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SUBJECT: Forwards peaking factor limit rept for Units 1 & 2, in accordance w/Tech Specs 6.9.1.6.

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SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
RADIAL PEAKING FACTOR LIMIT REPORT

Gentlemen:

In accordance with Technical Specification 6.9.1.6, Carolina Power & Light Company hereby submits the Peaking Factor Limit Report for Shearon Harris Unit 1 Cycle 2.

Please refer any questions regarding this submittal to Mr. Mark A. Turkal at (919) 362-2985.

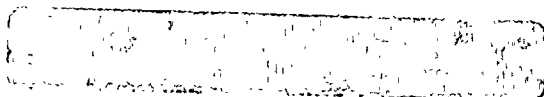
Yours very truly,

R. A. Watson

R. A. Watson
Vice President
Harris Nuclear Project

RAW:tbb

cc: Mr. D. H. Brown
Mr. B. C. Buckley
Dr. J. N. Grace
Mr. G. F. Maxwell



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PEAKING FACTOR LIMIT REPORT FOR SHEARON HARRIS UNIT 1 CYCLE 2

RAOC AND BASE LOAD OPERATION

This Peaking Factor Limit Report is provided in accordance with Paragraph 6.9.1.6 of the Shearon Harris Unit 1 Technical Specifications.

The Shearon Harris Unit 1 Cycle 2 elevation dependent $W(z)$ values for RAOC operation at beginning, middle, and near end-of-life are shown in Figures 1 through 3, respectively. This information is sufficient to determine $W(z)$ versus core height for Cycle 2 burnups through the end of full power reactivity plus a power coastdown of up to 1000 MWD/MTU through the use of three point interpolation.

The Shearon Harris Unit 1 Cycle 2 elevation dependent $W(z)$ values for base load operation between 85% and 100% of rated thermal power consistent with the Shearon Harris Unit 1 Technical Specification 4.2.2.3 at 150, 6000, and 12000 MWD/MTU Cycle 2 burnups are shown in Figures 4 through 6, respectively. This information is sufficient to determine $W(z)$ versus core height for Cycle 2 burnups through the end of full power reactivity plus a power coastdown of up to 1000 MWD/MTU through the use of three point interpolation.

$W(z)$ values for RAOC and base load operation were calculated using the method described in Part B of Reference 1.

The minimum allowable power level for base load operation, APL^{ND} , for Shearon Harris 1 Cycle 2 is 85 percent of rated thermal power.

The appropriate $W(z)$ function is used to confirm that the heat flux hot channel factor, $Fq(z)$, will be limited to the Technical Specification values of:

