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December 14, 1984

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. C. H. Berlinger, Chief
Core Performance Branch

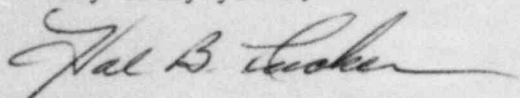
Subject: McGuire Nuclear Station
Docket Nos. 50-369 and 50-370
McGuire 2/Cycle 2 OFA Reload-Peaking Factor Limit Report

Dear Mr. Denton:

My letter of November 16, 1984 submitted proposed license amendments to facility operating licenses NPF-9 and NPF-17 for McGuire Nuclear Station, Units 1 and 2, respectively. The amendments change plant operating limitations given in the Technical Specifications affected by use of the optimized fuel assembly (OFA) design for McGuire Unit 2/Cycle 2 to ensure plant operation consistent with the design and safety evaluations. The submittal indicated that the peaking factor limit report which is required in accordance with the proposed McGuire Unit 2 technical specification paragraph 6.9.1.9 (as given in Attachment 1 of the submittal) would be submitted by December 14, 1984.

Attached is the Peaking Factor Limit Report for McGuire Unit 2/Cycle 2. This report provides the $W(Z)$ functions that are to be used for RAOC and base load operation during Cycle 2, and the value for APL^{ND} . For both RAOC and base load operation, a set of data covering three specific burnup steps is provided which permits the determination of $W(Z)$ at any cycle burnup through the use of three point interpolation. The information for base load operation has been obtained using a ± 5 percent AFD about a measured target in the power interval between 80% and 100% of rated thermal power. Figures 1-3 are the $W(Z)$ functions appropriate for RAOC operation and Figures 4-6 are the $W(Z)$ functions appropriate for base load operation. The appropriate $W(Z)$ function is used to confirm that the heat flux hot channel factor, $F_q(z)$, will be limited to the values specified in the Technical Specifications.

Very truly yours,



Hal B. Tucker

PBN:mjf

Attachment

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1/1* *Original
To: Reg Files*

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Mr. Harold R. Denton, Director
December 14, 1984
Page 2

cc: (w/attachment)

Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Mr. Dayne Brown, Chief
Radiation Protection Branch
Division of Facility Services
Department of Human Resources
P. O. Box 12200
Raleigh, North Carolina 27605

Mr. W. T. Orders
Senior Resident Inspector
McGuire Nuclear Station

PEAKING FACTOR LIMIT REPORT FOR MCGUIRE UNIT 2 CYCLE 2

RAOC AND BASE LOAD OPERATION

This Peaking Factor Limit Report is provided in accordance with Paragraph 6.9.1.9 of the McGuire Unit 2 Technical Specifications.

The McGuire Unit 2, 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 in the range of 0 MWD/MTU to 10700 MWD/MTU through the use of three point interpolation.

The McGuire Unit 2, Cycle 2 elevation dependent $W(z)$ values for base load operation between 80% and 100% of rated thermal power with a ± 5 percent AFD about a measured target value at 150, 4000, and 9000 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 in the range of 0 MWD/MTU to 10700 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.

