5$$

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

2.6.2 $F_Q^{RTP} = 2.50$

2.6.3 K(Z) is provided in figure 4.

2.6.4 $$F_Q(Z) \leq \frac{F_Q^{RTP} * K(Z)}{P * W(Z)} \quad \text{for } P > 0.5$$

$$F_Q(Z) \leq \frac{F_Q^{RTP} * K(Z)}{0.5 * W(Z)} \quad \text{for } P \leq 0.5$$

2.6.5 W(Z) values are provided in Figures 6 through 9.

2.6.6 The $F_Q(Z)$ penalty factors are provided in Table 1.

2.7 Nuclear Enthalpy Rise Hot Channel Factor - $F^N_{\Delta H}$ (Specification 3.2.2)

2.7.1 $F^N_{\Delta H} \leq F^{RTP}_{\Delta H} * (1 + PF_{\Delta H} * (1-P))$

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

2.7.2a $F^{RTP}_{\Delta H}$ = 1.53 for LOPAR fuel, and

2.7.2b $F^{RTP}_{\Delta H}$ = 1.65 for VANTAGE 5 and VANTAGE + fuel

2.7.3 $PF_{\Delta H}$ = 0.3 for LOPAR and VANTAGE 5 and VANTAGE + fuel

2.8 Axial Flux Difference (Specification 3.2.3)

2.8.1 The Axial Flux Difference (AFD) acceptable operation limits are provided in Figure 5.

2.9 Boron Concentration (Specification 3.9.1)

2.9.1 The boron concentration shall be greater than or equal to 1980 ppm.[1]

[1]This concentration bounds the condition of $k_{eff} \leq 0.95$ (all rods in less the most reactive rod) and subcriticality (all rods out) over the entire cycle. This concentration includes additional boron to address uncertainties and B^{10} depletion.

COLR for VEGP UNIT 1 CYCLE 9

TABLE 1

$F_Q(Z)$ PENALTY FACTOR

Cycle Burnup (MWD/MTU)	$F_Q(Z)$ Penalty Factor
All Burnups	1.020

Notes:

1. The Penalty Factor, to be applied to $F_Q(Z)$ in accordance with SR 3.2.1.2, is the maximum factor by which $F_Q(Z)$ is expected to increase over a 39 EFPD interval (surveillance interval of 31 EFPD plus the maximum allowable extension not to exceed 25% of the surveillance interval per SR 3.0.2) starting from the burnup at which the $F_Q(Z)$ was determined.

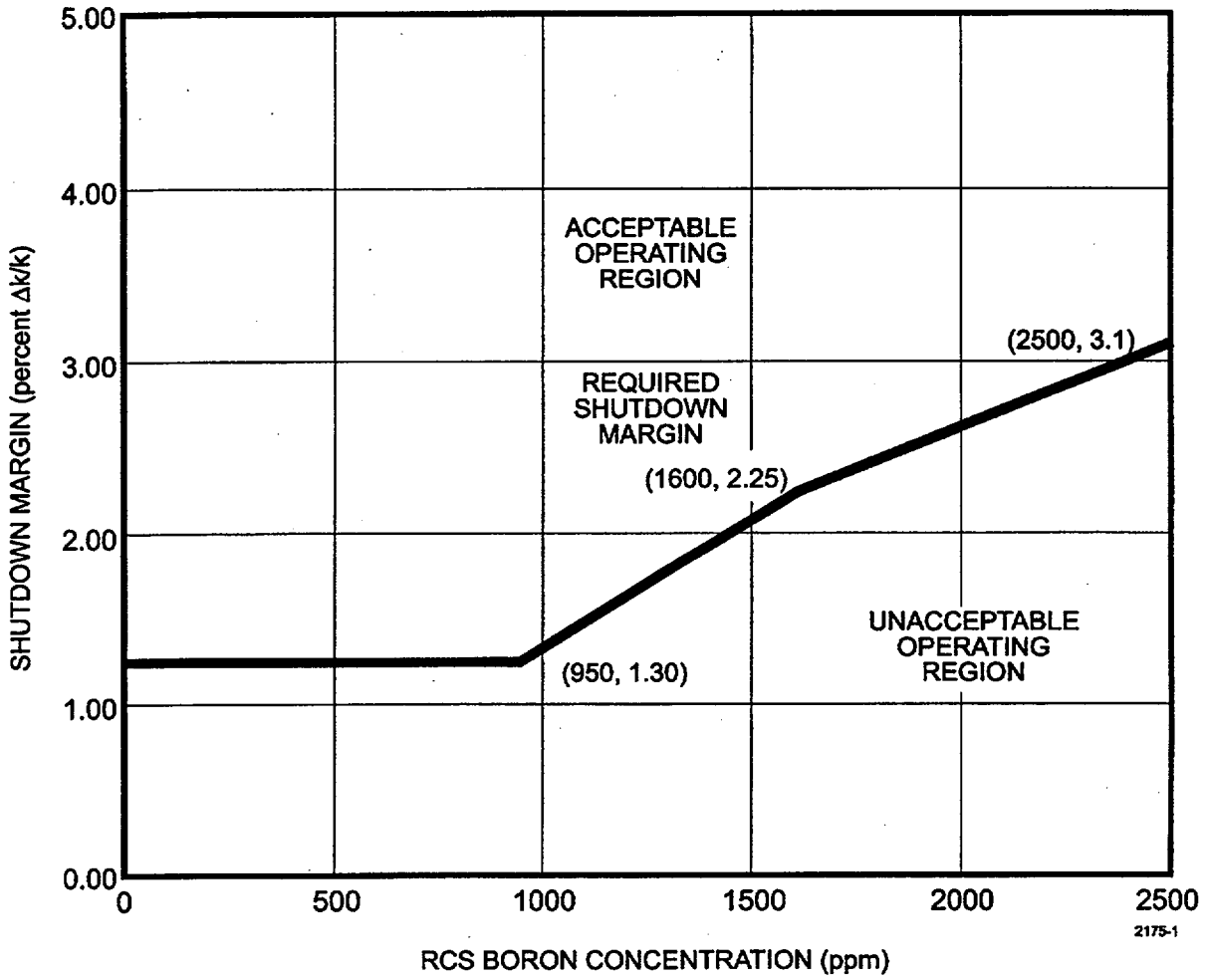


FIGURE 1

REQUIRED SHUTDOWN MARGIN FOR MODES 3 AND 4 (MODE 4 WITH AT LEAST ONE REACTOR COOLANT PUMP RUNNING)

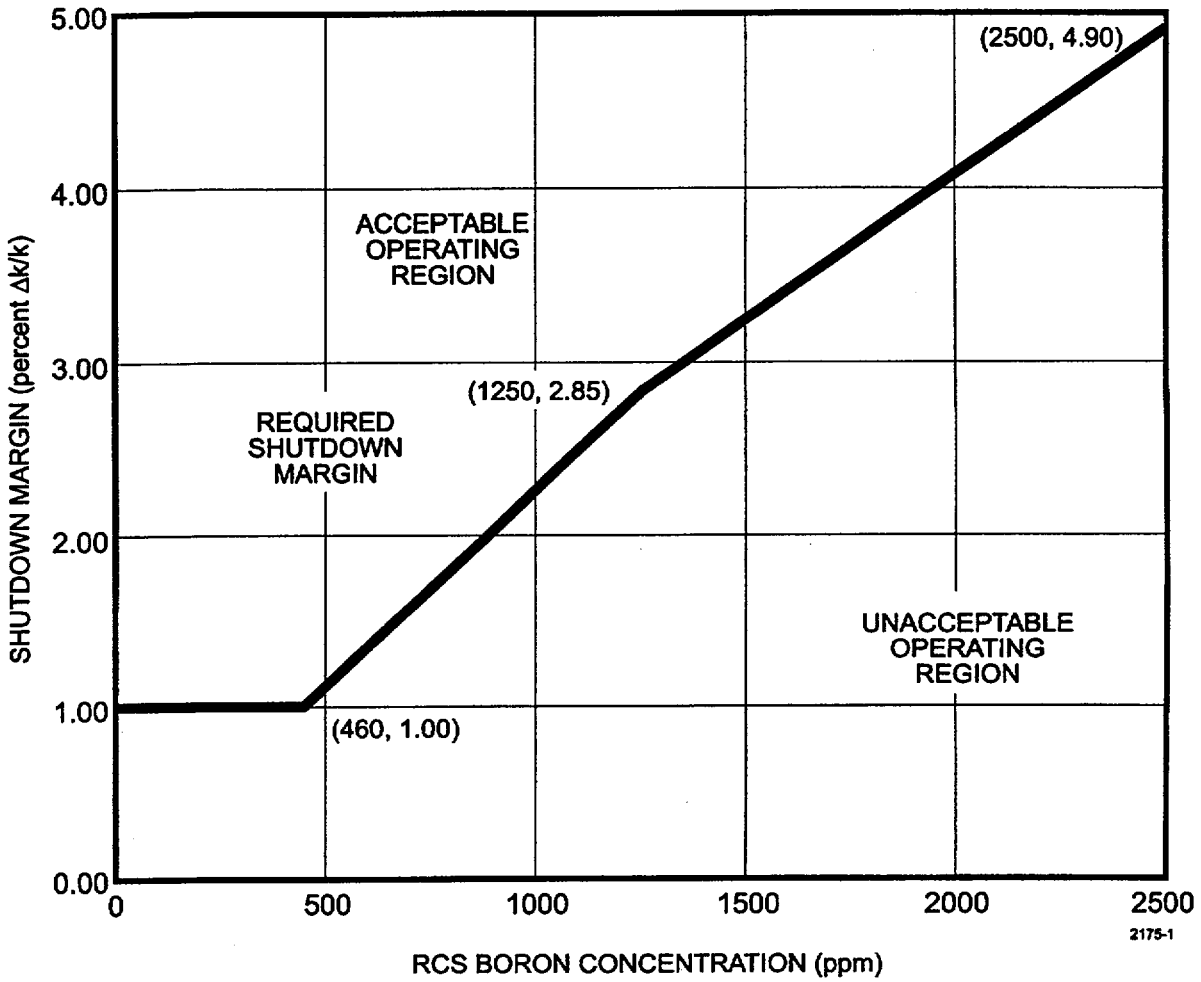
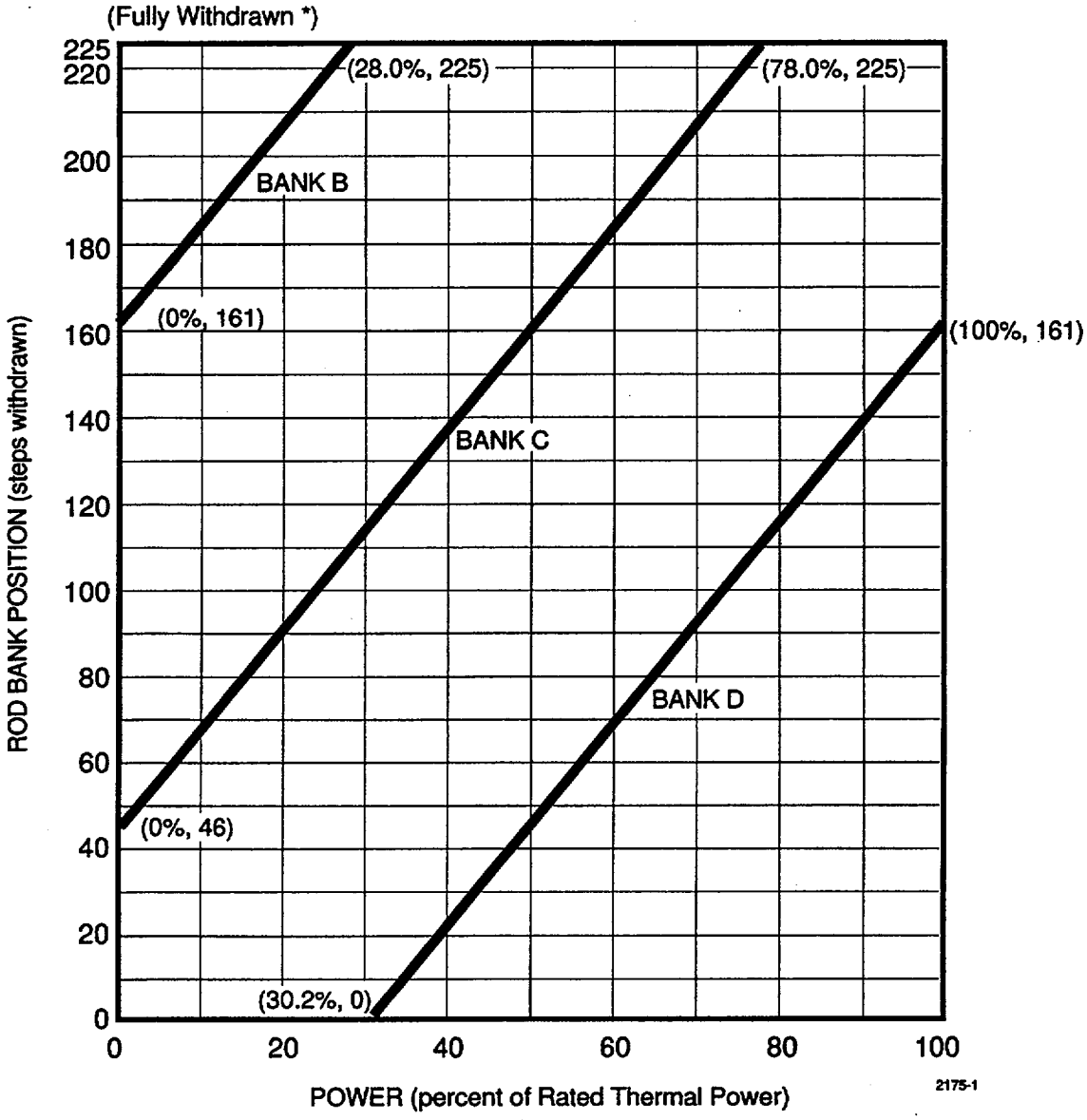


