SOUTH CAROLINA ELECTRIC & GAS COMPANY

VIRGIL C. SUMMER NUCLEAR STATION

CORE OPERATING LIMITS REPORT

FOR

CYCLE 12

REVISION 3

OCTOBER 1999

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1.0 Core Operating Limits Report

This Core Operating Limits Report (COLR) for V. C. Summer Station Cycle 12 has been prepared in accordance with the requirements of Technical Specification 6.9.1.11.

The Technical Specifications affected by this report are listed below:

3.1.1.3	Moderator Temperature Coefficient
3.1.3.5	Shutdown Rod Insertion Limits
3.1.3.6	Control Rod Insertion Limits
3.2.1	Axial Flux Difference
3.2.2	Heat Flux Hot Channel Factor
3.2.3	RCS Flow Rate and Nuclear Enthalpy Rise Hot Channel Factor
3.3.3.11	Power Distribution Measurement Uncertainty

2.0 Operating Limits

The cycle-specific parameter limits for the specifications listed in Section 1.0 are presented in the subsections which follow. These limits have been developed using the NRC-approved methodologies specified in Technical Specification 6.9.1.11.

2.1 Moderator Temperature Coefficient (Specification 3.1.1.3):

2.1.1 The Moderator Temperature Coefficient (MTC) limits are:
The BOL/ARO-MTC shall be less positive than the limits shown in Figure 1.
The EOL/ARO/RTP-MTC shall be less negative than -5×10^{-4} $\Delta k/k/^{\circ}F$.

2.1.2 The MTC Surveillance limit is:
The 300 ppm/ARO/RTP-MTC should be less negative than or equal to -4.1×10^{-4} $\Delta k/k/^{\circ}F$
where: BOL stands for Beginning of Cycle Life
ARO stands for All Rods Out
RTP stands for RATED THERMAL POWER
EOL stands for End of Cycle Life

2.2 Shutdown Rod Insertion Limits (Specification 3.1.3.5):

The shutdown rods shall be withdrawn to at least 228 steps.

2.3 Control Rod Insertion Limits (Specification 3.1.3.6):

The Control Bank Insertion Limits are specified by Figure 2.

2.4 Axial Flux Difference (Specification 3.2.1):

2.4.1 The Axial Flux Difference (AFD) Limits for RAOC operation for Cycle 12 are shown in Figure 3.

2.4.2 The Axial Flux Difference (AFD) target band during base load operations for Cycle12 is:
BOL - EOL (0 - 23,320 MWD/MTU): ±5% about a measured target value.

2.4.3 The minimum allowable power level for base load operation, APL^{ND}, is 85% of RATED THERMAL POWER.

2.5 Heat Flux Hot Channel Factor - $F_Q(z)$ (Specification 3.2.2):

$$F_Q(z) \leq \frac{F_Q^{RTP}}{P} \times K(z) \qquad \text{for } P > 0.5$$

$$F_Q(z) \leq \frac{F_Q^{RTP}}{0.5} \times K(z) \qquad \text{for } P \leq 0.5$$

where: $P = \dfrac{\text{Thermal Power}}{\text{Rated Thermal Power}}$

2.5.1 $F_Q^{RTP} = 2.40$

2.5.2 K(z) is provided in Figure 4

2.5.3 Elevation dependent W(z) values for RAOC operation at 150, 800, 6,000, 10,000, and 20,000 MWD/MTU are shown in Figures 5 through 9, respectively. This information is sufficient to determine W(z) versus core height in the range of 0 MWD/MTU to EOL burnup through the use of three point interpolation.

2.5.4 Elevation dependent $W(z)_{BL}$ values for base load operation between 85 and 100% of rated thermal power with the item 2.4.2 specified target band about a measured target value at 150, 3,400, 6,000, 10,000, and 20,000 MWD/MTU are shown in Figures 10 through 14, respectively. This information is sufficient to determine $W(z)_{BL}$ versus core height for burnups in the range of 0 MWD/MTU to EOL burnup through the use of three point interpolation.

2.6 RCS Flow Rate and Nuclear Enthalpy Rise Hot Channel Factor - $F_{\Delta H}^{N}$ (Specification 3.2.3):

$$R = \frac{F_{\Delta H}^{N}}{F_{\Delta H}^{RTP} \times \left(1 + PF_{\Delta H}^{N} \times (1 - P)\right)}$$

where: $P = \dfrac{\text{Thermal Power}}{\text{Rated Thermal Power}}$

2.6.1 $F_{\Delta H}^{RTP} = 1.62$

2.6.1 $PF_{\Delta H} = 0.3$

2.6.3 The Acceptable Operation Region from the combination of Reactor Coolant System total flow and R is provided in Figure 15.

2.7 Power Distribution Measurement Uncertainty (Specifications 3.2.2 and 3.2.3):

If the Power Distribution Monitoring System is OPERABLE, as defined in Technical Specification 3.3.3.11, the uncertainty, $U_{F\Delta H}$, to be applied to the Nuclear Enthalpy Rise Hot Channel Factor $F^N_{\Delta H}$ shall be calculated by the following formula

$$U_{F\Delta H} = 1.0 + \frac{U_{\Delta H}}{100.0}$$

where: $U_{\Delta H}$ = Uncertainty for enthalpy rise as defined in equation (5-19) in Reference 1.

If the Power Distribution Monitoring System is OPERABLE, as defined in Techincal Specification 3.3.3.11, the uncertainty, U_{FQ}, to be applied to the Heat Flux Hot Channel Factor $F_Q(z)$ shall be calculated by the following formula

$$U_{FQ} = \left(1.0 + \frac{U_Q}{100.0}\right) \cdot U_e$$

where: U_Q = Uncertainty for power peaking factor as defined in equation (5-19) in Reference 1.

U_e = Engineering uncertainty factor.

= 1.03

If the Power Distribution Monitoring System is INOPERABLE, as defined in Technical Specification 3.3.3.11, the uncertainty, $U_{F\Delta H}$, to be applied to the Nuclear Enthalpy Rise Hot Channel Factor $F^N_{\Delta H}$ shall be calculated by the following formula

$$U_{F\Delta H} = U_{F\Delta Hm}$$

where: $U_{F\Delta Hm}$ = Base $F_{\Delta H}$ measurement uncertainty.

= 1.04

If the Power Distribution Monitoring System is INOPERABLE, as defined in Technical Specification 3.3.3.11, the uncertainty, U_{FQ}, to be applied to the Heat Flux Hot Channel Factor $F_Q(z)$ shall be calculated by the following formula

$$U_{FQ} = U_{qu} \cdot U_e$$

where: U_{qu} = Base F_Q measurement uncertainty.

= 1.05

U_e = Engineering uncertainty factor.

= 1.03

3.0 References

1) WCAP-12473-A (Non-Proprietary), "BEACON Core Monitoring and Operations Support System", August, 1994.

Figure 1. Moderator Temperature Coefficient Versus Power Level
V.C. Summer - Cycle 12

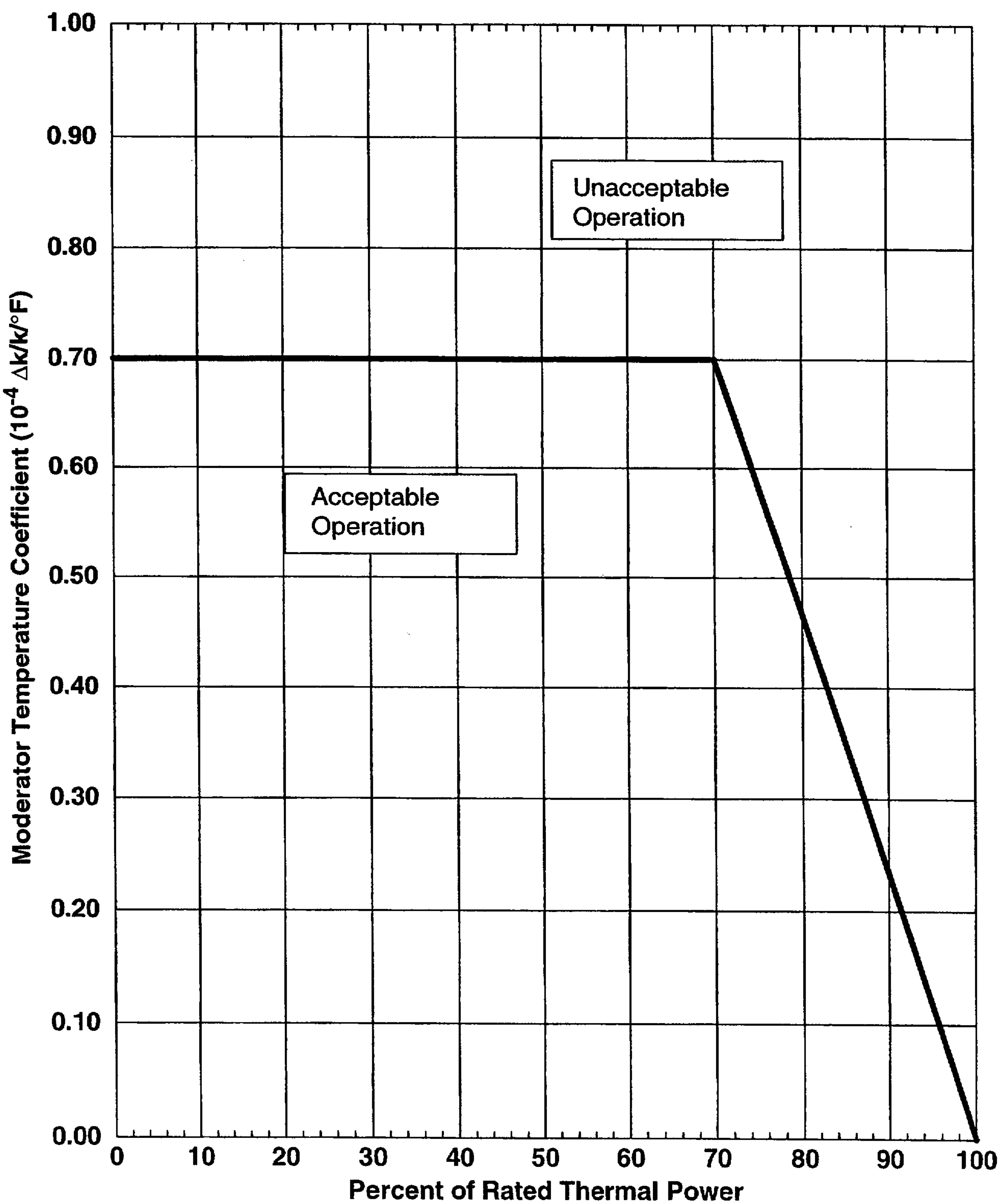


Figure 2. Rod Group Insertion Limits Versus Thermal Power for Three Loop Operation V. C. Summer - Cycle 12