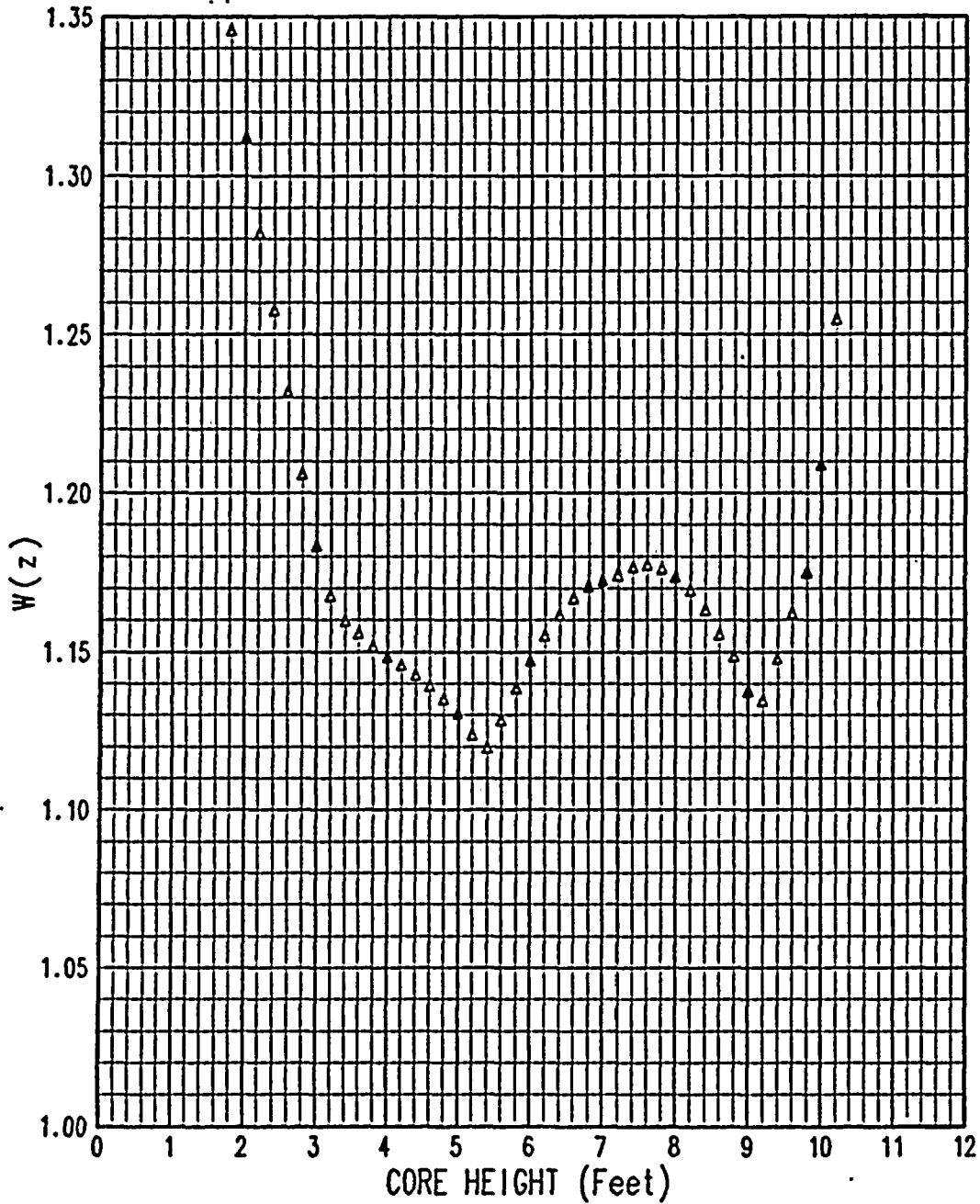
$$Fq(z) \leq \frac{2.32}{P} [K(z)] \text{ for } P > 0.50 \text{ and}$$

$$Fq(z) \leq 4.64 [K(z)] \text{ for } P \leq 0.50$$

The appropriate elevation dependent $W(z)$ values, when applied to a power distribution measured under equilibrium conditions, demonstrates that the initial conditions assumed in the LOCA are met, along with the ECCS acceptance criteria of 10CFR50.46.

- (1) WCAP-10216-P-A, Relaxation of Constant Axial Control - Fq Surveillance Technical Specification