FIGURE 2

REQUIRED SHUTDOWN MARGIN FOR MODES 4 AND 5 (MODE 4 WITH NO REACTOR COOLANT PUMPS RUNNING)



* Fully withdrawn shall be the condition where control rods are at a position within the interval ≥225 and ≤231 steps withdrawn.

NOTE: The Rod Bank Insertion Limits are based on the control bank withdrawal sequence A, B, C, D and a control bank tip-to-tip distance of 115 steps.

FIGURE 3

ROD BANK INSERTION LIMITS VERSUS % OF RATED THERMAL POWER

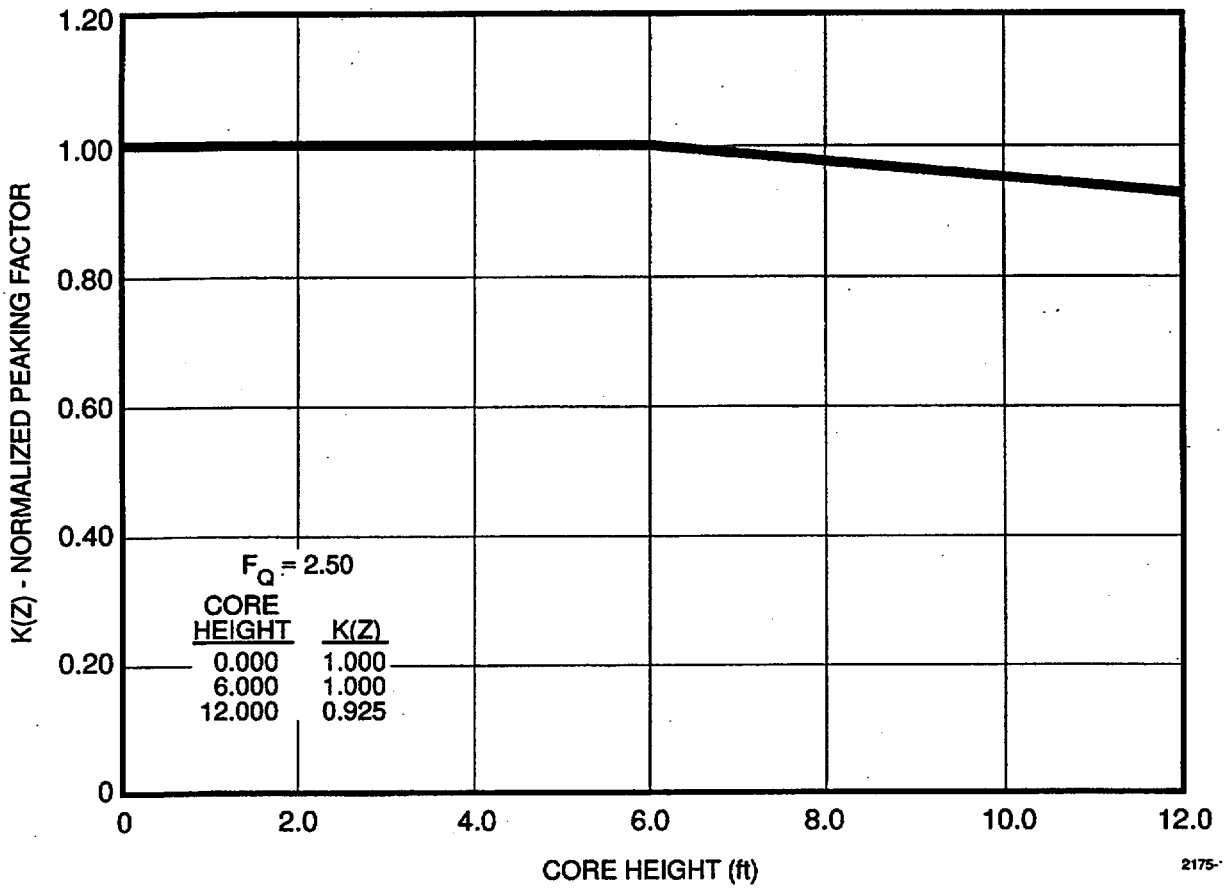


FIGURE 4

K(Z) - NORMALIZED $F_Q(Z)$ AS A FUNCTION OF CORE HEIGHT

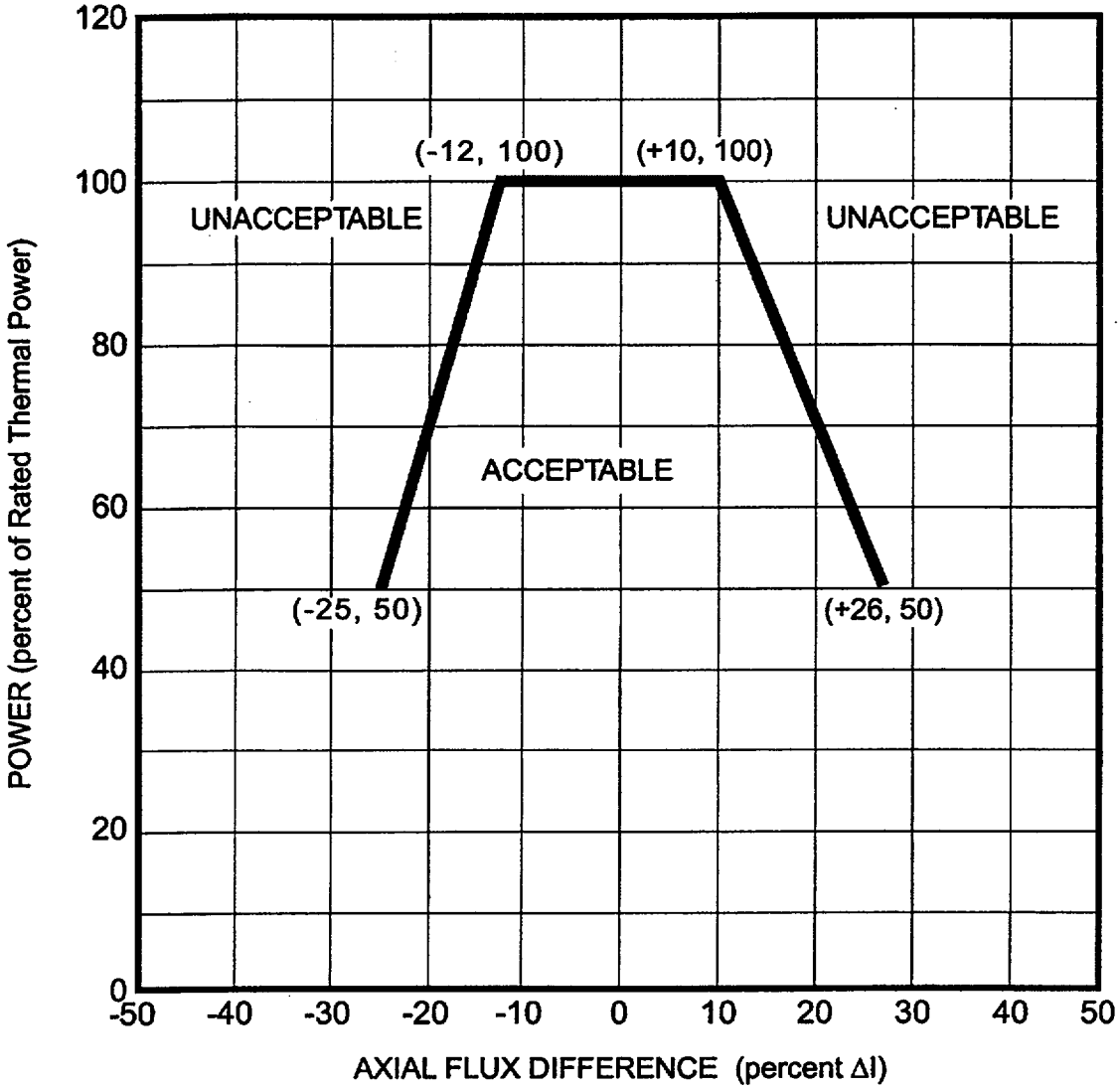
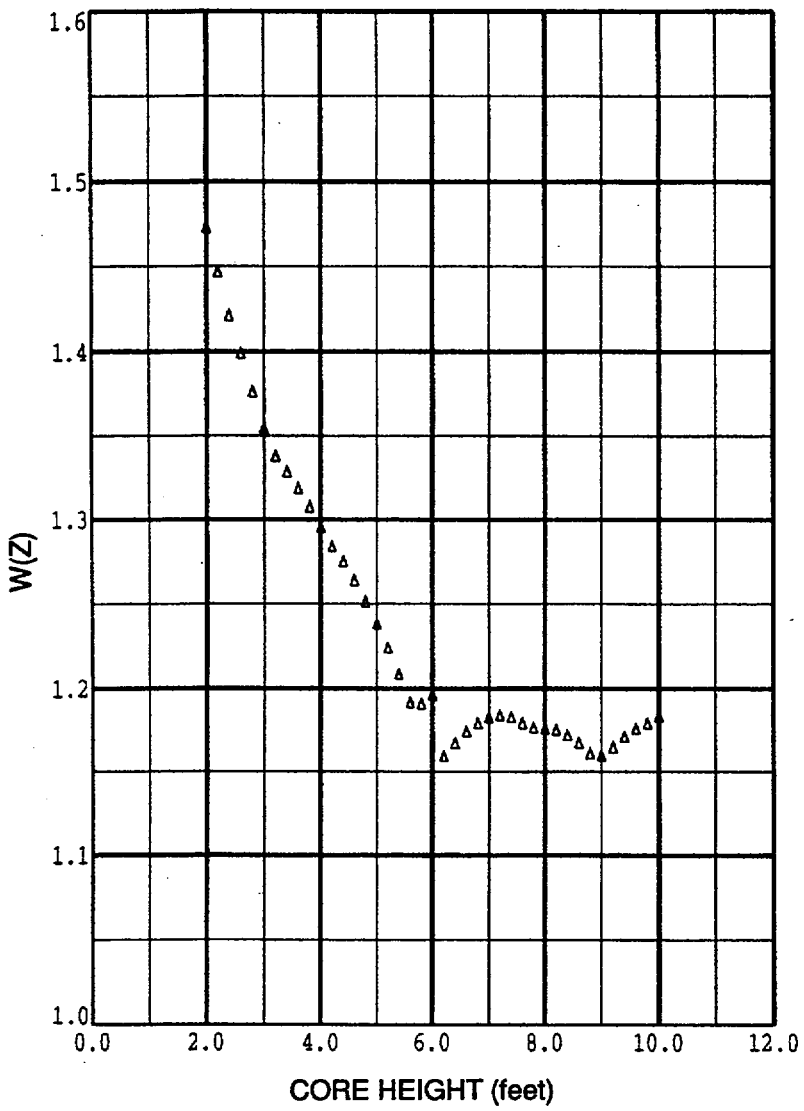