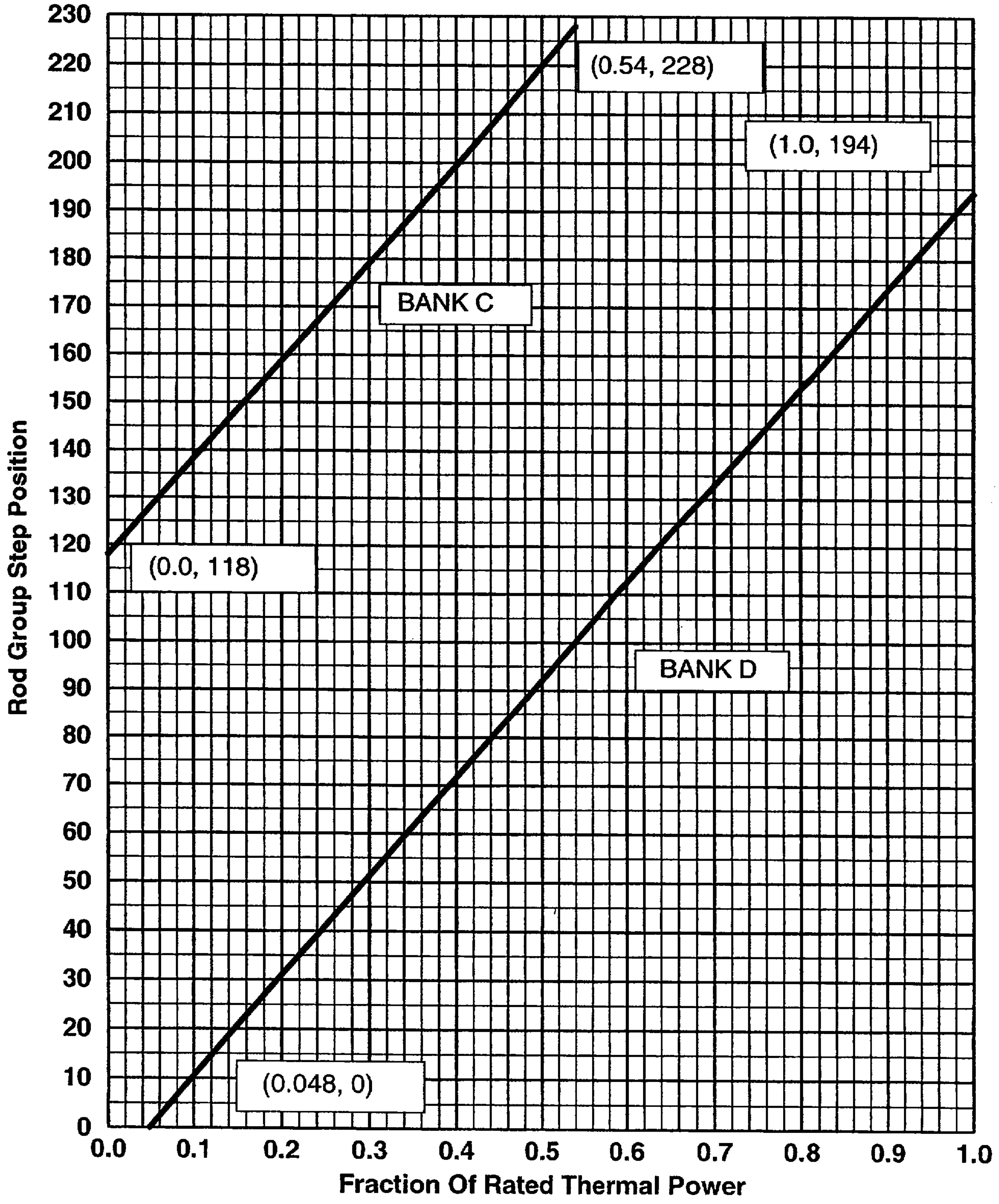


Figure 3. Axial Flux Difference Limits as a Function of Rated Thermal Power V. C. Summer - Cycle 12

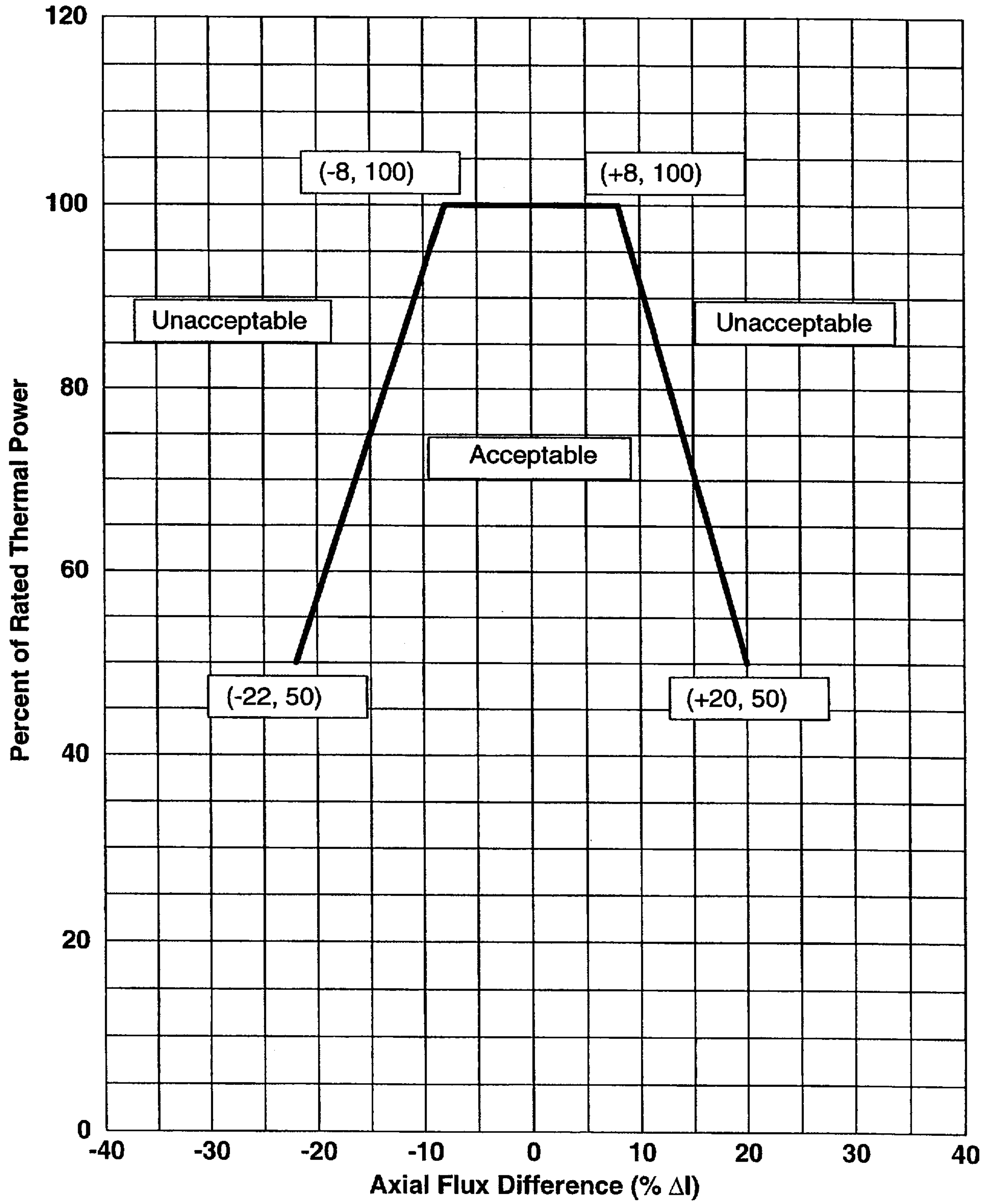


Figure 4. K(z) - Normalized $F_Q(z)$ as a Function of Core Height
V. C. Summer - Cycle 12