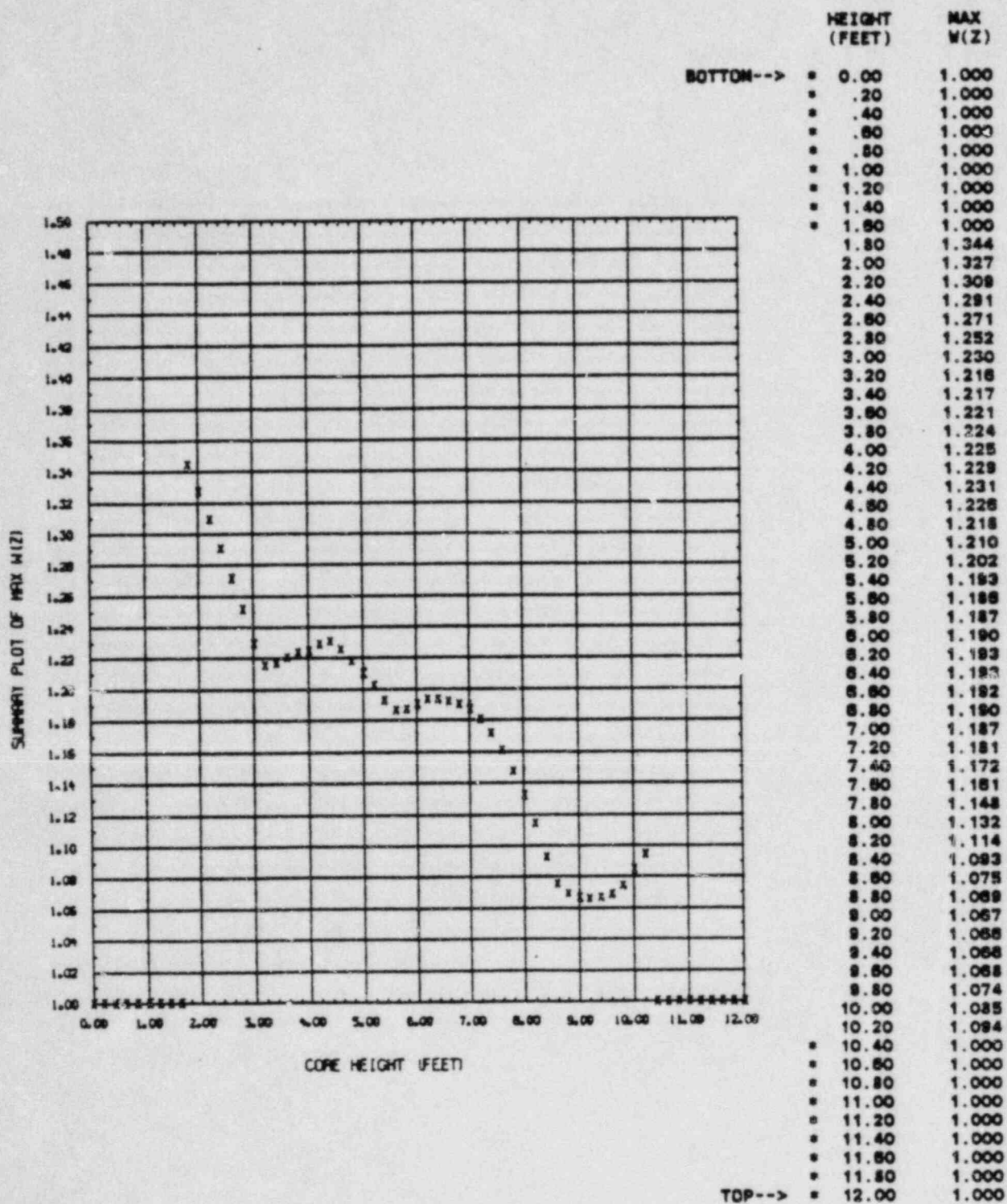
The minimum allowable power level for base load operation, APL^{ND} , for McGuire 2 Cycle 2 is 80 percent of rated thermal power.

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

$$F_q(z) \leq \frac{2.26}{P} [K(z)] \text{ for } P > 0.50 \text{ and}$$
$$F_q(z) \leq 4.52 [K(z)] \text{ for } P \leq 0.50$$

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.