FIGURE 5

AXIAL FLUX DIFFERENCE LIMITS AS A FUNCTION OF % OF RATED THERMAL POWER FOR RAOC



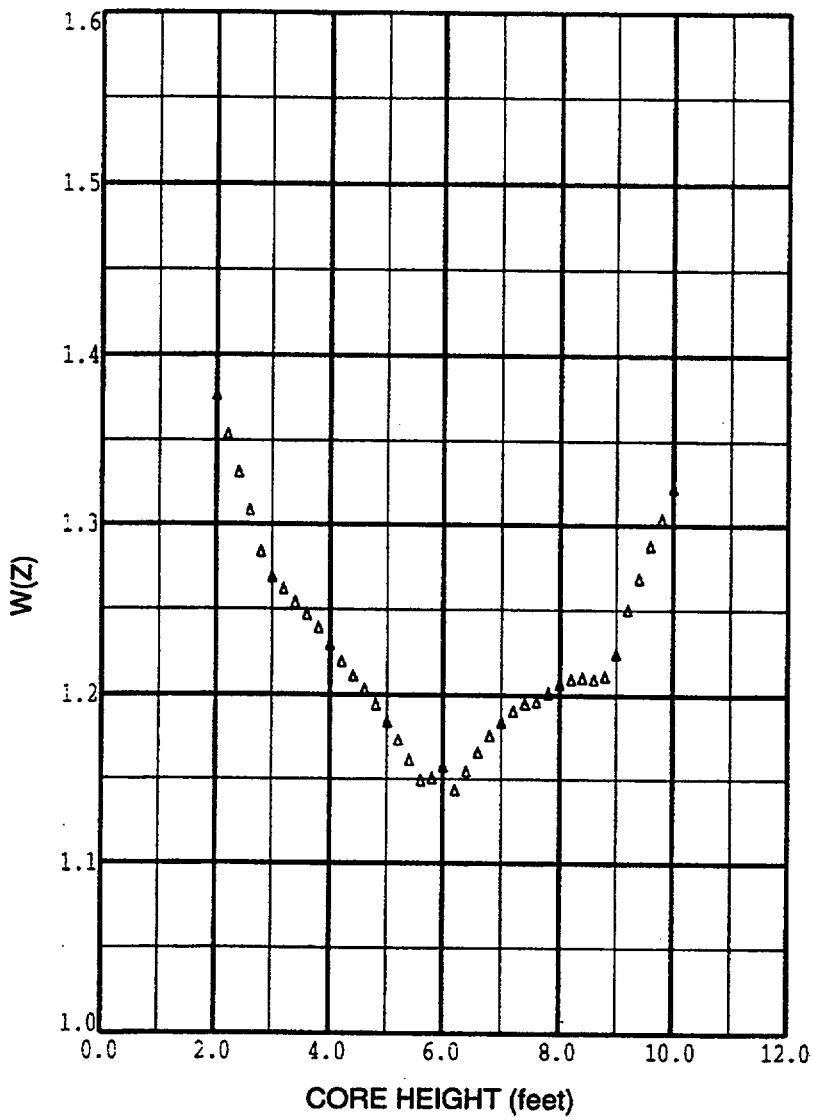
	Axial Point	Elevation (feet)	BOL W(Z)
*	1	12.00	1.0000
*	2	11.80	1.0000
*	3	11.60	1.0000
*	4	11.40	1.0000
*	5	11.20	1.0000
*	6	11.00	1.0000
*	7	10.80	1.0000
*	8	10.60	1.0000
*	9	10.40	1.0000
*	10	10.20	1.0000
	11	10.00	1.1833
	12	9.80	1.1791
	13	9.60	1.1759
	14	9.40	1.1710
	15	9.20	1.1647
	16	9.00	1.1597
	17	8.80	1.1609
	18	8.60	1.1674
	19	8.40	1.1721
	20	8.20	1.1751
	21	8.00	1.1760
	22	7.80	1.1766
	23	7.60	1.1793
	24	7.40	1.1830
	25	7.20	1.1840
	26	7.00	1.1826
	27	6.80	1.1792
	28	6.60	1.1740
	29	6.40	1.1672
	30	6.20	1.1592
	31	6.00	1.1960
	32	5.80	1.1906
	33	5.60	1.1914
	34	5.40	1.2083
	35	5.20	1.2240
	36	5.00	1.2381
	37	4.80	1.2515
	38	4.60	1.2639
	39	4.40	1.2749
	40	4.20	1.2842
	41	4.00	1.2954
	42	3.80	1.3077
	43	3.60	1.3187
	44	3.40	1.3287
	45	3.20	1.3381
	46	3.00	1.3542
	47	2.80	1.3764
	48	2.60	1.3992
	49	2.40	1.4213
	50	2.20	1.4468
	51	2.00	1.4727
*	52	1.80	1.0000
*	53	1.60	1.0000
*	54	1.40	1.0000
*	55	1.20	1.0000
*	56	1.00	1.0000
*	57	0.80	1.0000
*	58	0.60	1.0000
*	59	0.40	1.0000
*	60	0.20	1.0000
*	61	0.00	1.0000

FIGURE 6

RAOC W(Z) AT 150 MWD/MTU

* Top and Bottom 15% Excluded per Technical Specification B3.2.1

This figure is referred to by Technical Specification B3.2.1



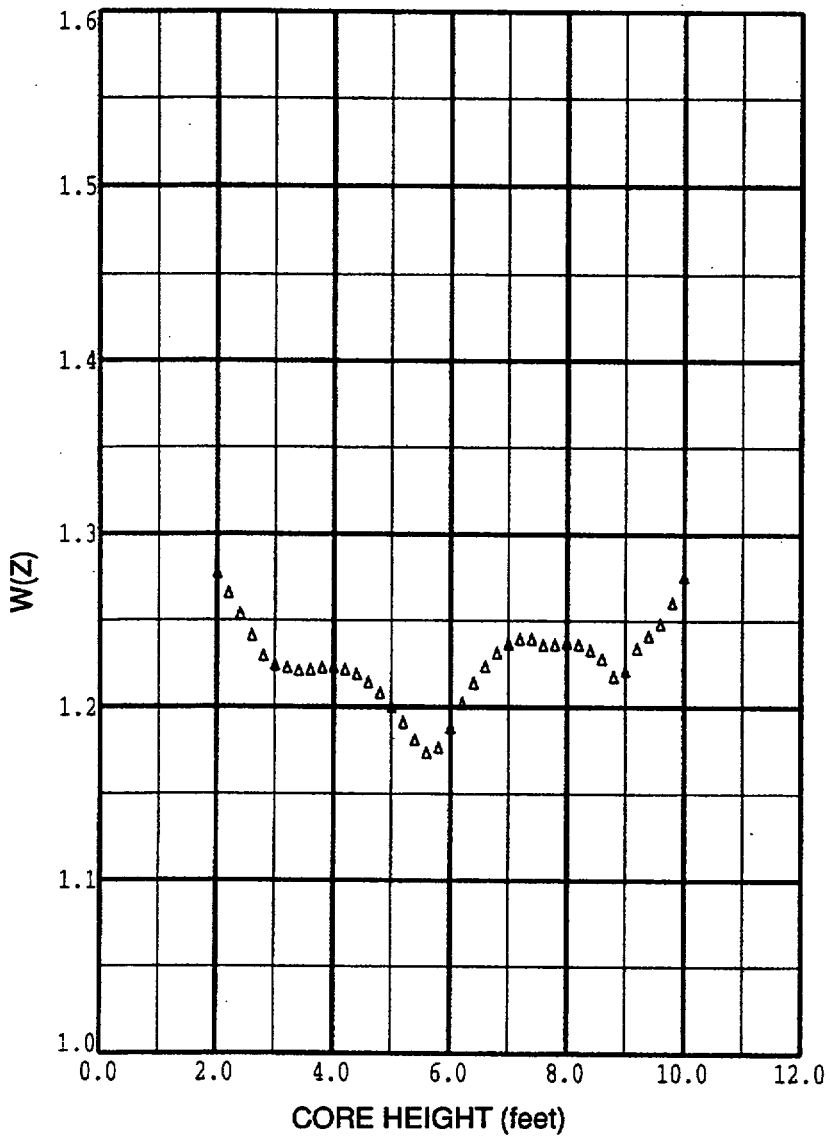
	Axial Point	Elevation (feet)	MOL-1 W(Z)
*	1	12.00	1.0000
*	2	11.80	1.0000
*	3	11.60	1.0000
*	4	11.40	1.0000
*	5	11.20	1.0000
*	6	11.00	1.0000
*	7	10.80	1.0000
*	8	10.60	1.0000
*	9	10.40	1.0000
*	10	10.20	1.0000
	11	10.00	1.3220
	12	9.80	1.3035
	13	9.60	1.2879
	14	9.40	1.2687
	15	9.20	1.2501
	16	9.00	1.2244
	17	8.80	1.2110
	18	8.60	1.2092
	19	8.40	1.2101
	20	8.20	1.2091
	21	8.00	1.2064
	22	7.80	1.2011
	23	7.60	1.1960
	24	7.40	1.1946
	25	7.20	1.1905
	26	7.00	1.1841
	27	6.80	1.1759
	28	6.60	1.1660
	29	6.40	1.1547
	30	6.20	1.1433
	31	6.00	1.1576
	32	5.80	1.1505
	33	5.60	1.1492
	34	5.40	1.1615
	35	5.20	1.1734
	36	5.00	1.1840
	37	4.80	1.1941
	38	4.60	1.2031
	39	4.40	1.2110
	40	4.20	1.2195
	41	4.00	1.2293
	42	3.80	1.2391
	43	3.60	1.2471
	44	3.40	1.2539
	45	3.20	1.2618
	46	3.00	1.2690
	47	2.80	1.2838
	48	2.60	1.3082
	49	2.40	1.3309
	50	2.20	1.3537
	51	2.00	1.3766
*	52	1.80	1.0000
*	53	1.60	1.0000
*	54	1.40	1.0000
*	55	1.20	1.0000
*	56	1.00	1.0000
*	57	0.80	1.0000
*	58	0.60	1.0000
*	59	0.40	1.0000
*	60	0.20	1.0000
*	61	0.00	1.0000

