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SCE&G®
A SCANA COMPANY

May 19, 2005

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION
DOCKET NO. 50-395
OPERATING LICENSE NO. NPF-12
CORE OPERATING LIMITS REPORT (COLR)
FOR CYCLE 16

In accordance with Section 6.9.1.11 of the Virgil C. Summer Nuclear Station Technical Specifications, South Carolina Electric & Gas Company (SCE&G) hereby submits the Cycle 16 Core Operating Limits Report (COLR).

Should you have any questions, please call Mrs. Susan B. Reese at (803) 345-4591.

Very truly yours,

[signature] for J.A.

Jeffrey B. Archie

SBR/JBA/sr
Attachment

NOTE: Attachment is on file in NL

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N. O. Lorick
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SOUTH CAROLINA ELECTRIC & GAS COMPANY

VIRGIL C. SUMMER NUCLEAR STATION

CORE OPERATING LIMITS REPORT

FOR

CYCLE 16

REVISION 0

APRIL 2005

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1.0 Core Operating Limits Report

This Core Operating Limits Report (COLR) for V. C. Summer Station Cycle 16 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} Δk/k/°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

2.1.2 The MTC Surveillance limit is:

The 300 ppm/ARO/RTP-MTC should be less negative than or equal to -4.1×10^{-4} Δk/k/°F

2.1.3 The Revised Predicted near-EOL 300 ppm MTC shall be calculated using the following algorithm from Reference 2:

Revised Predicted MTC = Predicted MTC + AFD Correction*+ Predictive Correction**

*AFD Correction is 0.05 pcm/°F/%ΔAFD.
**Predictive Correction is -3 pcm/°F.

If the Revised Predicted MTC is less negative than the SR 4.1.1.3b limit of -4.1×10^{-4} Δk/k/°F, and all of the benchmark data contained in the surveillance procedure are met, then an MTC measurement in accordance with SR 4.1.1.3b is not required.

2.2 Shutdown Rod Insertion Limits (Specification 3.1.3.5):

The shutdown rods shall be withdrawn to at least 230 steps.

2.3 Control Rod Insertion Limits (Specification 3.1.3.6):

Control Bank A and B rods shall be withdrawn to at least 230 steps. Control Bank C and D Insertion Limits are specified by Figure 2. Control rod overlap is 102 steps.

2.4 **Axial Flux Difference (Specification 3.2.1):**

2.4.1 The Axial Flux Difference (AFD) Limits for RAOC operation for Cycle 16 are shown in Figure 3.

2.4.2 The Axial Flux Difference (AFD) target band during base load operations for Cycle 16 is: BOL - EOL (0 – 22,800 MWD/MTU): ±5% about a measured target value.

2.4.3 The minimum allowable power level for base load operation, APL^{ND}, is 75% of RATED THERMAL POWER.

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

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

$$F_Q(Z) \leq \frac{F_Q^{RTP}}{0.5} \times K(Z) \qquad \text{for } P \leq 0.5 \qquad \text{where: } P = \frac{\text{Thermal Power}}{\text{Rated Thermal Power}}$$

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, 3000, 10000, and 20000 MWD/MTU are shown in Figures 5 through 8 and Tables 1 through 4, 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. Table 5 shows F_Q margin decreases for RAOC operation that are greater than 2% per 31 Effective Full Power Days (EFPD). These values shall be used to increase $F_Q^M(z)$ as per Surveillance Requirement 4.2.2.2e. A 2% penalty factor shall be used at all burnups that are outside the range of Table 5.

2.5.4 Elevation dependent $W(z)_{BL}$ values for base load operation between 75 and 100% of rated thermal power with the item 2.4.2 specified target band about a measured target value at 150, 1300, 3000, 10000, and 20000 MWD/MTU are shown in Figures 9 through 13 and Tables 6 through 10, 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. Table 11 shows F_Q margin decreases for base load operation that are greater than 2% per 31 Effective Full Power Days (EFPD). These values shall be used to increase $F_Q^M(z)$ as per Surveillance Requirement 4.2.2.4c. A 2% penalty factor shall be used at all burnups that are outside the range of Table 11.

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

$$R = \frac{F_{\Delta H}^N}{F_{\Delta H}^{RTP} \times (1 + PF_{\Delta H}^N \times (1 - P))} \qquad \text{where: } P = \frac{\text{Thermal Power}}{\text{Rated Thermal Power}}$$

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

2.6.2 $PF_{\Delta H} = 0.3$

2.6.3 The Acceptable Operation Region from the combination of Reactor Coolant System total flow and R is provided in Figure 14.

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 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:

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

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.

2) WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," March 1997 (Westinghouse Proprietary).

Figure 1. Moderator Temperature Coefficient Versus Power Level
V.C. Summer - Cycle 16

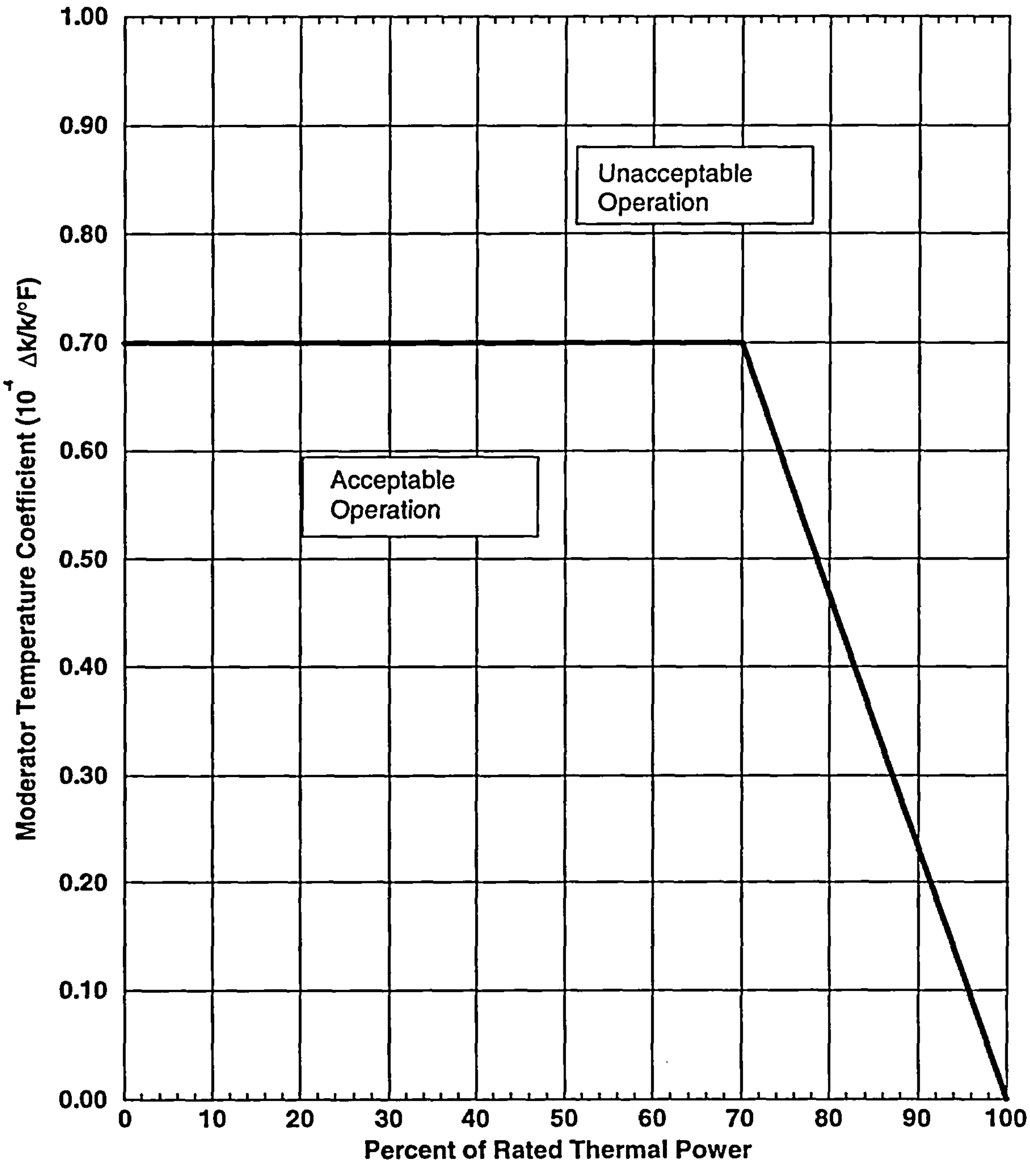


Figure 2. Rod Group Insertion Limits Versus Thermal Power for Three Loop Operation V. C. Summer - Cycle 16