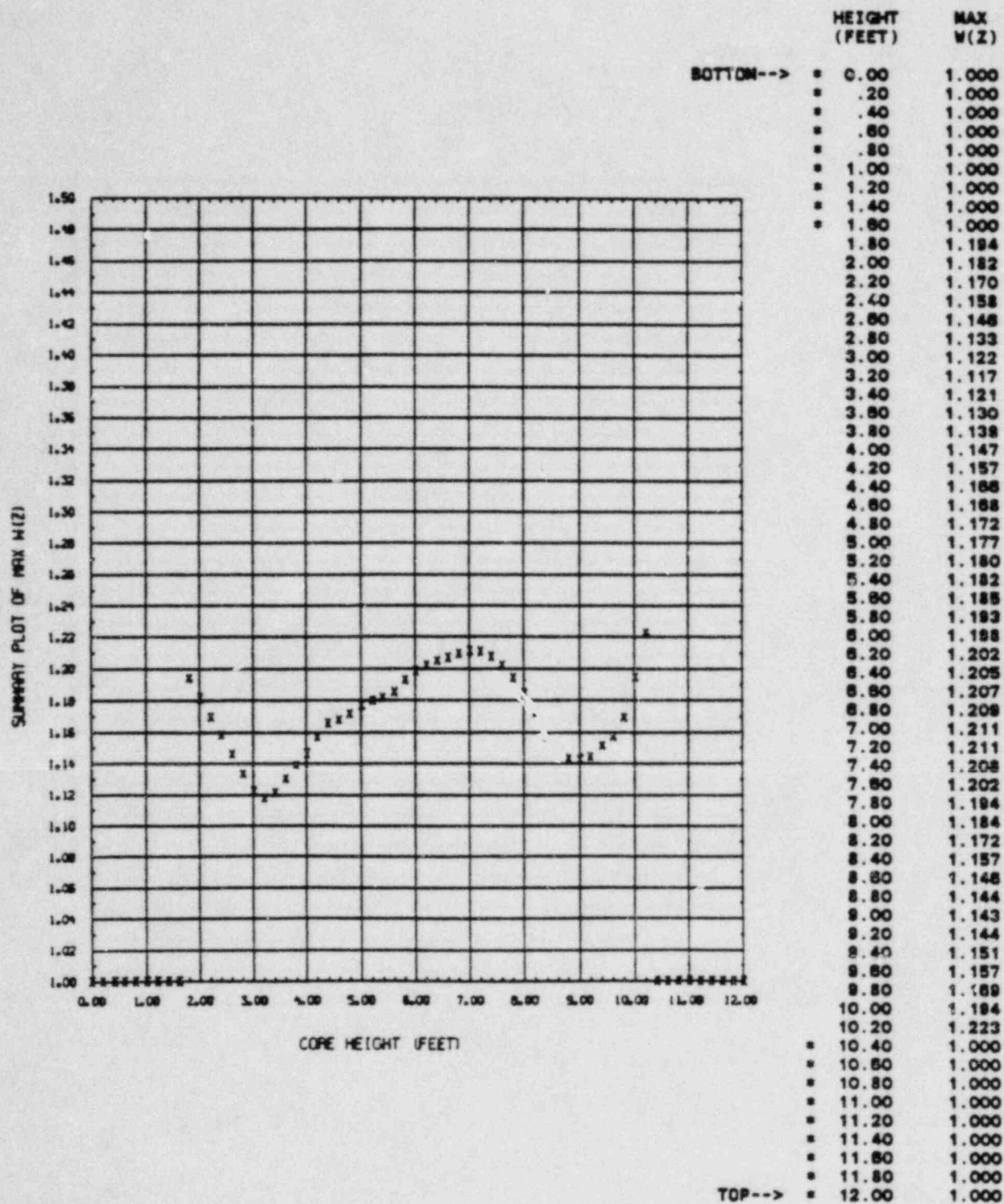
- (1) WCAP-10216-P-A, Relaxation of Constant Axial Control - F_q Surveillance Technical Specification