* Top and Bottom 15% Excluded per Technical Specification B3.2.1

FIGURE 7

RAOC W(Z) AT 4000 MWD/MTU

This figure is referred to by Technical Specification B3.2.1



	Axial Point	Elevation (feet)	MOL-2 W(Z)
*	1	12.00	1.0000
*	2	11.80	1.0000
*	3	11.60	1.0000
*	4	11.40	1.0000
*	5	11.20	1.0000
*	6	11.00	1.0000
*	7	10.80	1.0000
*	8	10.60	1.0000
*	9	10.40	1.0000
*	10	10.20	1.0000
	11	10.00	1.2758
	12	9.80	1.2603
	13	9.60	1.2482
	14	9.40	1.2410
	15	9.20	1.2340
	16	9.00	1.2209
	17	8.80	1.2178
	18	8.60	1.2278
	19	8.40	1.2327
	20	8.20	1.2359
	21	8.00	1.2372
	22	7.80	1.2360
	23	7.60	1.2356
	24	7.40	1.2391
	25	7.20	1.2393
	26	7.00	1.2364
	27	6.80	1.2312
	28	6.60	1.2235
	29	6.40	1.2138
	30	6.20	1.2023
	31	6.00	1.1883
	32	5.80	1.1766
	33	5.60	1.1738
	34	5.40	1.1810
	35	5.20	1.1912
	36	5.00	1.2004
	37	4.80	1.2080
	38	4.60	1.2141
	39	4.40	1.2186
	40	4.20	1.2215
	41	4.00	1.2228
	42	3.80	1.2226
	43	3.60	1.2213
	44	3.40	1.2207
	45	3.20	1.2227
	46	3.00	1.2240
	47	2.80	1.2292
	48	2.60	1.2412
	49	2.40	1.2536
	50	2.20	1.2657
	51	2.00	1.2775
*	52	1.80	1.0000
*	53	1.60	1.0000
*	54	1.40	1.0000
*	55	1.20	1.0000
*	56	1.00	1.0000
*	57	0.80	1.0000
*	58	0.60	1.0000
*	59	0.40	1.0000
*	60	0.20	1.0000
*	61	0.00	1.0000

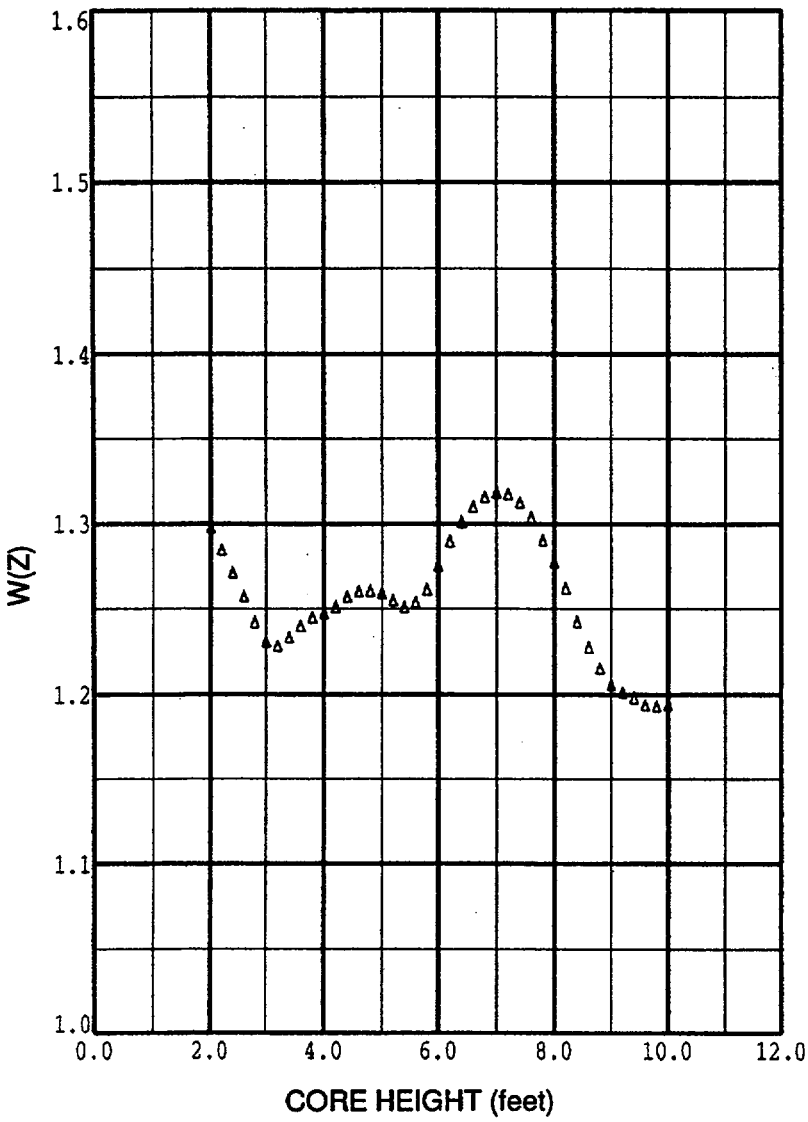
FIGURE 8

RAOC W(Z) AT 12000 MWD/MTU

* Top and Bottom 15% Excluded per Technical Specification B3.2.1

This figure is referred to by Technical Specification B3.2.1

COLR for VEGP UNIT 1 CYCLE 9



	Axial Point	Elevation (feet)	EOL W(Z)
*	1	12.00	1.0000
*	2	11.80	1.0000
*	3	11.60	1.0000
*	4	11.40	1.0000
*	5	11.20	1.0000
*	6	11.00	1.0000
*	7	10.80	1.0000
*	8	10.60	1.0000
*	9	10.40	1.0000
*	10	10.20	1.0000
	11	10.00	1.1939
	12	9.80	1.1930
	13	9.60	1.1935
	14	9.40	1.1982
	15	9.20	1.2011
	16	9.00	1.2059
	17	8.80	1.2153
	18	8.60	1.2279
	19	8.40	1.2427
	20	8.20	1.2621
	21	8.00	1.2772
	22	7.80	1.2903
	23	7.60	1.3038
	24	7.40	1.3123
	25	7.20	1.3170
	26	7.00	1.3180
	27	6.80	1.3155
	28	6.60	1.3098
	29	6.40	1.3010
	30	6.20	1.2897
	31	6.00	1.2749
	32	5.80	1.2614
	33	5.60	1.2539
	34	5.40	1.2510
	35	5.20	1.2548
	36	5.00	1.2591
	37	4.80	1.2607
	38	4.60	1.2602
	39	4.40	1.2572
	40	4.20	1.2512
	41	4.00	1.2474
	42	3.80	1.2449
	43	3.60	1.2400
	44	3.40	1.2334
	45	3.20	1.2283
	46	3.00	1.2309
	47	2.80	1.2423
	48	2.60	1.2574
	49	2.40	1.2712
	50	2.20	1.2847
	51	2.00	1.2979
*	52	1.80	1.0000
*	53	1.60	1.0000
*	54	1.40	1.0000
*	55	1.20	1.0000
*	56	1.00	1.0000
*	57	0.80	1.0000
*	58	0.60	1.0000
*	59	0.40	1.0000
*	60	0.20	1.0000
*	61	0.00	1.0000

* Top and Bottom 15% Excluded per Technical Specification B3.2.1

FIGURE 9

RAOC W(Z) AT 20000 MWD/MTU

This figure is referred to by Technical Specification B3.2.1

VOGTLE ELECTRIC GENERATING PLANT (VEGP) UNIT 2 CYCLE 8

CORE OPERATING LIMITS REPORT

REVISION 1

AUGUST 2000

COLR for VEGP UNIT 2 CYCLE 8

1.0 CORE OPERATING LIMITS REPORT

This Core Operating Limits Report (COLR) for VEGP UNIT 2 CYCLE 8 has been prepared in accordance with the requirements of Technical Specification 5.6.5.

The Technical Requirement affected by this report is listed below:

13.1.1	SHUTDOWN MARGIN - MODES 1 and 2

The Technical Specifications affected by this report are listed below:

3.1.1	SHUTDOWN MARGIN - MODES 3, 4 and 5
3.1.3	Moderator Temperature Coefficient
3.1.5	Shutdown Bank Insertion Limits
3.1.6	Control Bank Insertion Limits
3.2.1	Heat Flux Hot Channel Factor - $F_Q(Z)$
3.2.2	Nuclear Enthalpy Rise Hot Channel Factor – $F^N_{\Delta H}$
3.2.3	Axial Flux Difference
3.9.1	Boron Concentration

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 NRC-approved methodologies, including those specified in Technical Specification 5.6.5.