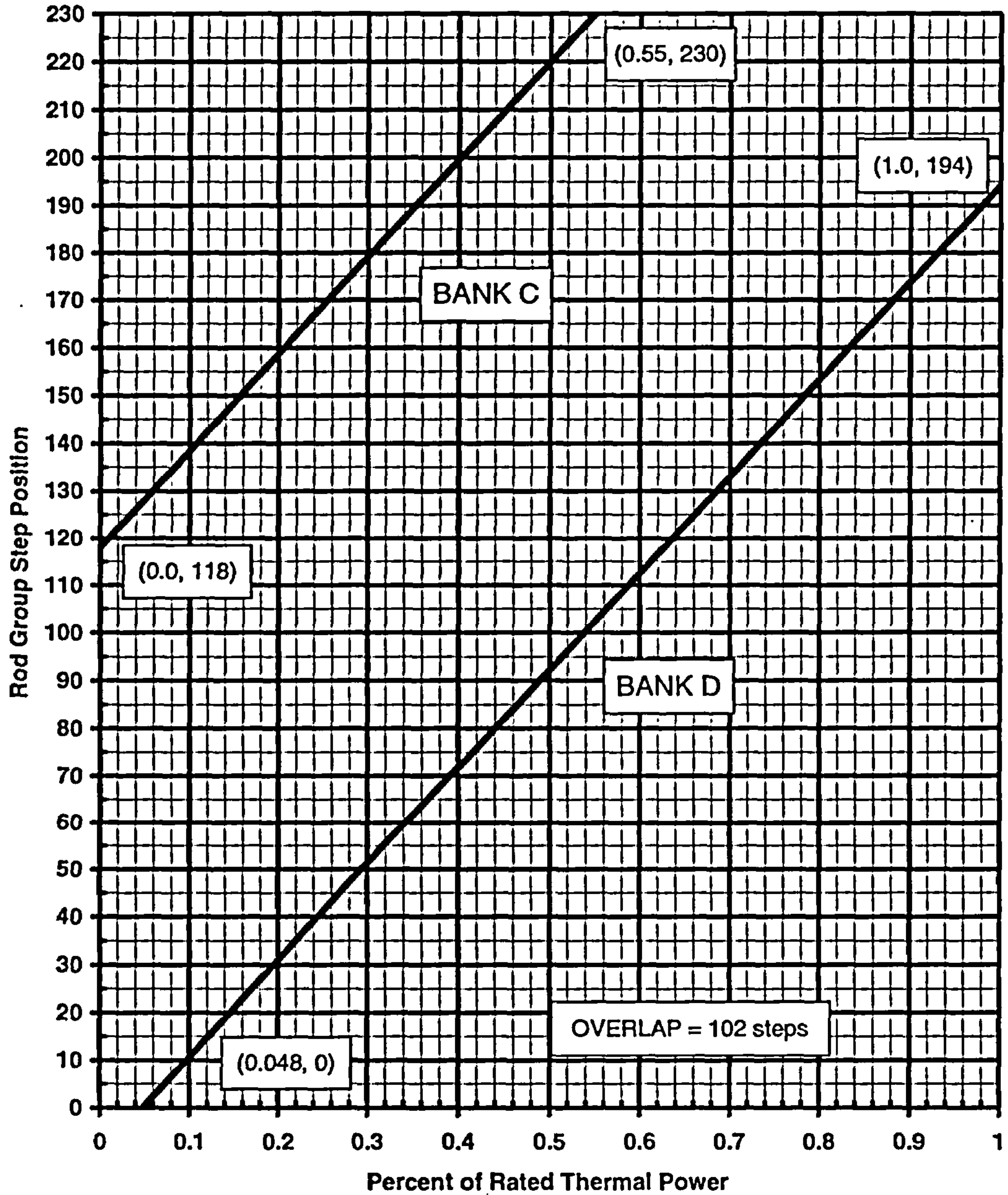


Figure 3. Axial Flux Difference Limits as a Function of Rated Thermal Power V. C. Summer - Cycle 16

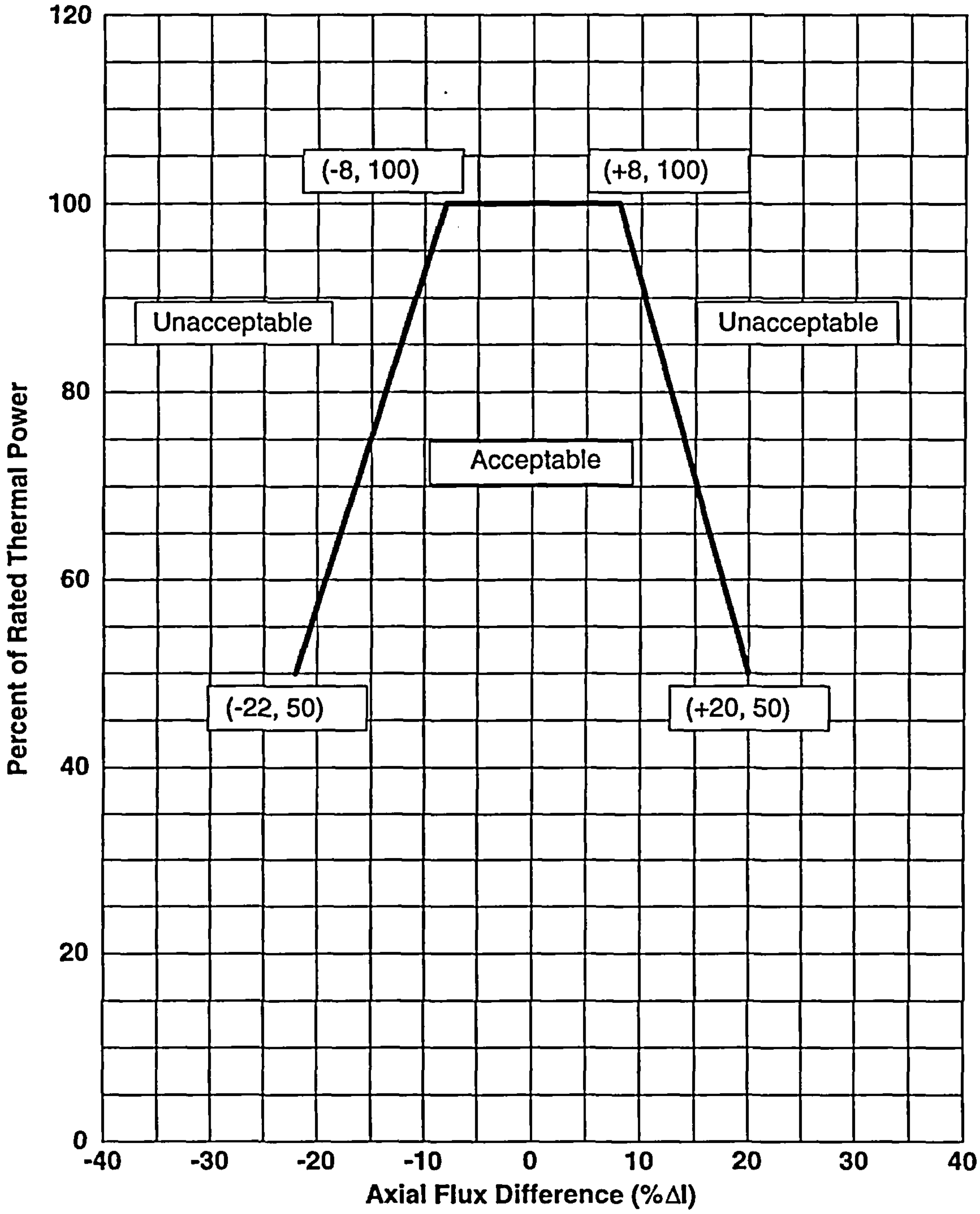


Figure 4. K(z) - Normalized $F_Q(z)$ as a Function of Core Height
V. C. Summer - Cycle 16

