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SOUTHERN COMPANY
Energy to Serve Your World℠

October 20, 2006

Docket Nos.: 50-424
50-425

NL-06-2319

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Vogtle Electric Generating Plant
Unit 1 Cycle 14 and Unit 2 Cycle 12 Core Operating Limits Reports

Ladies and Gentlemen:

Pursuant to the reporting requirements of Vogtle Electric Generating Plant (VEGP) Technical Specification 5.6.5, Southern Nuclear Operating Company is submitting Revision 0 of the Unit Cycle 14 Core Operating Limits Report (COLR) and Revision 1 of the Unit 2 Cycle 12 COLR.

This letter contains no NRC commitments. If you have any questions, please advise.

Sincerely,

Don E. Grissette

DEG/LPH/daj

Enclosures: 1. Revision 0 of the Unit Cycle 14 Core Operating Limits Report (COLR)
2. Revision 1 of the Unit 2 Cycle 12 Core Operating Limits Report (COLR)

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. T. E. Tynan, General Manager – Plant Vogtle
RType: CVC7000

U. S. Nuclear Regulatory Commission
Dr. W. D. Travers, Regional Administrator
Mr. C. Gratton, NRR Project Manager – Vogtle
Mr. G. J. McCoy, Senior Resident Inspector – Vogtle

A001

Enclosure 1

Vogtle Electric Generating Plant
Revision 0 of the Unit Cycle 14 Core Operating Limits Report (COLR)

VOGTLE ELECTRIC GENERATING PLANT (VEGP) UNIT 1 CYCLE 14

CORE OPERATING LIMITS REPORT

REVISION 0

October 2006

1.0 CORE OPERATING LIMITS REPORT

This Core Operating Limits Report (COLR) for VEGP UNIT 1 CYCLE 14 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 $+0.7 \times 10^{-4}$ $\Delta k/k/°F$ for power levels up to 70 percent RTP with a linear ramp to 0 $\Delta k/k/°F$ at 100 percent RTP.

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

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

[1]Applicable for full-power T-average of 586.4°F to 587.4°F.

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.

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

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

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

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

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

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

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 1900 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.

TABLE 1

$F_Q(Z)$ PENALTY FACTOR

Cycle Burnup (MWD/MTU)	$F_Q(Z)$ Penalty Factor
6124	1.020
6338	1.021
7831	1.021
8044	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 all cycle burnups outside the range of the table, a penalty factor of 1.020 shall be used.

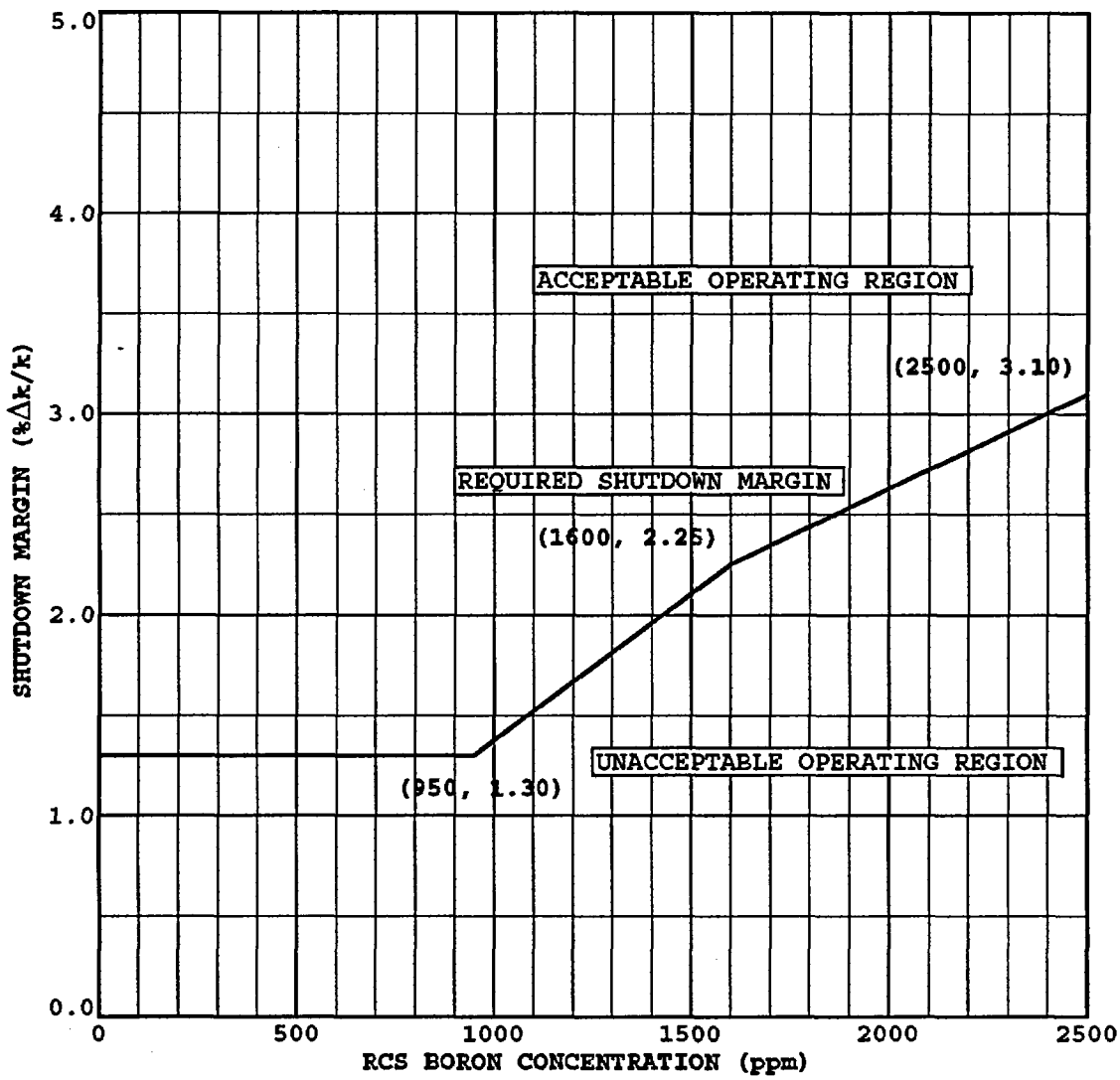


FIGURE 1

REQUIRED SHUTDOWN MARGIN FOR MODES 3 AND 4 (FOUR LOOPS FILLED AND VENTED AND AT LEAST ONE REACTOR COOLANT PUMP RUNNING)

