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U. S. Nuclear Regulatory Commission
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DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
CORE OPERATING LIMITS REPORT, CYCLE 19

In accordance with the Millstone Power Station Unit 3 (MPS3) Technical Specifications (TSs), Section 6.9.1.6.d, Dominion Nuclear Connecticut, Inc., hereby submits, as Enclosure 1, the Cycle 19 Core Operating Limits Report (COLR).

The MPS3 COLR has been revised to incorporate the following:

1) Editorial changes to increment the cycle number from 18 to 19.

2) Changes to Tables 1, 3, 4, 6, 7, and 8 to include Cycle 19 specific information.

The COLR has been incorporated into the MPS3 Technical Requirements Manual.

If you have any questions or require additional information, please contact Jeffry A. Langan at (860) 444-5544.

Sincerely,

D. C. Lawrence
Director, Nuclear Station Safety and Licensing - Millstone

Enclosures: (1)

Commitments made in this letter: None.

A001
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Serial No. 17-443
Docket No. 50-423

ENCLOSURE 1

CORE OPERATING LIMITS REPORT, CYCLE 19

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3

TECHNICAL REQUIREMENTS MANUAL

APPENDIX 8.1

CORE OPERATING LIMITS REPORT

CYCLE 19

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Millstone Unit 3
Cycle 19
CORE OPERATING LIMITS REPORT

1.0 CORE OPERATING LIMITS REPORT

This CORE OPERATING LIMITS REPORT (COLR) for Millstone Unit 3 Cycle 19 has been prepared in accordance with the requirements of Technical Specification 6.9.1.6.a. The Technical Specifications affected by this report are listed below.

2.1.1	Safety Limits
2.2.1	Limiting Safety System Settings
3/4.1.1.1.1	SHUTDOWN MARGIN - MODES 1 and 2
3/4.1.1.1.2	SHUTDOWN MARGIN - MODES 3, 4 and 5 Loops Filled
3/4.1.1.2	SHUTDOWN MARGIN - MODE 5 Loops Not Filled
3/4.1.1.3	Moderator Temperature Coefficient
3/4.1.3.5	Shutdown Rod Insertion Limit
3/4.1.3.6	Control Rod Insertion Limits
3/4.2.1.1	AXIAL FLUX DIFFERENCE
3/4.2.2.1	Heat Flux Hot Channel Factor
3/4.2.3.1	RCS Total Flow Rate and Nuclear Enthalpy Rise Hot Channel Factor
3/4.2.5	DNB Parameters
3/4.3.5	Shutdown Margin Monitor Alarm Setpoint
3/4.9.1.1	REFUELING 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 the NRC-approved methodologies specified in Technical Specification 6.9.1.6.b.

2.1 Safety Limits (Specification 2.1.1)

2.1.1 Reactor Core

The combination of THERMAL POWER, Reactor Coolant System highest loop average temperature, and pressurizer pressure shall not exceed the limits shown in Figure 1.

2.2 Limiting Safety System Settings (Specification 2.2.1)

2.2.1 Overtemperature ΔT

2.2.1.1 $K_1 \leq 1.20$

2.2.1.2 $K_2 \geq 0.025$ / °F

2.2.1.3 $K_3 \geq 0.00113$ / psi

2.2.1.4 $\tau_1 \geq 8$ seconds

2.2.1.5 $\tau_2 \leq 3$ seconds

2.2.1.6 $\tau_4 \geq 20$ seconds

2.2.1.7 $\tau_5 \leq 4$ seconds

2.2.1.8 T' is loop specific indicated T_{avg} at RATED THERMAL POWER, ≤ 587.1°F

2.2.1.9 P' is nominal pressurizer pressure, ≥ 2250 psia

2.2.1.10 $f_1(\Delta I)$ is a function of the indicated difference between top and bottom detectors of the power range neutron ion chambers; with nominal gains to be selected based on measured instrument response during plant startup tests calibrations such that:

(1) For $q_t - q_b$ between -18% and +10%, $f_1(\Delta I) \geq 0$, where q_t and q_b are percent RATED THERMAL POWER in the upper and lower halves of the core, respectively, and $q_t + q_b$ is the total THERMAL POWER in percent RATED THERMAL POWER;

(2) For each percent that the magnitude of $q_t - q_b$ exceeds -18%, the ΔT Trip Setpoint shall be automatically reduced by ≥ 3.75% of its value at RATED THERMAL POWER.

(3) For each percent that the magnitude of $q_t - q_b$ exceeds +10%, the ΔT Trip Setpoint shall be automatically reduced by ≥ 2.14% of its value at RATED THERMAL POWER.

2.2.2 Overpower ΔT

2.2.2.1 $K_4 \leq 1.10$

2.2.2.2 Deleted

2.2.2.3 $K_6 \geq 0.0015$ / °F when T > T" and $K_6 \leq 0$ / °F when T≤ T"

2.2.2.4 $\tau_1 \geq 8$ seconds

2.2.2.5 $\tau_2 \leq 3$ seconds

2.2.2.6 Deleted

2.2.2.7 T" is loop specific indicated T_{avg} at RATED THERMAL POWER, ≤ 587.1°F

2.3 SHUTDOWN MARGIN - MODES 1 and 2 (Specification 3/4.1.1.1.1)

2.3.1 The SHUTDOWN MARGIN shall be greater than or equal to 1.3% Δk/k.

2.4 SHUTDOWN MARGIN - MODES 3, 4 and 5 Loops Filled (Specification 3/4.1.1.1.2)

2.4.1 The SHUTDOWN MARGIN shall be greater than or equal to the limits shown in Figures 2, 3 and 4.[1]

2.5 SHUTDOWN MARGIN - MODE 5 Loops Not Filled (Specification 3/4.1.1.2)

2.5.1 The SHUTDOWN MARGIN shall be greater than or equal to the limits shown in Figure 5 or the limits shown in Figure 4 with the chemical and volume control system (CVCS) aligned to preclude reactor coolant system boron concentration reduction.[1]

2.6 Moderator Temperature Coefficient (Specification 3/4.1.1.3)

2.6.1 The BOL/ARO/0% - 70% RTP MTC shall be less positive than + 0.5 x 10^{-4} Δk/k/°F. Above 70% RTP, the MTC limit is a linear ramp to 0 Δk/k/°F at 100% RTP.

2.6.2 The EOL/ARO/RTP MTC shall be less negative than - 5.65 x 10^{-4} Δk/k/°F.

[1]The SHUTDOWN MARGIN requirements in Figures 2, 3, 4 and 5 are based on cycle-specific boron dilution analyses performed by Dominion.

2.6.3 The 300 ppm/ARO/RTP MTC should be less negative than or equal to - 4.9 x 10^{-4} $\Delta k/k/°F$,

where: BOL stands for Beginning Of Cycle Life

ARO stands for All Rods Out

HZP stands for Hot Zero Power

EOL stands for End Of Cycle Life

RTP stands for RATED THERMAL POWER.

2.7 Shutdown Rod Insertion Limit (Specification 3/4.1.3.5)

2.7.1 The shutdown rods shall be at least 220 steps withdrawn (inclusive).

2.8 Control Rod Insertion Limits (Specification 3/4.1.3.6)

2.8.1 The control rod banks shall be limited in physical insertion as shown in Figure 6, and

2.8.2 Control bank A shall be at least 220 steps withdrawn.

2.9 AXIAL FLUX DIFFERENCE (Specification 3/4.2.1.1)

2.9.1 The AXIAL FLUX DIFFERENCE (AFD) limits are provided in Figure 7.

2.9.2 Deleted

2.9.3 Deleted

2.10 Heat Flux Hot Channel Factor - $F_Q(Z)$ (Specification 3/4.2.2.1)

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

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

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

2.10.1 $F^{RTP}_Q = 2.60$.

2.10.2 K(Z) is provided in Figure 8.

2.11 Heat Flux Hot Channel Factor Surveillance - $F_Q(Z)$ (Specification 3/4.2.2.1.2)

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

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

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

2.11.1 $F^{RTP}_Q = 2.60$.

2.11.2 K(Z) is provided in Figure 8.

2.11.3 W(Z) values for RAOC operation are provided in Table 1. The Cycle 19 burnup dependent RAOC W(Z) values are valid over the range of burnup from 0 to 21,600 MWD/MTU.

2.11.4 Deleted.

2.11.5 W(Z) values for Part Power operation are provided in Table 3. The Cycle 19 burnup dependent Part Power W(Z) values are valid over the range of burnup from 0 to 150 MWD/MTU.

2.11.6 The factors in Table 4 shall be used for surveillance requirement 4.2.2.1.2. A 2% factor shall be used outside of the burnup range shown in Table 4.

2.11.7 The values provided in Table 5 shall be used to reduce the normal operating space for $F_Q(Z)$ exceeding its limits.

2.11.8 W(Z) values for RAOC operation for compensatory action at 97% RTP for 1% Transient F_Q Margin Gain are provided in Table 6. The Cycle 19 burnup dependent W(Z) values are valid over a range of burnup from 0 to 21,600 MWD/MTU.

2.11.9 W(Z) values for RAOC operation for compensatory action at 95% RTP for 2% Transient FQ Margin Gain are provided in Table 7. The Cycle 19 burnup dependent W(Z) values are valid over a range of burnup from 0 to 21,600 MWD/MTU.

2.11.10 W(Z) values for RAOC operation for compensatory action at 93% RTP for 3% Transient F_Q Margin Gain are provided in Table 8. The Cycle 19 burnup dependent W(Z) values are valid over a range of burnup from 0 to 21,600 MWD/MTU.