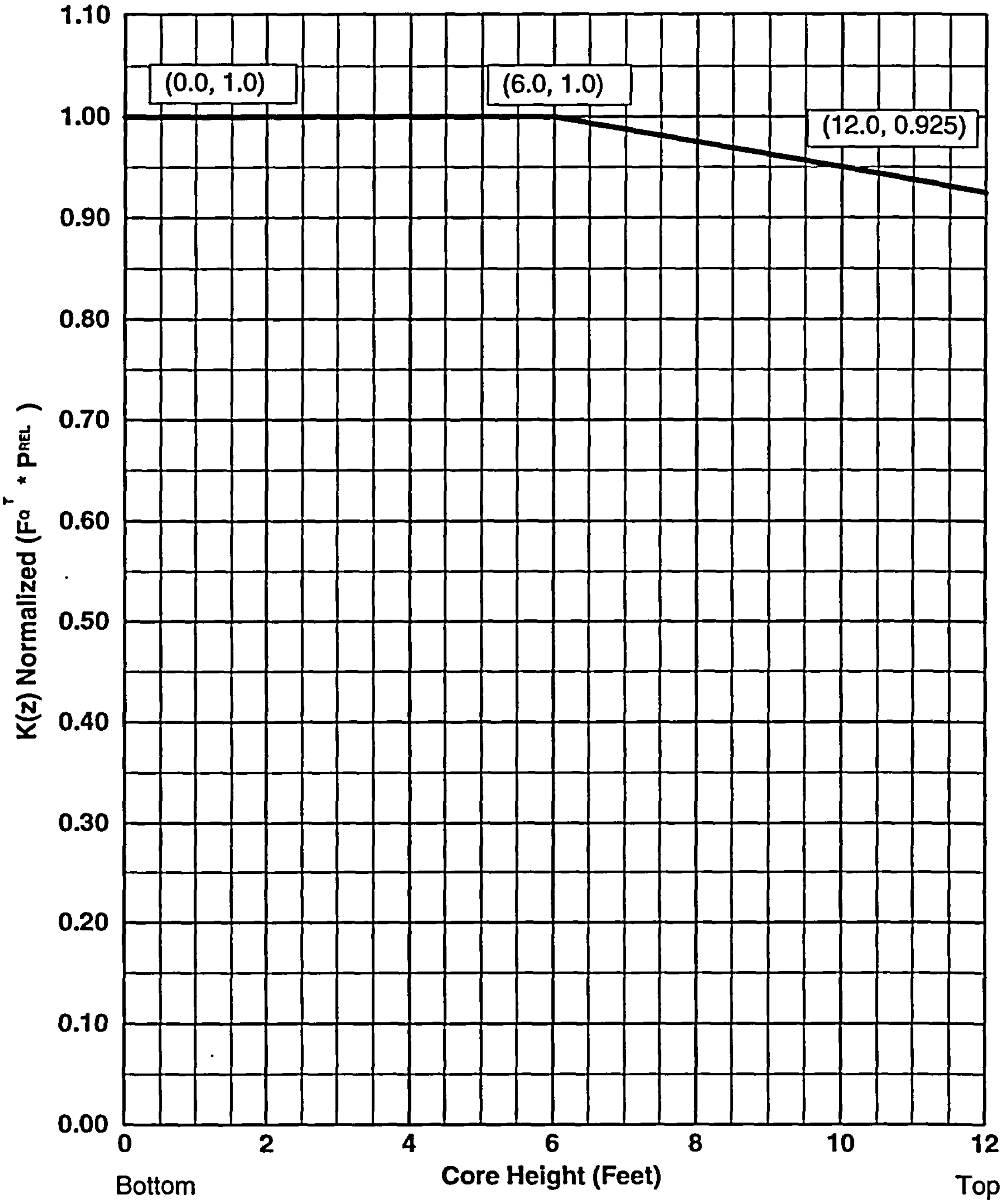


Figure 5. RAOC W(z) at 150 MWD/MTU
V. C. Summer - Cycle 16

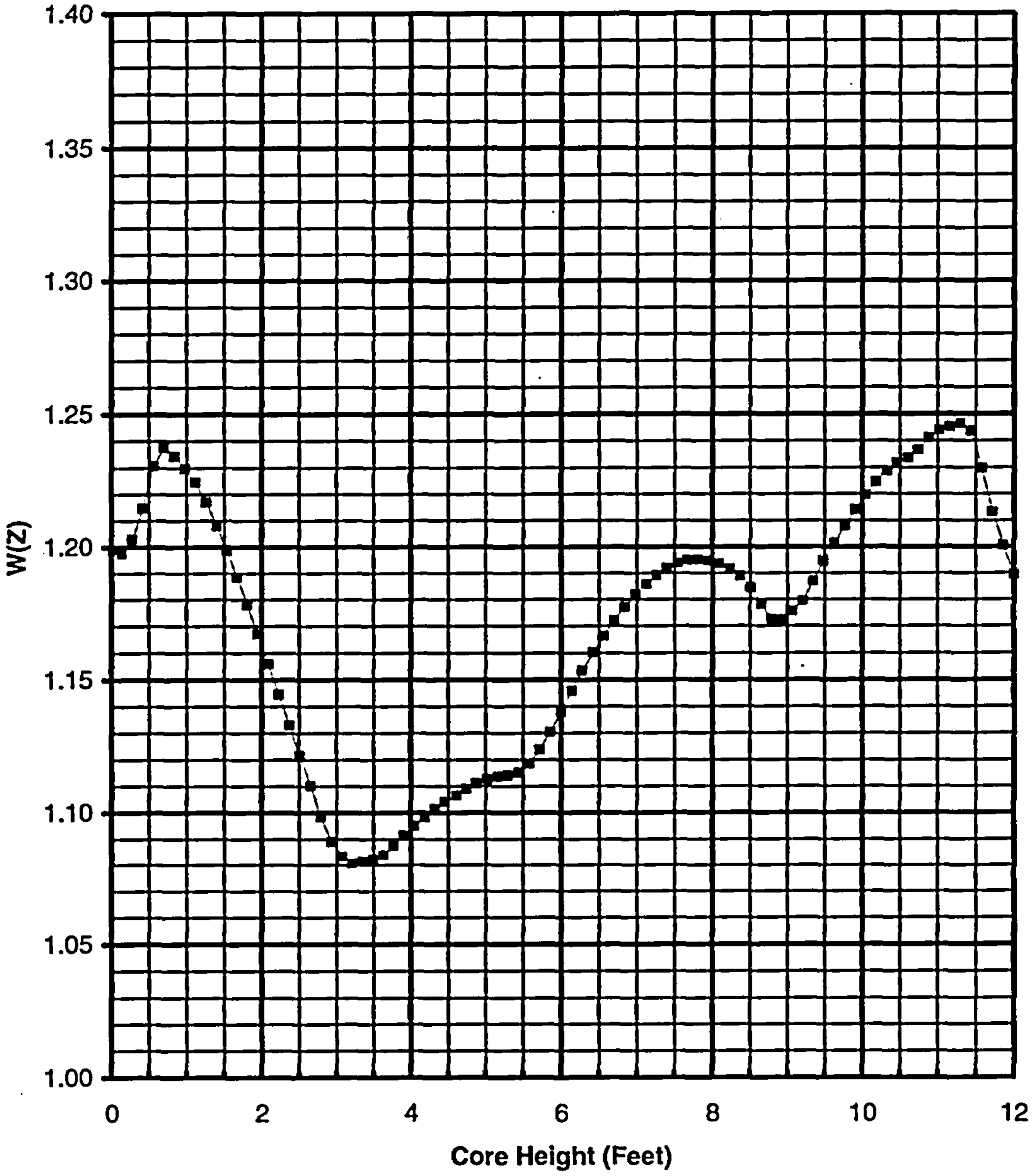


Table 1. RAOC W(z) at 150 MWD/MTU
V. C. Summer - Cycle 16

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.199	6.14	1.146
0.14	1.198	6.28	1.153
0.28	1.203	6.42	1.160
0.42	1.215	6.56	1.166
0.56	1.231	6.70	1.172
0.70	1.238	6.84	1.177
0.84	1.234	6.98	1.182
0.98	1.230	7.12	1.186
1.12	1.225	7.26	1.189
1.26	1.217	7.40	1.192
1.40	1.208	7.54	1.194
1.54	1.199	7.67	1.195
1.67	1.189	7.81	1.195
1.81	1.178	7.95	1.195
1.95	1.167	8.09	1.194
2.09	1.156	8.23	1.192
2.23	1.145	8.37	1.189
2.37	1.133	8.51	1.185
2.51	1.122	8.65	1.178
2.65	1.110	8.79	1.173
2.79	1.099	8.93	1.172
2.93	1.089	9.07	1.176
3.07	1.083	9.21	1.180
3.21	1.081	9.35	1.187
3.35	1.081	9.49	1.195
3.49	1.082	9.63	1.202
3.63	1.084	9.77	1.208
3.77	1.087	9.91	1.214
3.91	1.091	10.05	1.220
4.05	1.095	10.19	1.225
4.19	1.098	10.33	1.229
4.33	1.101	10.46	1.232
4.46	1.104	10.61	1.234
4.61	1.107	10.74	1.237
4.74	1.109	10.88	1.241
4.88	1.111	11.02	1.244
5.02	1.113	11.16	1.245
5.16	1.114	11.30	1.247
5.30	1.114	11.44	1.244
5.44	1.115	11.58	1.230
5.58	1.119	11.72	1.213
5.72	1.124	11.86	1.200
5.86	1.130	12.00	1.189
6.00	1.138		