2.1 SHUTDOWN MARGIN - MODES 1 AND 2 (Technical Requirement 13.1.1)

2.1.1 The SHUTDOWN MARGIN shall be greater than or equal to 1.30 percent $\Delta k/k$.

2.2 SHUTDOWN MARGIN - MODES 3, 4 AND 5 (Specification 3.1.1)

2.2.1 The SHUTDOWN MARGIN shall be greater than or equal to the limits shown in Figures 1 and 2.

2.3 Moderator Temperature Coefficient (Specification 3.1.3)

2.3.1 The Moderator Temperature Coefficient (MTC) limits are:

The BOL/ARO/HZP - MTC shall be less positive than $+0.7 \times 10^{-4}$ $\Delta k/k/^{o}F$ for power levels up to 70% RTP with a linear ramp to 0 $\Delta k/k/^{o}F$ at 100% RTP.

The EOL/ARO/RTP-MTC shall be less negative than -5.5×10^{-4} $\Delta k/k/^{o}F$.*

2.3.2 The MTC Surveillance limits are:

The 300 ppm/ARO/RTP-MTC should be less negative than or equal to -4.75×10^{-4} $\Delta k/k/^{o}F$.*

The 60 ppm/ARO/RTP-MTC should be less negative than -5.35×10^{-4} $\Delta k/k/^{o}F$.*

where: BOL stands for Beginning of Cycle Life
ARO stands for All Rods Out
HZP stands for Hot Zero THERMAL POWER
EOL stands for End of Cycle Life
RTP stands for RATED THERMAL POWER

2.4 Shutdown Bank Insertion Limits (Specification 3.1.5)

2.4.1 The shutdown banks shall be withdrawn to a position greater than or equal to 225 steps.

2.5 Control Bank Insertion Limits (Specification 3.1.6)

2.5.1 The control banks shall be limited in physical insertion as shown in Figure 3.

* Applicable for full-power T-average of 586.4°F.

2.6 <u>Heat Flux Hot Channel Factor</u> - $F_Q(Z)$ (Specification 3.2.1)

2.6.1 $$F_Q(Z) \leq \frac{F_Q^{RTP}}{P} * K(Z) \quad \text{for } P > 0.5$$

$$F_Q(Z) \leq \frac{F_Q^{RTP}}{0.5} * K(Z) \quad \text{for } P \leq 0.5$$

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

2.6.2 $F_Q^{RTP} = 2.50$

2.6.3 K(Z) is provided in Figure 4.

2.6.4 $$F_Q(Z) \leq F_Q^{RTP} \frac{* K(Z)}{P * W(Z)} \quad \text{for } P > 0.5$$

$$F_Q(Z) \leq F_Q^{RTP} \frac{* K(Z)}{0.5 * W(Z)} \quad \text{for } P \leq 0.5$$

2.6.5 W(Z) values are provided in Figures 6 through 9.

2.6.6 The $F_Q(Z)$ penalty factors are provided in Table 1.

2.7 Nuclear Enthalpy Rise Hot Channel Factor - $F^N_{\Delta H}$ (Specification 3.2.2)

2.7.1 $F^N_{\Delta H} \leq F^{RTP}_{\Delta H} * (1 + PF_{\Delta H} * (1-P))$

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

2.7.2 $F^{RTP}_{\Delta H} = 1.65$

2.7.3 $PF_{\Delta H} = 0.3$

2.8 Axial Flux Difference (Specification 3.2.3)

2.8.1 The Axial Flux Difference (AFD) Acceptable Operation Limits are provided in Figure 5.

2.9 Boron Concentration (Specification 3.9.1)

2.9.1 The boron concentration shall be greater than or equal to 1936 ppm.#

This concentration bounds the condition of $k_{eff} \leq 0.95$ (all rods in less the most reactive rod) and subcriticality (all rods out) over the entire cycle. This concentration includes additional boron to address uncertainties and B^{10} depletion.

s:\vogtle\Colr_Ptlr\COLR.U2

COLR for VEGP UNIT 2 CYCLE 8

TABLE 1

$F_Q(Z)$ PENALTY FACTOR

Cycle Burnup (MWD/MTU)	$F_Q(Z)$ Penalty Factor
2704	1.020
2916	1.023
3129	1.026
3342	1.027
3555	1.027
3980	1.027
4193	1.026
4406	1.029
4619	1.027
4831	1.025
5044	1.022
5257	1.020

Notes:

1. The Penalty Factor, to be applied to $F_Q(Z)$ in accordance with SR 3.2.1.2, is the maximum factor by which $F_Q(Z)$ is expected to increase over a 39 EFPD interval (surveillance interval of 31 EFPD plus the maximum allowable extension not to exceed 25% of the surveillance interval per SR 3.0.2) starting from the burnup at which the $F_Q(Z)$ was determined.

2. Linear interpolation is adequate for intermediate cycle burnups.

3. For <u>all</u> cycle burnups outside the range of the table, a penalty factor of 1.020 shall be used.

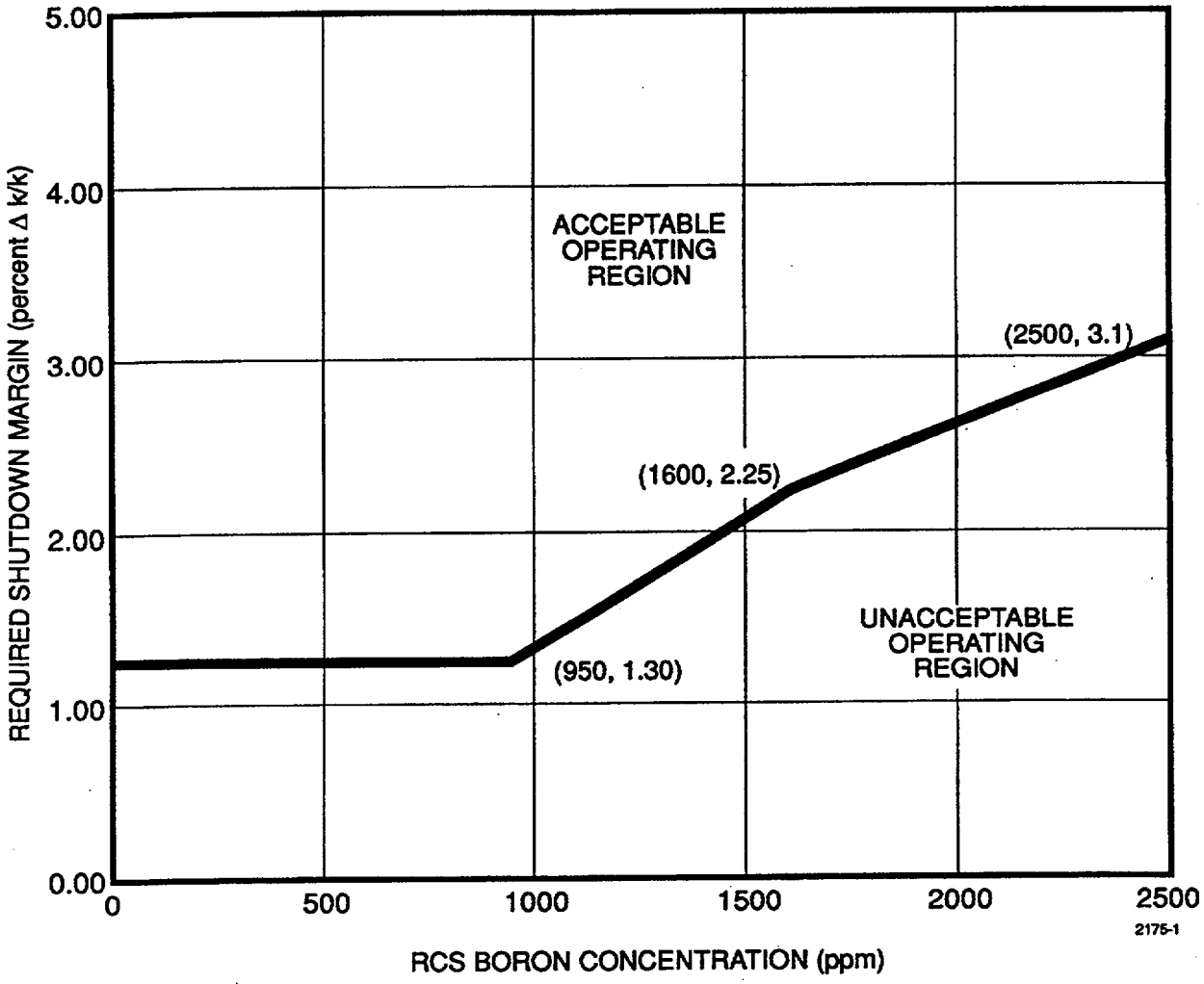


FIGURE 1

REQUIRED SHUTDOWN MARGIN FOR MODES 3 AND 4 (MODE 4 WITH AT LEAST ONE REACTOR COOLANT PUMP RUNNING)