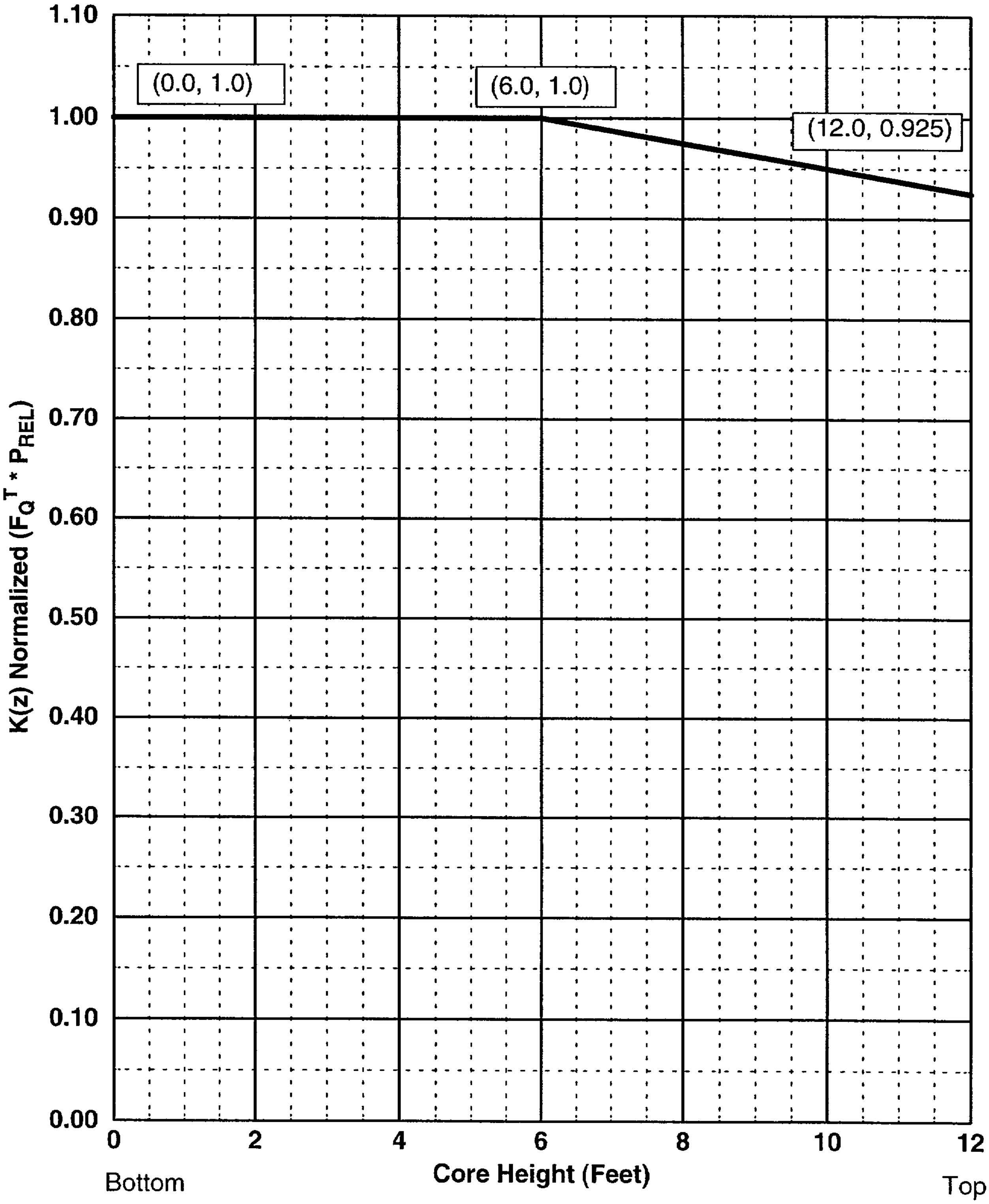


Figure 5. RAOC W(z) at 150 MWD/MTU
V. C. Summer - Cycle 12

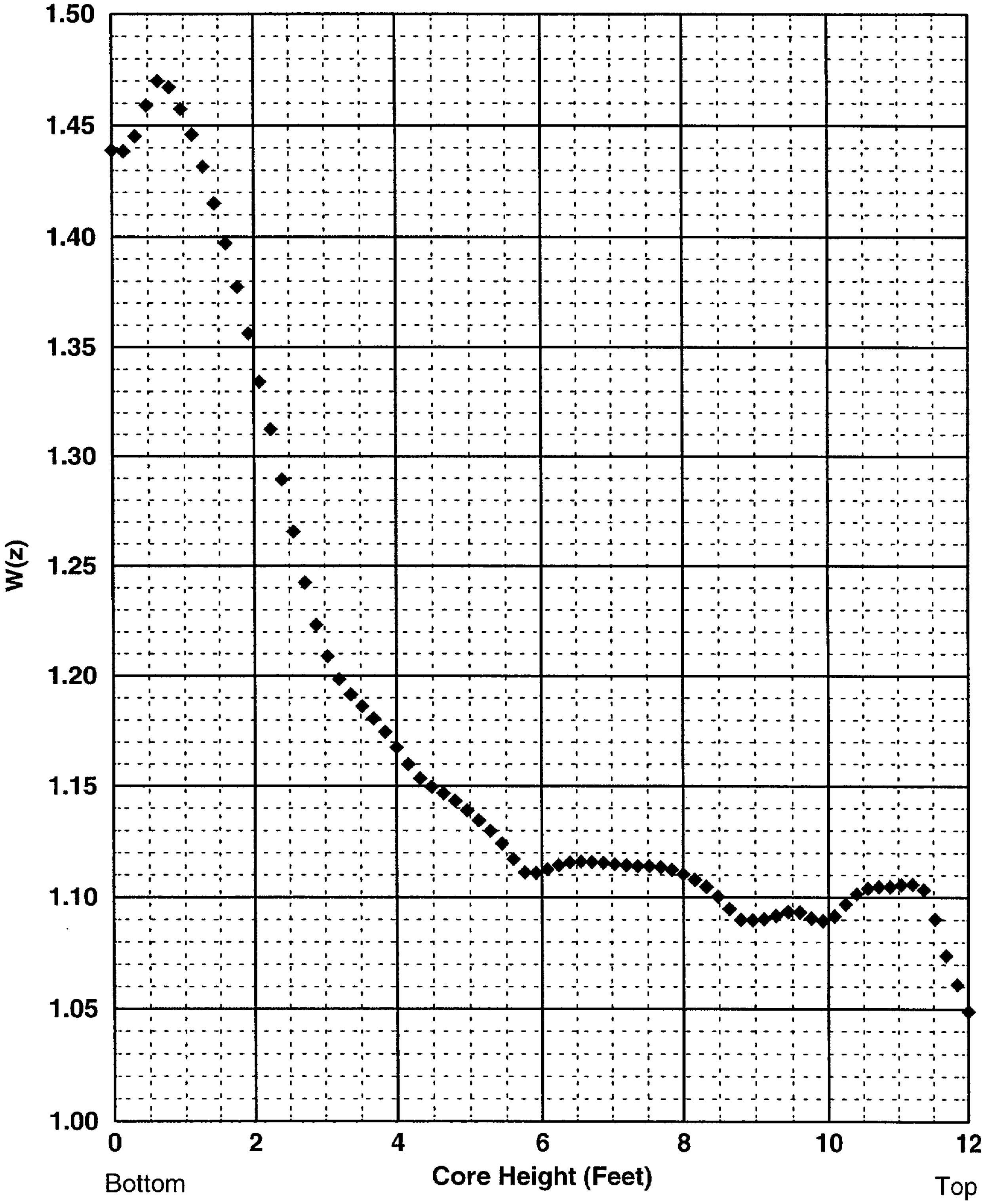


Table 1. RAOC W(z) at 150 MWD/MTU
V. C. Summer - Cycle 12

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.4389	6.08	1.1125
0.16	1.4385	6.24	1.1143
0.32	1.4452	6.40	1.1156
0.48	1.4590	6.56	1.1160
0.64	1.4700	6.72	1.1159
0.80	1.4671	6.88	1.1155
0.96	1.4574	7.04	1.1149
1.12	1.4460	7.20	1.1143
1.28	1.4316	7.36	1.1139
1.44	1.4151	7.52	1.1139
1.60	1.3971	7.68	1.1135
1.76	1.3774	7.84	1.1123
1.92	1.3562	8.00	1.1103
2.08	1.3343	8.16	1.1079
2.24	1.3122	8.32	1.1048
2.40	1.2894	8.48	1.1004
2.56	1.2656	8.64	1.0947
2.72	1.2424	8.80	1.0900
2.88	1.2231	8.96	1.0899
3.04	1.2088	9.12	1.0904
3.20	1.1985	9.28	1.0918
3.36	1.1916	9.44	1.0935
3.52	1.1862	9.60	1.0933
3.68	1.1807	9.76	1.0907
3.84	1.1746	9.92	1.0895
4.00	1.1675	10.08	1.0916
4.16	1.1599	10.24	1.0969
4.32	1.1535	10.40	1.1016
4.48	1.1496	10.56	1.1041
4.64	1.1468	10.72	1.1048
4.80	1.1433	10.88	1.1048
4.96	1.1390	11.04	1.1056
5.12	1.1345	11.20	1.1059
5.28	1.1298	11.36	1.1035
5.44	1.1241	11.52	1.0903
5.60	1.1171	11.68	1.0740
5.76	1.1111	11.84	1.0610
5.92	1.1109	12.00	1.0490