Figure 6. RAOC W(z) at 3000 MWD/MTU
V. C. Summer - Cycle 16

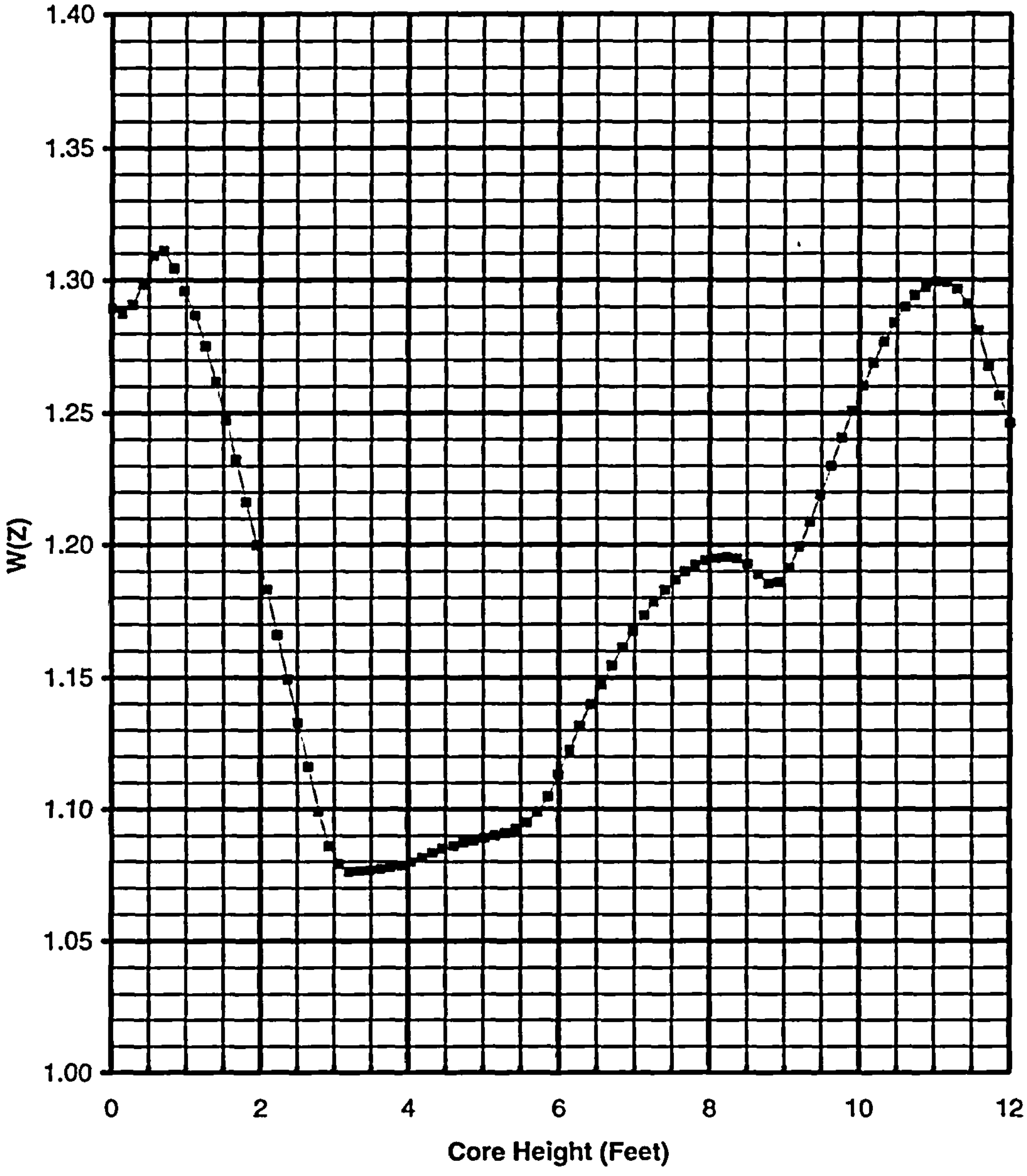


Table 2. RAOC W(z) at 3000 MWD/MTU
V. C. Summer - Cycle 16

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.289	6.14	1.123
0.14	1.288	6.28	1.132
0.28	1.291	6.42	1.140
0.42	1.298	6.56	1.147
0.56	1.309	6.70	1.155
0.70	1.311	6.84	1.161
0.84	1.304	6.98	1.168
0.98	1.296	7.12	1.173
1.12	1.287	7.26	1.179
1.26	1.275	7.40	1.183
1.40	1.262	7.54	1.187
1.54	1.247	7.67	1.190
1.67	1.232	7.81	1.192
1.81	1.216	7.95	1.194
1.95	1.200	8.09	1.195
2.09	1.183	8.23	1.195
2.23	1.166	8.37	1.195
2.37	1.149	8.51	1.193
2.51	1.133	8.65	1.189
2.65	1.116	8.79	1.186
2.79	1.099	8.93	1.186
2.93	1.086	9.07	1.191
3.07	1.079	9.21	1.199
3.21	1.076	9.35	1.209
3.35	1.076	9.49	1.219
3.49	1.077	9.63	1.230
3.63	1.077	9.77	1.241
3.77	1.078	9.91	1.251
3.91	1.079	10.05	1.260
4.05	1.080	10.19	1.269
4.19	1.082	10.33	1.277
4.33	1.083	10.46	1.284
4.46	1.085	10.61	1.290
4.61	1.086	10.74	1.294
4.74	1.087	10.88	1.297
4.88	1.088	11.02	1.299
5.02	1.089	11.16	1.299
5.16	1.090	11.30	1.297
5.30	1.091	11.44	1.291
5.44	1.093	11.58	1.281
5.58	1.095	11.72	1.268
5.72	1.099	11.86	1.257
5.86	1.105	12.00	1.246
6.00	1.113		

Figure 7. RAOC W(z) at 10000 MWD/MTU
V. C. Summer - Cycle 16

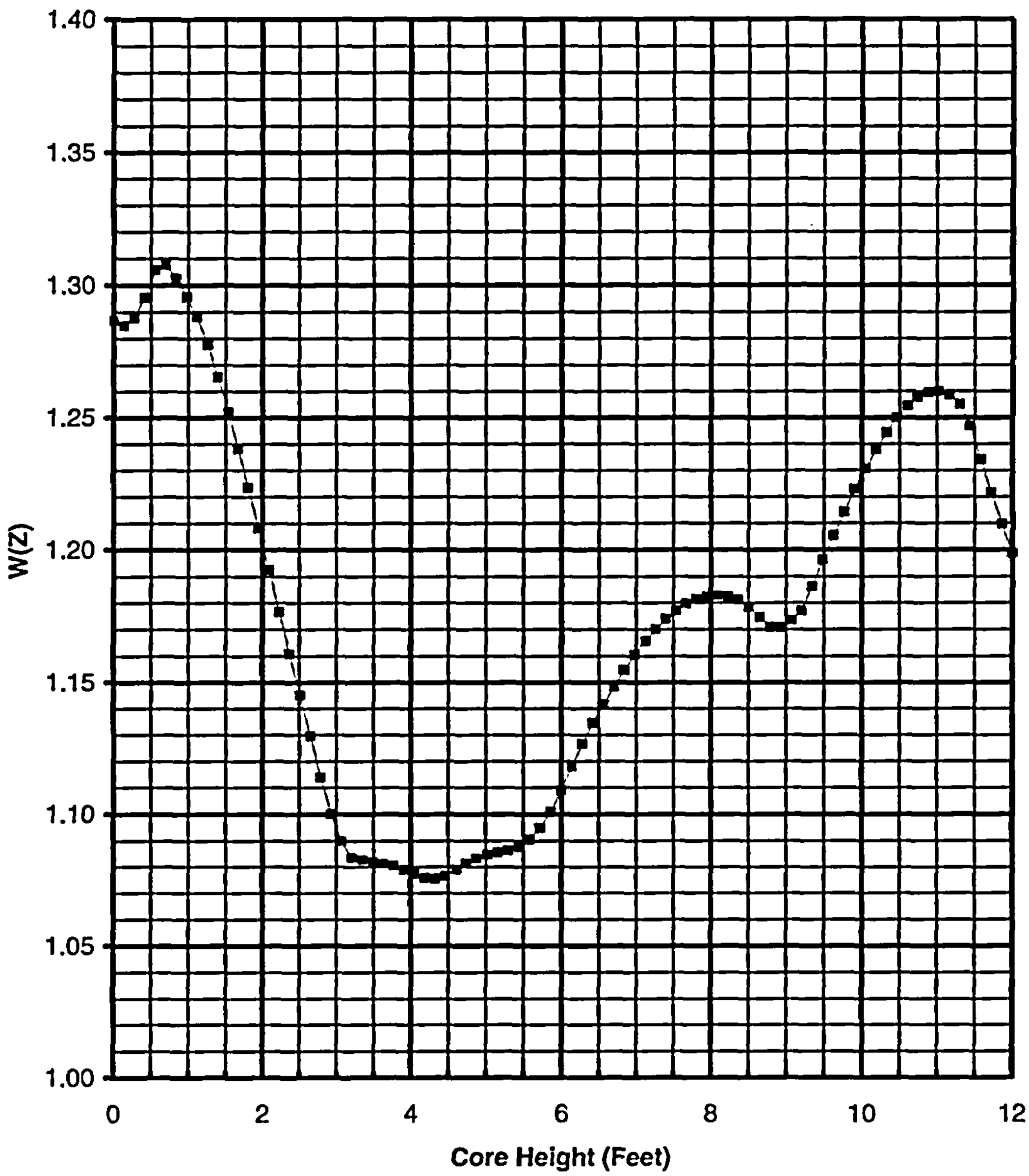


Table 3. RAOC W(z) at 10000 MWD/MTU
V. C. Summer - Cycle 16

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.287	6.14	1.118
0.14	1.285	6.28	1.127
0.28	1.288	6.42	1.135
0.42	1.295	6.56	1.142
0.56	1.306	6.70	1.148
0.70	1.308	6.84	1.155
0.84	1.303	6.98	1.160
0.98	1.296	7.12	1.166
1.12	1.288	7.26	1.170
1.26	1.278	7.40	1.174
1.40	1.265	7.54	1.177
1.54	1.252	7.67	1.180
1.67	1.238	7.81	1.181
1.81	1.224	7.95	1.182
1.95	1.208	8.09	1.183
2.09	1.193	8.23	1.182
2.23	1.177	8.37	1.181
2.37	1.161	8.51	1.179
2.51	1.145	8.65	1.175
2.65	1.130	8.79	1.171
2.79	1.114	8.93	1.171
2.93	1.100	9.07	1.174
3.07	1.090	9.21	1.177
3.21	1.084	9.35	1.186
3.35	1.083	9.49	1.196
3.49	1.082	9.63	1.206
3.63	1.081	9.77	1.214
3.77	1.080	9.91	1.223
3.91	1.079	10.05	1.231
4.05	1.077	10.19	1.238
4.19	1.076	10.33	1.244
4.33	1.075	10.46	1.250
4.46	1.077	10.61	1.255
4.61	1.079	10.74	1.258
4.74	1.081	10.88	1.260
4.88	1.083	11.02	1.260
5.02	1.085	11.16	1.259
5.16	1.086	11.30	1.255
5.30	1.086	11.44	1.247
5.44	1.088	11.58	1.234
5.58	1.091	11.72	1.221
5.72	1.095	11.86	1.210
5.86	1.101	12.00	1.199
6.00	1.109		