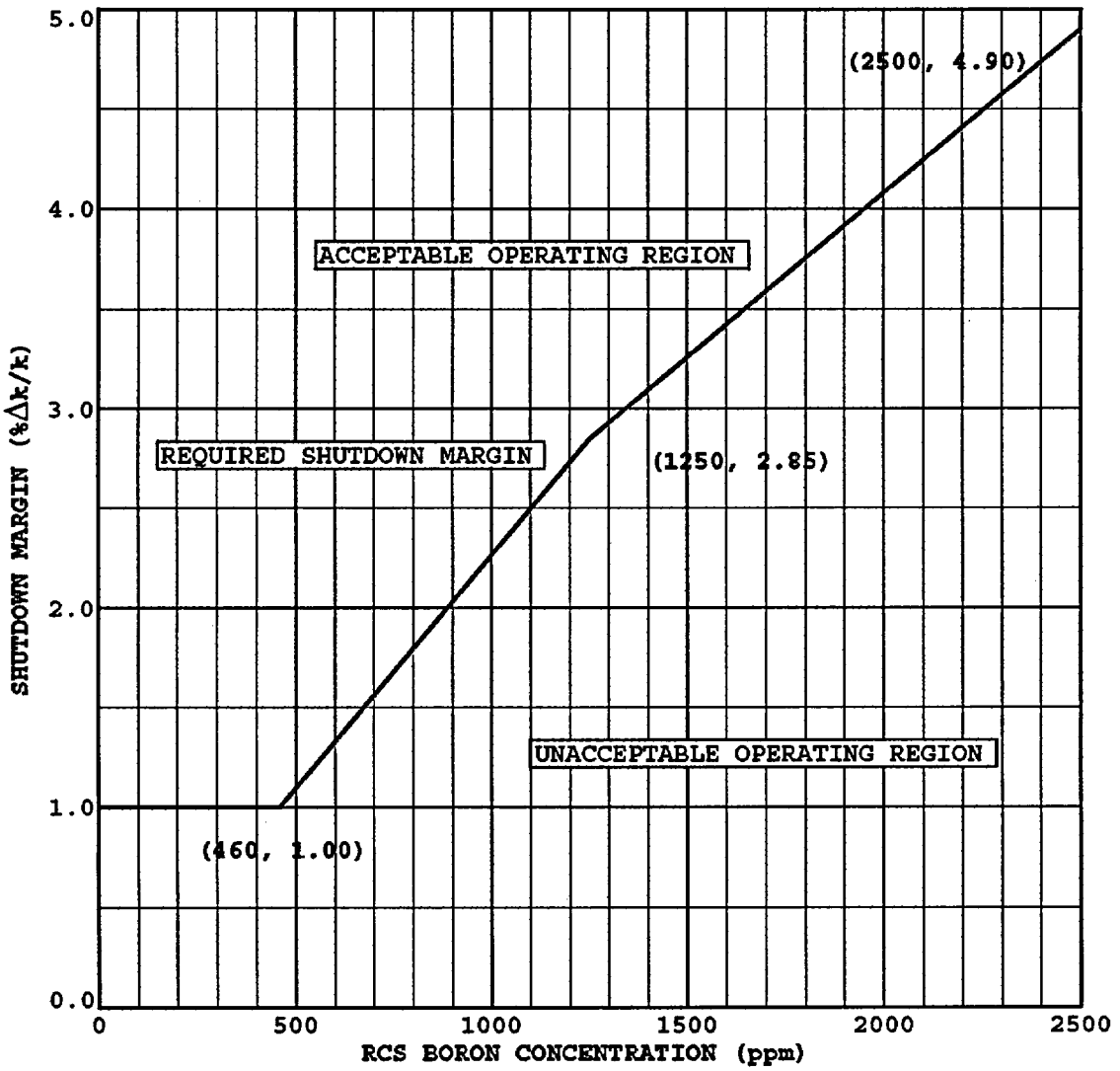
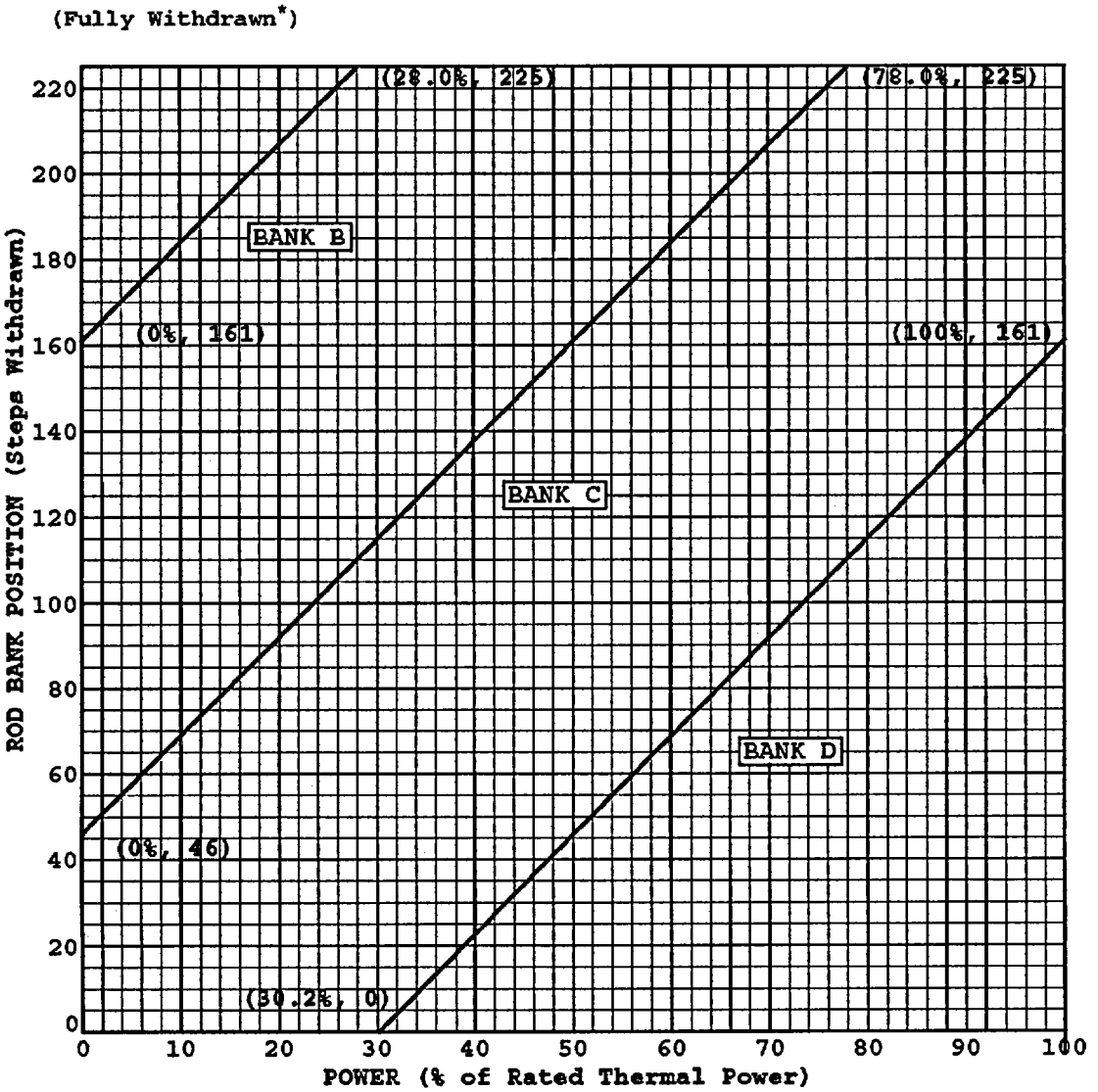


FIGURE 2

REQUIRED SHUTDOWN MARGIN FOR MODES 4 AND 5 (MODE 4 WHEN FIGURE 1 NOT APPLICABLE)