2.12 RCS Total Flow Rate and Nuclear Enthalpy Rise Hot Channel Factor - $F^N_{\Delta H}$ (Specification 3/4.2.3.1)

2.12.1 The RCS Total Flow Rate shall be greater than or equal to 379,200 gpm.

2.12.2 $F^N_{\Delta H} \leq F^{RTP}_{\Delta H} \times (1 + PF_{\Delta H} \times [1 - P])$

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

2.12.2.1 $F^{RTP}_{\Delta H}$ = 1.586 for Robust Fuel Assemblies (RFA) and (RFA-2)

2.12.2.2 $PF_{\Delta H}$ = 0.3 for P < 1.0.

2.13 DNB Parameters (Specification 3/4.2.5)

The following DNB-related parameters shall be maintained within the limits specified below:

2.13.1 Reactor Coolant System T_{avg} shall be maintained ≤ 593.5°F.

2.13.2 Pressurizer Pressure shall be maintained ≥ 2204 psia [2].

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[2] Limit not applicable during either a THERMAL POWER ramp in excess of 5% of RATED THERMAL POWER per minute or a THERMAL POWER step in excess of 10% of RATED THERMAL POWER.

2.14 Shutdown Margin Monitor Alarm Setpoint (Specification 3/4.3.5)[3]

2.14.1 The Shutdown Margin Monitor (SMM) minimum count rate and Alarm Ratio Setting to meet Limiting Condition for Operation (LCO) 3.3.5 shall be as shown below.

Tech. Spec. LCO	SMM Alarm Ratio Setting	Min. Count Rate (counts/sec)
3.3.5.a	1.50	1.0
	1.25	0.6
3.3.5.b.1	1.50	0.50
	1.25	0.35
3.3.5.b.2	1.50	0.35
	1.25	0.25

The combination of the SMM Alarm Ratio setting and minimum count rate accounts for the time lag between the indicated and actual count rates, as well as other uncertainties. The specified SMM Alarm Ratio setting ensures that the assumption that an alarm is generated at flux doubling in the Boron Dilution Event analysis remains valid. The count rate is displayed on the SMM.

2.15 Refueling Boron Concentration (Specification 3/4.9.1.1)

2.15.1 The boron concentration of all filled portions of the Reactor Coolant System and the refueling cavity shall be maintained at a boron concentration of greater than or equal to 2600 ppm.[4]

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[3] Section 2.14 is based on cycle-specific boron dilution analyses performed by Dominion.

[4] This boron concentration bounds the condition of $k_{eff} \leq 0.95$ (all rods in less the most reactive two rods) and subcriticality ($k_{eff} \leq 1.0$ with all rods out).