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

Figure 1

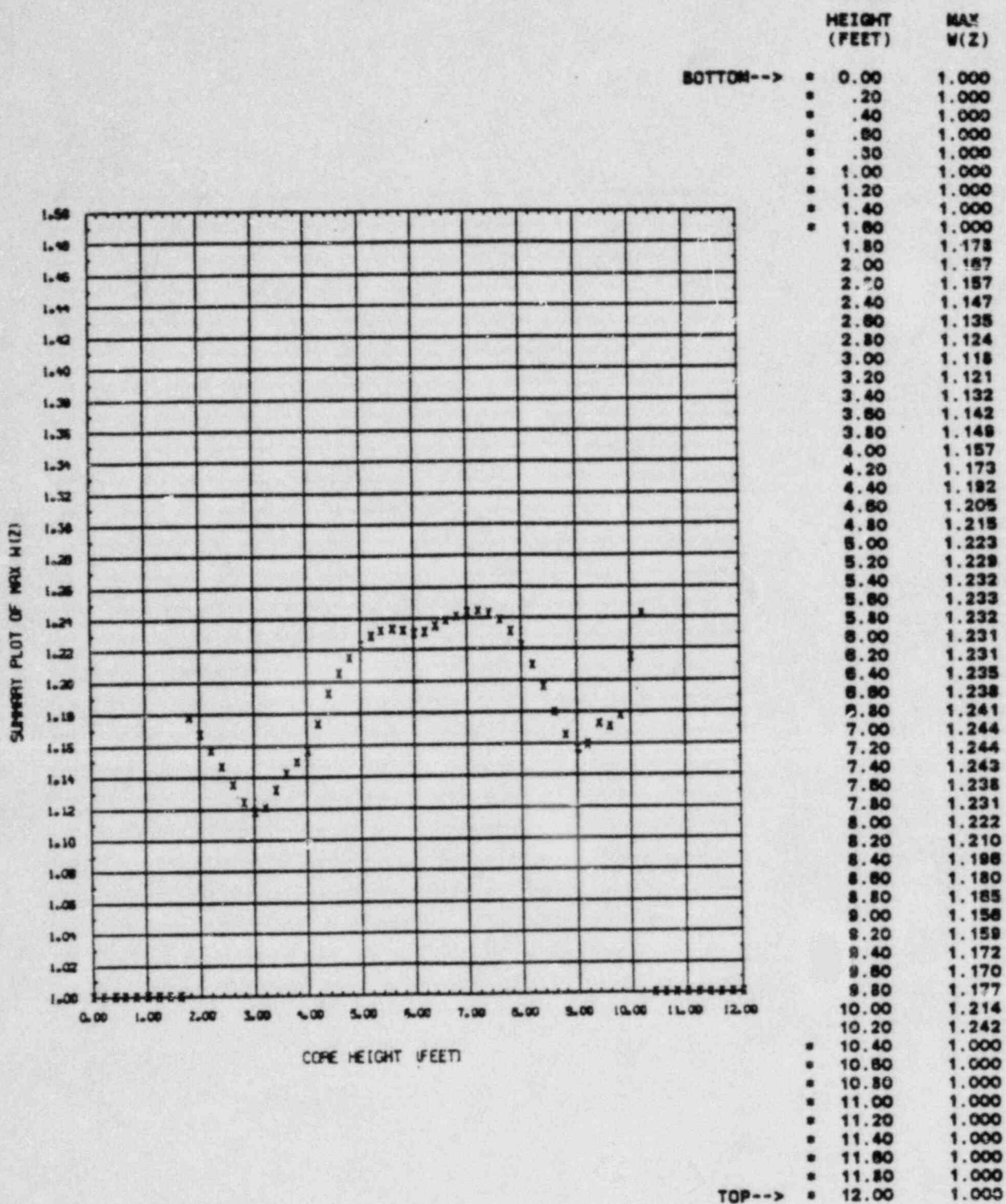
McGuire Unit 2 Cycle 2
RAOC W(z) at 150 MWD/MTU