*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

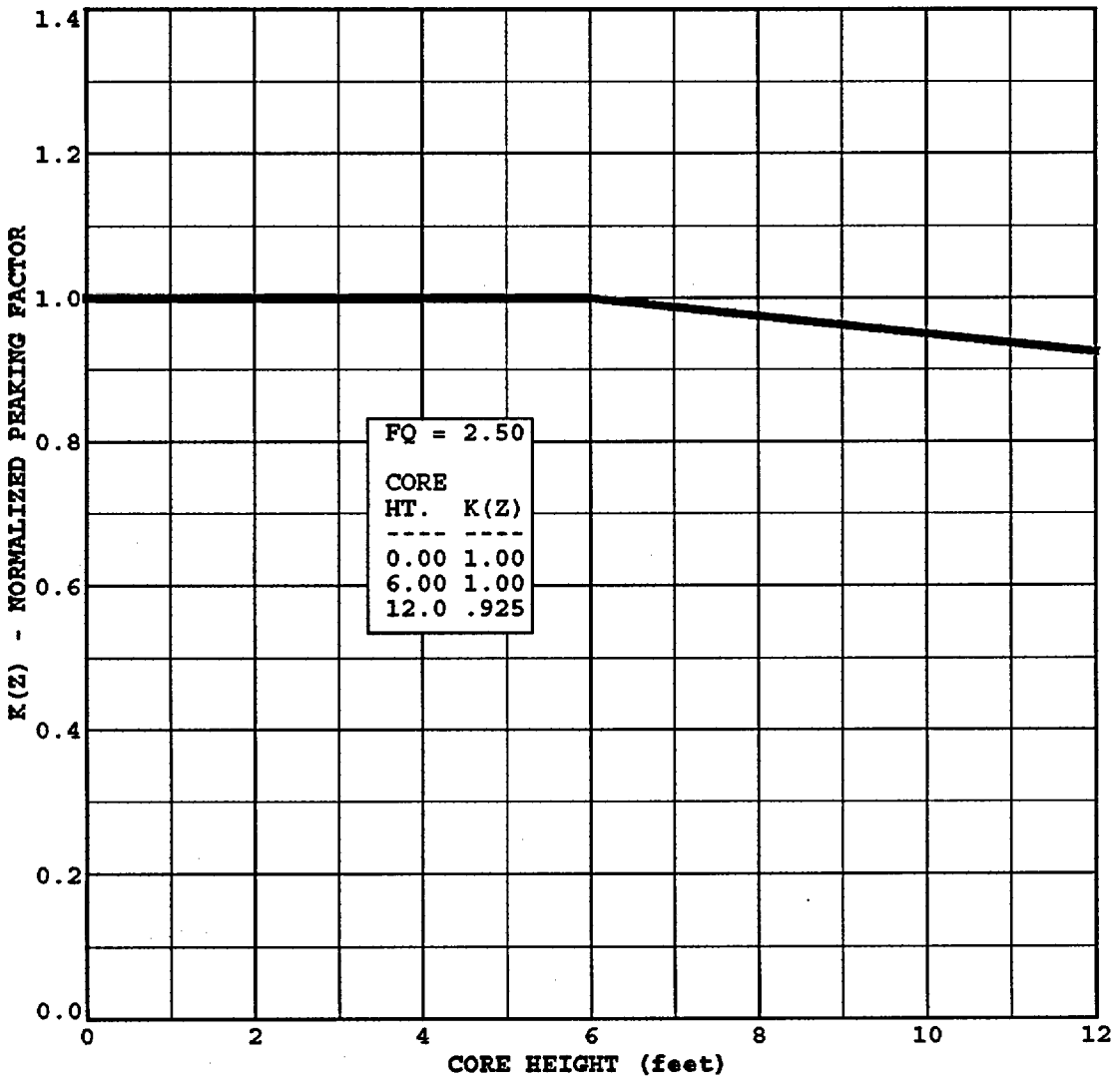


FIGURE 4

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

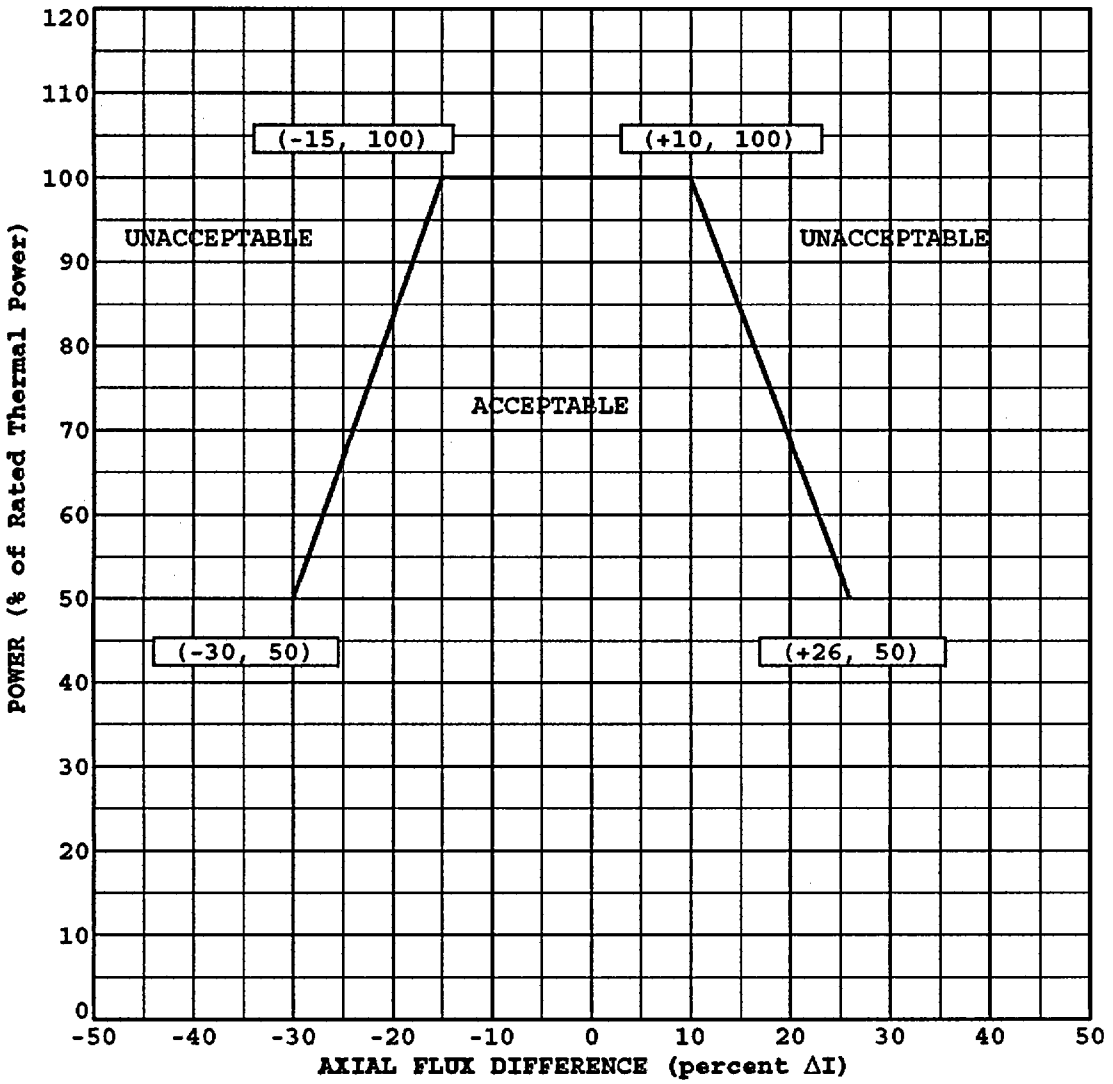
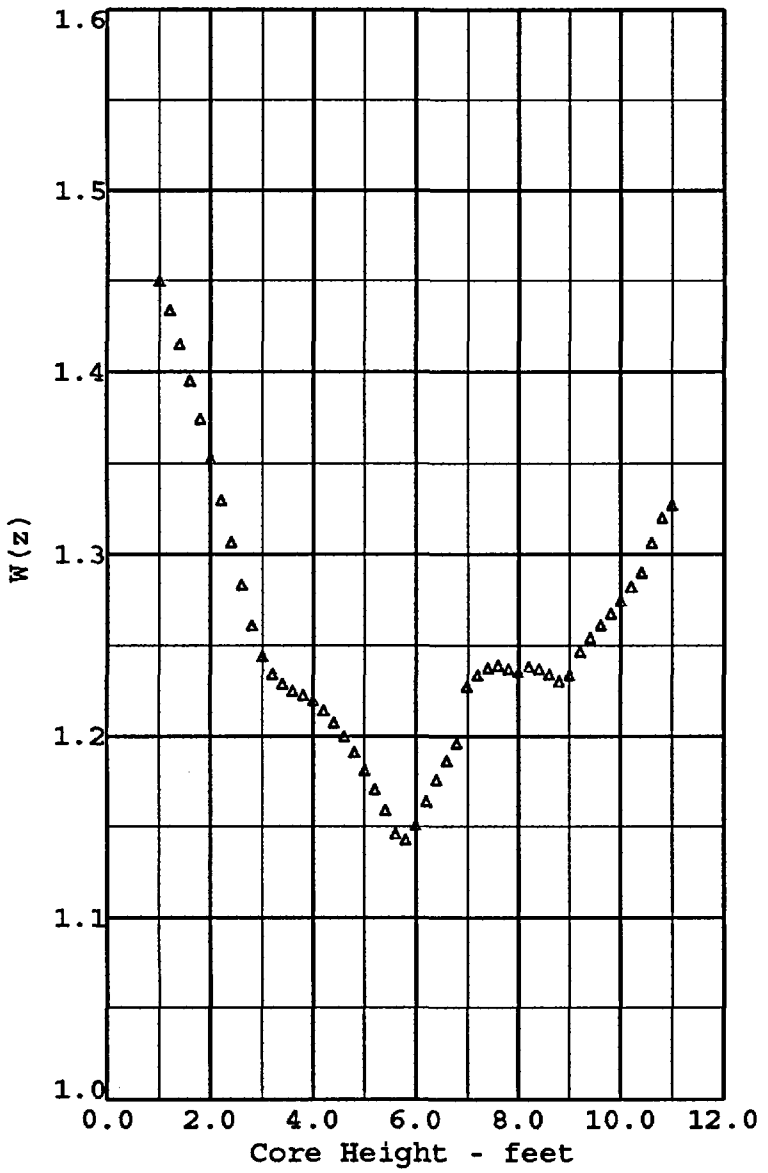


FIGURE 5

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



This figure is referred to by Specification B3.2.1

These W(Z) values are consistent with Figure 5, and are valid over the HFP T_{avg} temperature range from 586.4 to 587.4°F.

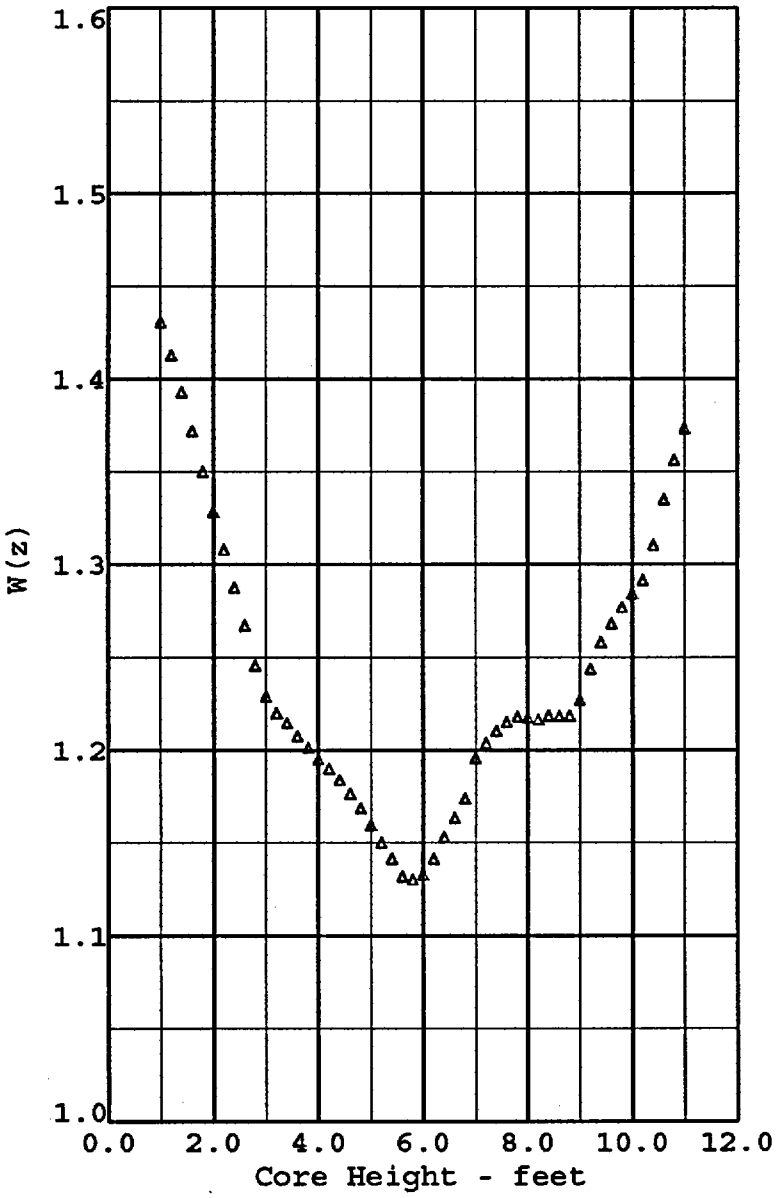
	Axial Point	Elevation (feet)	BOL W(Z)
*	1	12.00	1.0000
*	2	11.80	1.0000
*	3	11.60	1.0000
*	4	11.40	1.0000
*	5	11.20	1.0000
	6	11.00	1.3272
	7	10.80	1.3199
	8	10.60	1.3063
	9	10.40	1.2899
	10	10.20	1.2821
	11	10.00	1.2744
	12	9.80	1.2675
	13	9.60	1.2611
	14	9.40	1.2541
	15	9.20	1.2464
	16	9.00	1.2336
	17	8.80	1.2300
	18	8.60	1.2339
	19	8.40	1.2370
	20	8.20	1.2380
	21	8.00	1.2353
	22	7.80	1.2368
	23	7.60	1.2389
	24	7.40	1.2373
	25	7.20	1.2335
	26	7.00	1.2275
	27	6.80	1.1956
	28	6.60	1.1862
	29	6.40	1.1756
	30	6.20	1.1638
	31	6.00	1.1507
	32	5.80	1.1426
	33	5.60	1.1458
	34	5.40	1.1590
	35	5.20	1.1704
	36	5.00	1.1809
	37	4.80	1.1908
	38	4.60	1.1996
	39	4.40	1.2073
	40	4.20	1.2141
	41	4.00	1.2197
	42	3.80	1.2227
	43	3.60	1.2249
	44	3.40	1.2289
	45	3.20	1.2341
	46	3.00	1.2440
	47	2.80	1.2610
	48	2.60	1.2834
	49	2.40	1.3067
	50	2.20	1.3297
	51	2.00	1.3523
	52	1.80	1.3742
	53	1.60	1.3952
	54	1.40	1.4151
	55	1.20	1.4337
	56	1.00	1.4500
*	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 5 Axial Points

