DUKE POWER COMPANY
P.O. BOX 33189
CHARLOTTE, N.C. 28242

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

TELEPHONE
(704) 373-4531

July 20, 1984

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

Attention: Ms. E. G. Adensam, Chief
Licensing Branch No. 4

Subject: McGuire Nuclear Station
Docket Nos. 50-369 and 50-370
Base Load Operation Technical Specifications

Dear Mr. Denton:

My letter of June 14, 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 (which were subsequently approved on June 21, 1984) expanded the Power Distribution Limits section of the McGuire Unit 1 Technical Specifications to include Base Load Operation in addition to the previously approved RAOC Operation.

The McGuire 1 Cycle 2 Peaking Factor Limit Report format and content were amended to provide information which permits the exact determination of W(z) versus core height as a function of cycle burnup through the use of three point interpolation of three sets of burnup specific data. The report provides the elevation dependent W(z) values that are to be used as inputs to define the appropriate fitting coefficients for W(z) interpolations to be performed as a function of cycle burnup and axial elevation for RAOC and Base Load Operation, and the value for APL^{ND}. The June 14, 1984 submittal (Attachment 2A) included an amended McGuire Unit 1/Cycle 2 Peaking Factor Limit Report which contained the W(z) functions for RAOC Operation during Cycle 2 and Base Load Operation in the Cycle 2 burnup range of 1200 to 6000 MWD/MTU, and indicated that the base load W(z) functions for the remainder of Cycle 2 (Burnups greater than 6000 MWD/MTU) would be submitted in July, 1984.

Attached is the Peaking Factor Limit Report for McGuire Unit 1/Cycle 2 Base Load Operation in the Cycle 2 burnup range of 1200 to 10,200 MWD/MTU. This information has been derived for Base Load Operation with a ±3 percent AFD about a measured target in the power interval from 80 to 100 percent of rated thermal power. The W(z) functions for Cycle 2 burnups of 1200, 3000, and 6000 MWD/MTU were previously transmitted in the June 14, 1984 submittal. These functions are included in Figures 1-3 of the attached report for completeness. W(z) functions for the remainder of Cycle 2 (8000 and 9500 MWD/MTU) are given in figures 4 and 5. Using the W(z) functions shown in figures 1-5, the W(z) values for Cycle burnups between 1200 and 10,200 MWD/MTU can be determined using three point interpolation (for three point interpolation, the W(z) values from the three burnup steps closest to the measured burnup are used).

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In addition, the June 14, 1984 submittal indicated that the application contained one Class III License Amendment for McGuire Unit 1 and one Class I Amendment for McGuire Unit 2 (pursuant to 10 CFR 170.22), and that consequently a check in the amount of $4,400.00 would be forwarded separately in accordance with 10 CFR 170.12. This check is enclosed.

Very truly yours,

H. B. Tucker 1-3-84

Hal B. Tucker

PBN:glb

Attachment
Enclosure

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 1, CYCLE 2

BASE LOAD OPERATION

This Peaking Factor Limit Report is provided in accordance with Paragraph 6.9.1.9 of the McGuire Unit 1 Technical Specifications.

The McGuire Unit 1, Cycle 2 elevation dependent W(z) values for base load operation between 80% and 100% of rated thermal power with a ±3 percent AFD about a measured target value at 1200, 3000, 6000, 8000, and 9500 MWD/MTU Cycle 2 burnups are shown in Figures 1 through 5 respectively. This information is sufficient to determine W(z) versus core height for Cycle 2 burnups in the range of 1200 MWD/MTU to 10,200 MWD/MTU through the use of three point interpolation. W(z) was calculated using the method described in Part B of Reference 1.