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

Figure 2

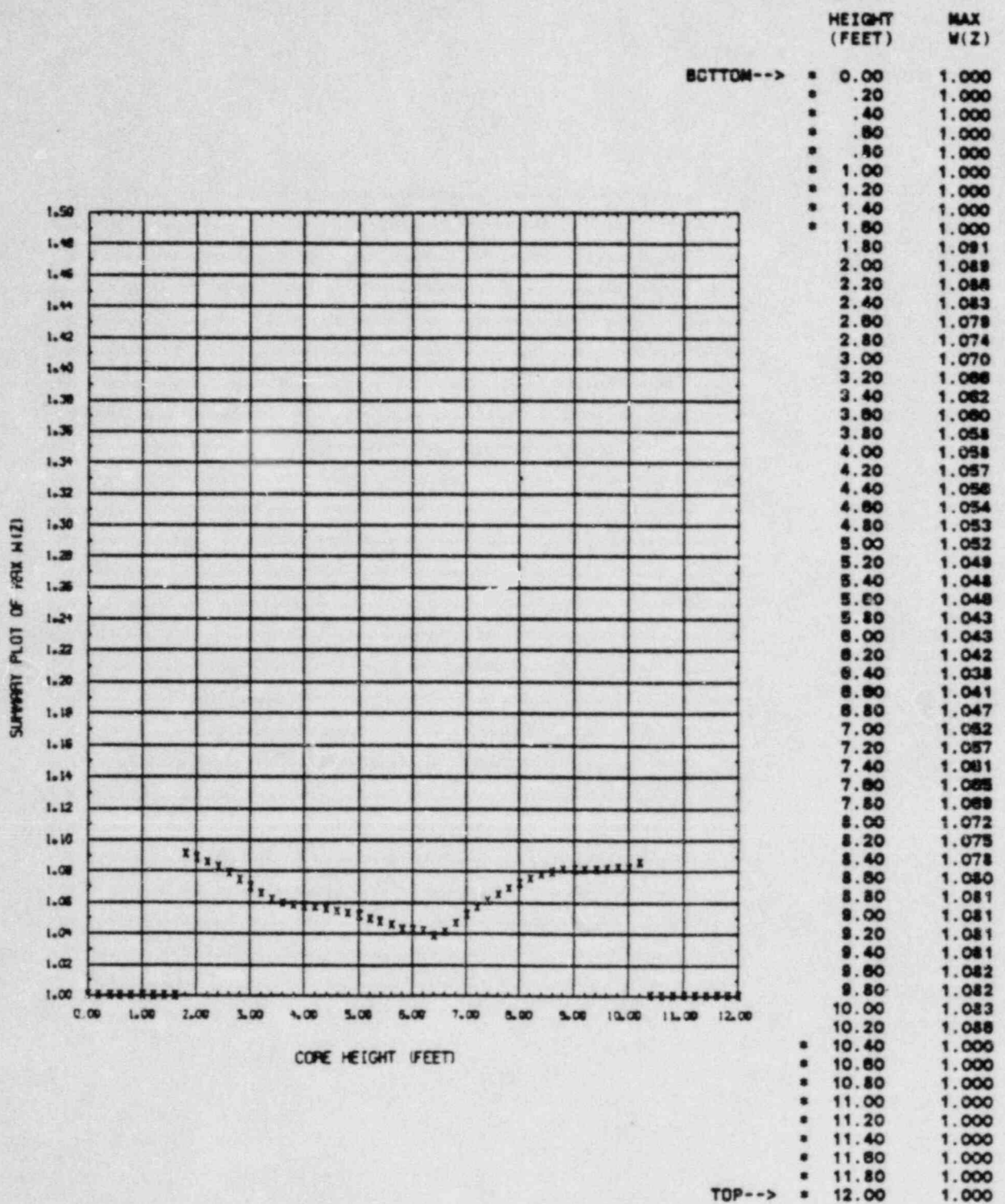
McGuire Unit 2 Cycle 2
RAOC W(z) at 4000 MWD/MTU