Figure 8. RAOC W(z) at 20000 MWD/MTU
V. C. Summer - Cycle 16

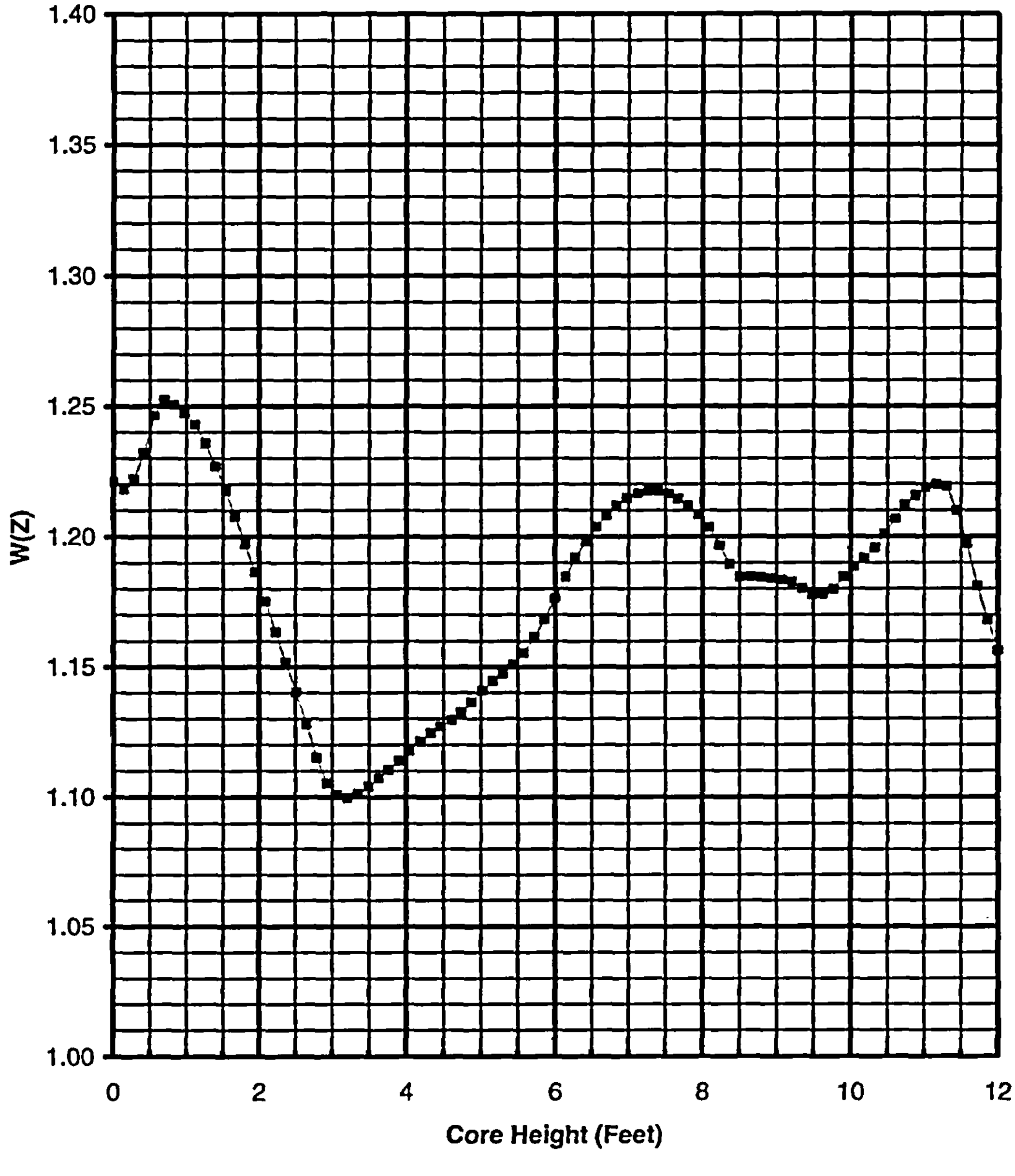


Table 4. RAOC W(z) at 20000 MWD/MTU
V. C. Summer - Cycle 16

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.221	6.14	1.185
0.14	1.218	6.28	1.192
0.28	1.222	6.42	1.198
0.42	1.232	6.56	1.204
0.56	1.247	6.70	1.208
0.70	1.252	6.84	1.212
0.84	1.251	6.98	1.215
0.98	1.248	7.12	1.217
1.12	1.243	7.26	1.217
1.26	1.236	7.40	1.217
1.40	1.227	7.54	1.216
1.54	1.218	7.67	1.215
1.67	1.208	7.81	1.212
1.81	1.197	7.95	1.208
1.95	1.187	8.09	1.203
2.09	1.175	8.23	1.197
2.23	1.164	8.37	1.190
2.37	1.152	8.51	1.185
2.51	1.140	8.65	1.185
2.65	1.128	8.79	1.184
2.79	1.115	8.93	1.184
2.93	1.105	9.07	1.183
3.07	1.101	9.21	1.183
3.21	1.100	9.35	1.180
3.35	1.101	9.49	1.178
3.49	1.104	9.63	1.178
3.63	1.107	9.77	1.180
3.77	1.110	9.91	1.185
3.91	1.114	10.05	1.188
4.05	1.118	10.19	1.192
4.19	1.121	10.33	1.196
4.33	1.125	10.46	1.201
4.46	1.127	10.61	1.207
4.61	1.129	10.74	1.212
4.74	1.132	10.88	1.216
4.88	1.136	11.02	1.219
5.02	1.141	11.16	1.220
5.16	1.145	11.30	1.219
5.30	1.147	11.44	1.210
5.44	1.151	11.58	1.197
5.58	1.155	11.72	1.181
5.72	1.161	11.86	1.168
5.86	1.168	12.00	1.156
6.00	1.176		

Table 5. RAOC F_Q Margin Decreases in Excess of 2% Per 31 EFPD

Cycle Burnup (MWD/MTU)	Maximum Decrease in F_Q Margin
2554	1.0200
2725	1.0207
2897	1.0228
3069	1.0238
3240	1.0238
3412	1.0227
3584	1.0211
3756	1.0200

Note: All cycle burnups outside the range of this table shall use a 1.020 decrease in margin for compliance with Specification 4.2.2.2e. Linear interpolation is adequate for intermediate cycle burnups.

Figure 9. Baseload W(z) at 150 MWD/MTU
V. C. Summer - Cycle 16

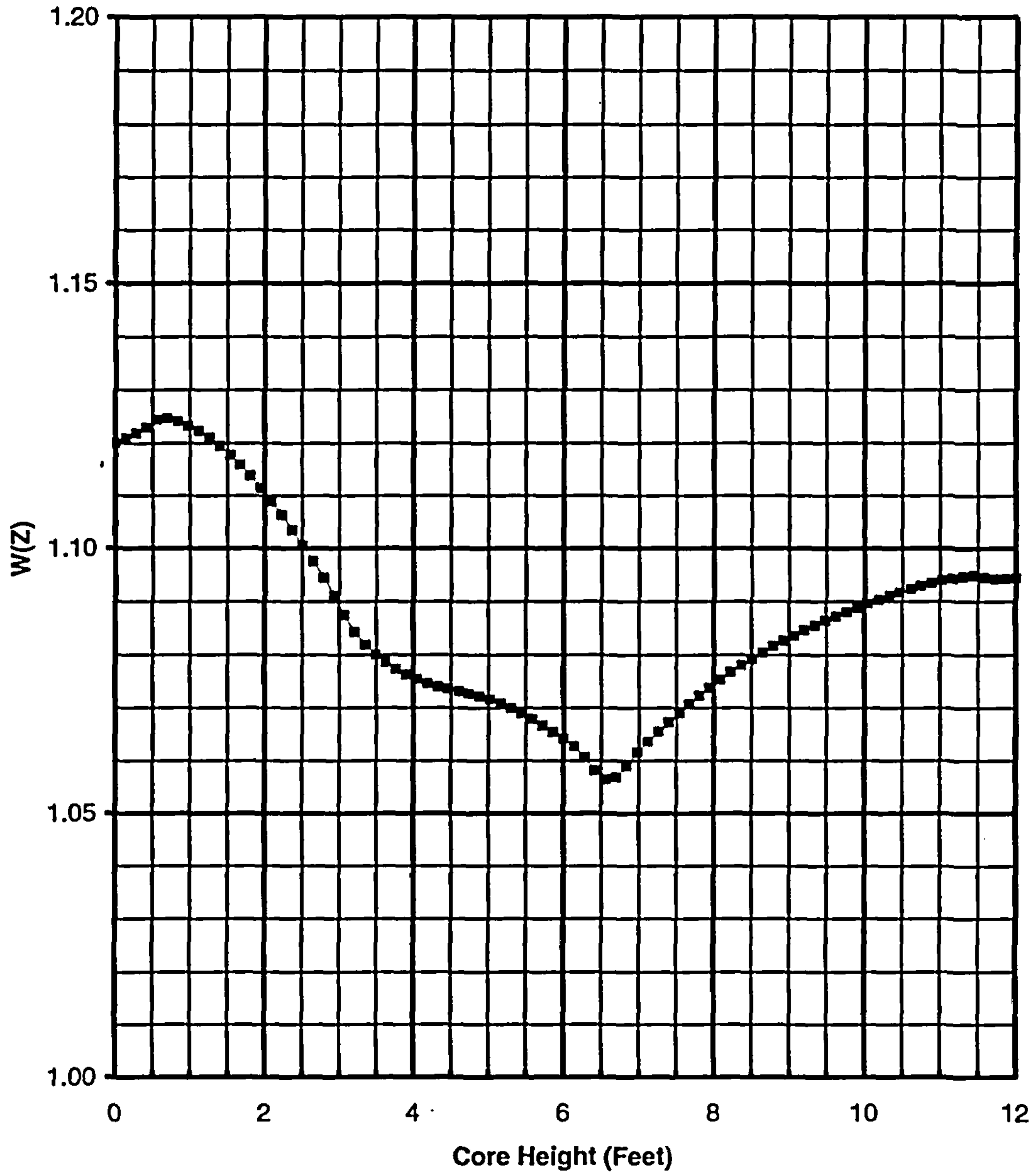


Table 6. Baseload W(z) at 150 MWD/MTU
V. C. Summer - Cycle 16

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.120	6.14	1.063
0.14	1.121	6.28	1.061
0.28	1.122	6.42	1.058
0.42	1.123	6.56	1.057
0.56	1.124	6.70	1.057
0.70	1.125	6.84	1.059
0.84	1.124	6.98	1.062
0.98	1.123	7.12	1.064
1.12	1.122	7.26	1.066
1.26	1.121	7.40	1.067
1.40	1.120	7.54	1.069
1.54	1.118	7.67	1.071
1.67	1.116	7.81	1.072
1.81	1.114	7.95	1.074
1.95	1.112	8.09	1.075
2.09	1.109	8.23	1.077
2.23	1.106	8.37	1.078
2.37	1.104	8.51	1.079
2.51	1.101	8.65	1.080
2.65	1.098	8.79	1.082
2.79	1.095	8.93	1.083
2.93	1.091	9.07	1.084
3.07	1.088	9.21	1.085
3.21	1.084	9.35	1.086
3.35	1.082	9.49	1.086
3.49	1.080	9.63	1.087
3.63	1.079	9.77	1.088
3.77	1.077	9.91	1.089
3.91	1.076	10.05	1.090
4.05	1.075	10.19	1.090
4.19	1.075	10.33	1.091
4.33	1.074	10.46	1.092
4.46	1.074	10.61	1.092
4.61	1.073	10.74	1.093
4.74	1.073	10.88	1.094
4.88	1.072	11.02	1.094
5.02	1.072	11.16	1.094
5.16	1.071	11.30	1.095
5.30	1.070	11.44	1.095
5.44	1.069	11.58	1.095
5.58	1.068	11.72	1.094
5.72	1.067	11.86	1.094
5.86	1.066	12.00	1.094
6.00	1.064		