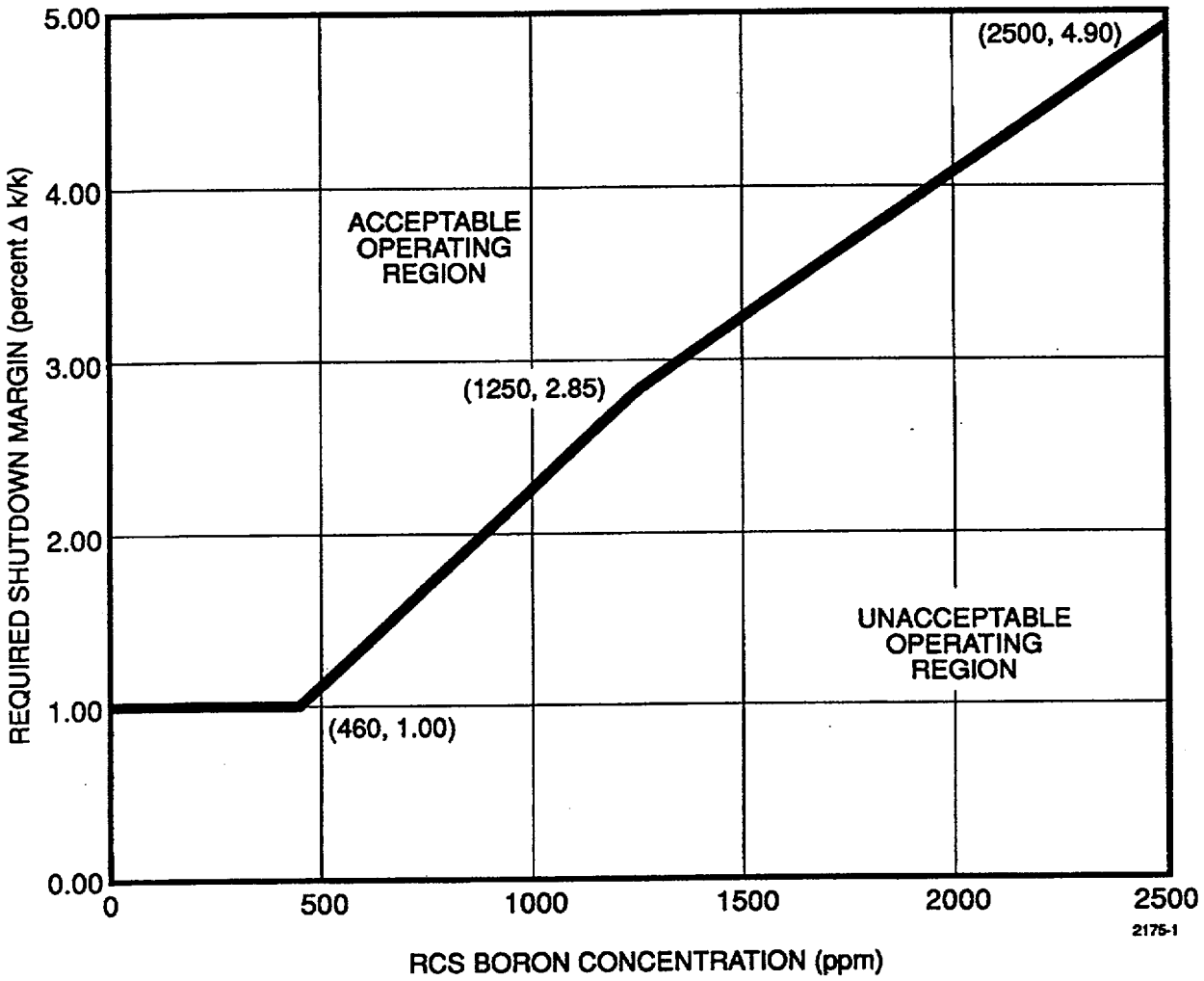
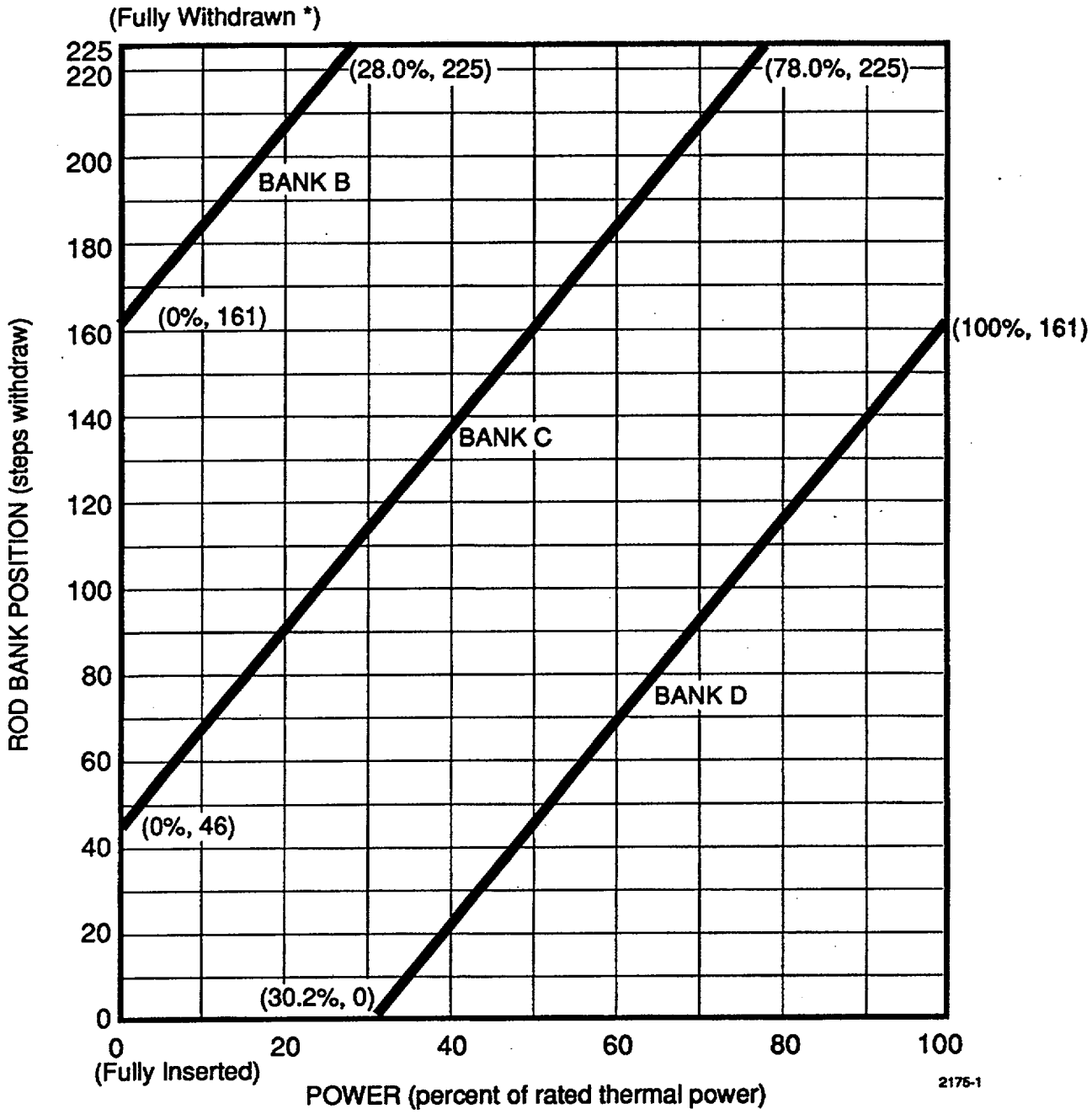


FIGURE 2

REQUIRED SHUTDOWN MARGIN FOR MODES 4 AND 5 (MODE 4 WITH NO REACTOR COOLANT PUMPS RUNNING)



* Fully withdrawn shall be the condition where control rods are at a position within the interval ≥225 and ≤231 steps withdrawn.

Note: The Rod Bank Insertion Limits are based on the control bank withdrawal sequence A, B, C, D and a control bank tip-to-tip distance of 115 steps.