* Excluded per Technical Specification Basis B3.2.1

FIGURE 6

RAOC W(Z) AT 150 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	1.3732
	7	10.80	1.3560
	8	10.60	1.3349
	9	10.40	1.3103
	10	10.20	1.2914
	11	10.00	1.2843
	12	9.80	1.2769
	13	9.60	1.2680
	14	9.40	1.2582
	15	9.20	1.2435
	16	9.00	1.2268
	17	8.80	1.2185
	18	8.60	1.2182
	19	8.40	1.2184
	20	8.20	1.2163
	21	8.00	1.2175
	22	7.80	1.2178
	23	7.60	1.2149
	24	7.40	1.2102
	25	7.20	1.2036
	26	7.00	1.1955
	27	6.80	1.1737
	28	6.60	1.1634
	29	6.40	1.1529
	30	6.20	1.1415
	31	6.00	1.1328
	32	5.80	1.1302
	33	5.60	1.1320
	34	5.40	1.1415
	35	5.20	1.1501
	36	5.00	1.1593
	37	4.80	1.1685
	38	4.60	1.1765
	39	4.40	1.1837
	40	4.20	1.1898
	41	4.00	1.1947
	42	3.80	1.2009
	43	3.60	1.2074
	44	3.40	1.2144
	45	3.20	1.2199
	46	3.00	1.2287
	47	2.80	1.2454
	48	2.60	1.2670
	49	2.40	1.2875
	50	2.20	1.3079
	51	2.00	1.3283
	52	1.80	1.3498
	53	1.60	1.3718
	54	1.40	1.3929
	55	1.20	1.4127
	56	1.00	1.4306
*	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

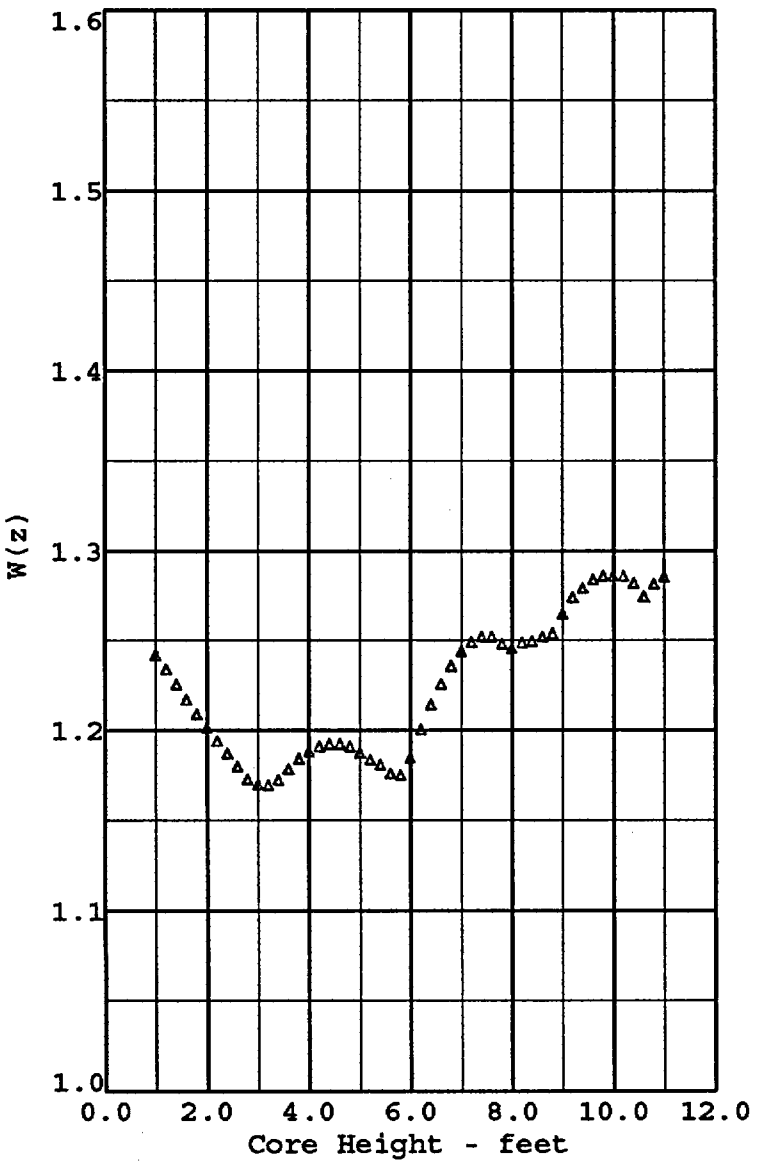
Top and Bottom 5 Axial Points
* Excluded per Technical Specification Basis B3.2.1

This figure is referred to by Specification B3.2.1

These W(Z) values are consistent with Figure 5, and are valid over the HFP T_{avg} temperature range from 586.4 to 587.4°F.

FIGURE 7

RAOC W(Z) AT 4000 MWD/MTU



This figure is referred to by Specification B3.2.1

These W(Z) values are consistent with Figure 5, and are valid over the HFP T_{avg} temperature range from 586.4 to 587.4°F.

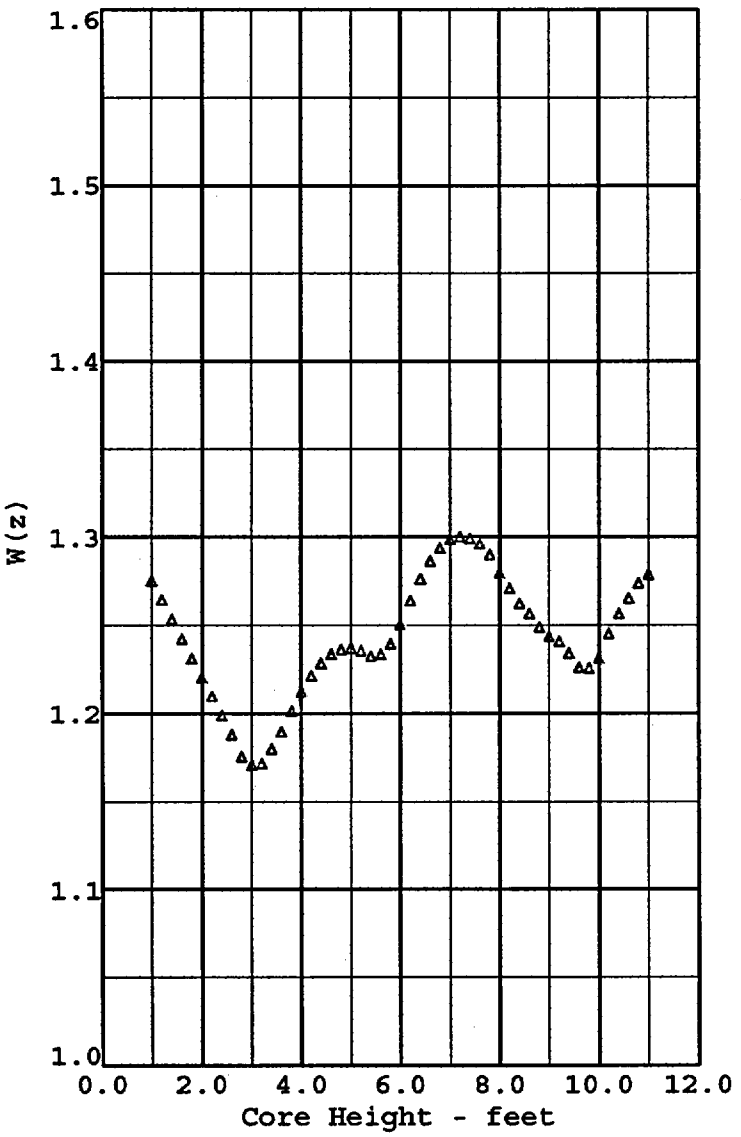
	Axial Point	Elevation (feet)	MOL-2 W(Z)
*	1	12.00	1.0000
*	2	11.80	1.0000
*	3	11.60	1.0000
*	4	11.40	1.0000
*	5	11.20	1.0000
	6	11.00	1.2855
	7	10.80	1.2815
	8	10.60	1.2745
	9	10.40	1.2819
	10	10.20	1.2857
	11	10.00	1.2857
	12	9.80	1.2858
	13	9.60	1.2838
	14	9.40	1.2791
	15	9.20	1.2741
	16	9.00	1.2647
	17	8.80	1.2538
	18	8.60	1.2518
	19	8.40	1.2496
	20	8.20	1.2488
	21	8.00	1.2456
	22	7.80	1.2481
	23	7.60	1.2521
	24	7.40	1.2519
	25	7.20	1.2491
	26	7.00	1.2437
	27	6.80	1.2359
	28	6.60	1.2259
	29	6.40	1.2141
	30	6.20	1.2005
	31	6.00	1.1845
	32	5.80	1.1750
	33	5.60	1.1758
	34	5.40	1.1807
	35	5.20	1.1836
	36	5.00	1.1875
	37	4.80	1.1908
	38	4.60	1.1923
	39	4.40	1.1924
	40	4.20	1.1910
	41	4.00	1.1881
	42	3.80	1.1840
	43	3.60	1.1784
	44	3.40	1.1722
	45	3.20	1.1693
	46	3.00	1.1697
	47	2.80	1.1726
	48	2.60	1.1798
	49	2.40	1.1869
	50	2.20	1.1940
	51	2.00	1.2014
	52	1.80	1.2089
	53	1.60	1.2169
	54	1.40	1.2256
	55	1.20	1.2341
	56	1.00	1.2419
*	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 5 Axial Points

* Excluded per Technical Specification Basis B3.2.1

FIGURE 8

RAOC W(Z) AT 12,000 MWD/MTU



This figure is referred to by Specification B3.2.1

These W(Z) values are consistent with Figure 5, and are valid over the HFP T_{avg} temperature range from 586.4 to 587.4°F.