Figure 10. Baseload W(z) at 1300 MWD/MTU
V. C. Summer - Cycle 16

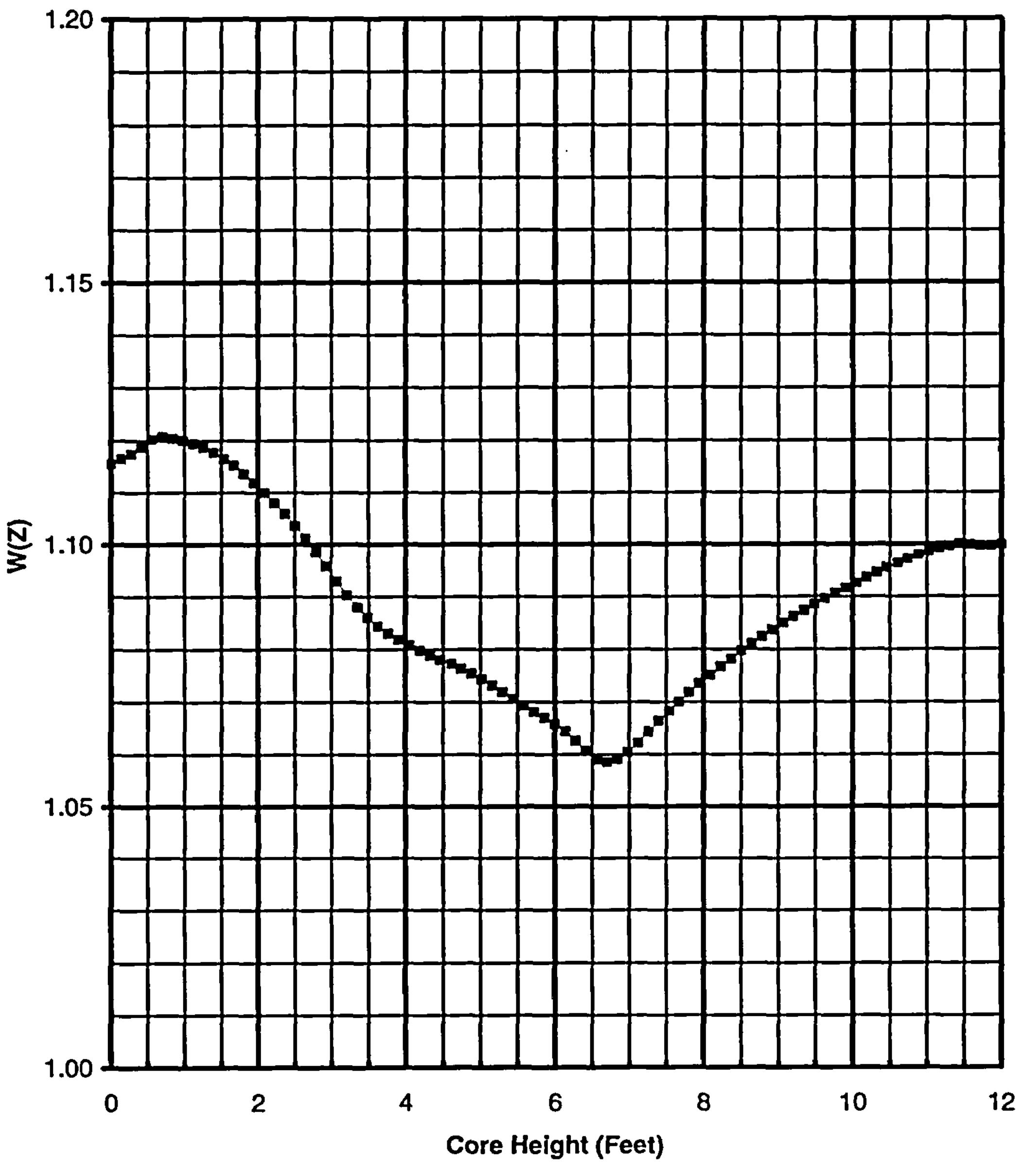


Table 7. Baseload W(z) at 1300 MWD/MTU
V. C. Summer - Cycle 16

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.116	6.14	1.064
0.14	1.117	6.28	1.063
0.28	1.117	6.42	1.061
0.42	1.119	6.56	1.059
0.56	1.120	6.70	1.059
0.70	1.121	6.84	1.059
0.84	1.120	6.98	1.060
0.98	1.120	7.12	1.062
1.12	1.119	7.26	1.064
1.26	1.119	7.40	1.066
1.40	1.118	7.54	1.068
1.54	1.117	7.67	1.070
1.67	1.115	7.81	1.072
1.81	1.114	7.95	1.074
1.95	1.112	8.09	1.075
2.09	1.110	8.23	1.077
2.23	1.108	8.37	1.078
2.37	1.106	8.51	1.080
2.51	1.104	8.65	1.081
2.65	1.101	8.79	1.082
2.79	1.099	8.93	1.084
2.93	1.096	9.07	1.085
3.07	1.093	9.21	1.086
3.21	1.090	9.35	1.087
3.35	1.088	9.49	1.089
3.49	1.086	9.63	1.090
3.63	1.084	9.77	1.091
3.77	1.083	9.91	1.092
3.91	1.082	10.05	1.093
4.05	1.081	10.19	1.094
4.19	1.080	10.33	1.095
4.33	1.079	10.46	1.096
4.46	1.078	10.61	1.096
4.61	1.077	10.74	1.097
4.74	1.076	10.88	1.098
4.88	1.075	11.02	1.099
5.02	1.074	11.16	1.099
5.16	1.073	11.30	1.100
5.30	1.072	11.44	1.100
5.44	1.071	11.58	1.100
5.58	1.069	11.72	1.100
5.72	1.068	11.86	1.100
5.86	1.067	12.00	1.100
6.00	1.066		