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

Figure 3

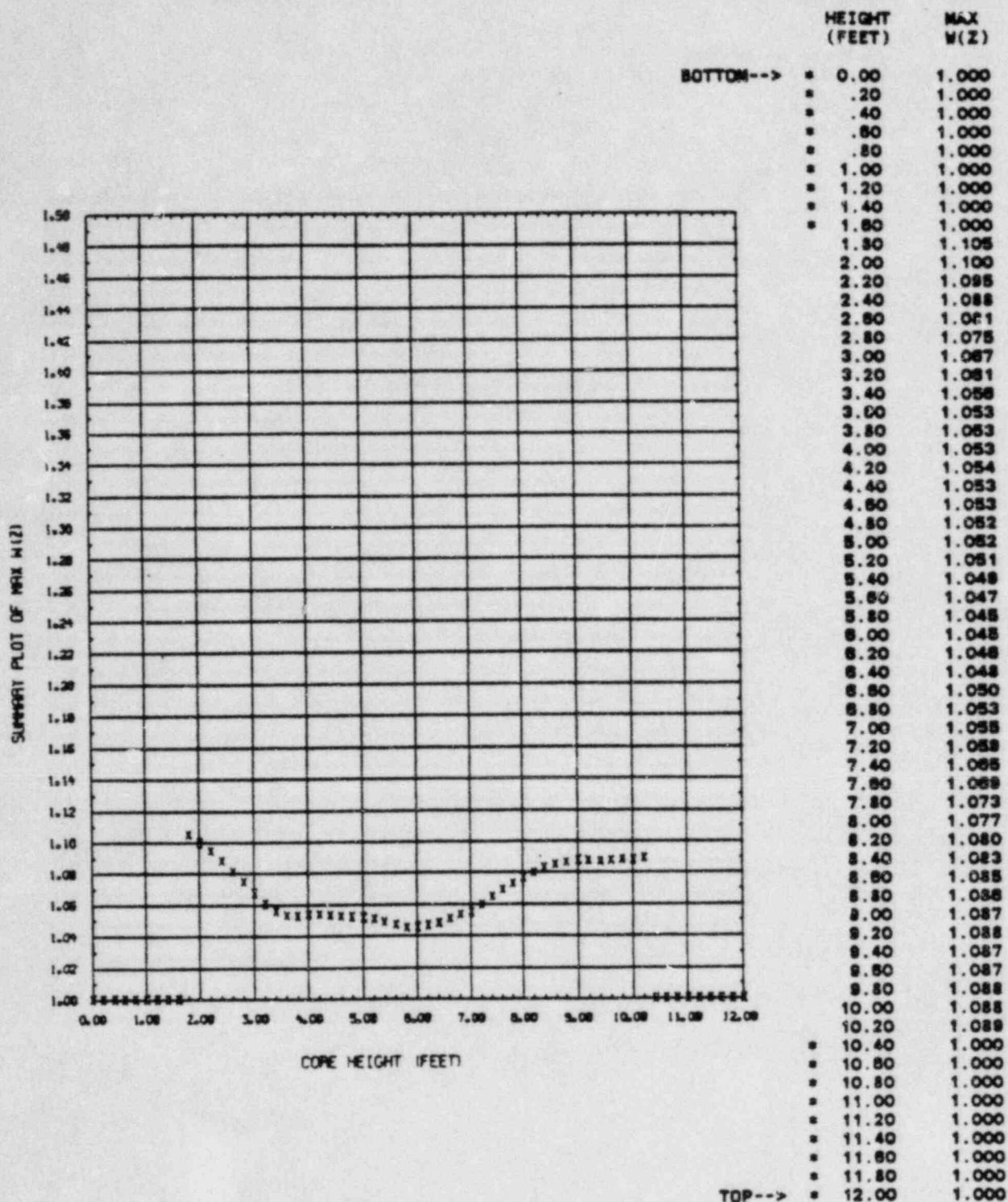
McGuire Unit 2 Cycle 2
RAOC W(z) at 9000 MWD/MTU