Figure 6. RAOC W(z) at 800 MWD/MTU
V. C. Summer - Cycle 12

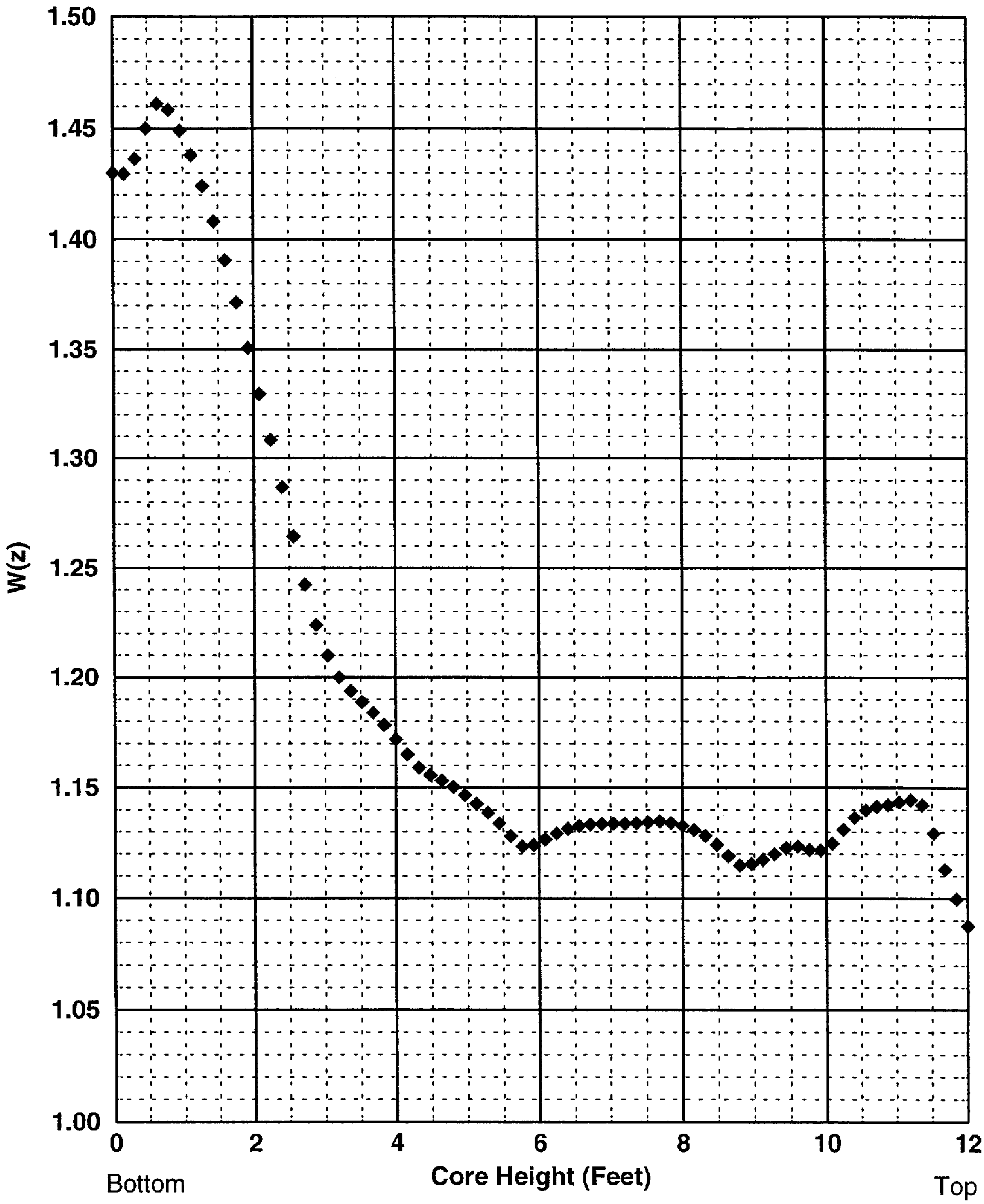


Table 2. RAOC W(z) at 800 MWD/MTU
V. C. Summer - Cycle 12

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.4299	6.08	1.1266
0.16	1.4295	6.24	1.1292
0.32	1.4363	6.40	1.1313
0.48	1.4500	6.56	1.1326
0.64	1.4611	6.72	1.1333
0.80	1.4584	6.88	1.1336
0.96	1.4490	7.04	1.1337
1.12	1.4379	7.20	1.1337
1.28	1.4240	7.36	1.1339
1.44	1.4080	7.52	1.1344
1.60	1.3905	7.68	1.1347
1.76	1.3714	7.84	1.1340
1.92	1.3507	8.00	1.1326
2.08	1.3296	8.16	1.1308
2.24	1.3084	8.32	1.1282
2.40	1.2868	8.48	1.1242
2.56	1.2643	8.64	1.1191
2.72	1.2424	8.80	1.1148
2.88	1.2238	8.96	1.1155
3.04	1.2099	9.12	1.1173
3.20	1.2000	9.28	1.1199
3.36	1.1937	9.44	1.1226
3.52	1.1888	9.60	1.1234
3.68	1.1839	9.76	1.1218
3.84	1.1783	9.92	1.1216
4.00	1.1719	10.08	1.1247
4.16	1.1650	10.24	1.1310
4.32	1.1591	10.40	1.1365
4.48	1.1557	10.56	1.1399
4.64	1.1532	10.72	1.1415
4.80	1.1503	10.88	1.1423
4.96	1.1466	11.04	1.1436
5.12	1.1427	11.20	1.1444
5.28	1.1387	11.36	1.1422
5.44	1.1338	11.52	1.1292
5.60	1.1280	11.68	1.1129
5.76	1.1233	11.84	1.0997
5.92	1.1240	12.00	1.0876

Figure 7. RAOC W(z) at 6000 MWD/MTU
V. C. Summer - Cycle 12

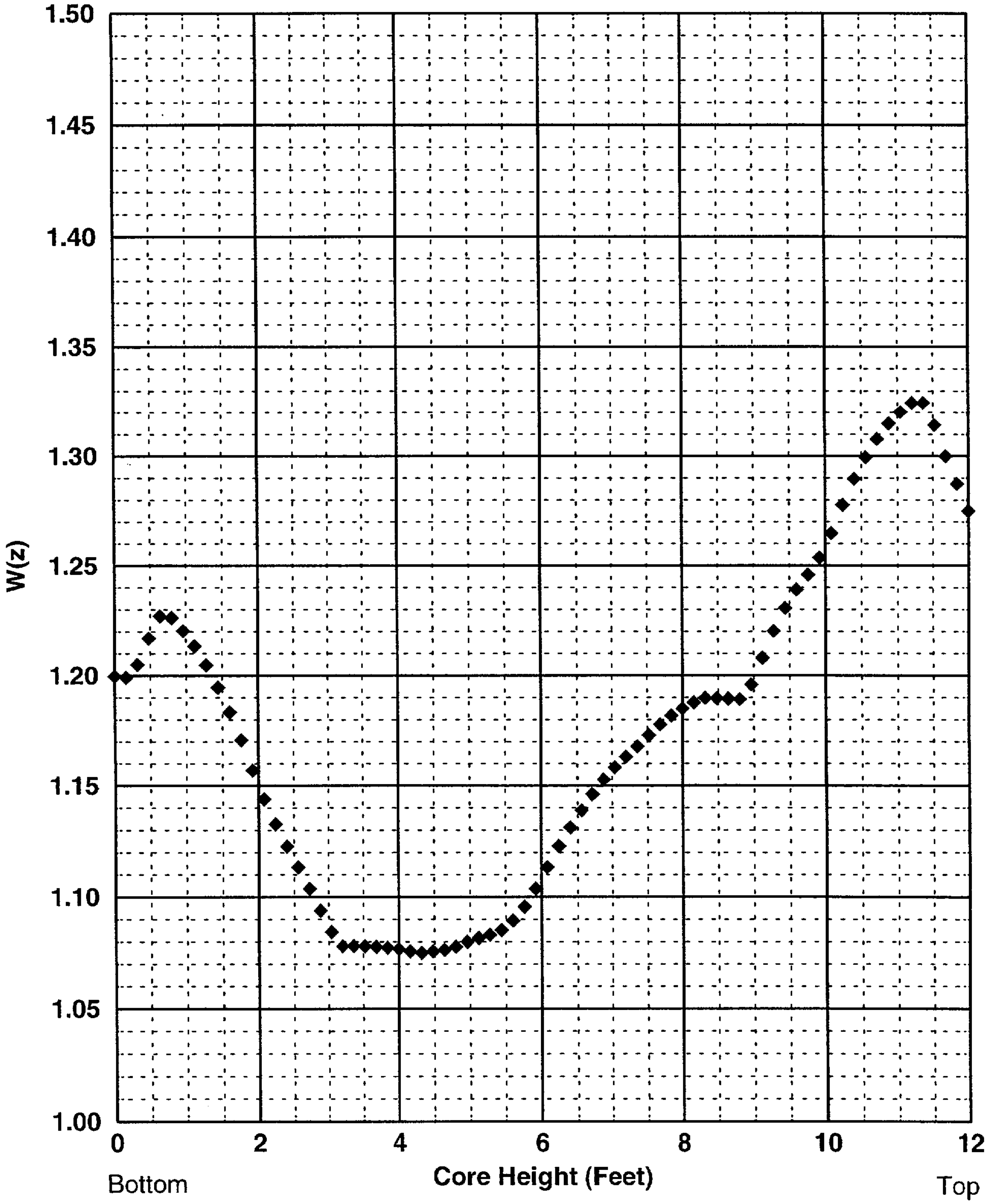


Table 3. RAOC W(z) at 6000 MWD/MTU
V. C. Summer - Cycle 12

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.1996	6.08	1.1134
0.16	1.1991	6.24	1.1228
0.32	1.2050	6.40	1.1312
0.48	1.2169	6.56	1.1389
0.64	1.2270	6.72	1.1461
0.80	1.2262	6.88	1.1527
0.96	1.2203	7.04	1.1582
1.12	1.2134	7.20	1.1630
1.28	1.2047	7.36	1.1678
1.44	1.1946	7.52	1.1729
1.60	1.1834	7.68	1.1778
1.76	1.1707	7.84	1.1818
1.92	1.1569	8.00	1.1850
2.08	1.1439	8.16	1.1878
2.24	1.1327	8.32	1.1898
2.40	1.1227	8.48	1.1897
2.56	1.1133	8.64	1.1895
2.72	1.1038	8.80	1.1892
2.88	1.0939	8.96	1.1959
3.04	1.0844	9.12	1.2080
3.20	1.0780	9.28	1.2202
3.36	1.0781	9.44	1.2306
3.52	1.0780	9.60	1.2390
3.68	1.0777	9.76	1.2458
3.84	1.0773	9.92	1.2535
4.00	1.0767	10.08	1.2647
4.16	1.0757	10.24	1.2778
4.32	1.0751	10.40	1.2897
4.48	1.0757	10.56	1.2994
4.64	1.0764	10.72	1.3078
4.80	1.0778	10.88	1.3149
4.96	1.0799	11.04	1.3202
5.12	1.0817	11.20	1.3245
5.28	1.0831	11.36	1.3245
5.44	1.0853	11.52	1.3142
5.60	1.0894	11.68	1.3000
5.76	1.0956	11.84	1.2874
5.92	1.1038	12.00	1.2750