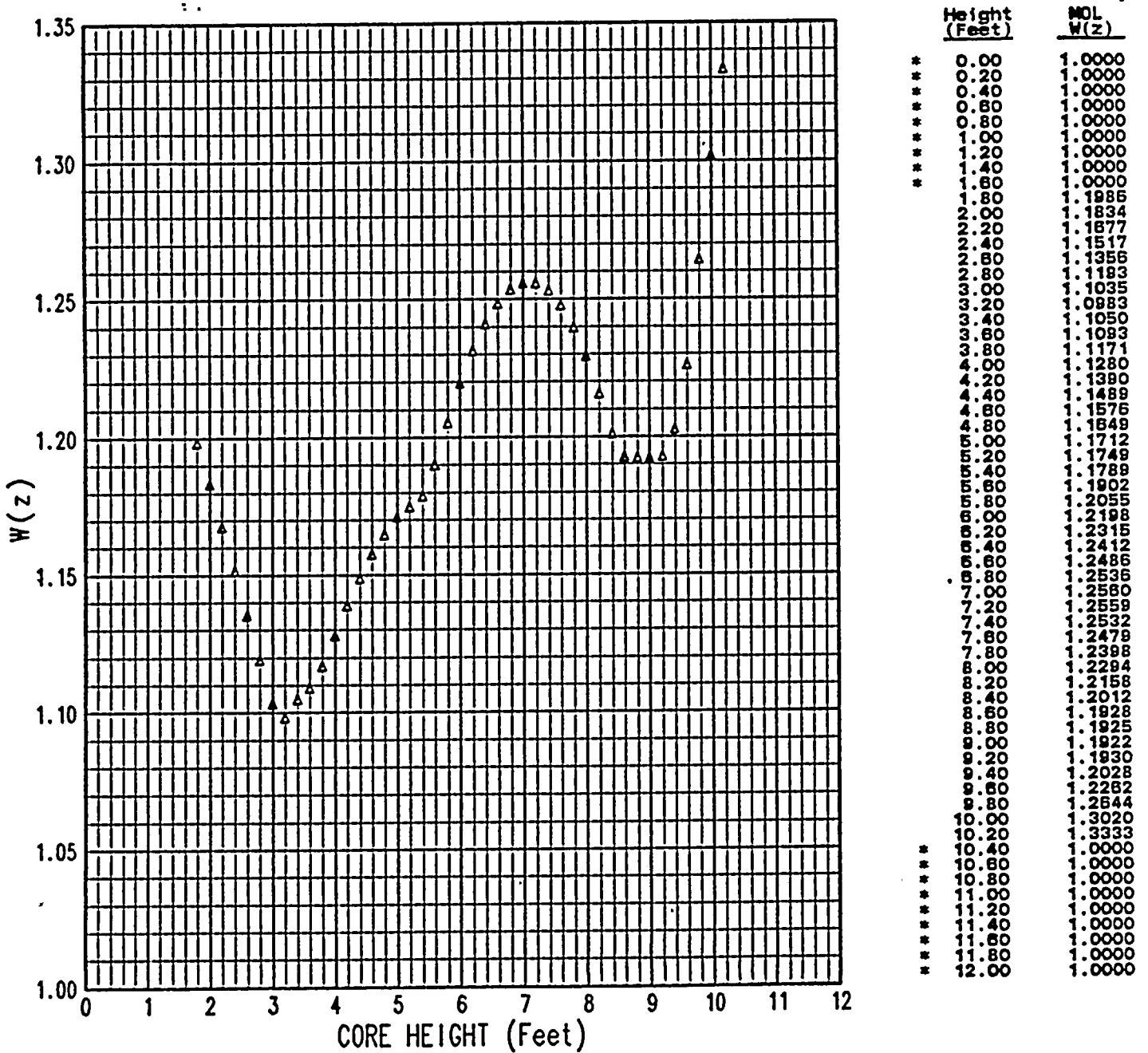
FIGURE 1
SHEARON HARRIS UNIT 1 CYCLE 2
RAOC W(Z) AT 150 MWD/MTU



Height (Feet)	BOL W(z)
* 0.00	1.0000
* 0.20	1.0000
* 0.40	1.0000
* 0.60	1.0000
* 0.80	1.0000
* 1.00	1.0000
* 1.20	1.0000
* 1.40	1.0000
* 1.60	1.0000
* 1.80	1.3459
* 2.00	1.3121
* 2.20	1.2821
* 2.40	1.2577
* 2.60	1.2321
* 2.80	1.2062
* 3.00	1.1836
* 3.20	1.1679
* 3.40	1.1598
* 3.60	1.1580
* 3.80	1.1519
* 4.00	1.1486
* 4.20	1.1460
* 4.40	1.1428
* 4.60	1.1394
* 4.80	1.1352
* 5.00	1.1307
* 5.20	1.1239
* 5.40	1.1198
* 5.60	1.1285
* 5.80	1.1387
* 6.00	1.1476
* 6.20	1.1554
* 6.40	1.1619
* 6.60	1.1671
* 6.80	1.1709
* 7.00	1.1726
* 7.20	1.1742
* 7.40	1.1767
* 7.60	1.1774
* 7.80	1.1764
* 8.00	1.1738
* 8.20	1.1896
* 8.40	1.1835
* 8.60	1.1558
* 8.80	1.1488
* 9.00	1.1378
* 9.20	1.1349
* 9.40	1.1481
* 9.60	1.1622
* 9.80	1.1751
* 10.00	1.2090
* 10.20	1.2551
* 10.40	1.0000
* 10.60	1.0000
* 10.80	1.0000
* 11.00	1.0000
* 11.20	1.0000
* 11.40	1.0000
* 11.60	1.0000
* 11.80	1.0000
* 12.00	1.0000