Figure 11. Baseload W(z) at 3000 MWD/MTU
V. C. Summer - Cycle 16

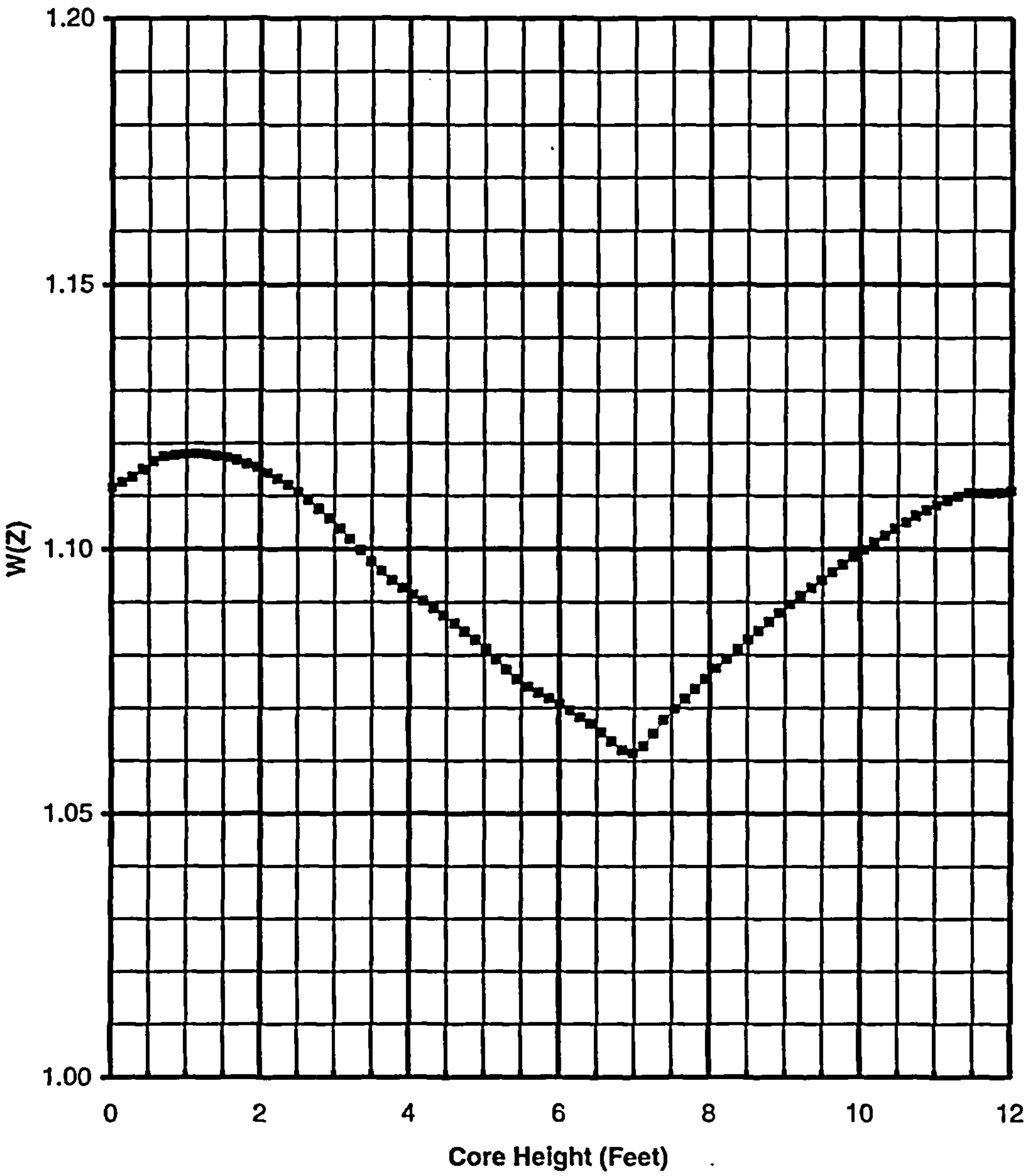


Table 8. Baseload W(z) at 3000 MWD/MTU
V. C. Summer - Cycle 16

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.112	6.14	1.070
0.14	1.113	6.28	1.068
0.28	1.114	6.42	1.067
0.42	1.115	6.56	1.065
0.56	1.117	6.70	1.064
0.70	1.118	6.84	1.062
0.84	1.118	6.98	1.061
0.98	1.118	7.12	1.063
1.12	1.118	7.26	1.065
1.26	1.118	7.40	1.068
1.40	1.118	7.54	1.070
1.54	1.117	7.67	1.072
1.67	1.117	7.81	1.074
1.81	1.116	7.95	1.076
1.95	1.115	8.09	1.078
2.09	1.114	8.23	1.079
2.23	1.113	8.37	1.081
2.37	1.112	8.51	1.083
2.51	1.111	8.65	1.085
2.65	1.109	8.79	1.086
2.79	1.108	8.93	1.088
2.93	1.106	9.07	1.090
3.07	1.104	9.21	1.091
3.21	1.102	9.35	1.093
3.35	1.100	9.49	1.094
3.49	1.098	9.63	1.096
3.63	1.096	9.77	1.097
3.77	1.094	9.91	1.099
3.91	1.093	10.05	1.100
4.05	1.091	10.19	1.101
4.19	1.090	10.33	1.103
4.33	1.089	10.46	1.104
4.46	1.088	10.61	1.105
4.61	1.086	10.74	1.106
4.74	1.085	10.88	1.107
4.88	1.083	11.02	1.108
5.02	1.081	11.16	1.109
5.16	1.079	11.30	1.110
5.30	1.077	11.44	1.111
5.44	1.076	11.58	1.111
5.58	1.074	11.72	1.110
5.72	1.073	11.86	1.111
5.86	1.072	12.00	1.111
6.00	1.071		

Figure 12. Baseload W(z) at 10000 MWD/MTU
V. C. Summer - Cycle 16

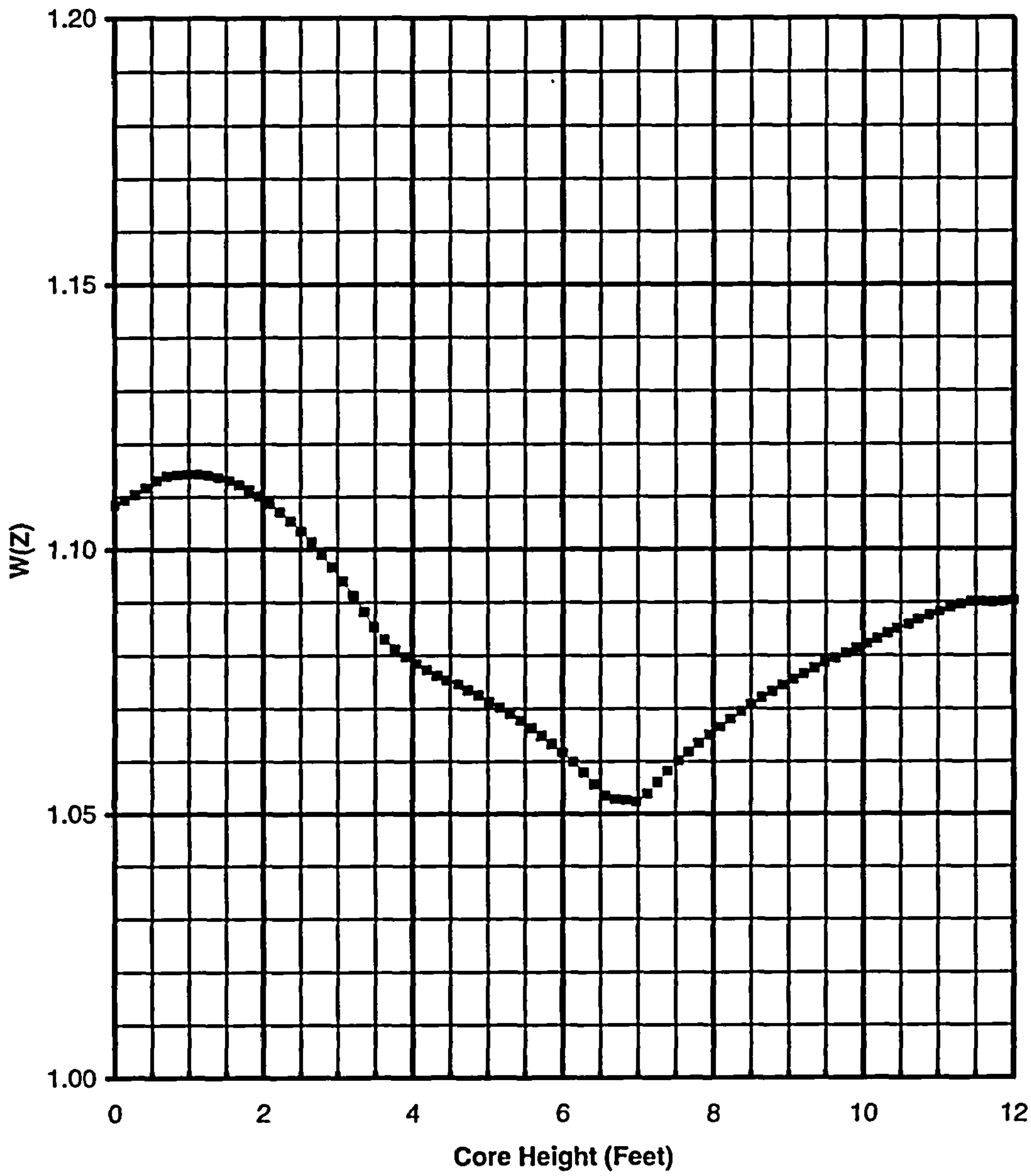


Table 9. Baseload W(z) at 10000 MWD/MTU
V. C. Summer - Cycle 16

Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.109	6.14	1.060
0.14	1.109	6.28	1.058
0.28	1.110	6.42	1.056
0.42	1.112	6.56	1.054
0.56	1.113	6.70	1.053
0.70	1.114	6.84	1.053
0.84	1.114	6.98	1.052
0.98	1.114	7.12	1.054
1.12	1.114	7.26	1.056
1.26	1.114	7.40	1.058
1.40	1.114	7.54	1.060
1.54	1.113	7.67	1.062
1.67	1.112	7.81	1.063
1.81	1.111	7.95	1.065
1.95	1.110	8.09	1.067
2.09	1.109	8.23	1.068
2.23	1.107	8.37	1.069
2.37	1.105	8.51	1.071
2.51	1.104	8.65	1.072
2.65	1.101	8.79	1.073
2.79	1.099	8.93	1.074
2.93	1.097	9.07	1.076
3.07	1.094	9.21	1.077
3.21	1.091	9.35	1.078
3.35	1.088	9.49	1.079
3.49	1.085	9.63	1.080
3.63	1.083	9.77	1.080
3.77	1.081	9.91	1.081
3.91	1.080	10.05	1.082
4.05	1.079	10.19	1.083
4.19	1.077	10.33	1.084
4.33	1.076	10.46	1.085
4.46	1.075	10.61	1.086
4.61	1.075	10.74	1.087
4.74	1.074	10.88	1.088
4.88	1.073	11.02	1.088
5.02	1.071	11.16	1.089
5.16	1.070	11.30	1.090
5.30	1.069	11.44	1.090
5.44	1.068	11.58	1.090
5.58	1.066	11.72	1.090
5.72	1.065	11.86	1.090
5.86	1.063	12.00	1.090
6.00	1.062		