Figure 8. RAOC W(z) at 10000 MWD/MTU
V. C. Summer - Cycle 12

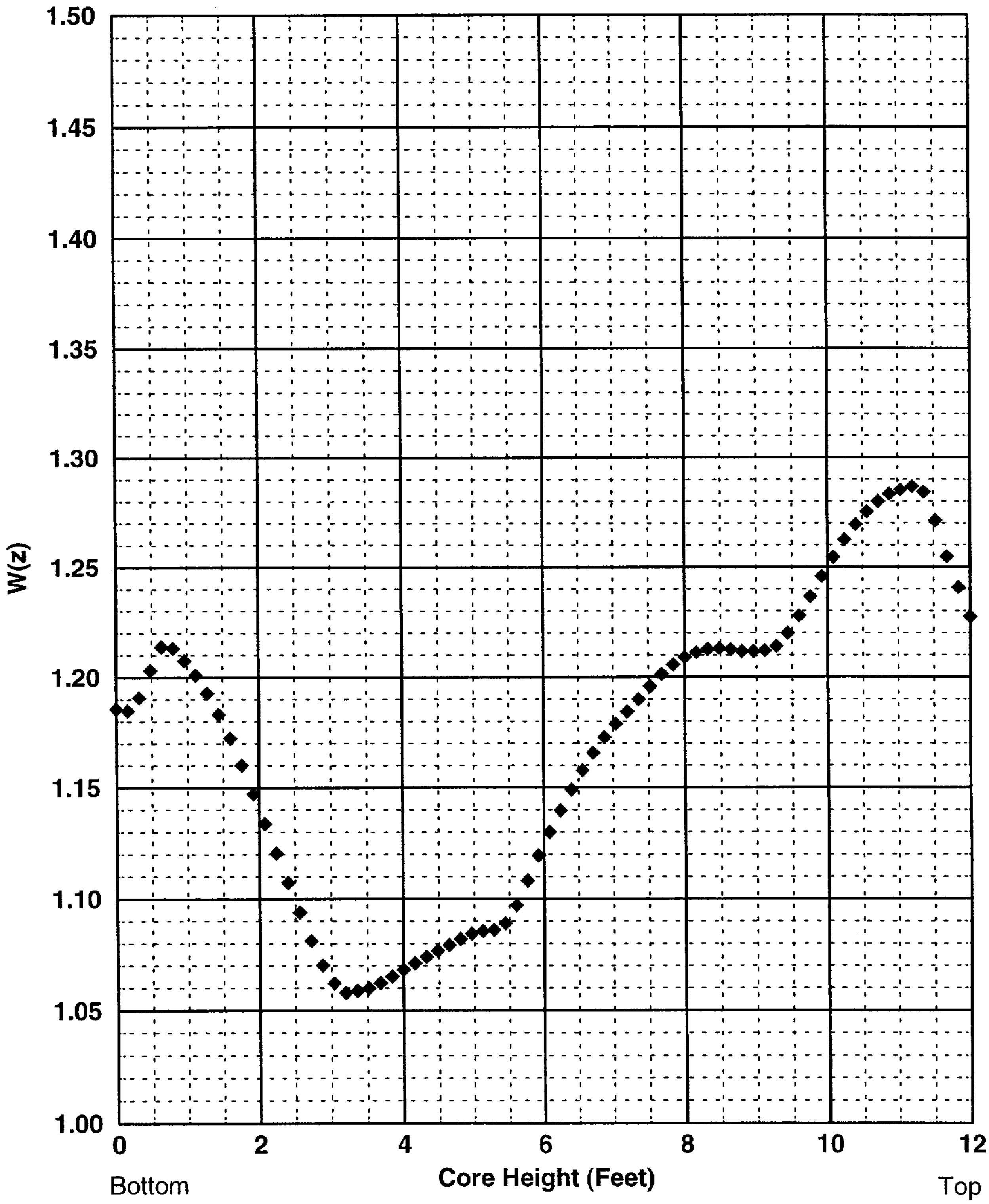


Table 4. RAOC W(z) at 10000 MWD/MTU
V. C. Summer - Cycle 12

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.1857	6.08	1.1299
0.16	1.1849	6.24	1.1397
0.32	1.1908	6.40	1.1490
0.48	1.2031	6.56	1.1577
0.64	1.2138	6.72	1.1656
0.80	1.2131	6.88	1.1726
0.96	1.2075	7.04	1.1788
1.12	1.2010	7.20	1.1844
1.28	1.1929	7.36	1.1900
1.44	1.1832	7.52	1.1959
1.60	1.1723	7.68	1.2014
1.76	1.1601	7.84	1.2057
1.92	1.1471	8.00	1.2090
2.08	1.1337	8.16	1.2112
2.24	1.1205	8.32	1.2126
2.40	1.1073	8.48	1.2130
2.56	1.0939	8.64	1.2125
2.72	1.0811	8.80	1.2116
2.88	1.0702	8.96	1.2117
3.04	1.0622	9.12	1.2120
3.20	1.0579	9.28	1.2140
3.36	1.0589	9.44	1.2199
3.52	1.0600	9.60	1.2277
3.68	1.0623	9.76	1.2365
3.84	1.0652	9.92	1.2457
4.00	1.0682	10.08	1.2544
4.16	1.0711	10.24	1.2624
4.32	1.0740	10.40	1.2694
4.48	1.0767	10.56	1.2753
4.64	1.0793	10.72	1.2800
4.80	1.0820	10.88	1.2833
4.96	1.0844	11.04	1.2853
5.12	1.0856	11.20	1.2868
5.28	1.0861	11.36	1.2842
5.44	1.0890	11.52	1.2711
5.60	1.0971	11.68	1.2547
5.76	1.1082	11.84	1.2407
5.92	1.1194	12.00	1.2273

Figure 9. RAOC W(z) at 20000 MWD/MTU
V. C. Summer - Cycle 12

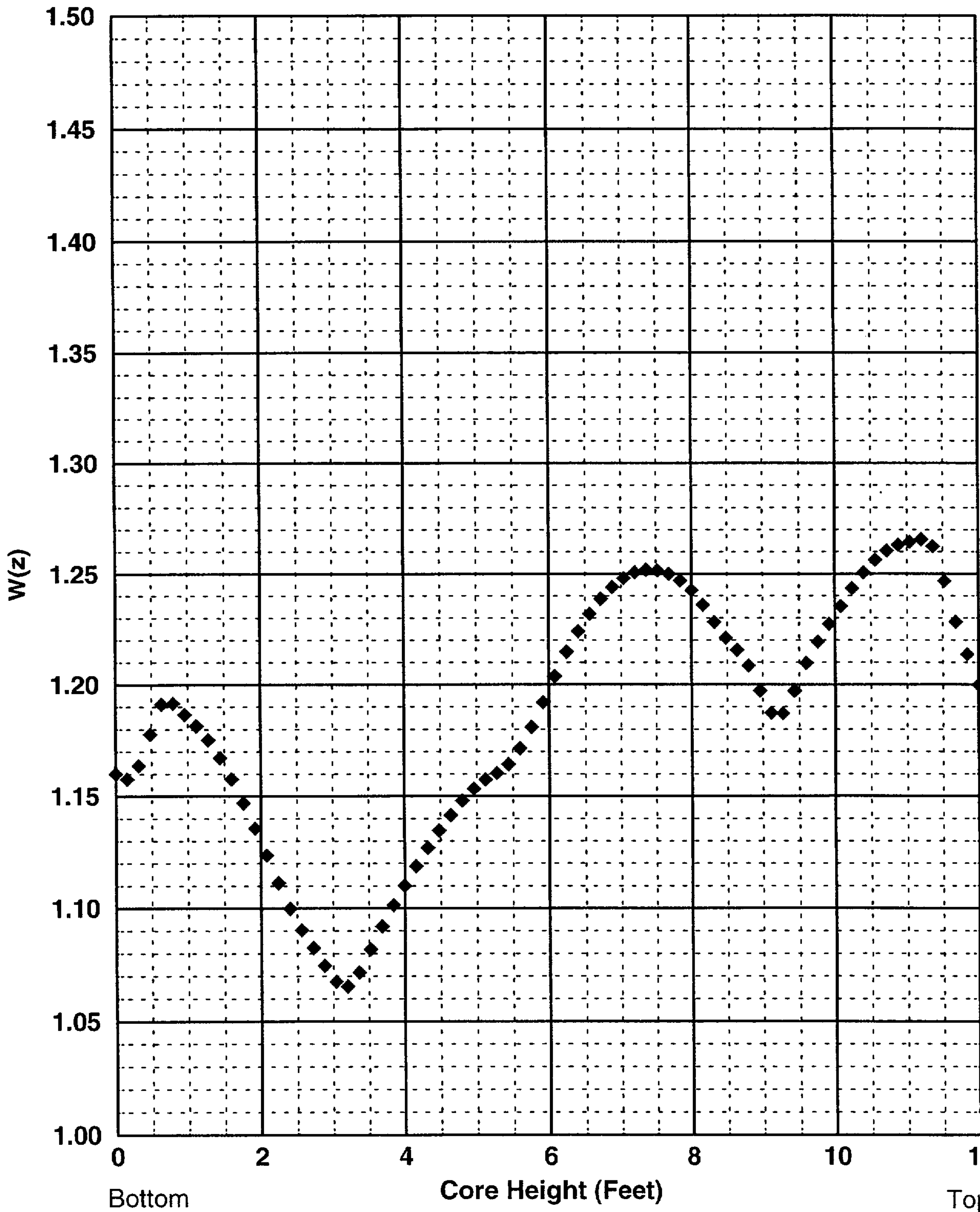


Table 5. RAOC W(z) at 20000 MWD/MTU
V. C. Summer - Cycle 12

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.1601	6.08	1.2038
0.16	1.1577	6.24	1.2147
0.32	1.1637	6.40	1.2240
0.48	1.1777	6.56	1.2319
0.64	1.1912	6.72	1.2386
0.80	1.1916	6.88	1.2440
0.96	1.1865	7.04	1.2481
1.12	1.1815	7.20	1.2507
1.28	1.1752	7.36	1.2519
1.44	1.1672	7.52	1.2516
1.60	1.1577	7.68	1.2500
1.76	1.1470	7.84	1.2470
1.92	1.1356	8.00	1.2425
2.08	1.1236	8.16	1.2359
2.24	1.1113	8.32	1.2281
2.40	1.0998	8.48	1.2210
2.56	1.0904	8.64	1.2155
2.72	1.0825	8.80	1.2085
2.88	1.0746	8.96	1.1973
3.04	1.0676	9.12	1.1872
3.20	1.0655	9.28	1.1870
3.36	1.0716	9.44	1.1972
3.52	1.0819	9.60	1.2096
3.68	1.0921	9.76	1.2192
3.84	1.1013	9.92	1.2272
4.00	1.1101	10.08	1.2353
4.16	1.1187	10.24	1.2434
4.32	1.1270	10.40	1.2506
4.48	1.1345	10.56	1.2563
4.64	1.1415	10.72	1.2605
4.80	1.1479	10.88	1.2632
4.96	1.1534	11.04	1.2645
5.12	1.1575	11.20	1.2657
5.28	1.1604	11.36	1.2624
5.44	1.1643	11.52	1.2468
5.60	1.1714	11.68	1.2283
5.76	1.1809	11.84	1.2136
5.92	1.1921	12.00	1.1999