Figure 1—Reactor Core Safety Limit

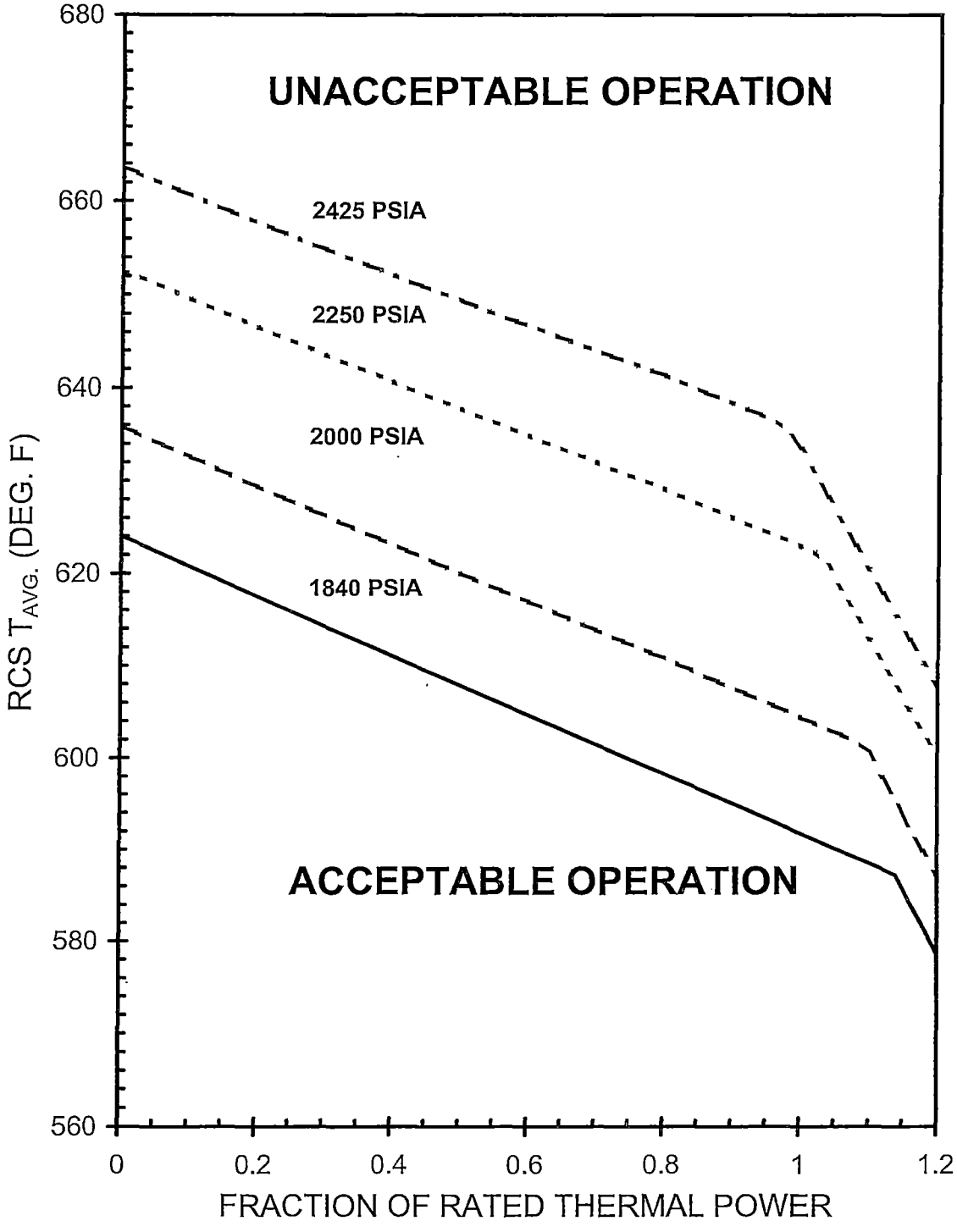

Figure 2—Required SHUTDOWN MARGIN for MODE 3

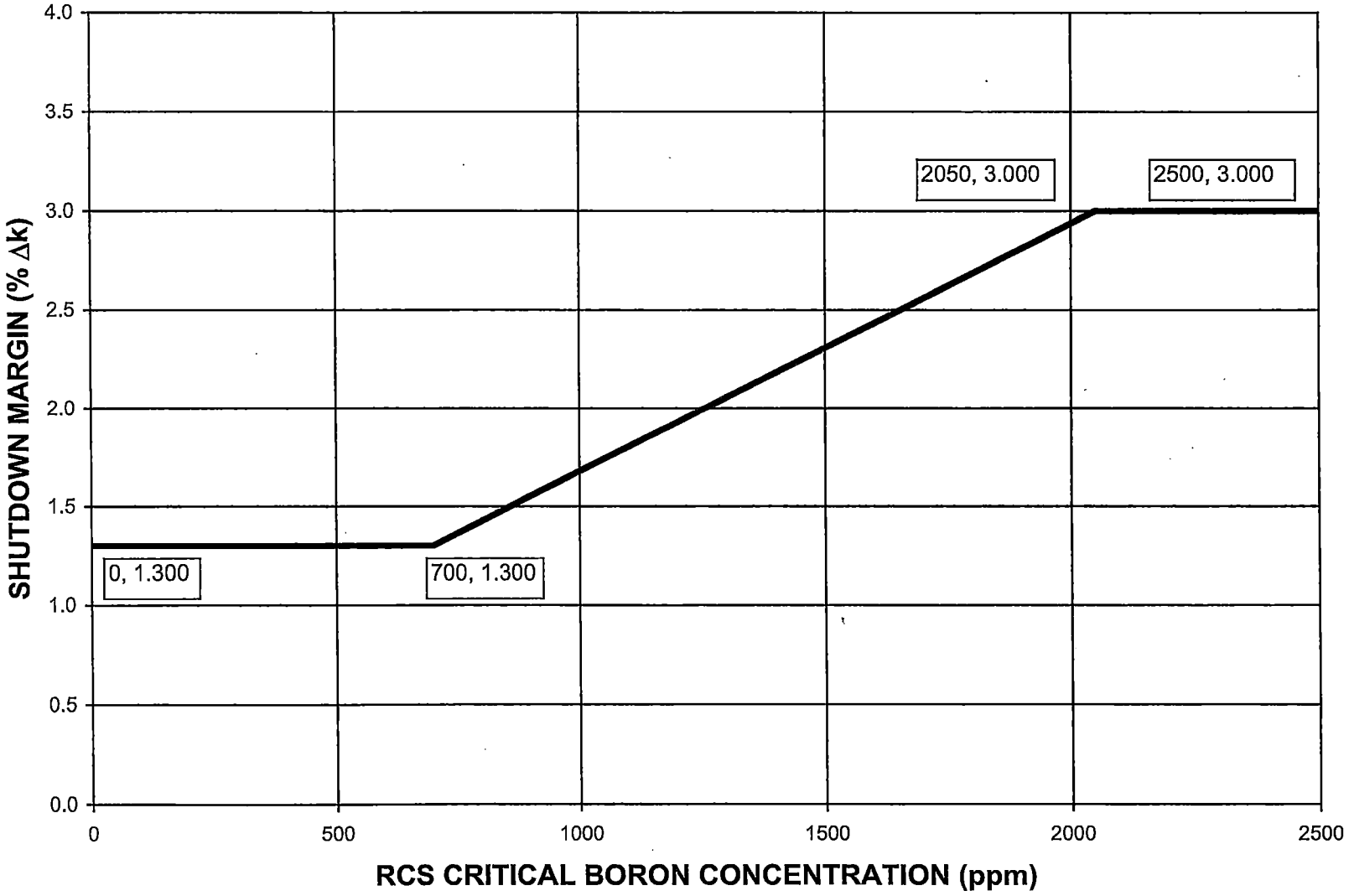

Figure 3—Required SHUTDOWN MARGIN for MODE 4

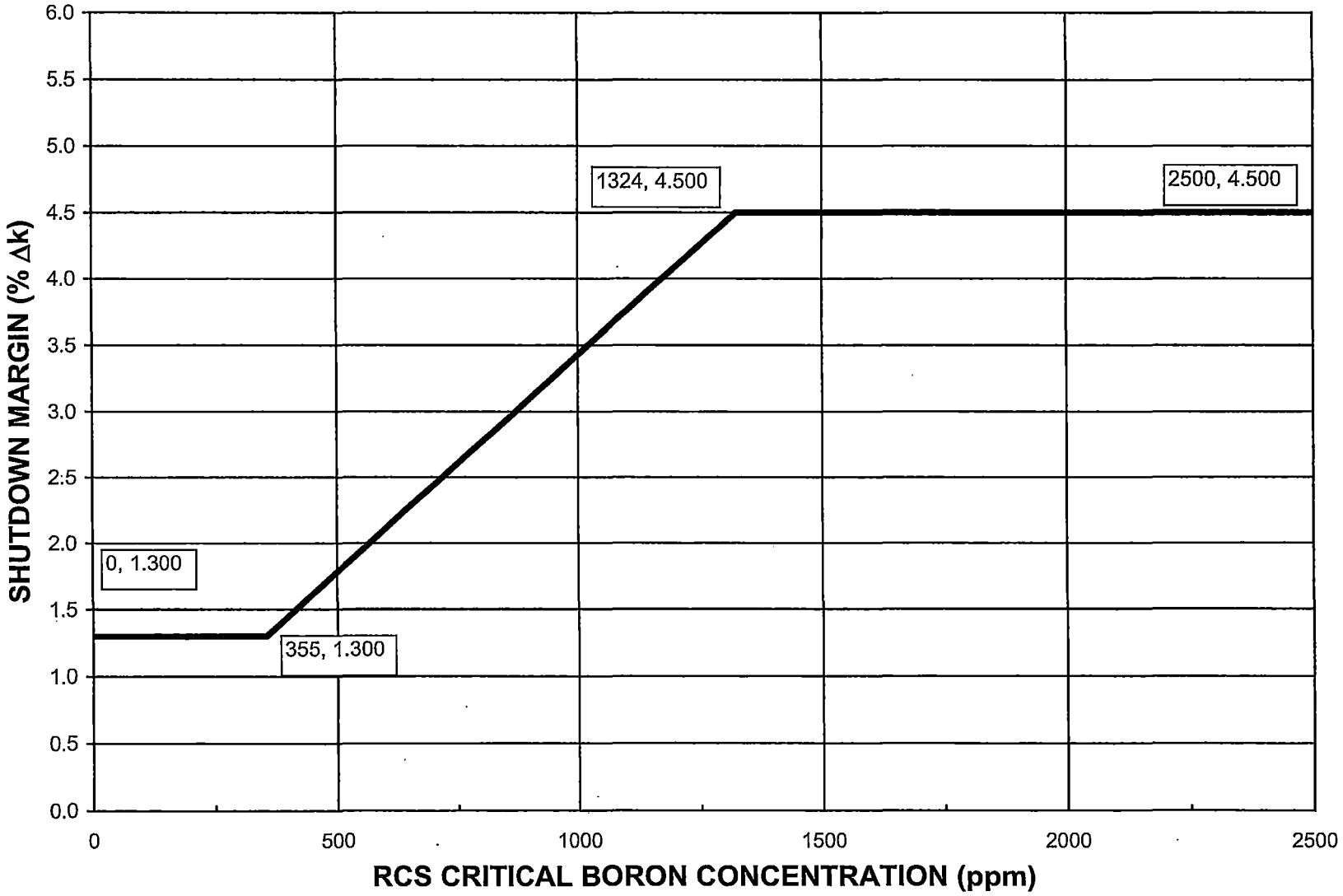

Figure 4—Required SHUTDOWN MARGIN for MODE 5 with RCS Loops Filled

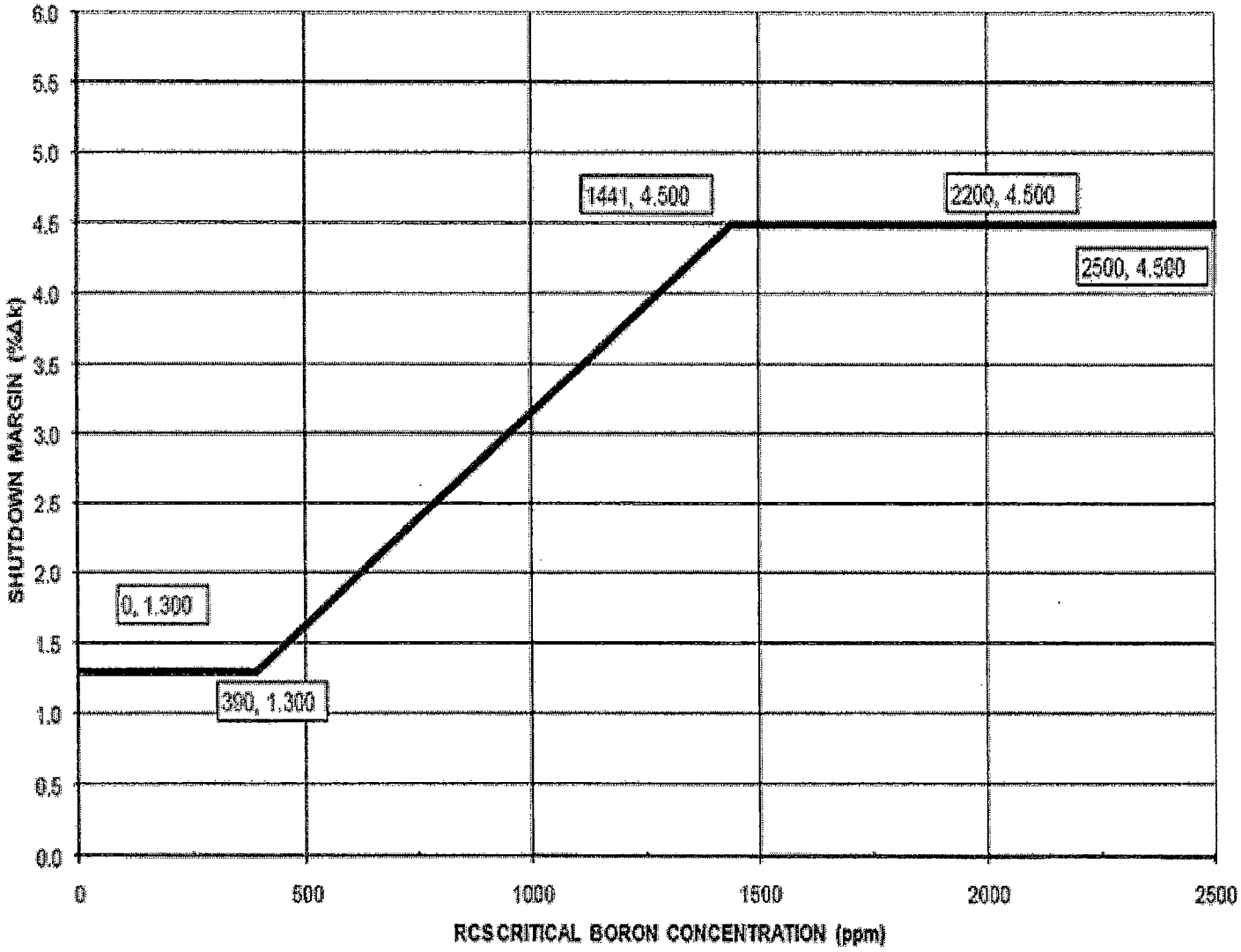

Figure 5—Required SHUTDOWN MARGIN for MODE 5 with RCS Loops Not Filled

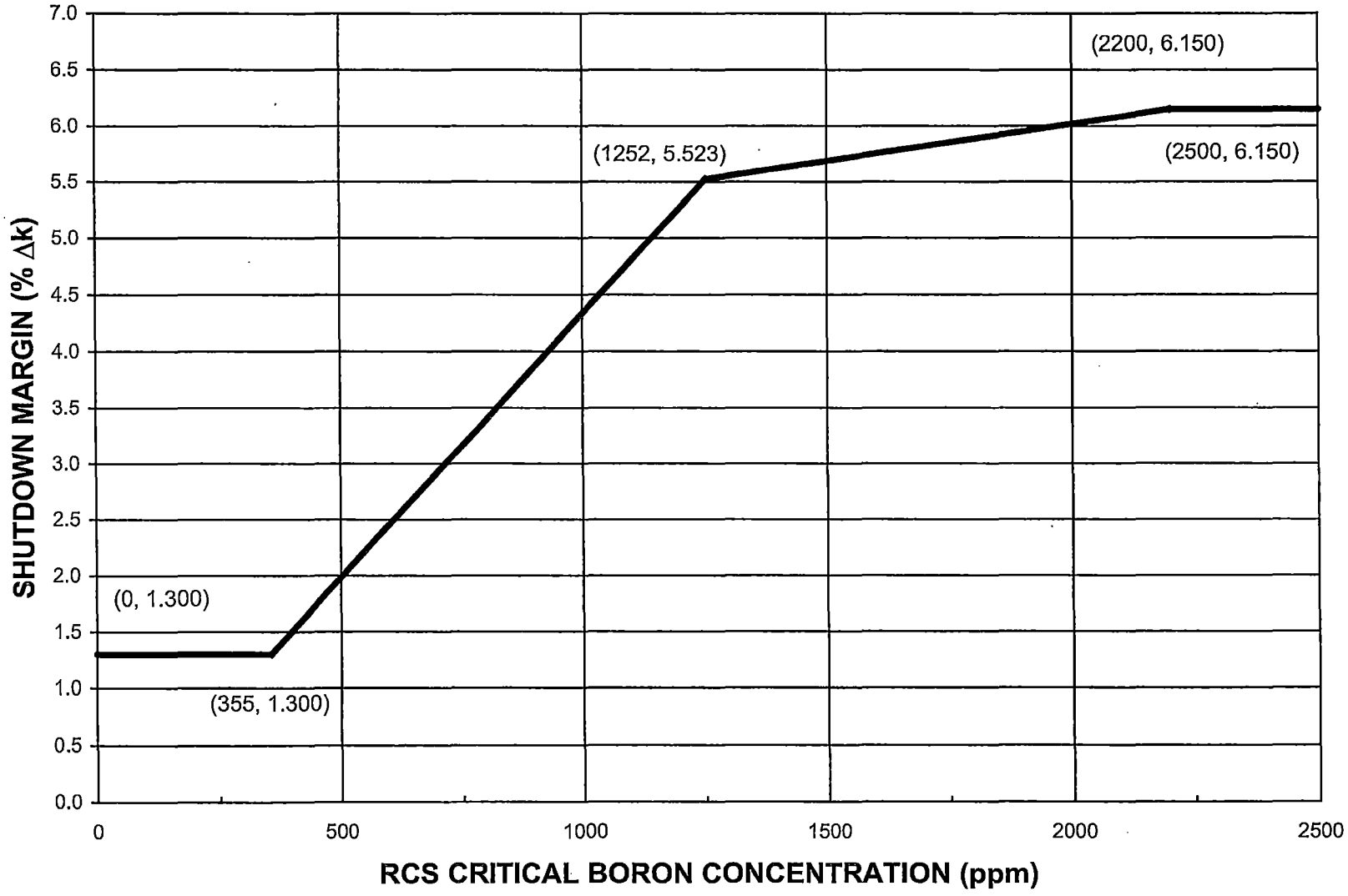

Figure 6—Control Rod Bank Insertion Limits versus THERMAL POWER

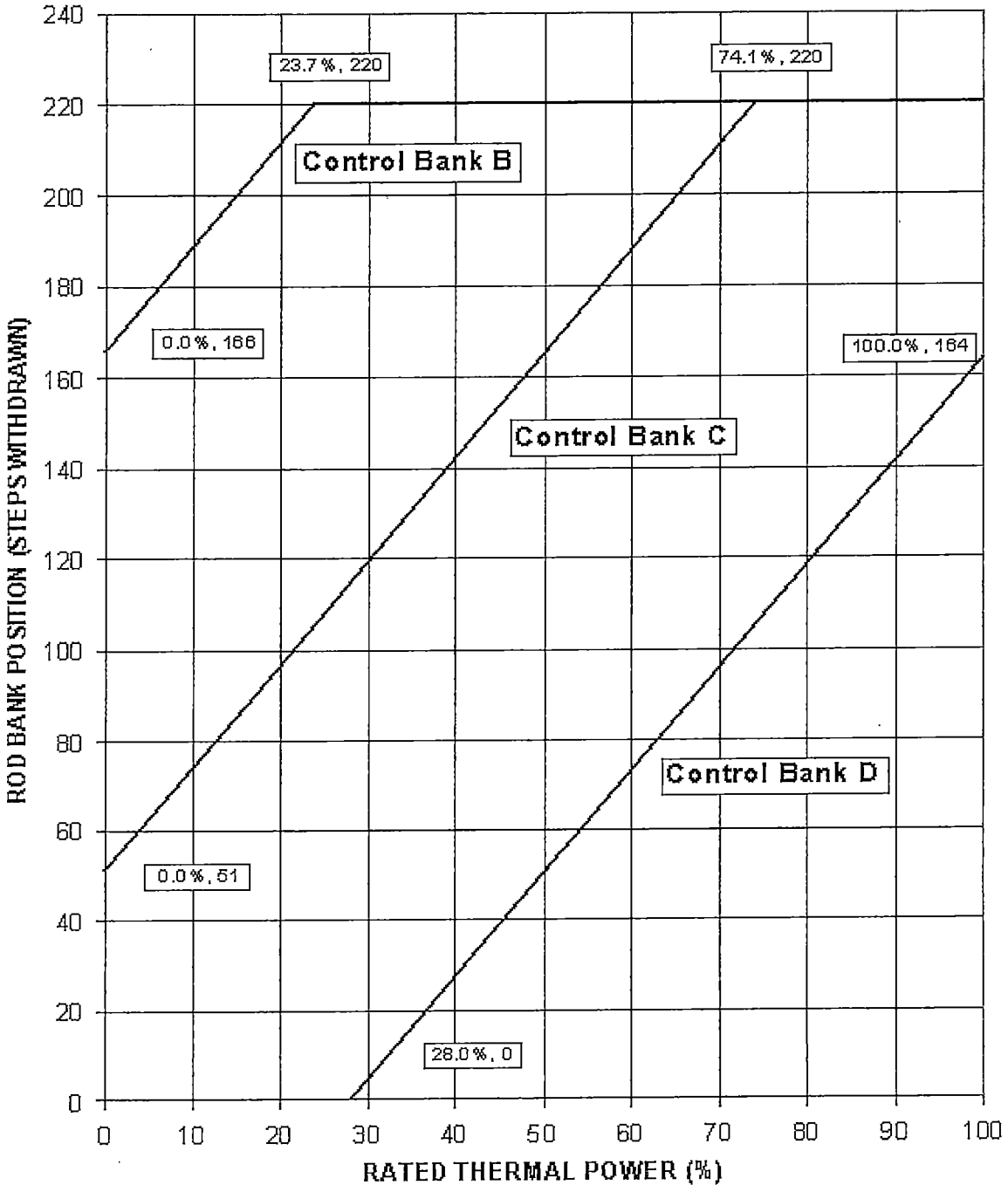

Figure 7—AXIAL FLUX DIFFERENCE Limits as a Function of RATED THERMAL POWER

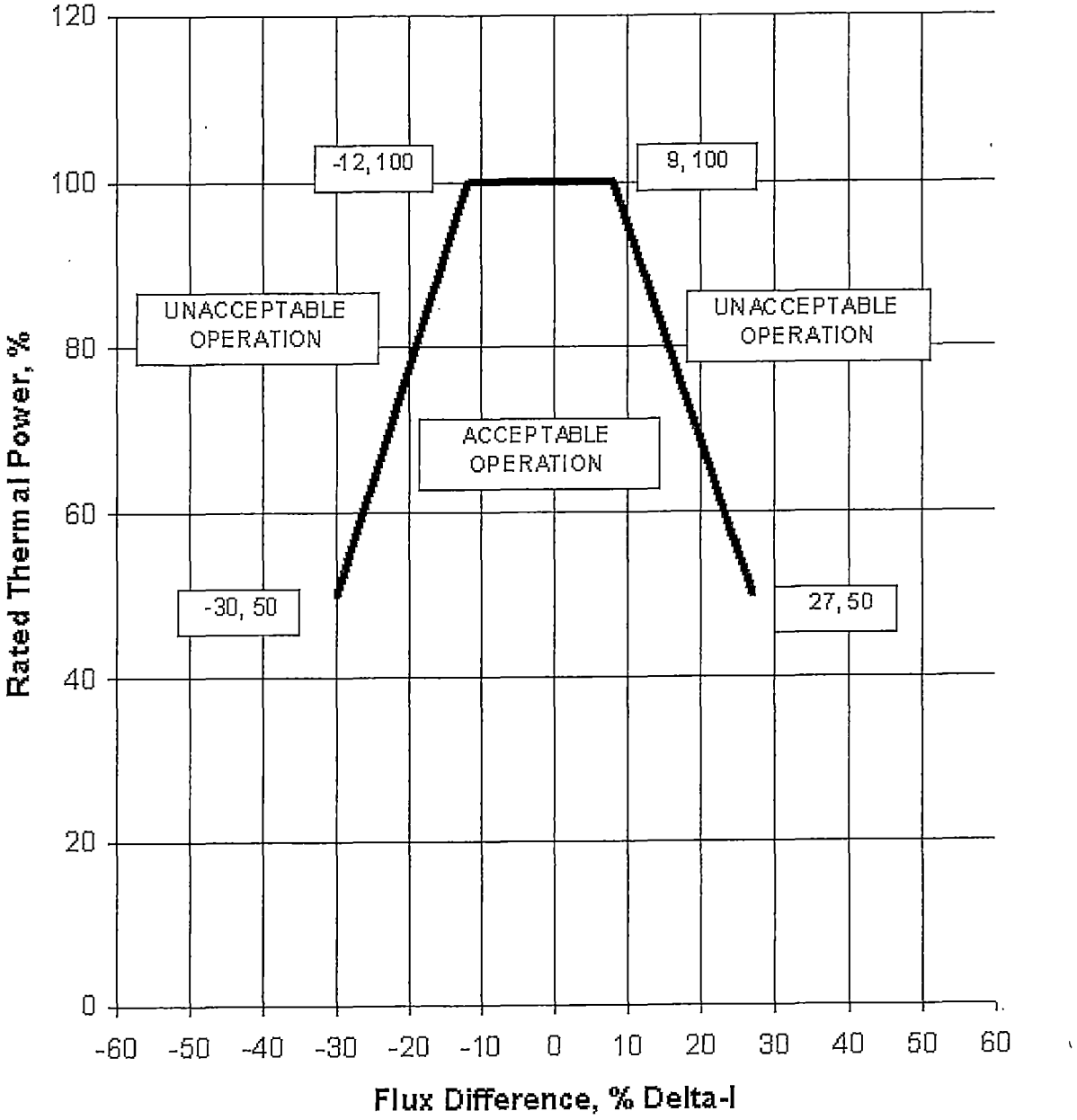

Figure 8—K(Z) - Normalized $F_Q(Z)$ as a Function of Core Height

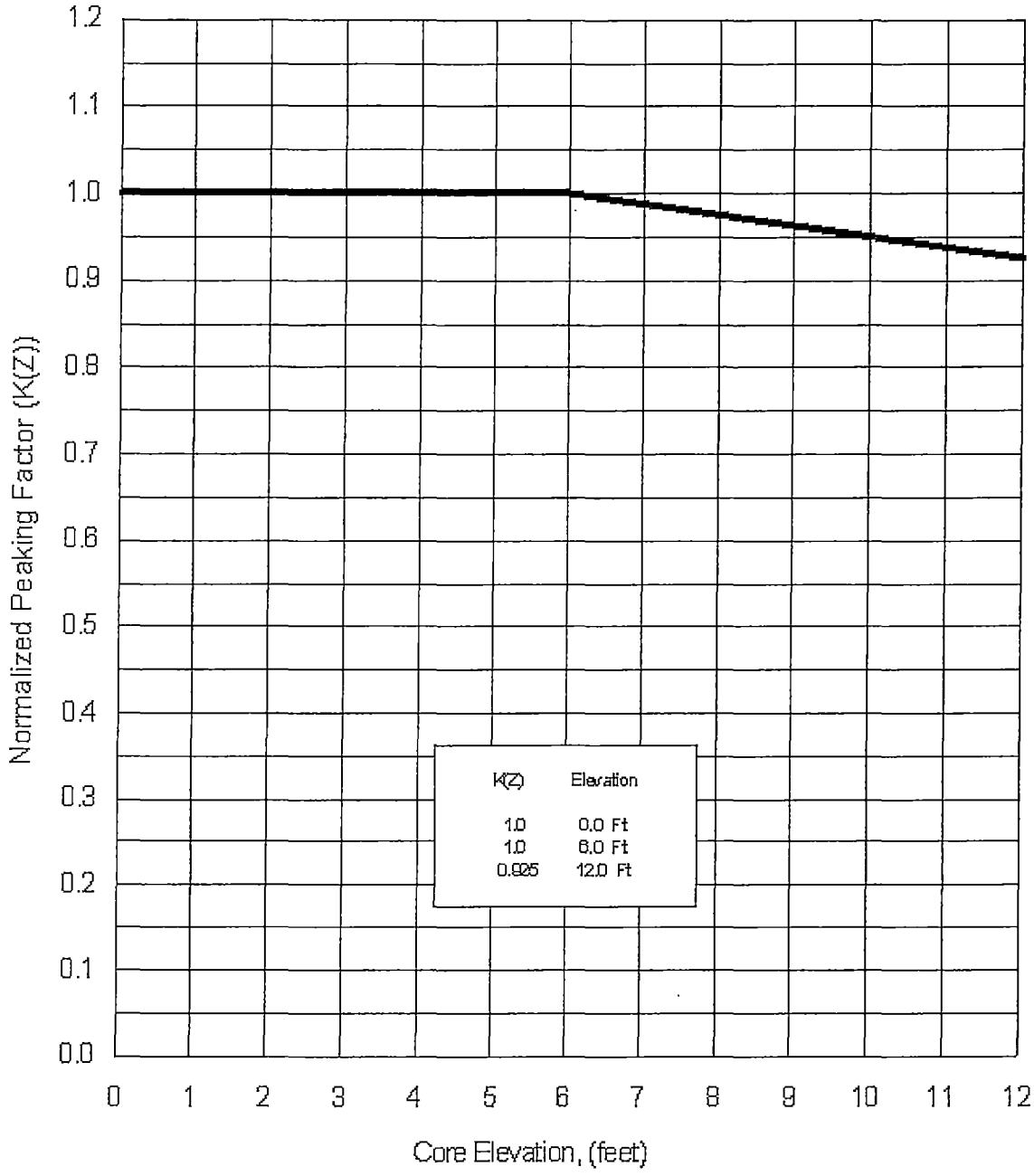

Table 1
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
-12/+9 AFD at 100% RTP

		Burnup Step (MWD/MTU)				
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
1	12.0778	1.0000	1.0000	1.0000	1.0000	1.0000
2	11.9101	1.0000	1.0000	1.0000	1.0000	1.0000
3	11.7423	1.0000	1.0000	1.0000	1.0000	1.0000
4	11.5746	1.0000	1.0000	1.0000	1.0000	1.0000
5	11.4068	1.0000	1.0000	1.0000	1.0000	1.0000
6	11.2391	1.0000	1.0000	1.0000	1.0000	1.0000
7	11.0713	1.2540	1.3643	1.3356	1.3198	1.2909