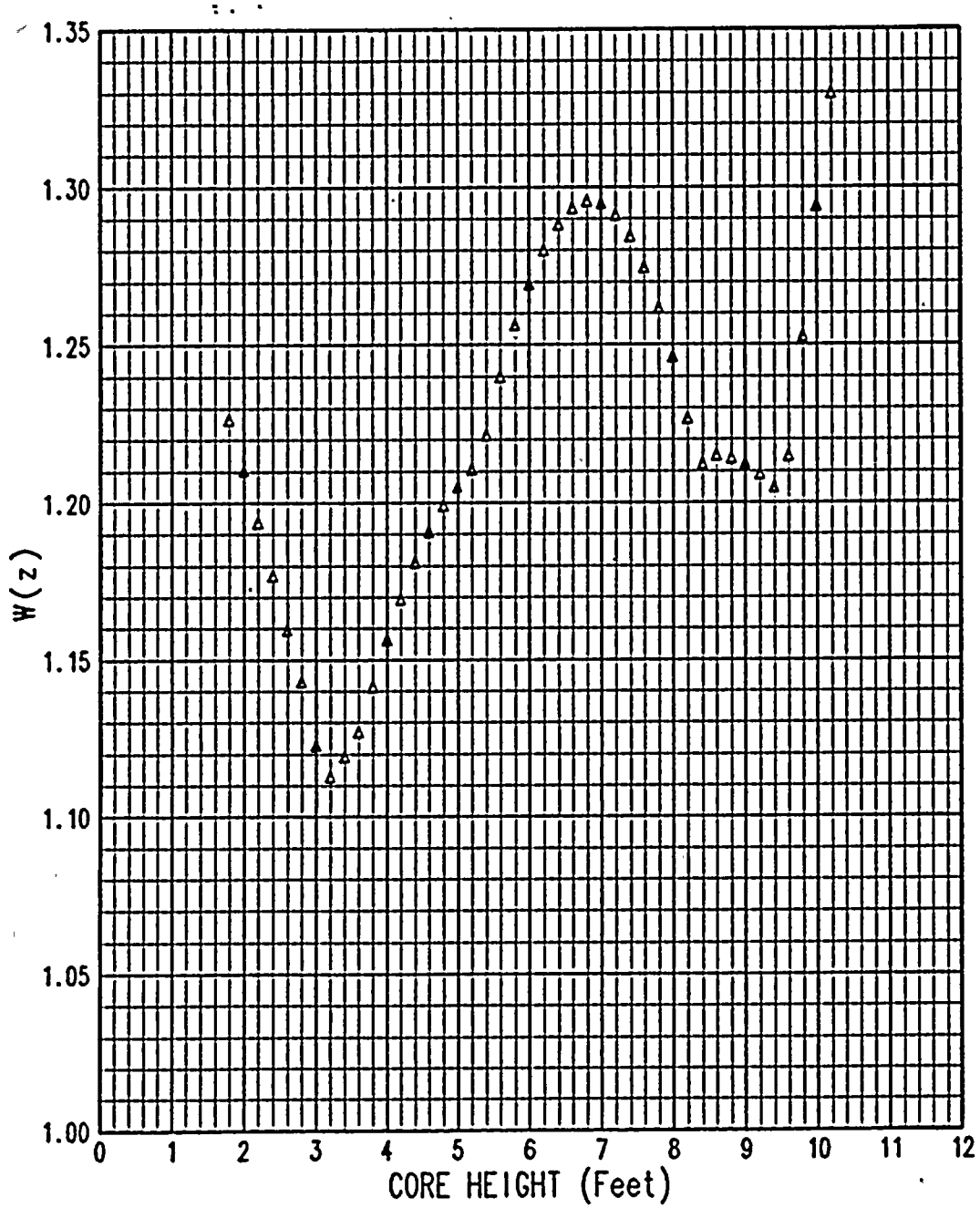
* TOP AND BOTTOM 15% EXCLUDED AS PER TECHNICAL SPECIFICATION 4.2.2.2.

FIGURE 2
SHEARON HARRIS UNIT 1 CYCLE 2
RAOC W(Z) AT 6000 MWD/MTU



* TOP AND BOTTOM 15% EXCLUDED AS PER TECHNICAL SPECIFICATION 4.2.2.2.