Figure 13. Baseload W(z) at 20000 MWD/MTU
V. C. Summer - Cycle 16

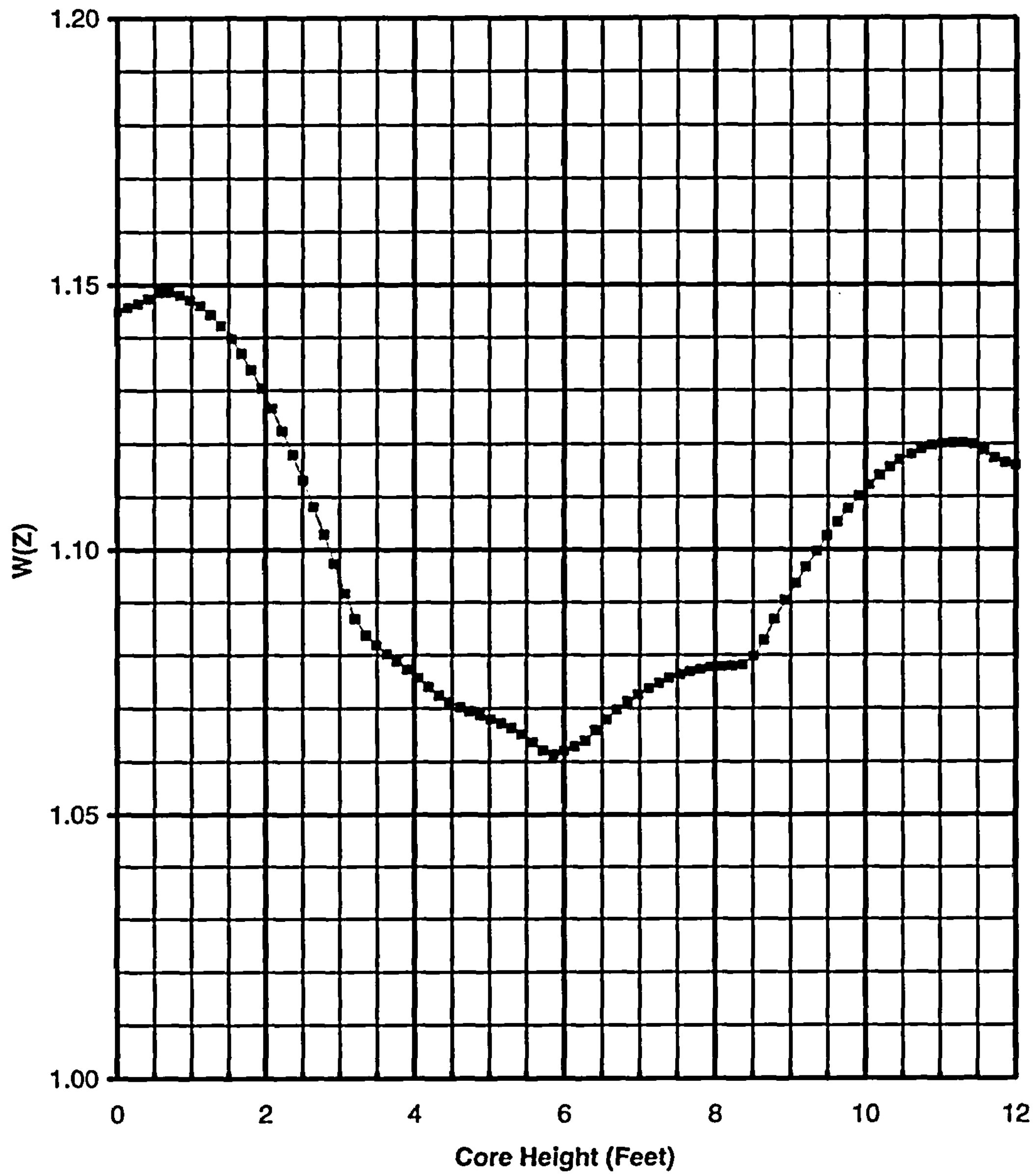


Table 10. Baseload W(z) at 20000 MWD/MTU
V. C. Summer - Cycle 16

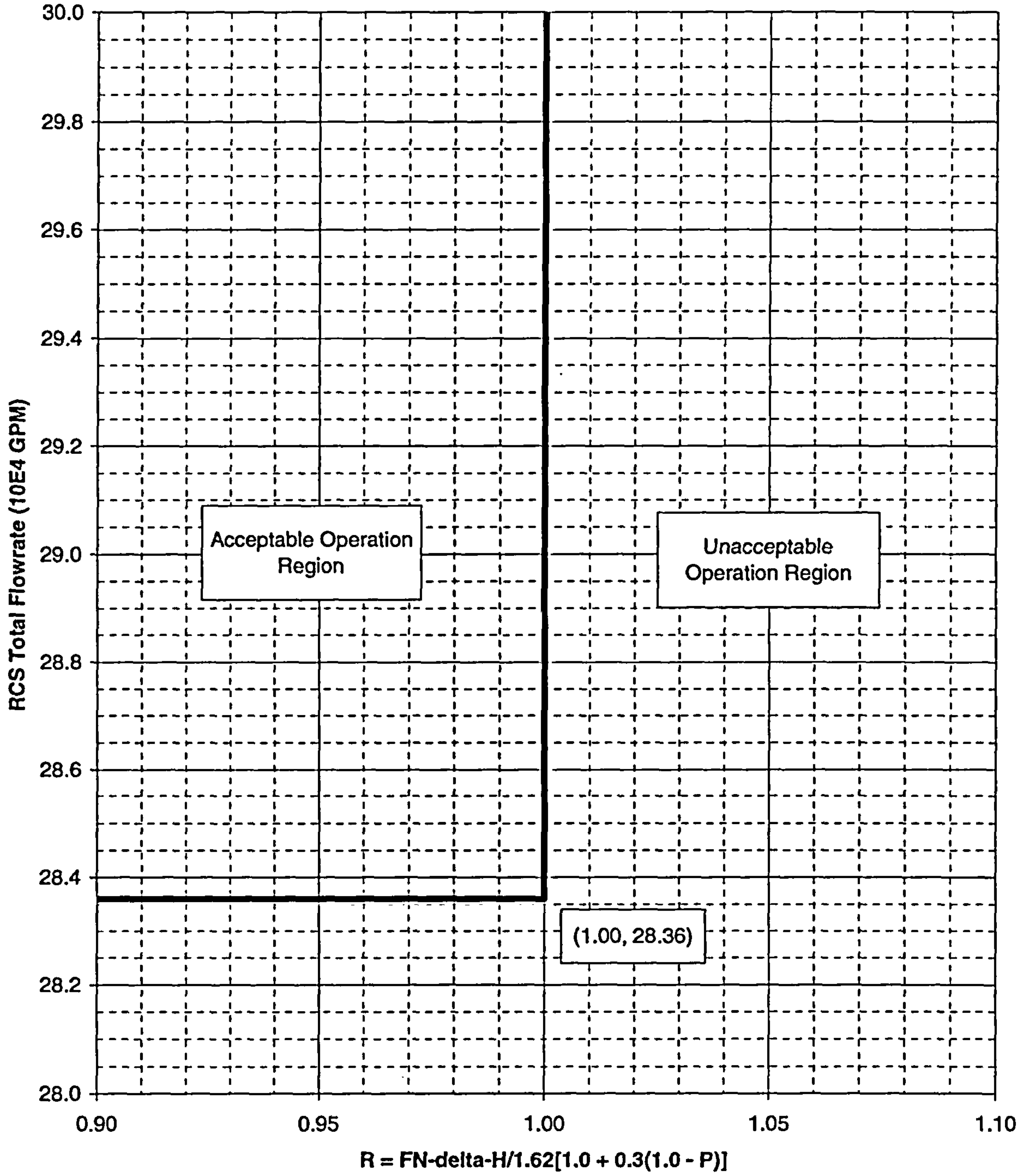
Core Height (ft)	W(z)	Core Height (ft)	W(z)
0.00	1.145	6.14	1.063
0.14	1.146	6.28	1.064
0.28	1.146	6.42	1.066
0.42	1.147	6.56	1.068
0.56	1.149	6.70	1.070
0.70	1.149	6.84	1.071
0.84	1.148	6.98	1.073
0.98	1.147	7.12	1.074
1.12	1.146	7.26	1.075
1.26	1.144	7.40	1.076
1.40	1.142	7.54	1.076
1.54	1.140	7.67	1.077
1.67	1.137	7.81	1.077
1.81	1.134	7.95	1.078
1.95	1.130	8.09	1.078
2.09	1.127	8.23	1.078
2.23	1.122	8.37	1.078
2.37	1.118	8.51	1.080
2.51	1.113	8.65	1.083
2.65	1.108	8.79	1.087
2.79	1.103	8.93	1.090
2.93	1.097	9.07	1.094
3.07	1.092	9.21	1.097
3.21	1.087	9.35	1.100
3.35	1.084	9.49	1.103
3.49	1.082	9.63	1.105
3.63	1.080	9.77	1.108
3.77	1.079	9.91	1.110
3.91	1.077	10.05	1.112
4.05	1.076	10.19	1.114
4.19	1.074	10.33	1.116
4.33	1.072	10.46	1.117
4.46	1.071	10.61	1.118
4.61	1.070	10.74	1.119
4.74	1.069	10.88	1.120
4.88	1.069	11.02	1.120
5.02	1.068	11.16	1.120
5.16	1.067	11.30	1.120
5.30	1.066	11.44	1.120
5.44	1.065	11.58	1.119
5.58	1.064	11.72	1.117
5.72	1.062	11.86	1.116
5.86	1.061	12.00	1.116
6.00	1.062		

Table 11. Baseload F_Q Margin Decreases in Excess of 2% Per 31 EFPD

Cycle Burnup (MWD/MTU)	Maximum Decrease in F_Q Margin
1008	1.0200
1180	1.0226
1352	1.0242
1524	1.0228
1695	1.0205
1867	1.0200
2039	1.0200
2210	1.0217
2382	1.0245
2554	1.0276
2725	1.0303
2897	1.0323
3069	1.0330
3240	1.0324
3412	1.0308
3584	1.0283
3756	1.0252
3927	1.0218
4099	1.0200

Note: All cycle burnups outside the range of this table shall use a 1.020 decrease in margin for compliance with Specification 4.2.2.4e. Linear interpolation is adequate for intermediate cycle burnups.

Figure 14. RCS Total Flowrate vs. R for Three Loop Operation
V. C. Summer - Cycle 16



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