8	10.9036	1.2444	1.3605	1.3342	1.3191	1.2897
9	10.7358	1.2329	1.3641	1.3287	1.3166	1.2860
10	10.5681	1.2189	1.3536	1.3222	1.3112	1.2808
11	10.4003	1.2047	1.3321	1.3132	1.3037	1.2749
12	10.2326	1.1924	1.3120	1.3010	1.2976	1.2679
13	10.0649	1.1822	1.2921	1.2911	1.2912	1.2595
14	9.8971	1.1727	1.2735	1.2817	1.2835	1.2520
15	9.7294	1.1635	1.2586	1.2703	1.2754	1.2474
16	9.5616	1.1564	1.2494	1.2592	1.2685	1.2452
17	9.3939	1.1514	1.2393	1.2477	1.2594	1.2410
18	9.2261	1.1483	1.2222	1.2320	1.2457	1.2323
19	9.0584	1.1475	1.2029	1.2179	1.2311	1.2243
20	8.8906	1.1481	1.1883	1.2076	1.2195	1.2181
21	8.7229	1.1529	1.1810	1.2013	1.2124	1.2137
22	8.5551	1.1576	1.1745	1.1975	1.2064	1.2142
23	8.3874	1.1615	1.1666	1.1938	1.1994	1.2165
24	8.2196	1.1647	1.1584	1.1894	1.1917	1.2179
25	8.0519	1.1669	1.1524	1.1891	1.1867	1.2225
26	7.8841	1.1680	1.1491	1.1894	1.1824	1.2280
27	7.7164	1.1680	1.1478	1.1877	1.1770	1.2309
28	7.5486	1.1669	1.1462	1.1847	1.1739	1.2320
29	7.3809	1.1647	1.1438	1.1806	1.1713	1.2317

*Distance from bottom of active core (feet)

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 1
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
-12/+9 AFD at 100% RTP (Continued)

		Burnup Step (MWD/MTU)				
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