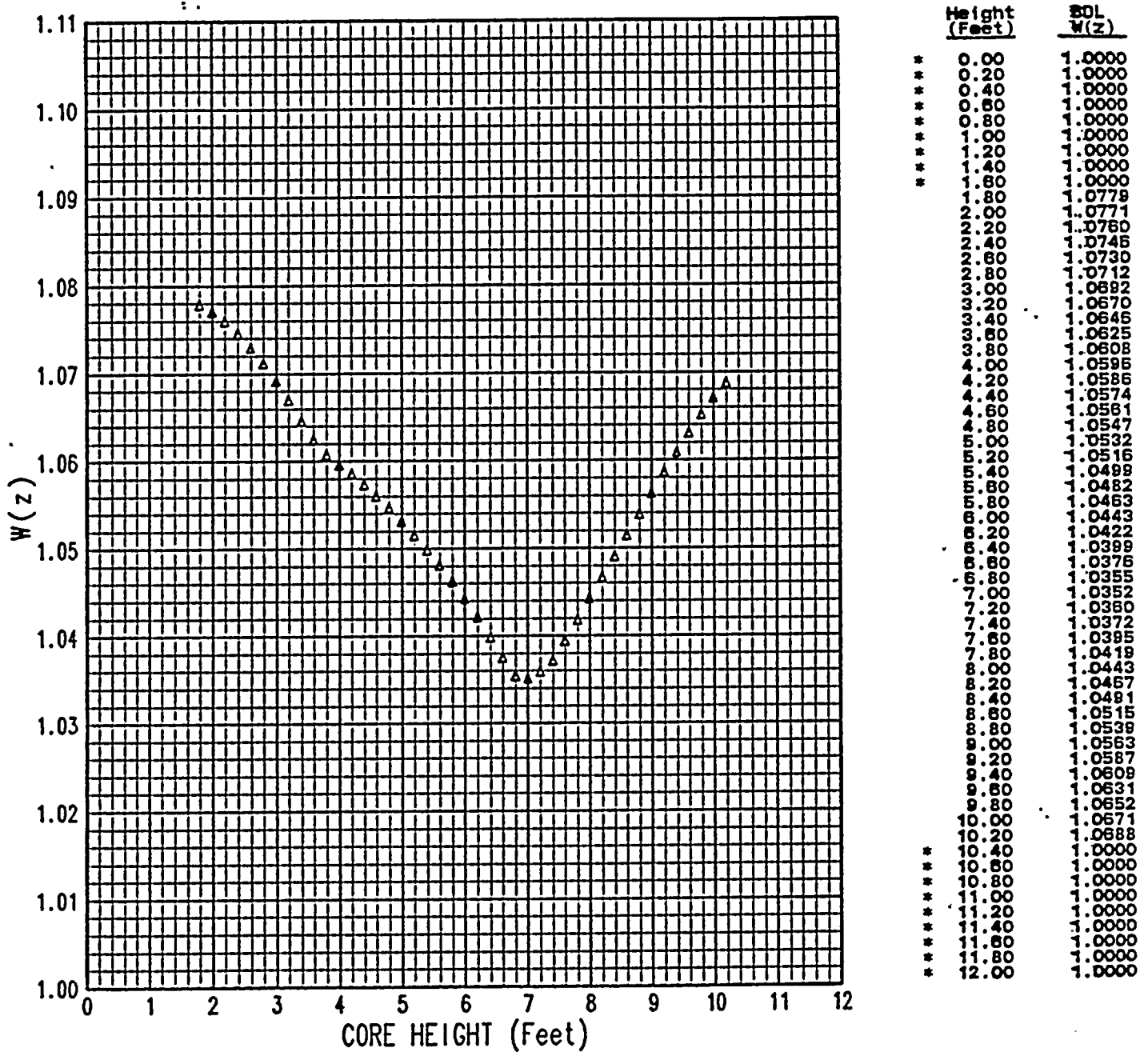
FIGURE 3
SHEARON HARRIS UNIT 1 CYCLE 2
RAOC W(Z) AT 12000 MWD/MTU