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

Figure 4

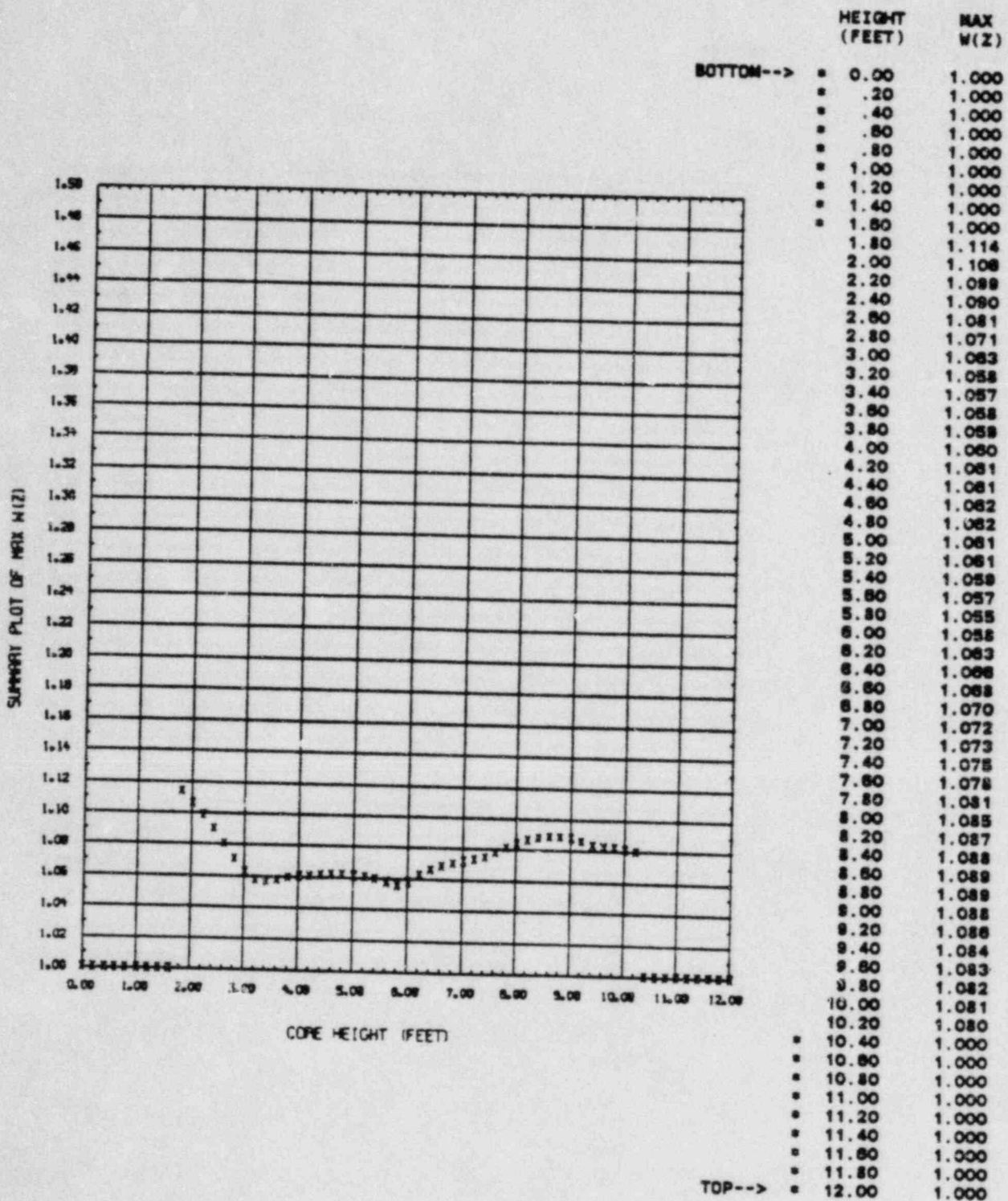
McGuire Unit 2 Cycle 2
 Baseload W(z) for Powers Between 80% and 100% of Rated Thermal Power
 Within $\pm 5\%$ AFD of the Measured Target
 150 MWD/MTU



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

Figure 5

McGuire Unit 2 Cycle 2
 Baseload W(z) for Powers Between 80% and 100% of Rated Thermal Power
 Within $\pm 5\%$ AFD of Measured Target
 4000 MWD/MTU



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

Figure 6

McGuire Unit 2 Cycle 2
 Baseload W(z) for Powers Between 80% and 100% of Rated Thermal Power
 Within $\pm 5\%$ AFD of Measured Target
 9000 MWD/MTU