30	7.2131	1.1616	1.1406	1.1752	1.1665	1.2296
31	7.0454	1.1572	1.1363	1.1687	1.1603	1.2260
32	6.8777	1.1529	1.1320	1.1611	1.1527	1.2209
33	6.7099	1.1496	1.1288	1.1525	1.1439	1.2143
34	6.5422	1.1461	1.1253	1.1430	1.1353	1.2062
35	6.3744	1.1417	1.1212	1.1329	1.1282	1.1969
36	6.2067	1.1365	1.1164	1.1222	1.1227	1.1867
37	6.0389	1.1306	1.1106	1.1100	1.1161	1.1749
38	5.8712	1.1246	1.1057	1.1021	1.1094	1.1630
39	5.7034	1.1203	1.1036	1.1016	1.1054	1.1536
40	5.5357	1.1232	1.1062	1.1004	1.1072	1.1499
41	5.3679	1.1312	1.1120	1.0996	1.1114	1.1496
42	5.2002	1.1372	1.1164	1.1021	1.1141	1.1494
43	5.0324	1.1427	1.1203	1.1044	1.1164	1.1484
44	4.8647	1.1481	1.1241	1.1059	1.1184	1.1466
45	4.6969	1.1529	1.1273	1.1072	1.1199	1.1441
46	4.5292	1.1572	1.1303	1.1084	1.1211	1.1409
47	4.3614	1.1612	1.1329	1.1092	1.1220	1.1371
48	4.1937	1.1648	1.1352	1.1100	1.1227	1.1327
49	4.0259	1.1680	1.1375	1.1107	1.1231	1.1285
50	3.8582	1.1709	1.1390	1.1110	1.1234	1.1246
51	3.6904	1.1734	1.1405	1.1115	1.1235	1.1211
52	3.5227	1.1760	1.1453	1.1139	1.1237	1.1175
53	3.3550	1.1777	1.1515	1.1179	1.1240	1.1139
54	3.1872	1.1796	1.1574	1.1221	1.1243	1.1118
55	3.0195	1.1873	1.1681	1.1276	1.1307	1.1170
56	2.8517	1.1999	1.1838	1.1368	1.1416	1.1294
57	2.6840	1.2139	1.2026	1.1506	1.1539	1.1426
58	2.5162	1.2278	1.2217	1.1651	1.1664	1.1558