Height (Feet)	EOL W(z)
* 0.00	1.0000
* 0.20	1.0000
* 0.40	1.0000
* 0.60	1.0000
* 0.80	1.0000
* 1.00	1.0000
* 1.20	1.0000
* 1.40	1.0000
* 1.60	1.0000
* 1.80	1.2266
2.00	1.2104
2.20	1.1938
2.40	1.1770
2.60	1.1598
2.80	1.1430
3.00	1.1228
3.20	1.1128
3.40	1.1183
3.60	1.1273
3.80	1.1415
4.00	1.1565
4.20	1.1594
4.40	1.1811
4.60	1.1910
4.80	1.1993
5.00	1.2052
5.20	1.2108
5.40	1.2215
5.60	1.2401
5.80	1.2563
6.00	1.2694
6.20	1.2802
6.40	1.2882
6.60	1.2934
6.80	1.2957
7.00	1.2950
7.20	1.2913
7.40	1.2845
7.60	1.2747
7.80	1.2617
8.00	1.2462
8.20	1.2269
8.40	1.2124
8.60	1.2151
8.80	1.2143
9.00	1.2124
9.20	1.2082
9.40	1.2050
9.60	1.2149
9.80	1.2528
10.00	1.2941
10.20	1.3288
* 10.40	1.0000
* 10.60	1.0000
* 10.80	1.0000
* 11.00	1.0000
* 11.20	1.0000
* 11.40	1.0000
* 11.60	1.0000
* 11.80	1.0000
* 12.00	1.0000

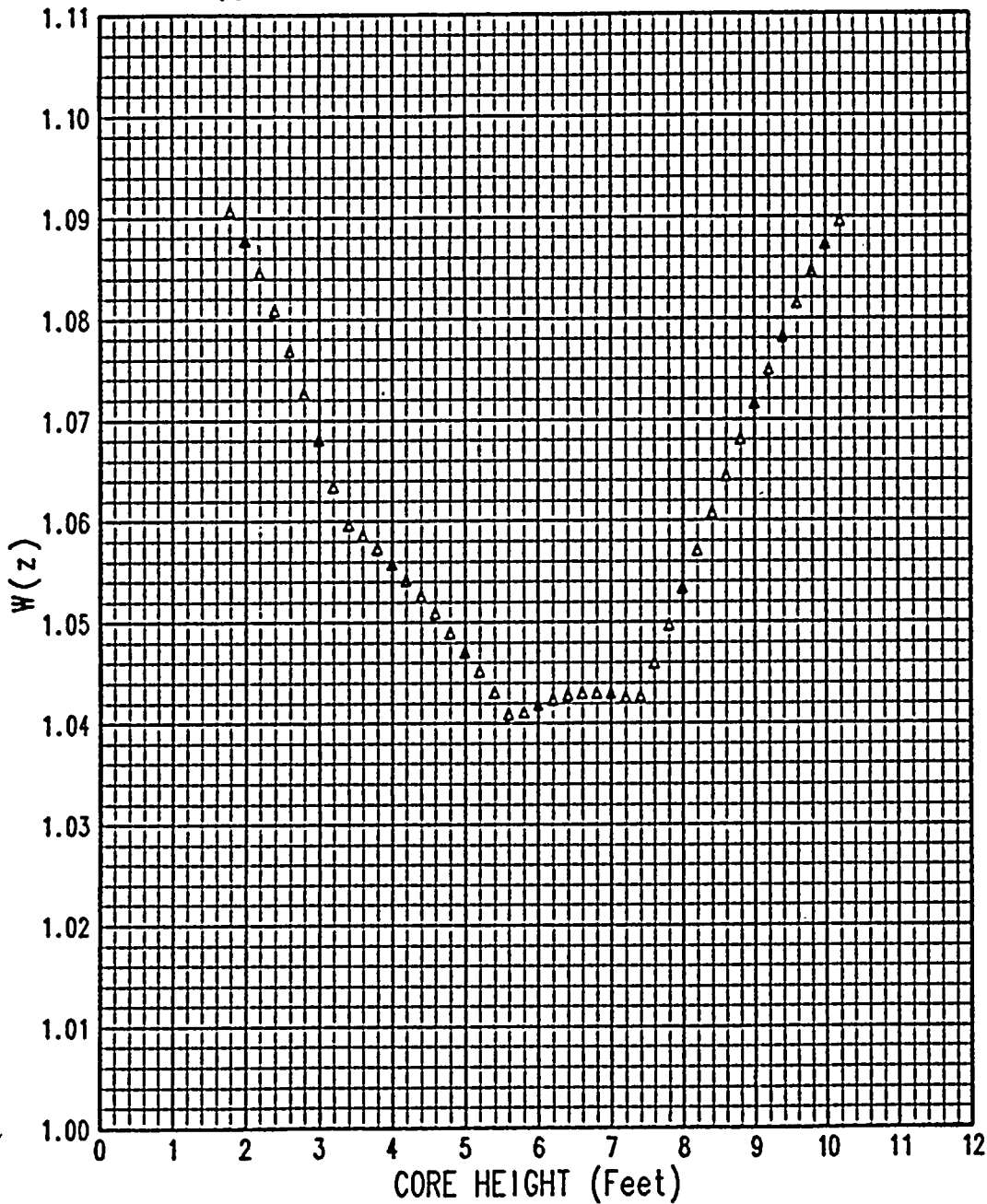
* TOP AND BOTTOM 15% EXCLUDED AS PER TECHNICAL SPECIFICATION 4.2.2.2.