Figure 10. Baseload W(z) at 150 MWD/MTU
V. C. Summer - Cycle 12

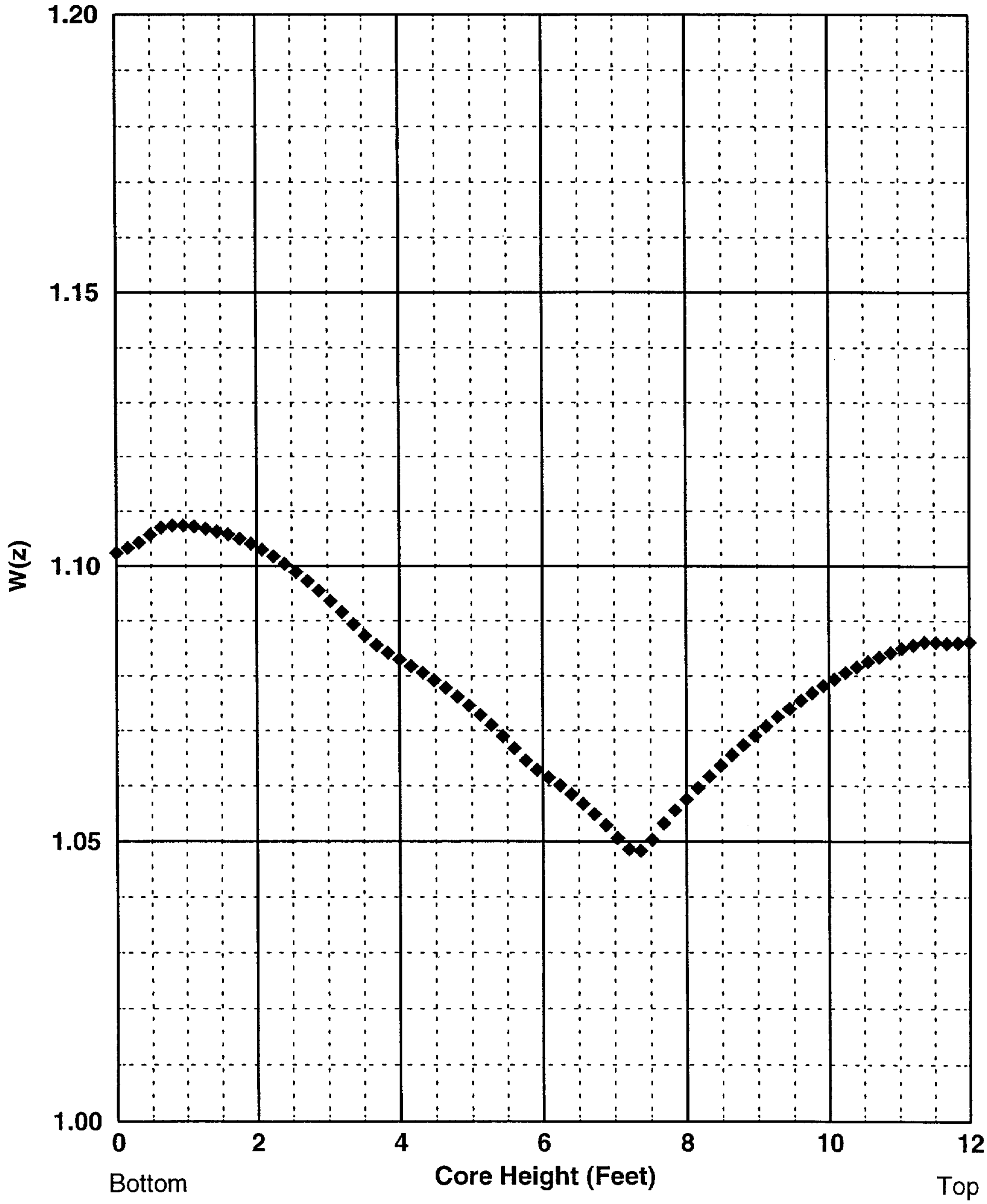


Table 6. Baseload W(z) at 150 MWD/MTU
V. C. Summer - Cycle 12

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.1024	6.08	1.0615
0.16	1.1033	6.24	1.0601
0.32	1.1043	6.40	1.0585
0.48	1.1057	6.56	1.0568
0.64	1.1070	6.72	1.0549
0.80	1.1074	6.88	1.0529
0.96	1.1074	7.04	1.0506
1.12	1.1072	7.20	1.0486
1.28	1.1068	7.36	1.0483
1.44	1.1063	7.52	1.0503
1.60	1.1058	7.68	1.0532
1.76	1.1050	7.84	1.0556
1.92	1.1041	8.00	1.0576
2.08	1.1030	8.16	1.0596
2.24	1.1018	8.32	1.0617
2.40	1.1004	8.48	1.0637
2.56	1.0989	8.64	1.0656
2.72	1.0973	8.80	1.0674
2.88	1.0955	8.96	1.0691
3.04	1.0936	9.12	1.0708
3.20	1.0916	9.28	1.0725
3.36	1.0894	9.44	1.0740
3.52	1.0873	9.60	1.0755
3.68	1.0856	9.76	1.0769
3.84	1.0842	9.92	1.0782
4.00	1.0830	10.08	1.0794
4.16	1.0818	10.24	1.0806
4.32	1.0806	10.40	1.0816
4.48	1.0792	10.56	1.0826
4.64	1.0778	10.72	1.0834
4.80	1.0762	10.88	1.0842
4.96	1.0746	11.04	1.0850
5.12	1.0729	11.20	1.0856
5.28	1.0710	11.36	1.0861
5.44	1.0690	11.52	1.0861
5.60	1.0668	11.68	1.0859
5.76	1.0646	11.84	1.0860
5.92	1.0629	12.00	1.0862

Figure 11. Baseload W(z) at 3400 MWD/MTU
V. C. Summer - Cycle 12

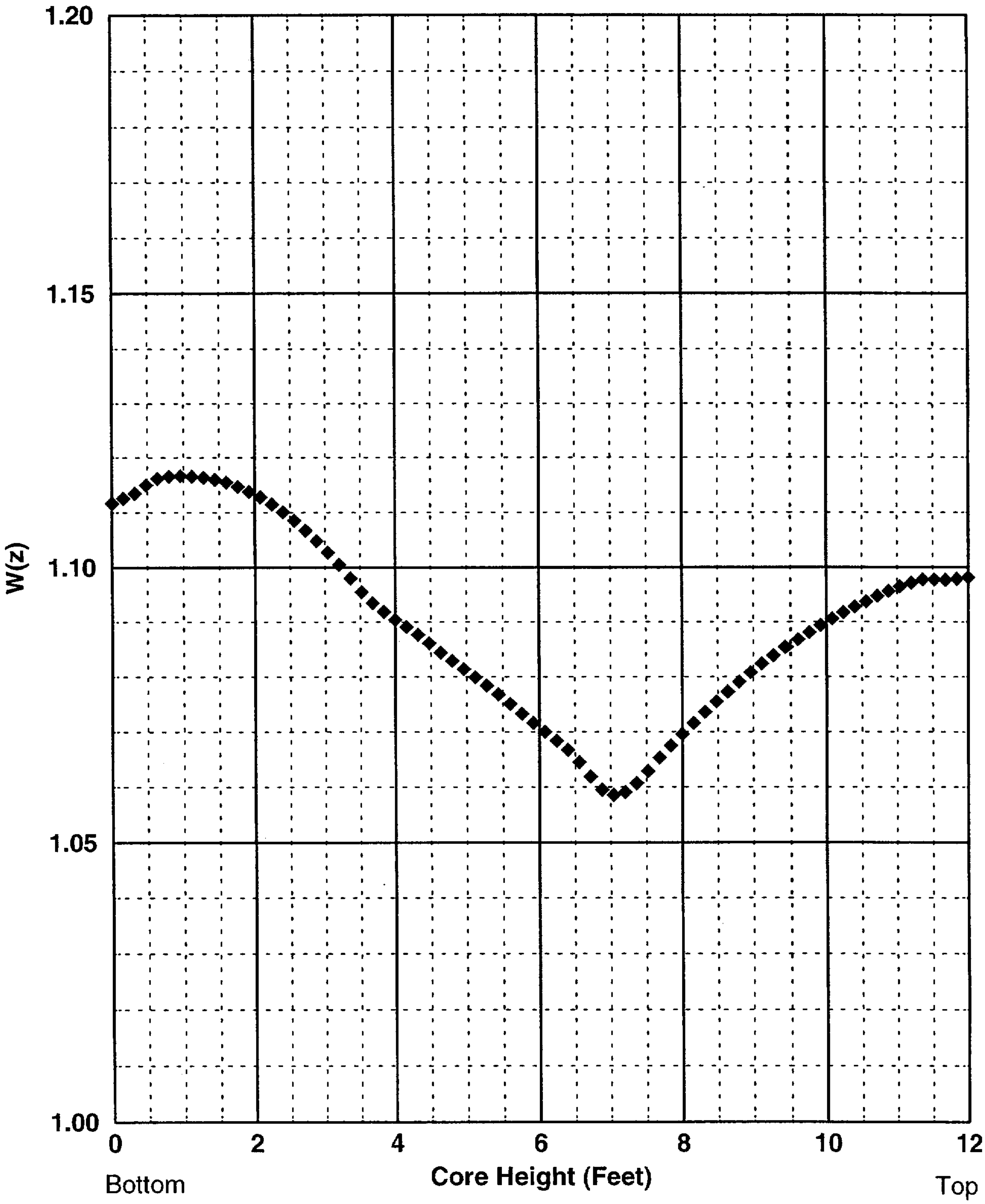


Table 7. Baseload W(z) at 3400 MWD/MTU
V. C. Summer - Cycle 12

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.1117	6.08	1.0700
0.16	1.1126	6.24	1.0684
0.32	1.1135	6.40	1.0667
0.48	1.1150	6.56	1.0645
0.64	1.1162	6.72	1.0619
0.80	1.1166	6.88	1.0595
0.96	1.1167	7.04	1.0586
1.12	1.1166	7.20	1.0591
1.28	1.1164	7.36	1.0607
1.44	1.1160	7.52	1.0629
1.60	1.1155	7.68	1.0653
1.76	1.1147	7.84	1.0675
1.92	1.1138	8.00	1.0696
2.08	1.1128	8.16	1.0716
2.24	1.1115	8.32	1.0736
2.40	1.1101	8.48	1.0755
2.56	1.1085	8.64	1.0773
2.72	1.1067	8.80	1.0791
2.88	1.1048	8.96	1.0808
3.04	1.1027	9.12	1.0824
3.20	1.1005	9.28	1.0839
3.36	1.0980	9.44	1.0854
3.52	1.0955	9.60	1.0868
3.68	1.0935	9.76	1.0881
3.84	1.0919	9.92	1.0894
4.00	1.0904	10.08	1.0906
4.16	1.0891	10.24	1.0918
4.32	1.0877	10.40	1.0928
4.48	1.0861	10.56	1.0938
4.64	1.0844	10.72	1.0948
4.80	1.0829	10.88	1.0957
4.96	1.0814	11.04	1.0965
5.12	1.0799	11.20	1.0972
5.28	1.0784	11.36	1.0978
5.44	1.0768	11.52	1.0978
5.60	1.0751	11.68	1.0977
5.76	1.0733	11.84	1.0979
5.92	1.0716	12.00	1.0982