FIGURE 3

ROD BANK INSERTION LIMITS VERSUS % OF RATED THERMAL POWER

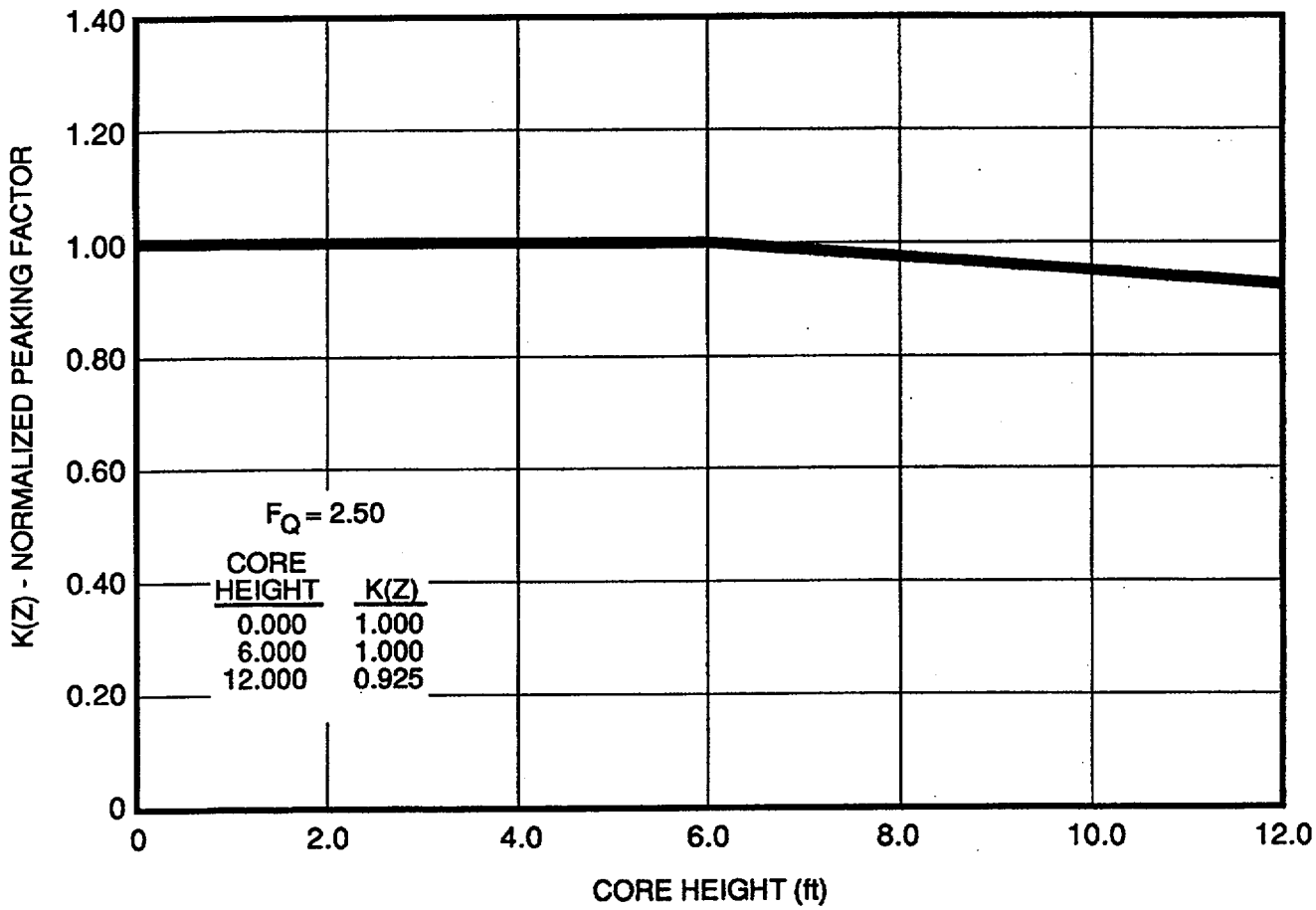


FIGURE 4

K(Z) - NORMALIZED F_Q (Z) AS A FUNCTION OF CORE HEIGHT

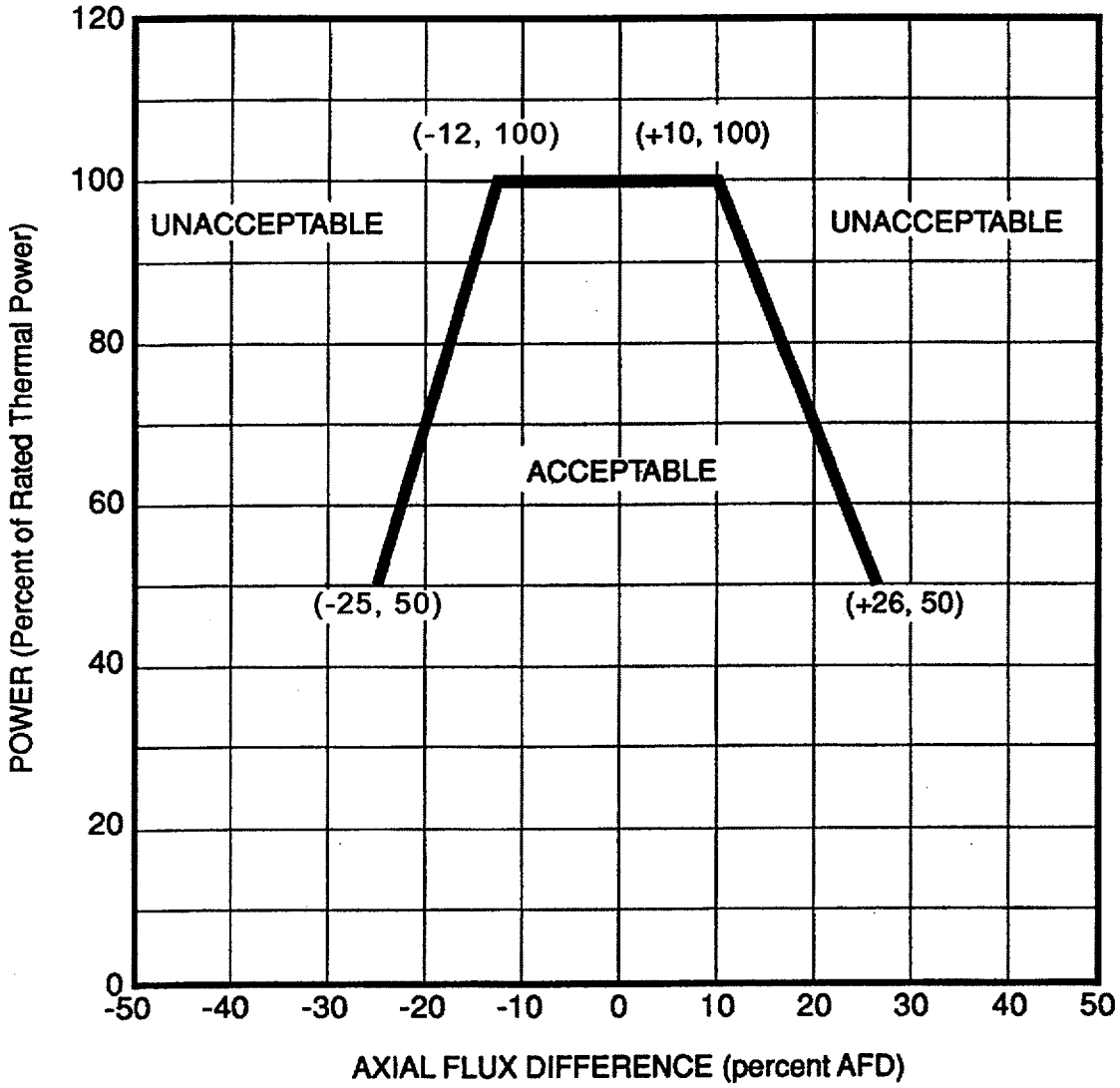
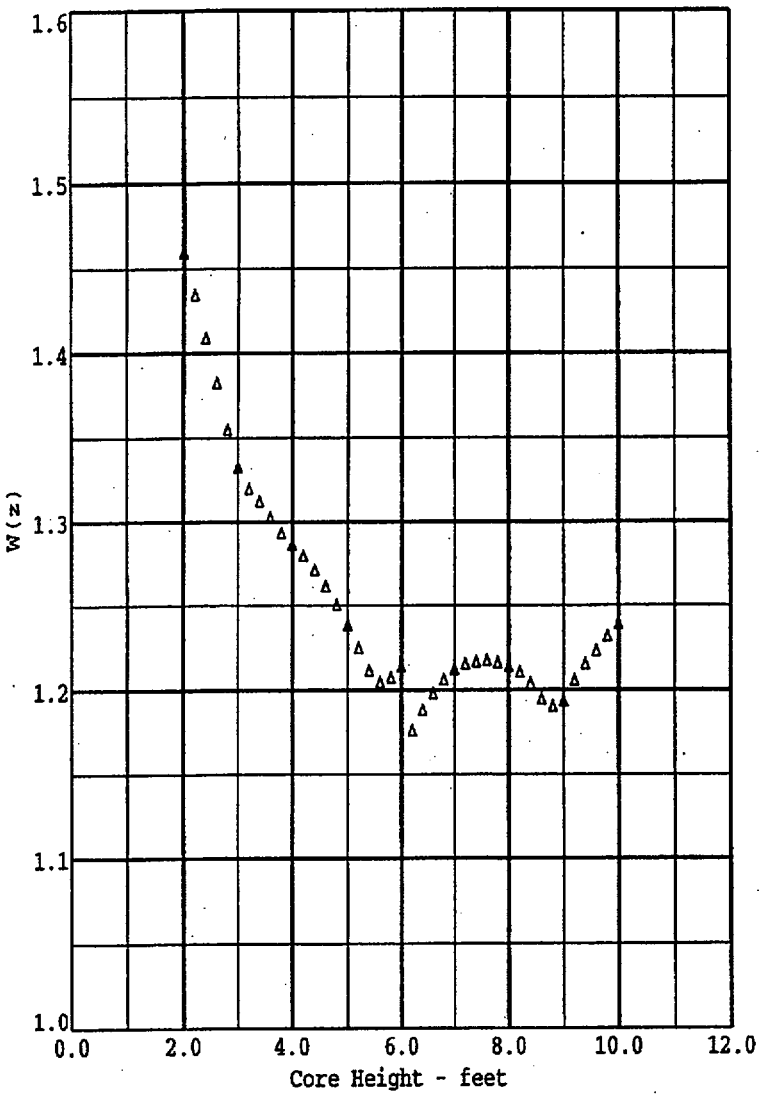


FIGURE 5

AXIAL FLUX DIFFERENCE LIMITS AS A FUNCTION OF % OF RATED THERMAL POWER FOR RAOC

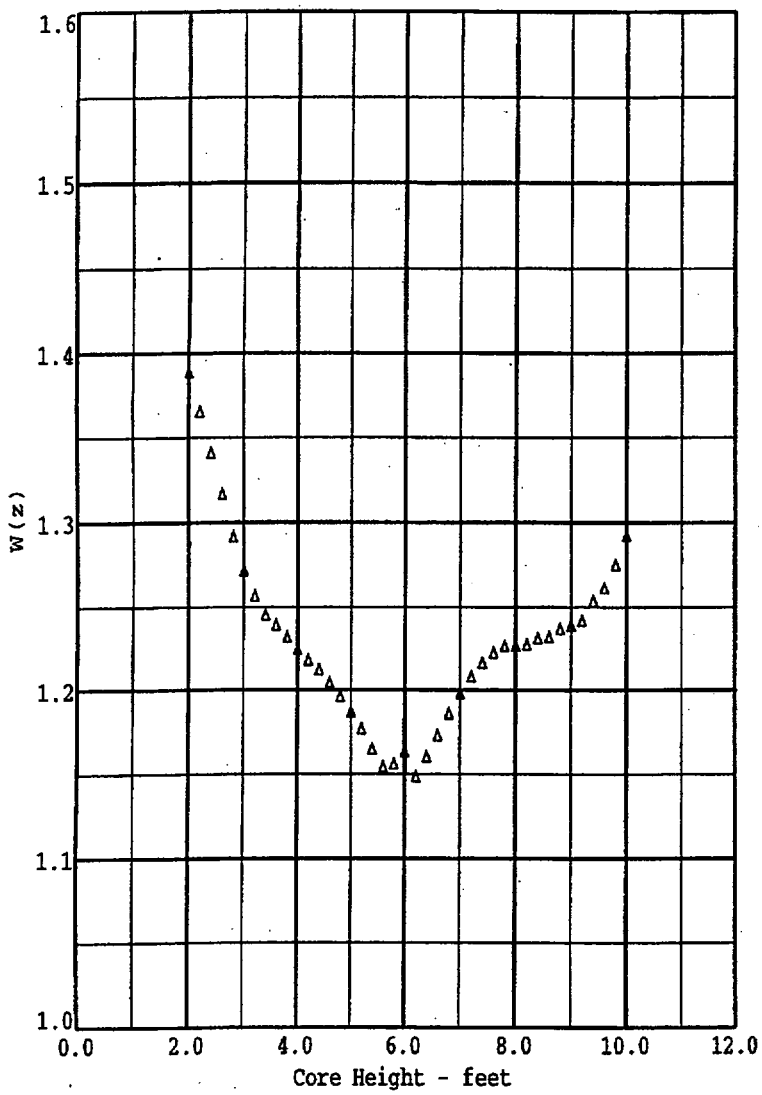


This figure is referred to by Specification B3.2.1

	Axial Point	Elevation (feet)	BOL W(Z)
*	1	12.00	1.0000
*	2	11.80	1.0000
*	3	11.60	1.0000
*	4	11.40	1.0000
*	5	11.20	1.0000
*	6	11.00	1.0000
*	7	10.80	1.0000
*	8	10.60	1.0000
*	9	10.40	1.0000
*	10	10.20	1.0000
	11	10.00	1.2388
	12	9.80	1.2317
	13	9.60	1.2231
	14	9.40	1.2154
	15	9.20	1.2057
	16	9.00	1.1935
	17	8.80	1.1903
	18	8.60	1.1946
	19	8.40	1.2040
	20	8.20	1.2105
	21	8.00	1.2139
	22	7.80	1.2163
	23	7.60	1.2176
	24	7.40	1.2167
	25	7.20	1.2155
	26	7.00	1.2121
	27	6.80	1.2060
	28	6.60	1.1980
	29	6.40	1.1881
	30	6.20	1.1761
	31	6.00	1.2139
	32	5.80	1.2073
	33	5.60	1.2046
	34	5.40	1.2115
	35	5.20	1.2249
	36	5.00	1.2385
	37	4.80	1.2504
	38	4.60	1.2614
	39	4.40	1.2711
	40	4.20	1.2796
	41	4.00	1.2862
	42	3.80	1.2932
	43	3.60	1.3027
	44	3.40	1.3124
	45	3.20	1.3198
	46	3.00	1.3324
	47	2.80	1.3548
	48	2.60	1.3826
	49	2.40	1.4088
	50	2.20	1.4345
	51	2.00	1.4594
*	52	1.80	1.0000
*	53	1.60	1.0000
*	54	1.40	1.0000
*	55	1.20	1.0000
*	56	1.00	1.0000
*	57	0.80	1.0000
*	58	0.60	1.0000
*	59	0.40	1.0000
*	60	0.20	1.0000
*	61	0.00	1.0000