*Distance from bottom of active core (feet)

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 1
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
-12/+9 AFD at 100% RTP (Continued)

		Burnup Step (MWD/MTU)				
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
59	2.3485	1.2437	1.2409	1.1793	1.1789	1.1688
60	2.1807	1.2630	1.2601	1.1935	1.1915	1.1815
61	2.0130	1.2818	1.2790	1.2073	1.2039	1.1939
62	1.8452	1.2996	1.2975	1.2207	1.2159	1.2058
63	1.6775	1.3166	1.3152	1.2334	1.2273	1.2170
64	1.5097	1.3324	1.3317	1.2451	1.2380	1.2274
65	1.3420	1.3468	1.3469	1.2556	1.2477	1.2368
66	1.1742	1.3592	1.3603	1.2646	1.2559	1.2448
67	1.0065	1.3686	1.3706	1.2710	1.2617	1.2501
68	0.8387	1.0000	1.0000	1.0000	1.0000	1.0000
69	0.6710	1.0000	1.0000	1.0000	1.0000	1.0000
70	0.5032	1.0000	1.0000	1.0000	1.0000	1.0000
71	0.3355	1.0000	1.0000	1.0000	1.0000	1.0000
72	0.1678	1.0000	1.0000	1.0000	1.0000	1.0000
73	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000

*Distance from bottom of active core (feet)

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 2
Deleted

TABLE 2 INTENTIONALLY DELETED.

Table 3
Part Power (74% RTP, 150 MWD/MTU) RAOC W(Z) Function
Millstone Unit 3 - Cycle 19

Mesh No	Height*	W(z)
1	12.0778	1.0000
2	11.9101	1.0000
3	11.7423	1.0000
4	11.5746	1.0000
5	11.4068	1.0000
6	11.2391	1.0000
7	11.0713	1.1210
8	10.9036	1.1026
9	10.7359	1.0894
10	10.5681	1.0796
11	10.4004	1.0694
12	10.2326	1.0614
13	10.0649	1.0558
14	9.8971	1.0510
15	9.7294	1.0469
16	9.5616	1.0447
17	9.3939	1.0443
18	9.2261	1.0456
19	9.0584	1.0492
20	8.8906	1.0553
21	8.7229	1.0658
22	8.5551	1.0763
23	8.3874	1.0854
24	8.2196	1.0934
25	8.0519	1.1002
26	7.8841	1.1061
27	7.7164	1.1108
28	7.5486	1.1143
29	7.3809	1.1169

*Distance from bottom of active core (feet)

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 3
Part Power (74% RTP, 150 MWD/MTU) RAOC W(Z) Function
Millstone Unit 3 - Cycle 19 (Continued)

Mesh No	Height*	W(z)
30	7.2132	1.1185
31	7.0454	1.1189
32	6.8777	1.1193
33	6.7099	1.1210
34	6.5422	1.1227
35	6.3744	1.1235
36	6.2067	1.1234
37	6.0389	1.1225
38	5.8712	1.1214
39	5.7034	1.1220
40	5.5357	1.1298
41	5.3679	1.1429
42	5.2002	1.1540
43	5.0324	1.1647
44	4.8647	1.1754
45	4.6969	1.1854
46	4.5292	1.1947
47	4.3614	1.2039
48	4.1937	1.2127
49	4.0259	1.2212
50	3.8582	1.2295
51	3.6904	1.2372
52	3.5227	1.2450
53	3.3550	1.2518
54	3.1872	1.2588
55	3.0195	1.2719
56	2.8517	1.2904
57	2.6840	1.3098
58	2.5162	1.3286
59	2.3485	1.3498

*Distance from bottom of active core (feet)

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 3
Part Power (74% RTP, 150 MWD/MTU) RAOC W(Z) Function
Millstone Unit 3 - Cycle 19 (Continued)

Mesh No	Height*	W(z)
60	2.1807	1.3748
61	2.0130	1.3995
62	1.8452	1.4233
63	1.6775	1.4465
64	1.5097	1.4686
65	1.3420	1.4896
66	1.1742	1.5088
67	1.0065	1.5253
68	0.8387	1.0000
69	0.6710	1.0000
70	0.5032	1.0000
71	0.3355	1.0000
72	0.1677	1.0000
73	0.0000	1.0000

*Distance from bottom of active core (feet)

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 4
Burnup Penalty for Incore
Millstone Unit 3 - Cycle 19*

Burnup (MWD/MTU)	Penalty
0	1.020
311	1.020
633	1.028
794	1.029
955	1.028
1276	1.024
1437	1.022
1598	1.020
3529	1.020
4173	1.021
4334	1.020

*Note: A Penalty of 1.020 shall be used outside of the burnup range shown in Table 4.

Table 5
Required Normal Operating Space Reductions for $F_Q(Z)$ Exceeding Its Non-Equilibrium Limits

Required Non-Equilibrium $F_Q(Z)$ Margin Improvement (%)	Required THERMAL POWER Limit (%RTP)	Required Negative Band AFD Reduction (%AFD)	Required Positive Band AFD Reduction (%AFD)
$\leq$ 1%	$\leq$ 97%	$\geq$ 2%	$\geq$ 4%
> 1% and $\leq$ 2%	$\leq$ 95%	$\geq$ 3%	$\geq$ 5%
> 2% and $\leq$ 3%	$\leq$ 93%	$\geq$ 4%	$\geq$ 6%
> 3%	$\leq$ 50%	N/A	N/A

Table 6
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 97% RTP for 1% Transient F_Q Margin Gain+

		Burnup Step (MWD/MTU)				
Mesh No.	Height*	150	4000	9000	11000	18000
1	12.0778	1.0000	1.0000	1.0000	1.0000	1.0000
2	11.9101	1.0000	1.0000	1.0000	1.0000	1.0000
3	11.7423	1.0000	1.0000	1.0000	1.0000	1.0000
4	11.5746	1.0000	1.0000	1.0000	1.0000	1.0000
5	11.4068	1.0000	1.0000	1.0000	1.0000	1.0000
6	11.2391	1.0000	1.0000	1.0000	1.0000	1.0000
7	11.0713	1.2162	1.2141	1.2503	1.2490	1.1762
8	10.9036	1.2016	1.2102	1.2494	1.2511	1.1716
9	10.7358	1.1842	1.2148	1.2461	1.2492	1.1637
10	10.5681	1.1660	1.2056	1.2423	1.2412	1.1594
11	10.4003	1.1488	1.1893	1.2375	1.2291	1.1587
12	10.2326	1.1324	1.1800	1.2299	1.2180	1.1585
13	10.0649	1.1148	1.1739	1.2198	1.2054	1.1564
14	9.8971	1.1043	1.1684	1.2086	1.1907	1.1523
15	9.7294	1.1024	1.1618	1.1976	1.1749	1.1468
16	9.5616	1.1009	1.1537	1.1887	1.1587	1.1411
17	9.3939	1.0970	1.1450	1.1820	1.1414	1.1351
18	9.2261	1.0915	1.1359	1.1752	1.1246	1.1290
19	9.0584	1.0867	1.1257	1.1656	1.1159	1.1251
20	8.8906	1.0841	1.1194	1.1577	1.1128	1.1211
21	8.7229	1.0835	1.1191	1.1549	1.1105	1.1169
22	8.5551	1.0866	1.1161	1.1507	1.1103	1.1203
23	8.3874	1.0910	1.1107	1.1443	1.1106	1.1292
24	8.2196	1.0932	1.1057	1.1375	1.1104	1.1354
25	8.0519	1.0977	1.1013	1.1314	1.1129	1.1408
26	7.8841	1.1025	1.1002	1.1271	1.1169	1.1455

*Distance from bottom of active core (feet)

+W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 6
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 97% RTP for 1% Transient F_Q Margin Gain$^+$ (Continued)

		Burnup Step (MWD/MTU)				
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
27	7.7164	1.1056	1.1031	1.1243	1.1190	1.1490
28	7.5486	1.1083	1.1050	1.1205	1.1199	1.1514
29	7.3809	1.1111	1.1053	1.1168	1.1198	1.1526
30	7.2131	1.1139	1.1048	1.1144	1.1185	1.1526
31	7.0454	1.1155	1.1033	1.1108	1.1162	1.1515
32	6.8777	1.1158	1.1009	1.1056	1.1129	1.1491
33	6.7099	1.1149	1.0976	1.0994	1.1086	1.1457
34	6.5422	1.1130	1.0941	1.0914	1.1032	1.1422
35	6.3744	1.1101	1.0907	1.0842	1.0976	1.1388
36	6.2067	1.1063	1.0871	1.0797	1.0924	1.1352
37	6.0389	1.1014	1.0825	1.0764	1.0865	1.1316
38	5.8712	1.0964	1.0777	1.0745	1.0806	1.1277
39	5.7034	1.0930	1.0743	1.0743	1.0766	1.1239
40	5.5357	1.0931	1.0741	1.0734	1.0769	1.1216
41	5.3679	1.0947	1.0766	1.0729	1.0789	1.1209
42	5.2002	1.1002	1.0803	1.0732	1.0795	1.1207
43	5.0324	1.1053	1.0835	1.0732	1.0796	1.1195
44	4.8647	1.1096	1.0867	1.0727	1.0797	1.1177
45	4.6969	1.1136	1.0906	1.0719	1.0799	1.1159
46	4.5292	1.1172	1.0942	1.0710	1.0800	1.1137
47	4.3614	1.1204	1.0973	1.0709	1.0799	1.1108
48	4.1937	1.1232	1.1001	1.0720	1.0799	1.1074
49	4.0259	1.1257	1.1025	1.0725	1.0801	1.1035
50	3.8582	1.1279	1.1047	1.0744	1.0802	1.0993
51	3.6904	1.1298	1.1074	1.0792	1.0801	1.0947
52	3.5227	1.1314	1.1123	1.0838	1.0803	1.0900