	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	1.2788
	7	10.80	1.2740
	8	10.60	1.2655
	9	10.40	1.2565
	10	10.20	1.2452
	11	10.00	1.2313
	12	9.80	1.2257
	13	9.60	1.2261
	14	9.40	1.2342
	15	9.20	1.2409
	16	9.00	1.2436
	17	8.80	1.2491
	18	8.60	1.2566
	19	8.40	1.2623
	20	8.20	1.2708
	21	8.00	1.2797
	22	7.80	1.2899
	23	7.60	1.2960
	24	7.40	1.2990
	25	7.20	1.3002
	26	7.00	1.2985
	27	6.80	1.2938
	28	6.60	1.2864
	29	6.40	1.2764
	30	6.20	1.2641
	31	6.00	1.2503
	32	5.80	1.2395
	33	5.60	1.2336
	34	5.40	1.2325
	35	5.20	1.2356
	36	5.00	1.2372
	37	4.80	1.2363
	38	4.60	1.2335
	39	4.40	1.2285
	40	4.20	1.2214
	41	4.00	1.2122
	42	3.80	1.2013
	43	3.60	1.1896
	44	3.40	1.1799
	45	3.20	1.1715
	46	3.00	1.1705
	47	2.80	1.1754
	48	2.60	1.1879
	49	2.40	1.1988
	50	2.20	1.2096
	51	2.00	1.2204
	52	1.80	1.2313
	53	1.60	1.2423
	54	1.40	1.2535
	55	1.20	1.2646
	56	1.00	1.2752
*	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 5 Axial Points
* Excluded per Technical Specification Basis B3.2.1

FIGURE 9

RAOC W(Z) AT 18,000 MWD/MTU

Enclosure 2

Vogtle Electric Generating Plant
Revision 1 of the Unit 2 Cycle 12 Core Operating Limits Report (COLR)

VOGTLE ELECTRIC GENERATING PLANT (VEGP) UNIT 2 CYCLE 12

CORE OPERATING LIMITS REPORT

REVISION 1

October 2006

1.0 CORE OPERATING LIMITS REPORT

This Core Operating Limits Report (COLR) for VEGP UNIT 2 CYCLE 12 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 $+0.7 \times 10^{-4}$ $\Delta k/k/^{\circ}F$ for power levels up to 70% RTP with a linear ramp to 0 $\Delta k/k/^{\circ}F$ at 100% RTP.

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

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

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[1] Applicable for full-power T-average of 586.4°F to 587.4°F.

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

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

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

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

2.6.2 $F_Q^{RTP} = 2.50$

2.6.3 K(Z) is provided in Figure 4.

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

$F_Q(Z) \leq \frac{F_Q^{RTP} * K(Z)}{0.5 * W(Z)}$ 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 1950 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.

TABLE 1

$F_Q(Z)$ PENALTY FACTOR

Cycle Burnup (MWD/MTU)	$F_Q(Z)$ Penalty Factor
5061	1.020
5275	1.022
5488	1.021
5702	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 all cycle burnups outside the range of the table, a penalty factor of 1.020 shall be used.

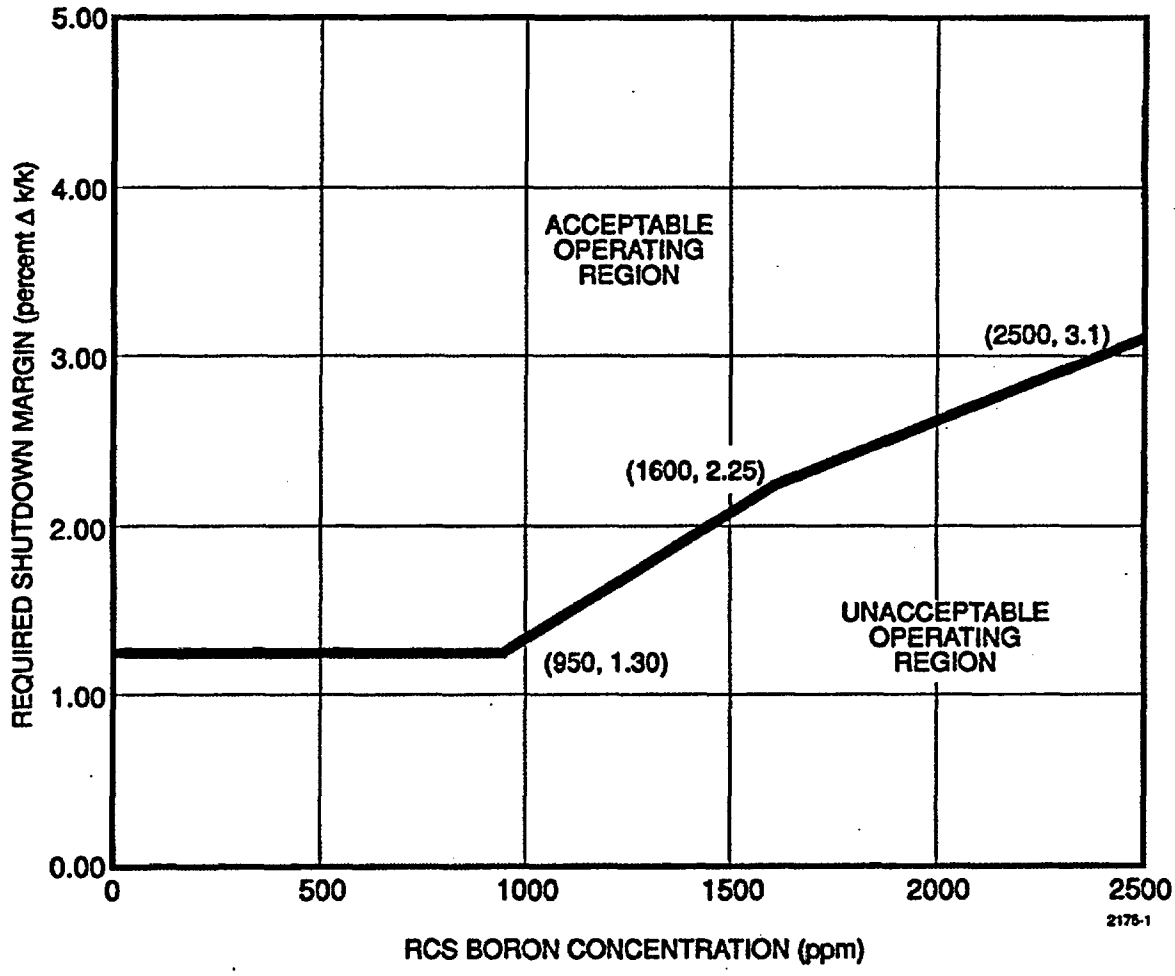


FIGURE 1

REQUIRED SHUTDOWN MARGIN FOR MODES 3 AND 4 (FOUR LOOPS FILLED AND VENTED AND AT LEAST ONE REACTOR COOLANT PUMP RUNNING)

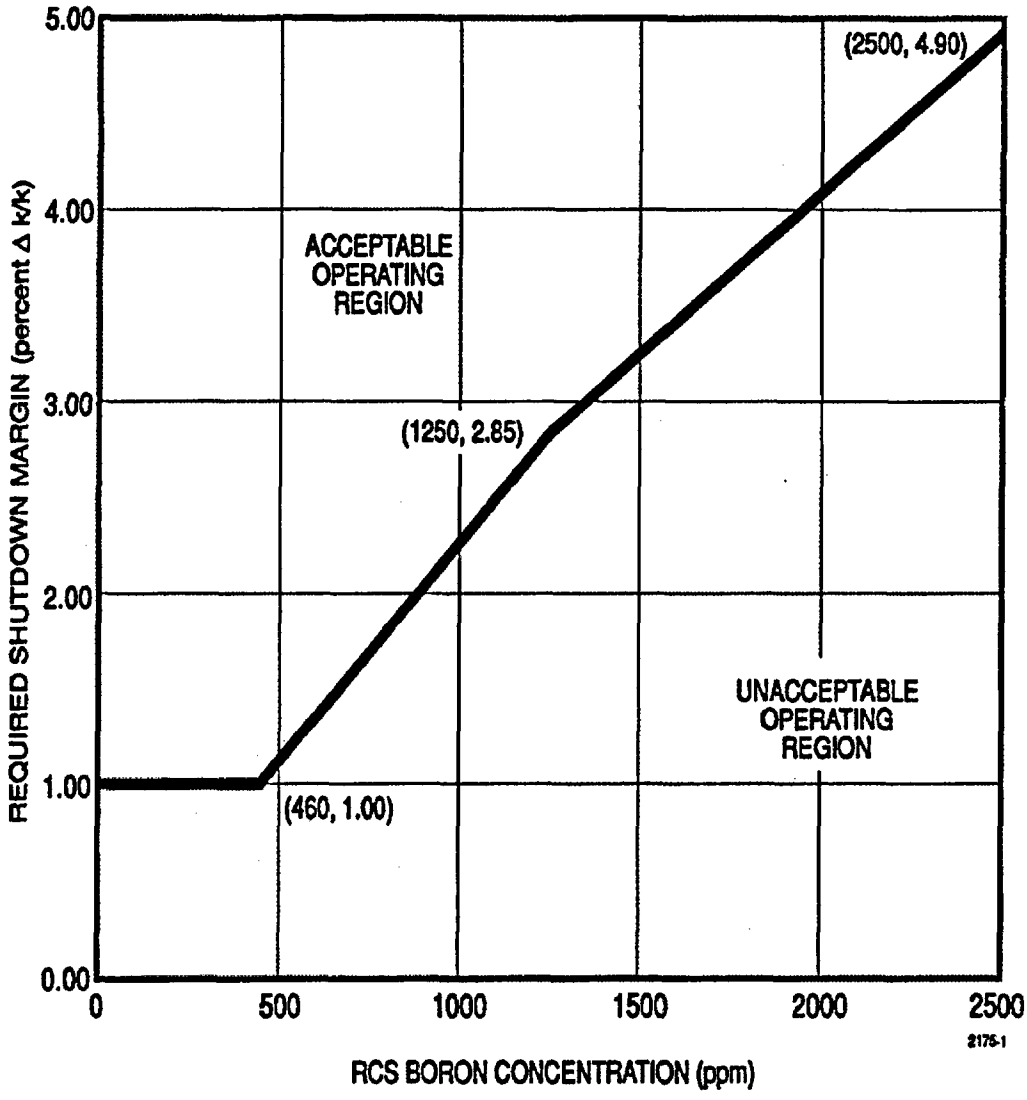
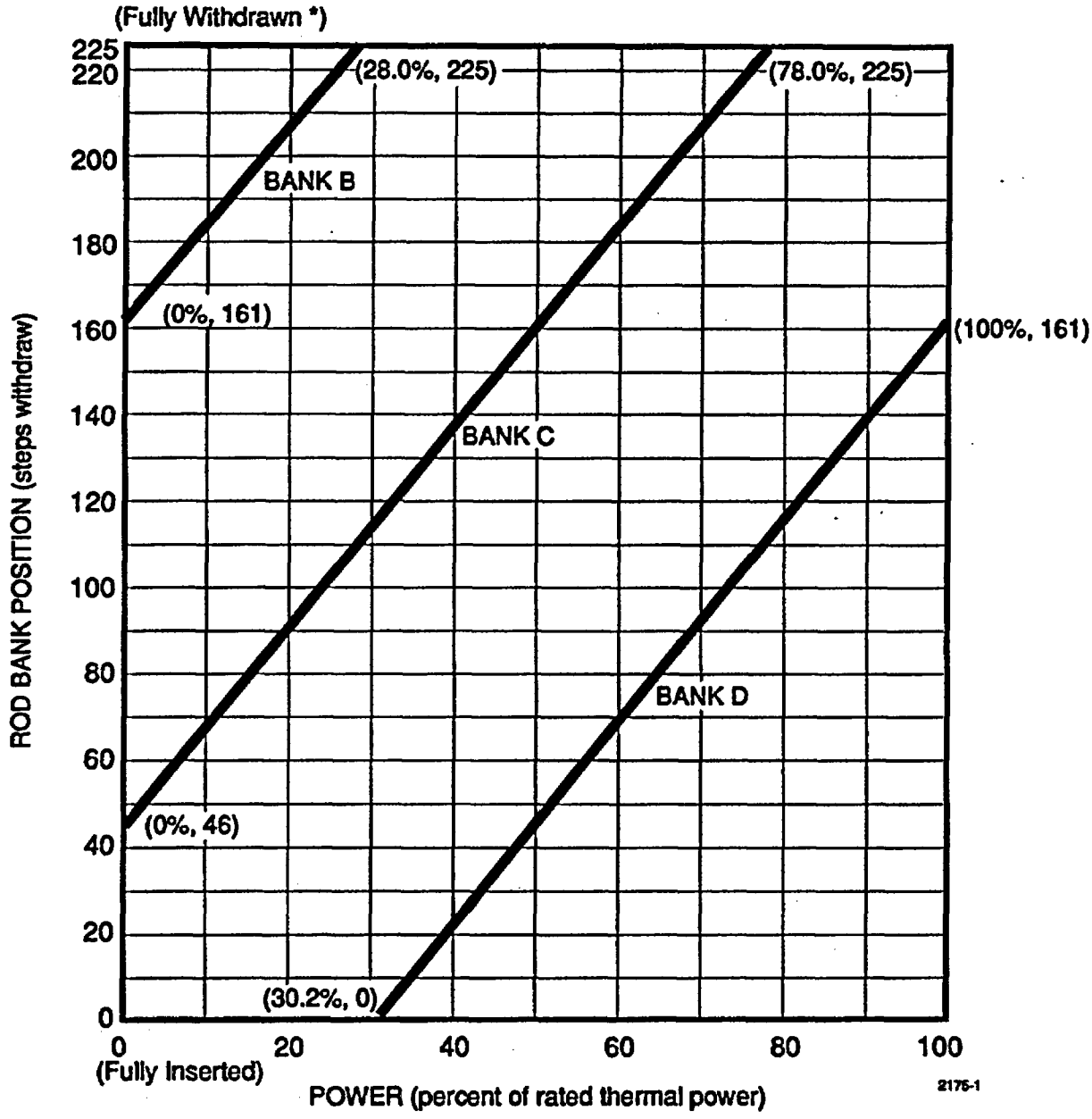