* Top and Bottom 15% Excluded per Technical Specification B3.2.1

FIGURE 6
RAOC W(Z) AT150 MWD/MTU

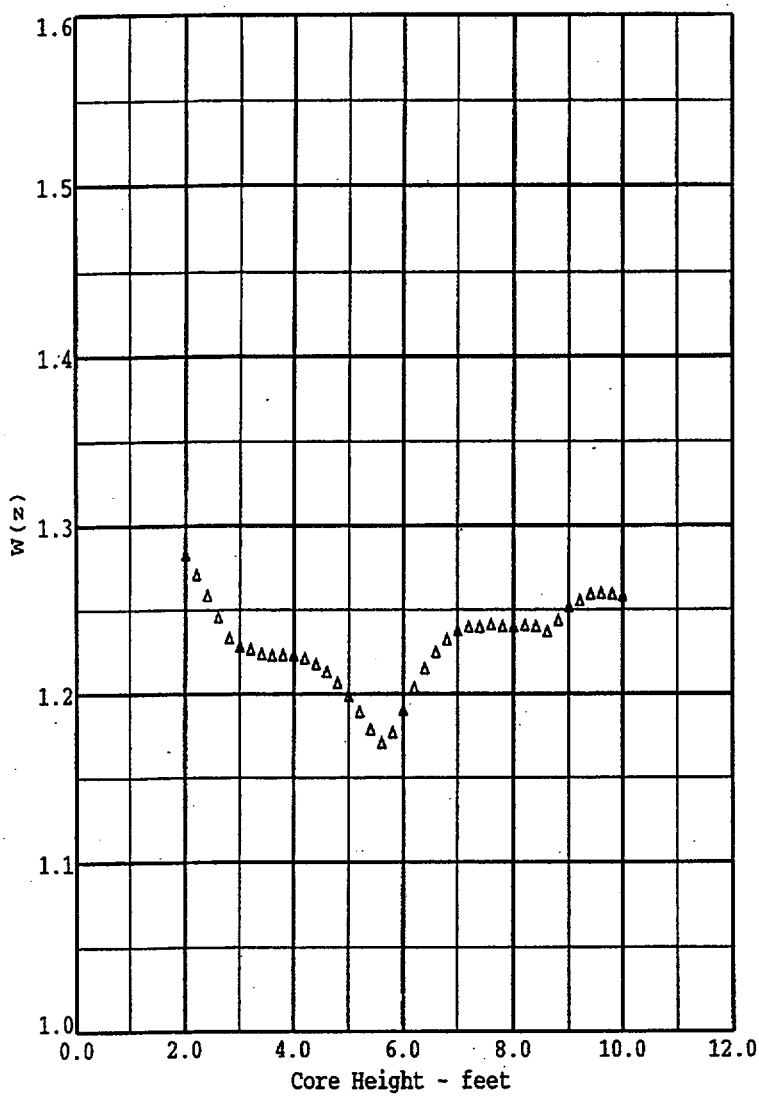


	Axial Point	Elevation (feet)	MOL-1 W(Z)
*	1	12.00	1.0000
*	2	11.80	1.0000
*	3	11.60	1.0000
*	4	11.40	1.0000
*	5	11.20	1.0000
*	6	11.00	1.0000
*	7	10.80	1.0000
*	8	10.60	1.0000
*	9	10.40	1.0000
*	10	10.20	1.0000
	11	10.00	1.2922
	12	9.80	1.2750
	13	9.60	1.2611
	14	9.40	1.2537
	15	9.20	1.2417
	16	9.00	1.2388
	17	8.80	1.2369
	18	8.60	1.2322
	19	8.40	1.2314
	20	8.20	1.2275
	21	8.00	1.2268
	22	7.80	1.2266
	23	7.60	1.2226
	24	7.40	1.2165
	25	7.20	1.2082
	26	7.00	1.1980
	27	6.80	1.1859
	28	6.60	1.1729
	29	6.40	1.1603
	30	6.20	1.1488
	31	6.00	1.1633
	32	5.80	1.1562
	33	5.60	1.1543
	34	5.40	1.1651
	35	5.20	1.1766
	36	5.00	1.1867
	37	4.80	1.1962
	38	4.60	1.2046
	39	4.40	1.2121
	40	4.20	1.2181
	41	4.00	1.2245
	42	3.80	1.2321
	43	3.60	1.2392
	44	3.40	1.2453
	45	3.20	1.2566
	46	3.00	1.2715
	47	2.80	1.2917
	48	2.60	1.3170
	49	2.40	1.3412
	50	2.20	1.3652
	51	2.00	1.3887
*	52	1.80	1.0000
*	53	1.60	1.0000
*	54	1.40	1.0000
*	55	1.20	1.0000
*	56	1.00	1.0000
*	57	0.80	1.0000
*	58	0.60	1.0000
*	59	0.40	1.0000
*	60	0.20	1.0000
*	61	0.00	1.0000

This figure is referred to by Specification B3.2.1

* Top and Bottom 15% Excluded per Technical Specification B3.2.1

FIGURE 7
RAOC W(Z) at 4000 MWD/MTU

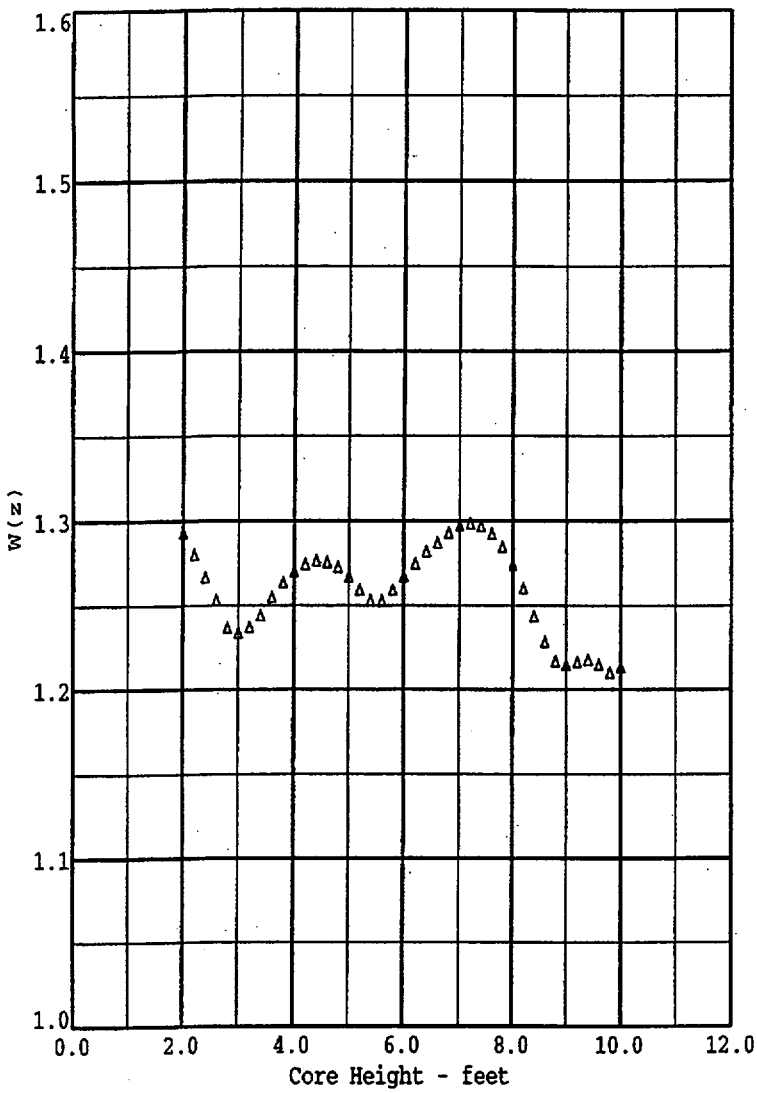


This figure is referred to by Specification B3.2.1

	Axial Point	Elevation (feet)	MOL-2 W(Z)
*	1	12.00	1.0000
*	2	11.80	1.0000
*	3	11.60	1.0000
*	4	11.40	1.0000
*	5	11.20	1.0000
*	6	11.00	1.0000
*	7	10.80	1.0000
*	8	10.60	1.0000
*	9	10.40	1.0000
*	10	10.20	1.0000
	11	10.00	1.2584
	12	9.80	1.2594
	13	9.60	1.2597
	14	9.40	1.2593
	15	9.20	1.2554
	16	9.00	1.2516
	17	8.80	1.2437
	18	8.60	1.2372
	19	8.40	1.2402
	20	8.20	1.2406
	21	8.00	1.2398
	22	7.80	1.2402
	23	7.60	1.2411
	24	7.40	1.2397
	25	7.20	1.2397
	26	7.00	1.2376
	27	6.80	1.2323
	28	6.60	1.2249
	29	6.40	1.2152
	30	6.20	1.2037
	31	6.00	1.1901
	32	5.80	1.1766
	33	5.60	1.1706
	34	5.40	1.1784
	35	5.20	1.1890
	36	5.00	1.1985
	37	4.80	1.2064
	38	4.60	1.2129
	39	4.40	1.2178
	40	4.20	1.2212
	41	4.00	1.2231
	42	3.80	1.2232
	43	3.60	1.2228
	44	3.40	1.2238
	45	3.20	1.2267
	46	3.00	1.2280
	47	2.80	1.2332
	48	2.60	1.2455
	49	2.40	1.2585
	50	2.20	1.2710
	51	2.00	1.2831
*	52	1.80	1.0000
*	53	1.60	1.0000
*	54	1.40	1.0000
*	55	1.20	1.0000
*	56	1.00	1.0000
*	57	0.80	1.0000
*	58	0.60	1.0000
*	59	0.40	1.0000
*	60	0.20	1.0000
*	61	0.00	1.0000

* Top and Bottom 15% Excluded per Technical Specification B3.2.1

FIGURE 8
RAOC W(Z) AT 12000 MWD/MTU



	Axial Point	Elevation (feet)	EOL W(Z)
*	1	12.00	1.0000
*	2	11.80	1.0000
*	3	11.60	1.0000
*	4	11.40	1.0000
*	5	11.20	1.0000
*	6	11.00	1.0000
*	7	10.80	1.0000
*	8	10.60	1.0000
*	9	10.40	1.0000
*	10	10.20	1.0000
	11	10.00	1.2132
	12	9.80	1.2098
	13	9.60	1.2148
	14	9.40	1.2176
	15	9.20	1.2162
	16	9.00	1.2145
	17	8.80	1.2167
	18	8.60	1.2285
	19	8.40	1.2435
	20	8.20	1.2600
	21	8.00	1.2740
	22	7.80	1.2846
	23	7.60	1.2923
	24	7.40	1.2968
	25	7.20	1.2983
	26	7.00	1.2971
	27	6.80	1.2928
	28	6.60	1.2869
	29	6.40	1.2818
	30	6.20	1.2747
	31	6.00	1.2674
	32	5.80	1.2591
	33	5.60	1.2526
	34	5.40	1.2527
	35	5.20	1.2593
	36	5.00	1.2670
	37	4.80	1.2725
	38	4.60	1.2756
	39	4.40	1.2763
	40	4.20	1.2744
	41	4.00	1.2701
	42	3.80	1.2636
	43	3.60	1.2547
	44	3.40	1.2441
	45	3.20	1.2371
	46	3.00	1.2337
	47	2.80	1.2367
	48	2.60	1.2530
	49	2.40	1.2666
	50	2.20	1.2798
	51	2.00	1.2930
*	52	1.80	1.0000
*	53	1.60	1.0000
*	54	1.40	1.0000
*	55	1.20	1.0000
*	56	1.00	1.0000
*	57	0.80	1.0000
*	58	0.60	1.0000
*	59	0.40	1.0000
*	60	0.20	1.0000
*	61	0.00	1.0000

This figure is referred to by Specification B3.2.1

* Top and Bottom 15% Excluded per Technical Specification B3.2.1

FIGURE 9
RAOC W(Z) AT 20000 MWD/MTU