*Distance from bottom of active core (feet)

$^+$W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 6
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 97% RTP for 1% Transient F_Q Margin Gain$^+$ (Continued)

		Burnup Step (MWD/MTU)				
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
53	3.3550	1.1347	1.1176	1.0878	1.0808	1.0860
54	3.1872	1.1411	1.1222	1.0916	1.0813	1.0843
55	3.0195	1.1481	1.1293	1.0951	1.0866	1.0898
56	2.8517	1.1570	1.1418	1.0988	1.0963	1.1011
57	2.6840	1.1697	1.1597	1.1043	1.1084	1.1115
58	2.5162	1.1859	1.1781	1.1147	1.1207	1.1219
59	2.3485	1.2033	1.1960	1.1280	1.1330	1.1326
60	2.1807	1.2199	1.2142	1.1411	1.1454	1.1431
61	2.0130	1.2360	1.2321	1.1541	1.1575	1.1535
62	1.8452	1.2516	1.2495	1.1668	1.1694	1.1636
63	1.6775	1.2663	1.2662	1.1789	1.1806	1.1732
64	1.5097	1.2800	1.2818	1.1902	1.1911	1.1822
65	1.3420	1.2929	1.2960	1.2005	1.2006	1.1904
66	1.1742	1.3042	1.3085	1.2092	1.2086	1.1973
67	1.0065	1.3125	1.3181	1.2155	1.2142	1.2019
68	0.8387	1.0000	1.0000	1.0000	1.0000	1.0000
69	0.6710	1.0000	1.0000	1.0000	1.0000	1.0000
70	0.5032	1.0000	1.0000	1.0000	1.0000	1.0000
71	0.3355	1.0000	1.0000	1.0000	1.0000	1.0000
72	0.1678	1.0000	1.0000	1.0000	1.0000	1.0000
73	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000

*Distance from bottom of active core (feet)

$^+$W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 7
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 95% RTP for 2% Transient F_Q Margin Gain+

		Burnup Step (MWD/MTU)				
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
1	12.0778	1.0000	1.0000	1.0000	1.0000	1.0000
2	11.9101	1.0000	1.0000	1.0000	1.0000	1.0000
3	11.7423	1.0000	1.0000	1.0000	1.0000	1.0000
4	11.5746	1.0000	1.0000	1.0000	1.0000	1.0000
5	11.4068	1.0000	1.0000	1.0000	1.0000	1.0000
6	11.2391	1.0000	1.0000	1.0000	1.0000	1.0000
7	11.0713	1.2125	1.2109	1.2412	1.1669	1.1687
8	10.9036	1.1974	1.2071	1.2401	1.1702	1.1660
9	10.7358	1.1800	1.2119	1.2361	1.1713	1.1603
10	10.5681	1.1617	1.2036	1.2313	1.1693	1.1530
11	10.4003	1.1439	1.1856	1.2251	1.1663	1.1444
12	10.2326	1.1273	1.1689	1.2159	1.1647	1.1364
13	10.0649	1.1120	1.1517	1.2041	1.1620	1.1345
14	9.8971	1.0962	1.1377	1.1912	1.1567	1.1336
15	9.7294	1.0795	1.1297	1.1780	1.1482	1.1284
16	9.5616	1.0643	1.1214	1.1669	1.1403	1.1235
17	9.3939	1.0551	1.1094	1.1558	1.1313	1.1172
18	9.2261	1.0507	1.0944	1.1441	1.1195	1.1084
19	9.0584	1.0449	1.0832	1.1308	1.1092	1.1035
20	8.8906	1.0439	1.0771	1.1239	1.1021	1.1027
21	8.7229	1.0528	1.0747	1.1236	1.0983	1.1046
22	8.5551	1.0623	1.0748	1.1210	1.0965	1.1103
23	8.3874	1.0685	1.0749	1.1159	1.0955	1.1173
24	8.2196	1.0714	1.0748	1.1111	1.0948	1.1230
25	8.0519	1.0732	1.0775	1.1027	1.0968	1.1278
26	7.8841	1.0757	1.0816	1.0952	1.1003	1.1318

*Distance from bottom of active core (feet)

+W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 7
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 95% RTP for 2% Transient F_Q Margin Gain$^+$ (Continued)

		Burnup Step (MWD/MTU)				
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
27	7.7164	1.0793	1.0839	1.0928	1.1019	1.1346
28	7.5486	1.0820	1.0851	1.0910	1.1023	1.1362
29	7.3809	1.0848	1.0853	1.0881	1.1016	1.1366
30	7.2131	1.0884	1.0846	1.0846	1.0999	1.1359
31	7.0454	1.0907	1.0828	1.0802	1.0971	1.1341
32	6.8777	1.0916	1.0802	1.0753	1.0933	1.1309
33	6.7099	1.0914	1.0767	1.0703	1.0886	1.1267
34	6.5422	1.0901	1.0727	1.0659	1.0827	1.1228
35	6.3744	1.0878	1.0691	1.0620	1.0766	1.1187
36	6.2067	1.0846	1.0661	1.0585	1.0710	1.1140
37	6.0389	1.0804	1.0623	1.0558	1.0653	1.1100
38	5.8712	1.0764	1.0583	1.0547	1.0600	1.1064
39	5.7034	1.0739	1.0556	1.0548	1.0569	1.1032
40	5.5357	1.0731	1.0555	1.0544	1.0576	1.1013
41	5.3679	1.0736	1.0578	1.0541	1.0598	1.1007
42	5.2002	1.0789	1.0613	1.0548	1.0607	1.1005
43	5.0324	1.0838	1.0645	1.0550	1.0611	1.0994
44	4.8647	1.0877	1.0669	1.0550	1.0611	1.0973
45	4.6969	1.0914	1.0690	1.0550	1.0607	1.0945
46	4.5292	1.0947	1.0730	1.0564	1.0600	1.0910
47	4.3614	1.0976	1.0780	1.0588	1.0590	1.0868
48	4.1937	1.1001	1.0825	1.0606	1.0577	1.0822
49	4.0259	1.1024	1.0866	1.0622	1.0568	1.0770
50	3.8582	1.1045	1.0905	1.0636	1.0562	1.0715
51	3.6904	1.1063	1.0940	1.0649	1.0558	1.0659
52	3.5227	1.1078	1.0972	1.0661	1.0555	1.0608

*Distance from bottom of active core (feet)

$^+$W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 7
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 95% RTP for 2% Transient F_Q Margin Gain$^+$ (Continued)

		Burnup Step (MWD/MTU)				
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
53	3.3550	1.1097	1.1001	1.0674	1.0555	1.0568
54	3.1872	1.1140	1.1027	1.0690	1.0579	1.0548
55	3.0195	1.1238	1.1055	1.0715	1.0649	1.0601
56	2.8517	1.1379	1.1140	1.0758	1.0755	1.0717
57	2.6840	1.1538	1.1313	1.0834	1.0877	1.0829
58	2.5162	1.1703	1.1493	1.0948	1.0999	1.0940
59	2.3485	1.1869	1.1664	1.1078	1.1120	1.1052
60	2.1807	1.2032	1.1839	1.1202	1.1240	1.1160
61	2.0130	1.2190	1.2012	1.1322	1.1356	1.1266
62	1.8452	1.2342	1.2179	1.1439	1.1468	1.1367
63	1.6775	1.2486	1.2339	1.1550	1.1574	1.1464
64	1.5097	1.2619	1.2489	1.1652	1.1671	1.1552
65	1.3420	1.2740	1.2626	1.1743	1.1758	1.1631
66	1.1742	1.2842	1.2745	1.1819	1.1830	1.1697
67	1.0065	1.2916	1.2836	1.1868	1.1875	1.1735
68	0.8387	1.0000	1.0000	1.0000	1.0000	1.0000
69	0.6710	1.0000	1.0000	1.0000	1.0000	1.0000
70	0.5032	1.0000	1.0000	1.0000	1.0000	1.0000
71	0.3355	1.0000	1.0000	1.0000	1.0000	1.0000
72	0.1678	1.0000	1.0000	1.0000	1.0000	1.0000
73	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000

*Distance from bottom of active core (feet)

$^+$W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 8
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 93% RTP for 3% Transient F_Q Margin Gain+