FIGURE 4
SHEARON HARRIS UNIT 1 CYCLE 2
BASE LOAD W(Z) AT 150 MWD/MTU
FOR POWER LEVELS ABOVE 85% OF RATED THERMAL POWER



* TOP AND BOTTOM 15% EXCLUDED AS PER TECHNICAL SPECIFICATION 4.2.2.4.

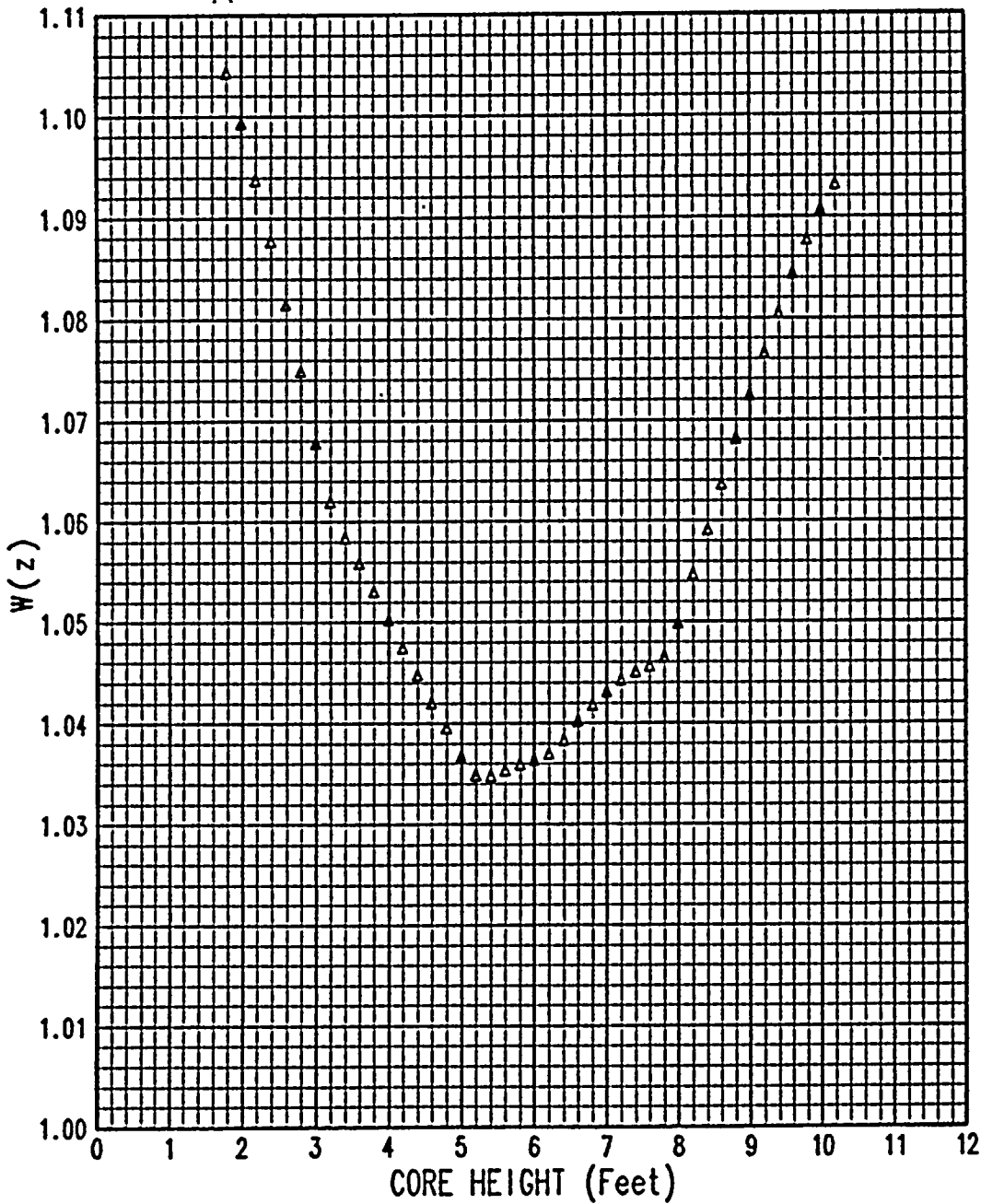
FIGURE 5
SHEARON HARRIS UNIT 1 CYCLE 2
BASE LOAD W(Z) AT 6000 MWD/MTU
FOR POWER LEVELS ABOVE 85% OF RATED THERMAL POWER