FIGURE 2

REQUIRED SHUTDOWN MARGIN FOR MODES 4 AND 5 (MODE 4 WHEN FIGURE 1 NOT APPLICABLE)



* 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

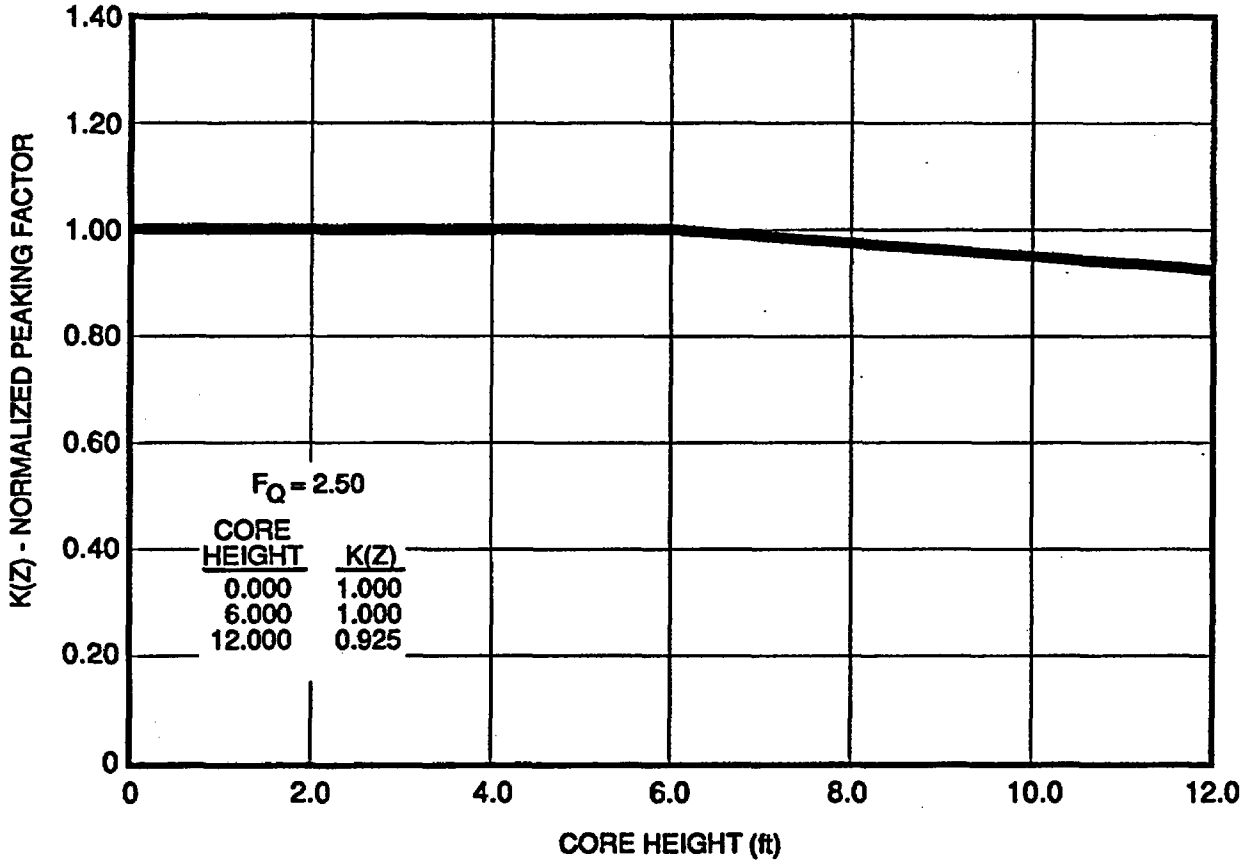


FIGURE 4

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

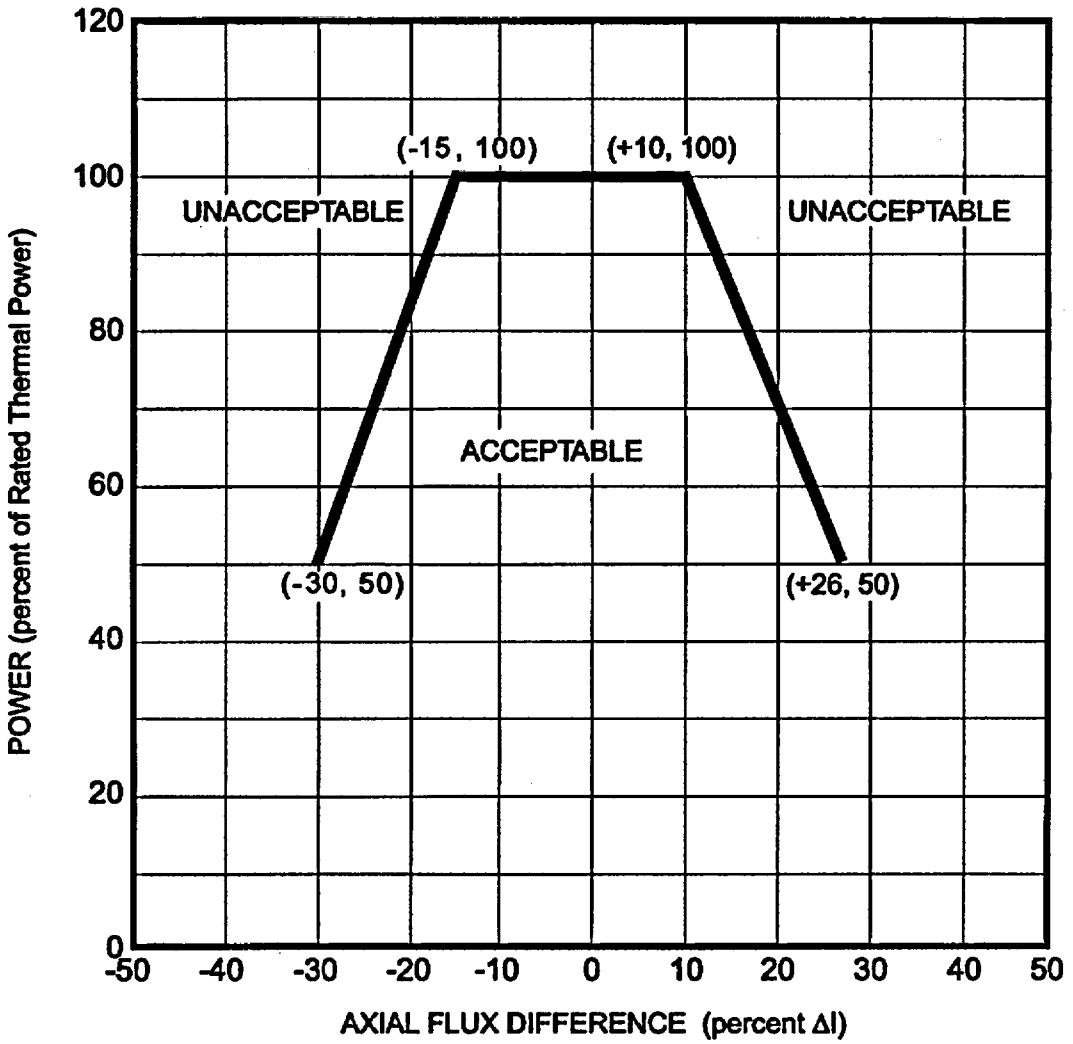
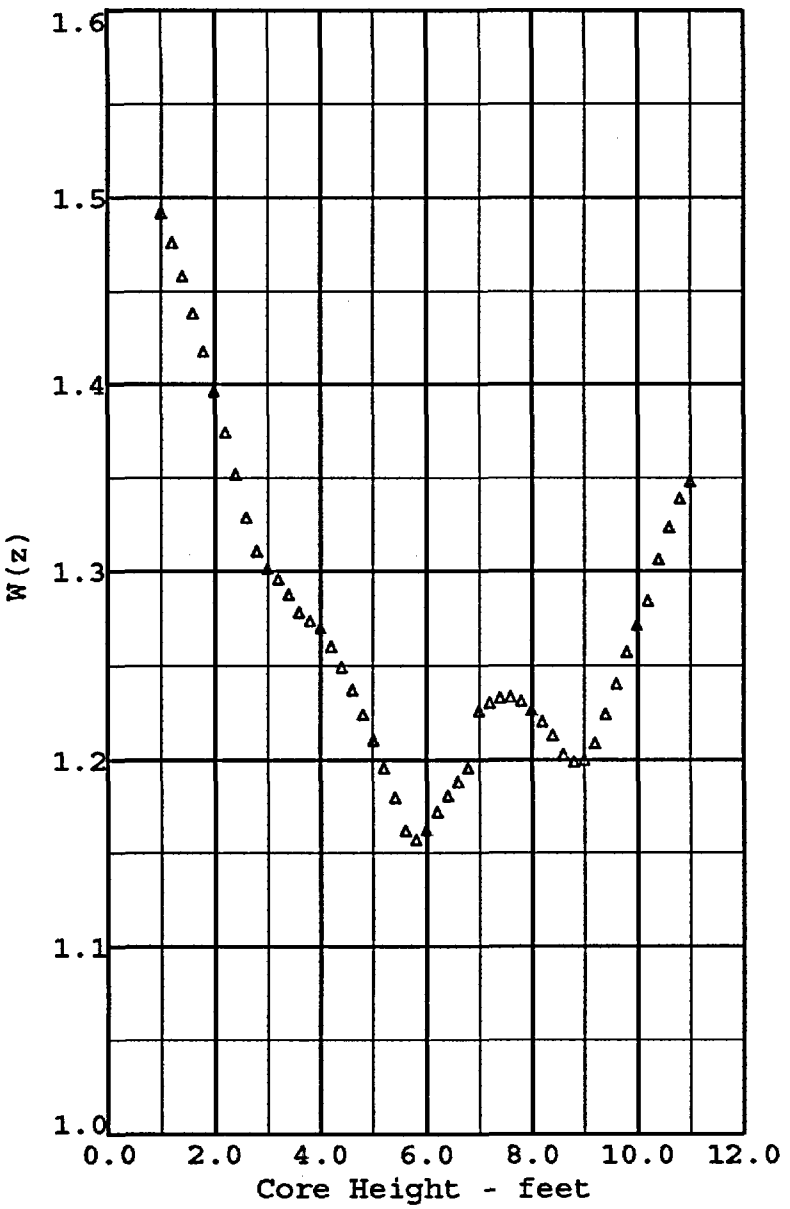


FIGURE 5

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



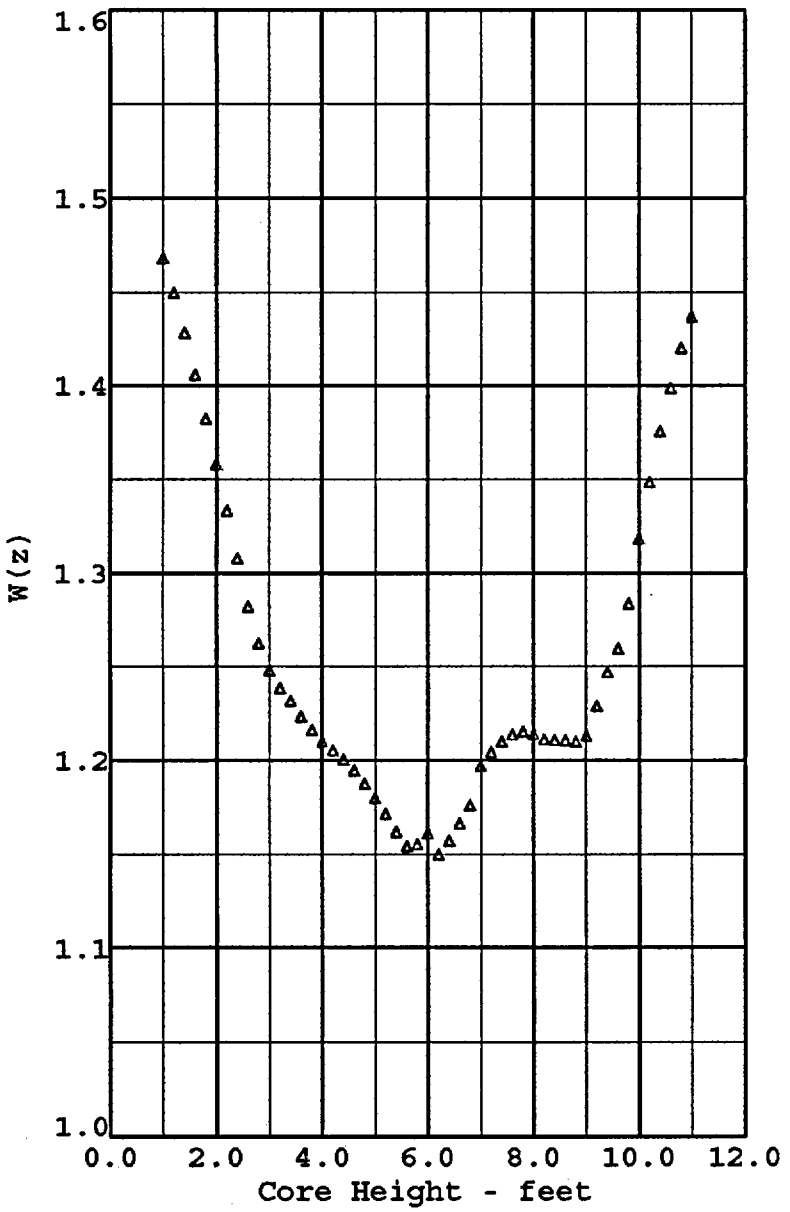
	Axial Point	Elevation (feet)	BOL W(Z)
*	1	12.00	1.0000
*	2	11.80	1.0000
*	3	11.60	1.0000
*	4	11.40	1.0000
*	5	11.20	1.0000
	6	11.00	1.3478
	7	10.80	1.3386
	8	10.60	1.3232
	9	10.40	1.3063
	10	10.20	1.2842
	11	10.00	1.2714
	12	9.80	1.2570
	13	9.60	1.2402
	14	9.40	1.2242
	15	9.20	1.2087
	16	9.00	1.1997
	17	8.80	1.1987
	18	8.60	1.2027
	19	8.40	1.2132
	20	8.20	1.2203
	21	8.00	1.2264
	22	7.80	1.2313
	23	7.60	1.2334
	24	7.40	1.2329
	25	7.20	1.2304
	26	7.00	1.2257
	27	6.80	1.1952
	28	6.60	1.1880
	29	6.40	1.1807
	30	6.20	1.1720
	31	6.00	1.1622
	32	5.80	1.1571
	33	5.60	1.1620
	34	5.40	1.1798
	35	5.20	1.1954
	36	5.00	1.2100
	37	4.80	1.2240
	38	4.60	1.2371
	39	4.40	1.2491
	40	4.20	1.2600
	41	4.00	1.2700
	42	3.80	1.2735
	43	3.60	1.2781
	44	3.40	1.2875
	45	3.20	1.2957
	46	3.00	1.3013
	47	2.80	1.3106
	48	2.60	1.3284
	49	2.40	1.3516
	50	2.20	1.3742
	51	2.00	1.3960
	52	1.80	1.4174
	53	1.60	1.4380
	54	1.40	1.4576
	55	1.20	1.4757
	56	1.00	1.4917
*	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 5 Axial Points
* Excluded per Technical Specification B3.2.1

This figure is referred to by Specification B3.2.1.

These W(Z) values are consistent with Figure 5, and are valid over the HFP T_{avg} temperature range from 586.4 to 587.4°F.