		Burnup Step (MWD/MTU)				
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
1	12.0778	1.0000	1.0000	1.0000	1.0000	1.0000
2	11.9101	1.0000	1.0000	1.0000	1.0000	1.0000
3	11.7423	1.0000	1.0000	1.0000	1.0000	1.0000
4	11.5746	1.0000	1.0000	1.0000	1.0000	1.0000
5	11.4068	1.0000	1.0000	1.0000	1.0000	1.0000
6	11.2391	1.0000	1.0000	1.0000	1.0000	1.0000
7	11.0713	1.1322	1.2092	1.2311	1.1379	1.1660
8	10.9036	1.1204	1.2059	1.2275	1.1396	1.1636
9	10.7358	1.1072	1.2094	1.2204	1.1397	1.1580
10	10.5681	1.0945	1.2010	1.2121	1.1364	1.1509
11	10.4003	1.0830	1.1835	1.2018	1.1317	1.1413
12	10.2326	1.0724	1.1671	1.1879	1.1282	1.1305
13	10.0649	1.0619	1.1501	1.1710	1.1232	1.1269
14	9.8971	1.0531	1.1362	1.1512	1.1173	1.1260
15	9.7294	1.0477	1.1279	1.1310	1.1117	1.1219
16	9.5616	1.0451	1.1192	1.1185	1.1072	1.1180
17	9.3939	1.0427	1.1068	1.1144	1.1022	1.1127
18	9.2261	1.0382	1.0913	1.1145	1.0952	1.1047
19	9.0584	1.0354	1.0780	1.1152	1.0887	1.0986
20	8.8906	1.0353	1.0697	1.1161	1.0852	1.0911
21	8.7229	1.0446	1.0664	1.1173	1.0844	1.0817
22	8.5551	1.0532	1.0654	1.1149	1.0825	1.0819
23	8.3874	1.0583	1.0645	1.1108	1.0788	1.0869
24	8.2196	1.0602	1.0633	1.1067	1.0747	1.0896
25	8.0519	1.0609	1.0649	1.0992	1.0713	1.0954
26	7.8841	1.0623	1.0681	1.0907	1.0699	1.1024

*Distance from bottom of active core (feet)

+W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 8
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 93% RTP for 3% Transient F_Q Margin Gain$^+$ (Continued)

		Burnup Step (MWD/MTU)				
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
27	7.7164	1.0651	1.0694	1.0828	1.0698	1.1072
28	7.5486	1.0668	1.0695	1.0719	1.0690	1.1107
29	7.3809	1.0687	1.0688	1.0634	1.0685	1.1130
30	7.2131	1.0713	1.0671	1.0615	1.0692	1.1139
31	7.0454	1.0727	1.0644	1.0595	1.0688	1.1135
32	6.8777	1.0727	1.0608	1.0560	1.0669	1.1119
33	6.7099	1.0716	1.0564	1.0519	1.0640	1.1090
34	6.5422	1.0695	1.0518	1.0468	1.0601	1.1049
35	6.3744	1.0663	1.0474	1.0416	1.0553	1.0997
36	6.2067	1.0621	1.0434	1.0373	1.0495	1.0938
37	6.0389	1.0576	1.0396	1.0341	1.0427	1.0880
38	5.8712	1.0542	1.0362	1.0327	1.0375	1.0832
39	5.7034	1.0522	1.0340	1.0327	1.0353	1.0800
40	5.5357	1.0499	1.0364	1.0323	1.0362	1.0786
41	5.3679	1.0498	1.0420	1.0319	1.0389	1.0785
42	5.2002	1.0537	1.0461	1.0324	1.0406	1.0789
43	5.0324	1.0576	1.0497	1.0323	1.0418	1.0784
44	4.8647	1.0607	1.0530	1.0321	1.0426	1.0769
45	4.6969	1.0635	1.0558	1.0326	1.0430	1.0747
46	4.5292	1.0656	1.0582	1.0329	1.0430	1.0718
47	4.3614	1.0683	1.0604	1.0328	1.0427	1.0682
48	4.1937	1.0729	1.0622	1.0326	1.0421	1.0641
49	4.0259	1.0777	1.0634	1.0333	1.0412	1.0594
50	3.8582	1.0821	1.0654	1.0357	1.0406	1.0546
51	3.6904	1.0862	1.0694	1.0394	1.0407	1.0509
52	3.5227	1.0904	1.0739	1.0428	1.0427	1.0504

*Distance from bottom of active core (feet)

$^+$W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 8
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 93% RTP for 3% Transient F_Q Margin Gain[+] (Continued)

		Burnup Step (MWD/MTU)				
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
53	3.3550	1.0953	1.0784	1.0458	1.0454	1.0504
54	3.1872	1.1007	1.0825	1.0486	1.0476	1.0503
55	3.0195	1.1049	1.0852	1.0524	1.0520	1.0513
56	2.8517	1.1111	1.0904	1.0595	1.0587	1.0544
57	2.6840	1.1229	1.1022	1.0706	1.0665	1.0656
58	2.5162	1.1390	1.1189	1.0829	1.0743	1.0770
59	2.3485	1.1565	1.1373	1.0951	1.0819	1.0873
60	2.1807	1.1733	1.1549	1.1073	1.0893	1.0978
61	2.0130	1.1895	1.1722	1.1191	1.0966	1.1080
62	1.8452	1.2052	1.1889	1.1306	1.1035	1.1177
63	1.6775	1.2201	1.2048	1.1414	1.1099	1.1270
64	1.5097	1.2338	1.2195	1.1513	1.1156	1.1354
65	1.3420	1.2462	1.2329	1.1603	1.1207	1.1430
66	1.1742	1.2568	1.2444	1.1677	1.1245	1.1493
67	1.0065	1.2643	1.2527	1.1724	1.1263	1.1529
68	0.8387	1.0000	1.0000	1.0000	1.0000	1.0000
69	0.6710	1.0000	1.0000	1.0000	1.0000	1.0000
70	0.5032	1.0000	1.0000	1.0000	1.0000	1.0000
71	0.3355	1.0000	1.0000	1.0000	1.0000	1.0000
72	0.1678	1.0000	1.0000	1.0000	1.0000	1.0000
73	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000

*Distance from bottom of active core (feet)

[+]W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

3.0 Analytical Methods

The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents.

3.1 WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 (Westinghouse Proprietary).

Methodology for Specifications:

- 2.1.1 Reactor Core Safety Limits
- 3.1.1.1.1 SHUTDOWN MARGIN – MODES 1 AND 2
- 3.1.1.1.2 SHUTDOWN MARGIN – MODES 3, 4, and 5 Loops Filled
- 3.1.1.2 SHUTDOWN MARGIN – Cold Shutdown – Loops Not Filled
- 3.1.1.3 Moderator Temperature Coefficient
- 3.1.3.5 Shutdown Rod Insertion Limit
- 3.1.3.6 Control Rod Insertion Limits
- 3.2.1.1 AXIAL FLUX DIFFERENCE
- 3.2.2.1 Heat Flux Hot Channel Factor
- 3.2.3.1 RCS Total Flow Rate, Nuclear Enthalpy Rise Hot Channel Factor
- 3.2.5 DNB Parameters
- 3.3.5 Shutdown Margin Monitor
- 3.9.1.1 REFUELING Boron Concentration

3.2 WCAP-10216-P-A-R1A, "Relaxation of Constant Axial Offset Control F_Q Surveillance Technical Specification," Rev. 1, February 1994 (Westinghouse Proprietary).

Methodology for Specifications:

- 3.2.1.1 AXIAL FLUX DIFFERENCE
- 3.2.2.1 Heat Flux Hot Channel Factor

3.3 WCAP-12945-P-A, Volume 1 (Revision 2) and Volumes 2 through 5 (Revision 1), "Code Qualification Document for Best Estimate LOCA Analysis," March 1998 (Westinghouse Proprietary).

Methodology for Specification:

- 3.2.2.1 Heat Flux Hot Channel Factor

3.4 WCAP-16009-P-A, "Realistic Large-Break LOCA Evaluation Methodology Using the Automated Statistical Treatment of Uncertainty Method (ASTRUM)," January 2005 (Westinghouse Proprietary).

Methodology for Specification:

- 3.2.2.1 Heat Flux Hot Channel Factor

3.5 WCAP-11946, "Safety Evaluation Supporting a More Negative EOL Moderator Temperature Coefficient Technical Specification for the Millstone Nuclear Power Station Unit 3," September 1988 (Westinghouse Proprietary).

Methodology for Specification:

- 3.1.1.3 Moderator Temperature Coefficient

3.6 WCAP-10054-P-A, "Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code," August 1985 (Westinghouse Proprietary).

Methodology for Specification

- 3.2.2.1 Heat Flux Hot Channel Factor

3.7 WCAP-10079-P-A, "NOTRUMP - A Nodal Transient Small Break and General Network Code," August 1985 (Westinghouse Proprietary).

Methodology for Specification:

- 3.2.2.1 Heat Flux Hot Channel Factor.

3.8 WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Report," April 1995 (Westinghouse Proprietary).

Methodology for Specification:

- 3.2.2.1 Heat Flux Hot Channel Factor.

3.9 WCAP-8301, "LOCTA-IV Program: Loss-of Coolant Transient Analysis," June 1974 (Westinghouse Proprietary).

Methodology for Specification:

- 3.2.2.1 Heat Flux Hot Channel Factor.

3.10 WCAP-10054-P-A, Addendum 2, Revision 1, "Addendum to the Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code: Safety Injection into the Broken Loop and COSI Condensation Model," July 1997 (Westinghouse Proprietary).

Methodology for Specification:

- 3.2.2.1 Heat Flux Hot Channel Factor

3.11 WCAP-8745-P-A, "Design Bases for the Thermal Overpower ΔT and Thermal Overtemperature ΔT Trip Functions," September 1986 (Westinghouse Proprietary).

Methodology for Specification:

- 2.2.1 Overtemperature ΔT and Overpower ΔT Setpoints

3.12 WCAP-12610-P-A & CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO™," July 2006 (Westinghouse Proprietary).

Methodology for Specification:

- 3.2.2.1 Heat Flux Hot Channel Factor