Height (Feet)	MOL W(z)
* 0.00	1.0000
* 0.20	1.0000
* 0.40	1.0000
* 0.80	1.0000
* 1.00	1.0000
* 1.20	1.0000
* 1.40	1.0000
* 1.80	1.0000
* 1.80	1.0807
2.00	1.0878
2.20	1.0846
2.40	1.0809
2.60	1.0769
2.80	1.0726
3.00	1.0681
3.20	1.0635
3.40	1.0597
3.60	1.0586
3.80	1.0573
4.00	1.0558
4.20	1.0542
4.40	1.0526
4.60	1.0509
4.80	1.0490
5.00	1.0471
5.20	1.0452
5.40	1.0431
5.60	1.0409
5.80	1.0411
6.00	1.0419
6.20	1.0424
6.40	1.0428
6.60	1.0430
6.80	1.0430
7.00	1.0430
7.20	1.0426
7.40	1.0427
7.60	1.0460
7.80	1.0488
8.00	1.0534
8.20	1.0571
8.40	1.0608
8.60	1.0645
8.80	1.0681
9.00	1.0716
9.20	1.0749
9.40	1.0782
9.60	1.0815
9.80	1.0846
10.00	1.0873
10.20	1.0896
* 10.40	1.0000
* 10.60	1.0000
* 10.80	1.0000
* 11.00	1.0000
* 11.20	1.0000
* 11.40	1.0000
* 11.60	1.0000
* 11.80	1.0000
* 12.00	1.0000

* TOP AND BOTTOM 15% EXCLUDED AS PER TECHNICAL SPECIFICATION 4.2.2.4.

FIGURE 6
SHEARON HARRIS UNIT 1 CYCLE 2
BASE LOAD W(Z) AT 12000 MWD/MTU
FOR POWER LEVELS ABOVE 85% OF RATED THERMAL POWER



Height (Feet)	EOL W(z)
* 0.00	1.0000
* 0.20	1.0000
* 0.40	1.0000
* 0.60	1.0000
* 0.80	1.0000
* 1.00	1.0000
* 1.20	1.0000
* 1.40	1.0000
* 1.60	1.0000
* 1.80	1.1044
* 2.00	1.0984
* 2.20	1.0938
* 2.40	1.0878
* 2.60	1.0815
* 2.80	1.0749
* 3.00	1.0678
* 3.20	1.0620
* 3.40	1.0585
* 3.60	1.0559
* 3.80	1.0531
* 4.00	1.0503
* 4.20	1.0475
* 4.40	1.0448
* 4.60	1.0421
* 4.80	1.0386
* 5.00	1.0368
* 5.20	1.0348
* 5.40	1.0348
* 5.60	1.0354
* 5.80	1.0360
* 6.00	1.0364
* 6.20	1.0370
* 6.40	1.0384
* 6.60	1.0403
* 6.80	1.0419
* 7.00	1.0432
* 7.20	1.0443
* 7.40	1.0451
* 7.60	1.0457
* 7.80	1.0466
* 8.00	1.0488
* 8.20	1.0548
* 8.40	1.0592
* 8.60	1.0637
* 8.80	1.0682
* 9.00	1.0725
* 9.20	1.0766
* 9.40	1.0806
* 9.60	1.0844
* 9.80	1.0878
* 10.00	1.0907
* 10.20	1.0932
* 10.40	1.0000
* 10.60	1.0000
* 10.80	1.0000
* 11.00	1.0000
* 11.20	1.0000
* 11.40	1.0000
* 11.60	1.0000
* 11.80	1.0000
* 12.00	1.0000

* TOP AND BOTTOM 15% EXCLUDED AS PER TECHNICAL SPECIFICATION 4.2.2.4.