FIGURE 6
RAOC W (Z) AT 150 MWD/MTU



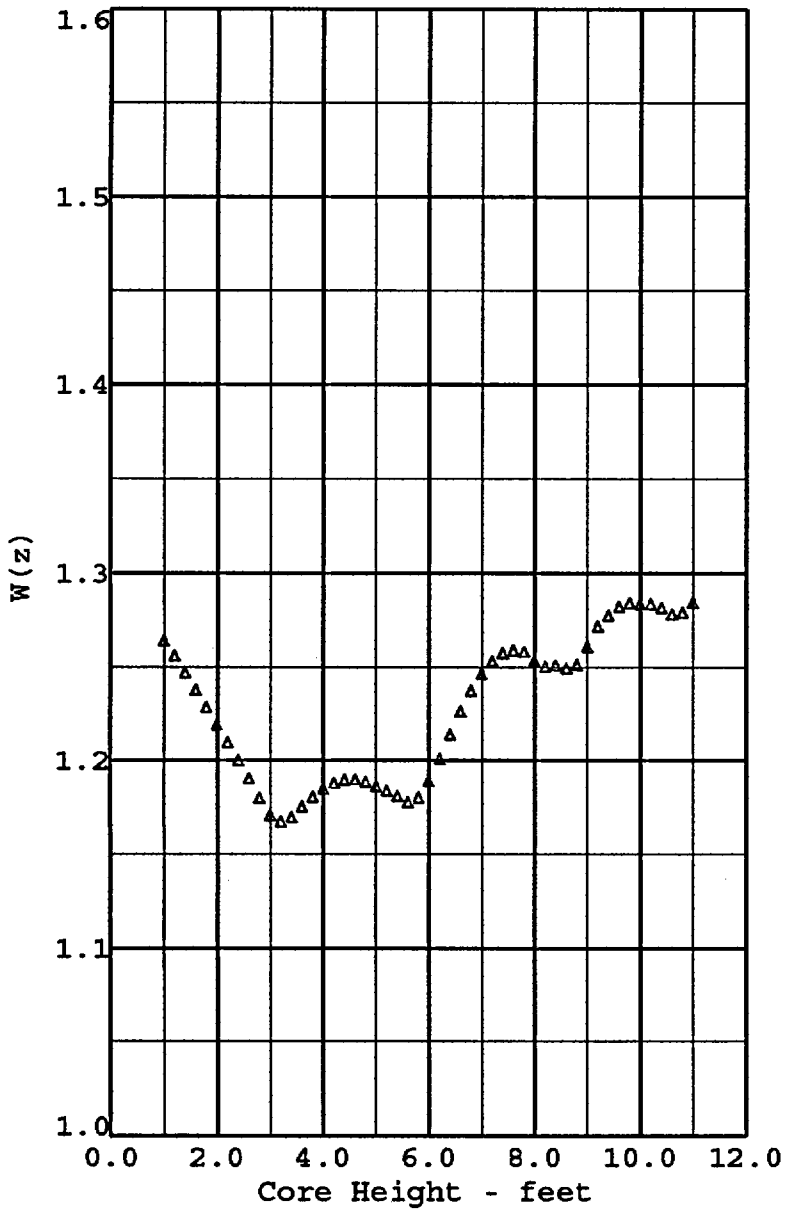
This figure is referred to by Specification B3.2.1

These W(Z) values are consistent with Figure 5, and are valid over the HFP T_{avg} temperature range from 586.4 to 587.4°F.

	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	1.4367
	7	10.80	1.4202
	8	10.60	1.3988
	9	10.40	1.3756
	10	10.20	1.3483
	11	10.00	1.3181
	12	9.80	1.2837
	13	9.60	1.2596
	14	9.40	1.2470
	15	9.20	1.2290
	16	9.00	1.2129
	17	8.80	1.2098
	18	8.60	1.2105
	19	8.40	1.2107
	20	8.20	1.2111
	21	8.00	1.2139
	22	7.80	1.2151
	23	7.60	1.2135
	24	7.40	1.2098
	25	7.20	1.2042
	26	7.00	1.1968
	27	6.80	1.1760
	28	6.60	1.1662
	29	6.40	1.1570
	30	6.20	1.1496
	31	6.00	1.1610
	32	5.80	1.1552
	33	5.60	1.1540
	34	5.40	1.1619
	35	5.20	1.1712
	36	5.00	1.1798
	37	4.80	1.1876
	38	4.60	1.1945
	39	4.40	1.2005
	40	4.20	1.2054
	41	4.00	1.2097
	42	3.80	1.2162
	43	3.60	1.2235
	44	3.40	1.2318
	45	3.20	1.2385
	46	3.00	1.2481
	47	2.80	1.2623
	48	2.60	1.2822
	49	2.40	1.3079
	50	2.20	1.3332
	51	2.00	1.3580
	52	1.80	1.3824
	53	1.60	1.4059
	54	1.40	1.4284
	55	1.20	1.4496
	56	1.00	1.4682
*	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 5 Axial Points
* Excluded per Technical Specification B3.2.1

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



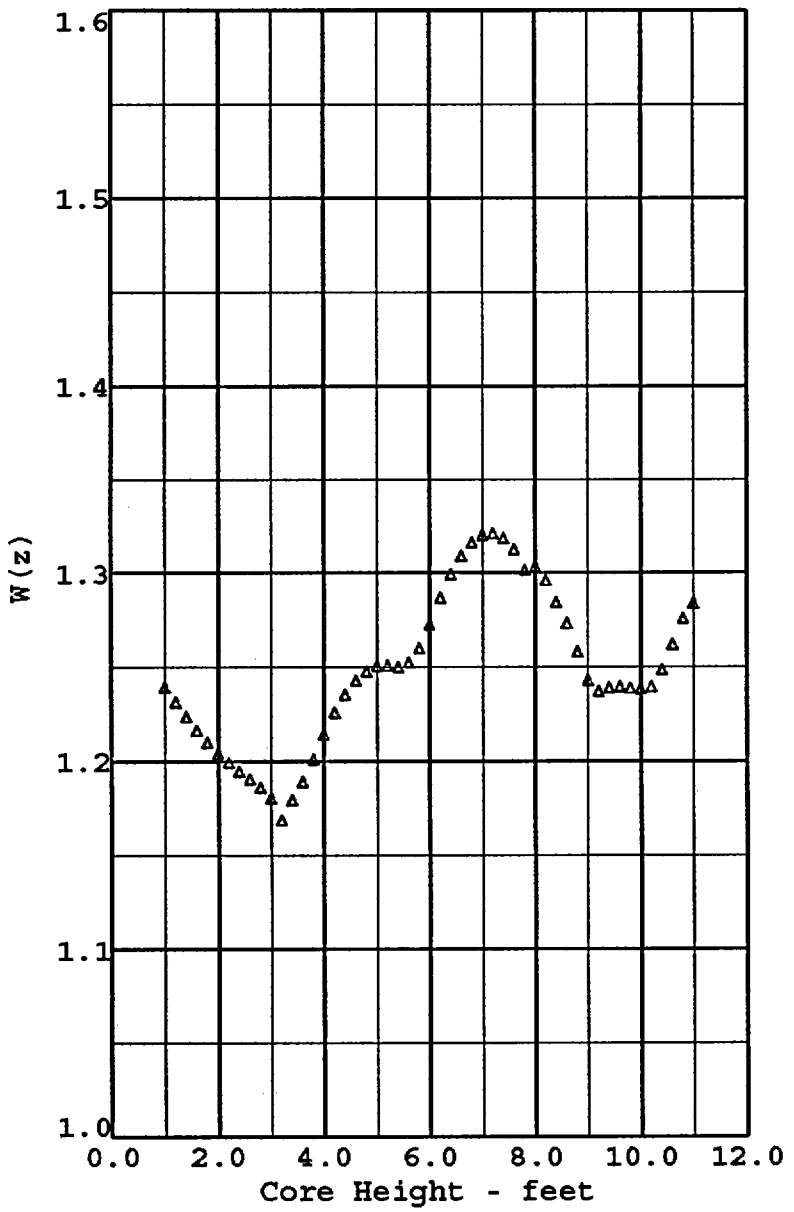
This figure is referred to by Specification B3.2.1

These W(Z) values are consistent with Figure 5, and are valid over the HFP T_{avg} temperature range from 586.4 to 587.4°F.

	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	1.2843
	7	10.80	1.2791
	8	10.60	1.2781
	9	10.40	1.2816
	10	10.20	1.2836
	11	10.00	1.2836
	12	9.80	1.2841
	13	9.60	1.2821
	14	9.40	1.2773
	15	9.20	1.2716
	16	9.00	1.2606
	17	8.80	1.2511
	18	8.60	1.2490
	19	8.40	1.2508
	20	8.20	1.2501
	21	8.00	1.2532
	22	7.80	1.2580
	23	7.60	1.2589
	24	7.40	1.2573
	25	7.20	1.2530
	26	7.00	1.2462
	27	6.80	1.2371
	28	6.60	1.2261
	29	6.40	1.2136
	30	6.20	1.2008
	31	6.00	1.1889
	32	5.80	1.1801
	33	5.60	1.1776
	34	5.40	1.1809
	35	5.20	1.1836
	36	5.00	1.1861
	37	4.80	1.1884
	38	4.60	1.1897
	39	4.40	1.1894
	40	4.20	1.1878
	41	4.00	1.1848
	42	3.80	1.1805
	43	3.60	1.1751
	44	3.40	1.1694
	45	3.20	1.1671
	46	3.00	1.1704
	47	2.80	1.1799
	48	2.60	1.1902
	49	2.40	1.2000
	50	2.20	1.2095
	51	2.00	1.2190
	52	1.80	1.2284
	53	1.60	1.2376
	54	1.40	1.2468
	55	1.20	1.2557
	56	1.00	1.2638
*	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 5 Axial Points
* 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	1.2837
	7	10.80	1.2756
	8	10.60	1.2620
	9	10.40	1.2486
	10	10.20	1.2395
	11	10.00	1.2384
	12	9.80	1.2387
	13	9.60	1.2395
	14	9.40	1.2389
	15	9.20	1.2371
	16	9.00	1.2428
	17	8.80	1.2579
	18	8.60	1.2731
	19	8.40	1.2844
	20	8.20	1.2959
	21	8.00	1.3034
	22	7.80	1.3014
	23	7.60	1.3125
	24	7.40	1.3185
	25	7.20	1.3211
	26	7.00	1.3202
	27	6.80	1.3161
	28	6.60	1.3090
	29	6.40	1.2992
	30	6.20	1.2867
	31	6.00	1.2724
	32	5.80	1.2599
	33	5.60	1.2522
	34	5.40	1.2499
	35	5.20	1.2507
	36	5.00	1.2503
	37	4.80	1.2476
	38	4.60	1.2426
	39	4.40	1.2353
	40	4.20	1.2258
	41	4.00	1.2141
	42	3.80	1.2009
	43	3.60	1.1889
	44	3.40	1.1791
	45	3.20	1.1685
	46	3.00	1.1803
	47	2.80	1.1859
	48	2.60	1.1903
	49	2.40	1.1946
	50	2.20	1.1993
	51	2.00	1.2042
	52	1.80	1.2099
	53	1.60	1.2163
	54	1.40	1.2235
	55	1.20	1.2314
	56	1.00	1.2394
*	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 5 Axial Points
* Excluded per Technical Specification B3.2.1

This figure is referred to by Specification B3.2.1

These W(Z) values are consistent with Figure 5, and are valid over the HFP T_{avg} temperature range from 586.4 to 587.4°F.

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