Figure 12. Baseload W(z) at 6000 MWD/MTU
V. C. Summer - Cycle 12

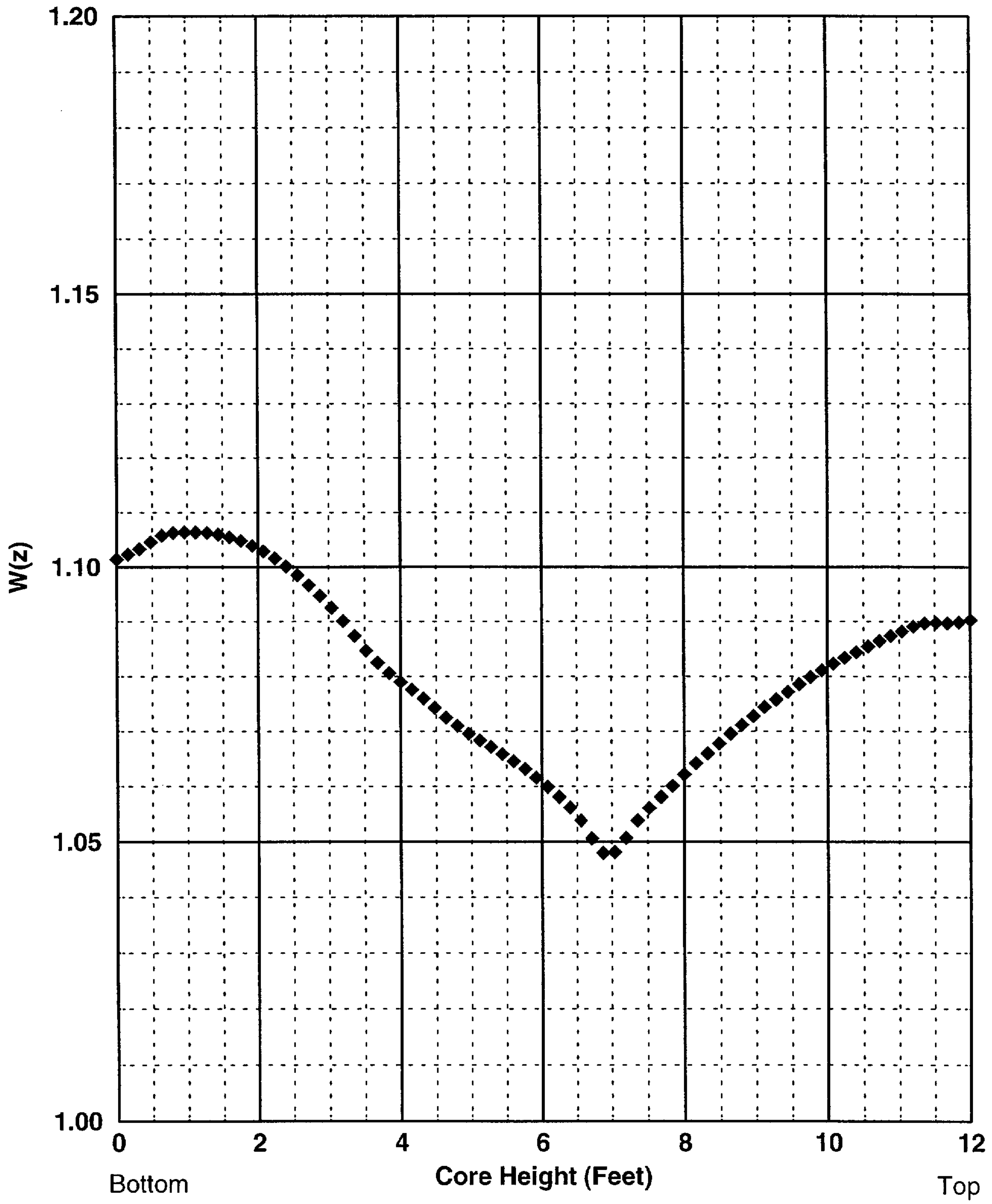


Table 8. Baseload W(z) at 6000 MWD/MTU
V. C. Summer - Cycle 12

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.1014	6.08	1.0599
0.16	1.1023	6.24	1.0581
0.32	1.1033	6.40	1.0562
0.48	1.1046	6.56	1.0538
0.64	1.1058	6.72	1.0506
0.80	1.1063	6.88	1.0480
0.96	1.1064	7.04	1.0481
1.12	1.1064	7.20	1.0507
1.28	1.1063	7.36	1.0538
1.44	1.1060	7.52	1.0561
1.60	1.1055	7.68	1.0581
1.76	1.1048	7.84	1.0601
1.92	1.1039	8.00	1.0622
2.08	1.1029	8.16	1.0642
2.24	1.1016	8.32	1.0660
2.40	1.1001	8.48	1.0678
2.56	1.0985	8.64	1.0696
2.72	1.0967	8.80	1.0712
2.88	1.0947	8.96	1.0728
3.04	1.0925	9.12	1.0744
3.20	1.0901	9.28	1.0758
3.36	1.0874	9.44	1.0772
3.52	1.0847	9.60	1.0786
3.68	1.0825	9.76	1.0799
3.84	1.0806	9.92	1.0811
4.00	1.0790	10.08	1.0823
4.16	1.0776	10.24	1.0834
4.32	1.0760	10.40	1.0844
4.48	1.0743	10.56	1.0855
4.64	1.0725	10.72	1.0865
4.80	1.0710	10.88	1.0874
4.96	1.0696	11.04	1.0882
5.12	1.0684	11.20	1.0891
5.28	1.0672	11.36	1.0897
5.44	1.0659	11.52	1.0898
5.60	1.0646	11.68	1.0897
5.76	1.0632	11.84	1.0899
5.92	1.0616	12.00	1.0903

Figure 13. Baseload W(z) at 10000 MWD/MTU
V. C. Summer - Cycle 12

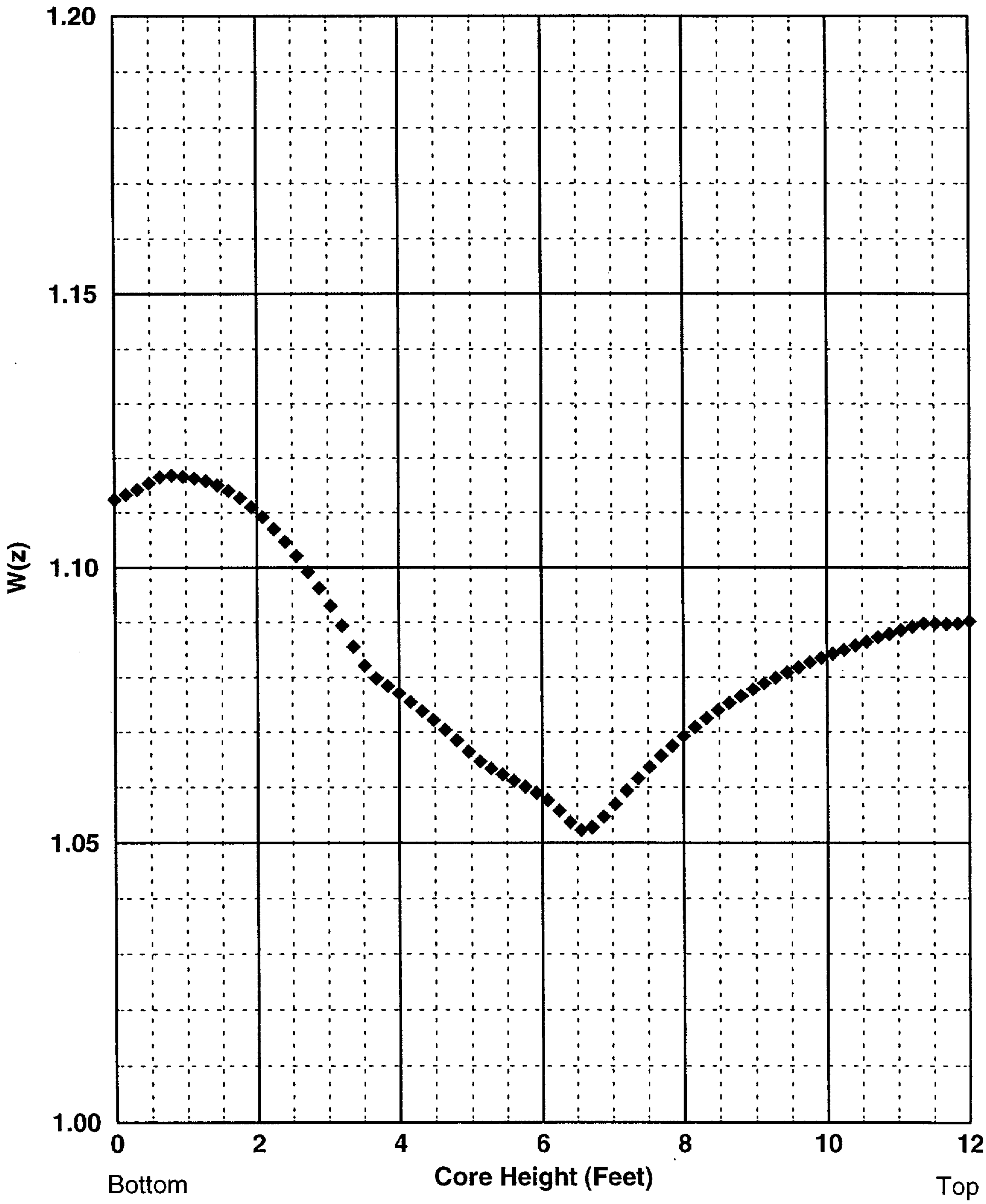


Table 9. Baseload W(z) at 10000 MWD/MTU
V. C. Summer - Cycle 12

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.1124	6.08	1.0577
0.16	1.1133	6.24	1.0558
0.32	1.1142	6.40	1.0537
0.48	1.1154	6.56	1.0523
0.64	1.1165	6.72	1.0528
0.80	1.1168	6.88	1.0547
0.96	1.1166	7.04	1.0570
1.12	1.1163	7.20	1.0594
1.28	1.1158	7.36	1.0616
1.44	1.1150	7.52	1.0637
1.60	1.1140	7.68	1.0657
1.76	1.1127	7.84	1.0675
1.92	1.1110	8.00	1.0693
2.08	1.1092	8.16	1.0709
2.24	1.1070	8.32	1.0725
2.40	1.1047	8.48	1.0740
2.56	1.1021	8.64	1.0753
2.72	1.0992	8.80	1.0766
2.88	1.0962	8.96	1.0778
3.04	1.0930	9.12	1.0789
3.20	1.0894	9.28	1.0799
3.36	1.0856	9.44	1.0809
3.52	1.0821	9.60	1.0818
3.68	1.0798	9.76	1.0827
3.84	1.0784	9.92	1.0835
4.00	1.0771	10.08	1.0843
4.16	1.0755	10.24	1.0850
4.32	1.0738	10.40	1.0858
4.48	1.0722	10.56	1.0865
4.64	1.0704	10.72	1.0873
4.80	1.0685	10.88	1.0879
4.96	1.0665	11.04	1.0886
5.12	1.0647	11.20	1.0892
5.28	1.0634	11.36	1.0898
5.44	1.0623	11.52	1.0898
5.60	1.0612	11.68	1.0897
5.76	1.0601	11.84	1.0898
5.92	1.0590	12.00	1.0902

Figure 14. Baseload W(z) at 20000 MWD/MTU
V. C. Summer - Cycle 12

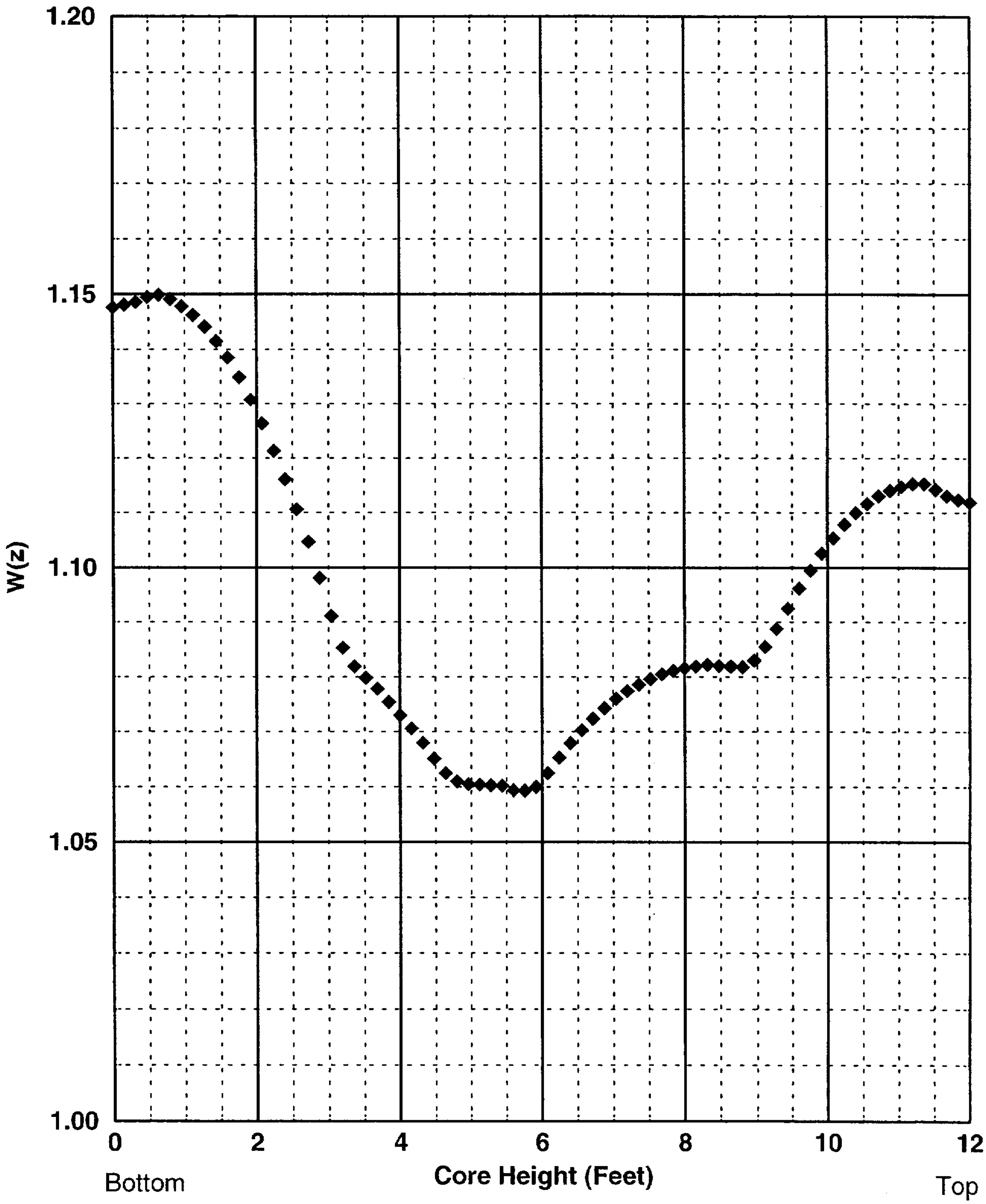
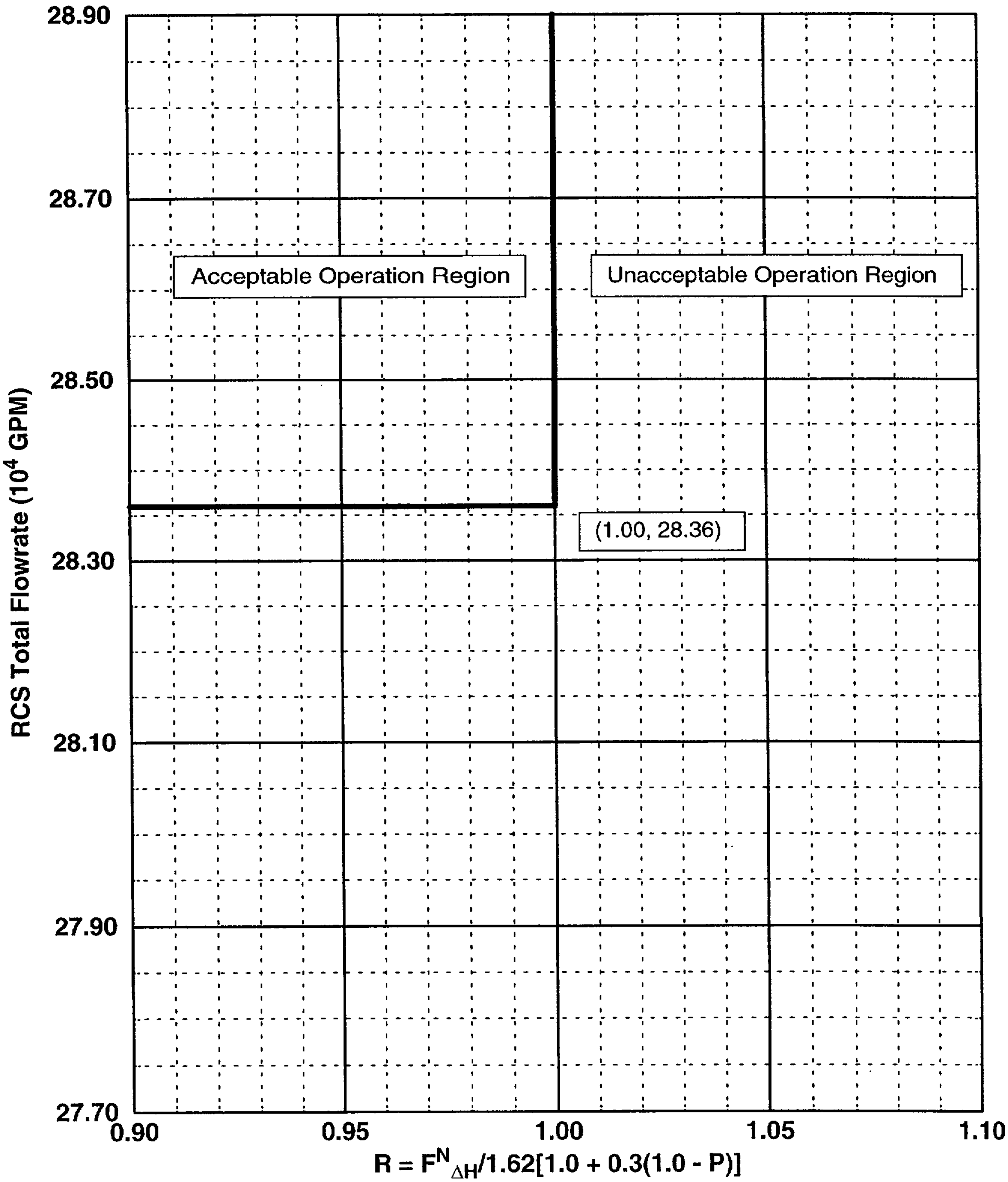


Table 10. Baseload W(z) at 20000 MWD/MTU
V. C. Summer - Cycle 12

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.1476	6.08	1.0625
0.16	1.1481	6.24	1.0653
0.32	1.1486	6.40	1.0679
0.48	1.1495	6.56	1.0703
0.64	1.1499	6.72	1.0724
0.80	1.1491	6.88	1.0743
0.96	1.1478	7.04	1.0760
1.12	1.1462	7.20	1.0774
1.28	1.1441	7.36	1.0786
1.44	1.1415	7.52	1.0796
1.60	1.1385	7.68	1.0805
1.76	1.1349	7.84	1.0811
1.92	1.1308	8.00	1.0816
2.08	1.1263	8.16	1.0819
2.24	1.1213	8.32	1.0822
2.40	1.1161	8.48	1.0820
2.56	1.1106	8.64	1.0819
2.72	1.1047	8.80	1.0818
2.88	1.0981	8.96	1.0830
3.04	1.0911	9.12	1.0855
3.20	1.0853	9.28	1.0888
3.36	1.0819	9.44	1.0925
3.52	1.0798	9.60	1.0962
3.68	1.0778	9.76	1.0995
3.84	1.0754	9.92	1.1026
4.00	1.0730	10.08	1.1054
4.16	1.0706	10.24	1.1079
4.32	1.0680	10.40	1.1100
4.48	1.0651	10.56	1.1117
4.64	1.0625	10.72	1.1131
4.80	1.0610	10.88	1.1141
4.96	1.0605	11.04	1.1148
5.12	1.0604	11.20	1.1153
5.28	1.0603	11.36	1.1153
5.44	1.0602	11.52	1.1143
5.60	1.0594	11.68	1.1131
5.76	1.0593	11.84	1.1124
5.92	1.0600	12.00	1.1119

Figure 15. RCS Total Flowrate Versus R for Three Loop Operation
V. C. Summer - Cycle 12



Measurement Uncertainty of 2.1% for Flow (includes 0.1% for feedwater venturi fouling) is included in this figure.