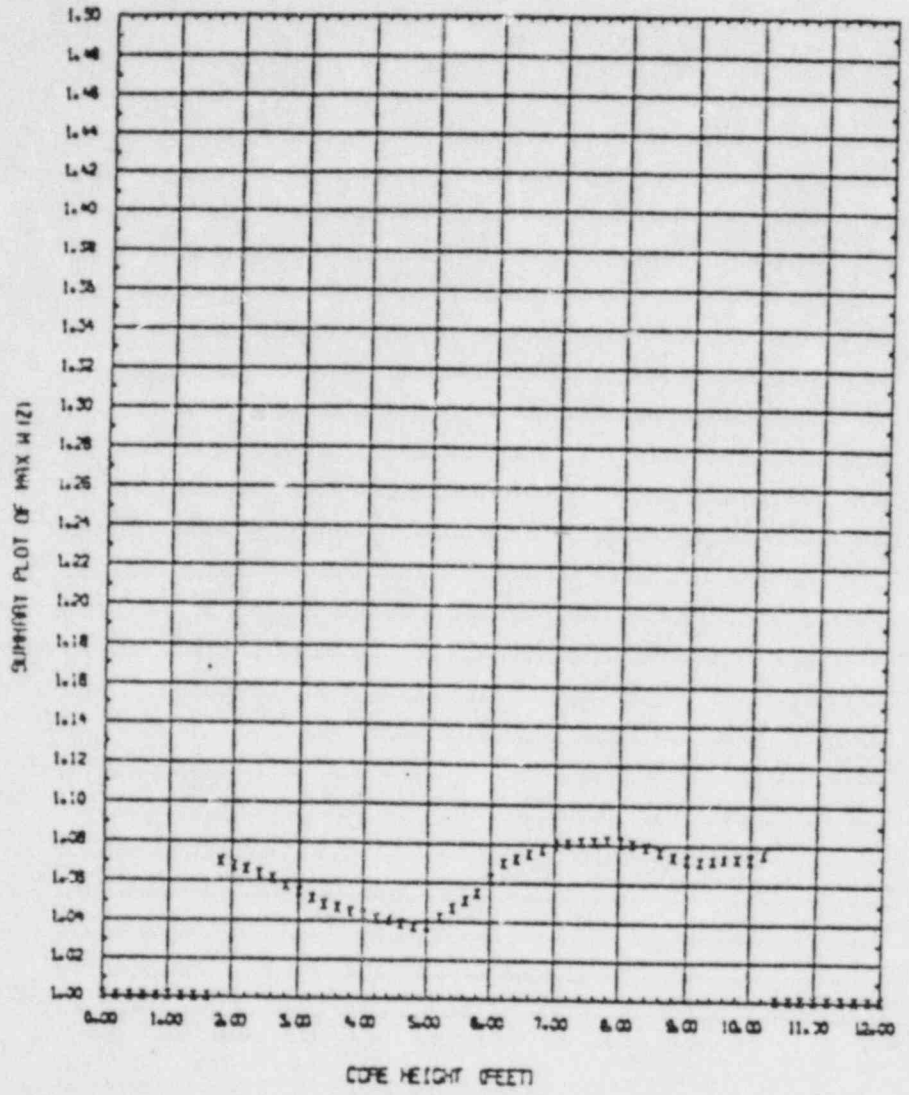
The minimum allowable power level for base load operation, APL^{ND}, for McGuire 1 Cycle 2 is 80 percent of rated thermal power. The appropriate W(z) function is used to confirm that the heat flux hot channel factor, $F_Q(z)$ will be limited to the Technical Specification values of:

$$F_Q(z) \leq \frac{2.15}{P} \quad [K(z)] \text{ for } P > 0.50 \text{ and}$$

$$F_Q(z) \leq 4.30 \quad [K(z)] \text{ for } P \leq 0.50$$

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.



		HEIGHT (FEET)	MAX W(Z)	
BOT	1	0.00	1.200	X
	2	.20	1.200	X
	3	.40	1.200	X
	4	.60	1.200	X
	5	.80	1.200	X
	6	1.00	1.200	X
	7	1.20	1.200	X
	8	1.40	1.200	X
	9	1.60	1.200	X
	10	1.80	1.078	
	11	2.00	1.062	
	12	2.20	1.066	
	13	2.40	1.063	
	14	2.60	1.061	
	15	2.80	1.058	
	16	3.00	1.055	
	17	3.20	1.051	
	18	3.40	1.048	
	19	3.60	1.046	
	20	3.80	1.044	
	21	4.00	1.043	
	22	4.20	1.041	
	23	4.40	1.040	
	24	4.60	1.039	
	25	4.80	1.037	
	26	5.00	1.038	
	27	5.20	1.042	
	28	5.40	1.046	
	29	5.60	1.050	
	30	5.80	1.054	
	31	6.00	1.062	
	32	6.20	1.069	
	33	6.40	1.072	
	34	6.60	1.074	
	35	6.80	1.077	
	36	7.00	1.079	
	37	7.20	1.080	
	38	7.40	1.081	
	39	7.60	1.081	
	40	7.80	1.081	
	41	8.00	1.081	
	42	8.20	1.080	
	43	8.40	1.079	
	44	8.60	1.076	
	45	8.80	1.074	
	46	9.00	1.072	
	47	9.20	1.071	
	48	9.40	1.072	
	49	9.60	1.073	
	50	9.80	1.073	
	51	10.00	1.073	
	52	10.20	1.075	
	53	10.40	1.080	X
	54	10.60	1.200	X
	55	10.80	1.200	X
	56	11.00	1.200	X
	57	11.20	1.200	X
	58	11.40	1.200	X
	59	11.60	1.200	X
	60	11.80	1.200	X
TOP	61	12.00	1.200	X

X Top and bottom 15 % excluded as per Technical Specification 4.2.2.4.g

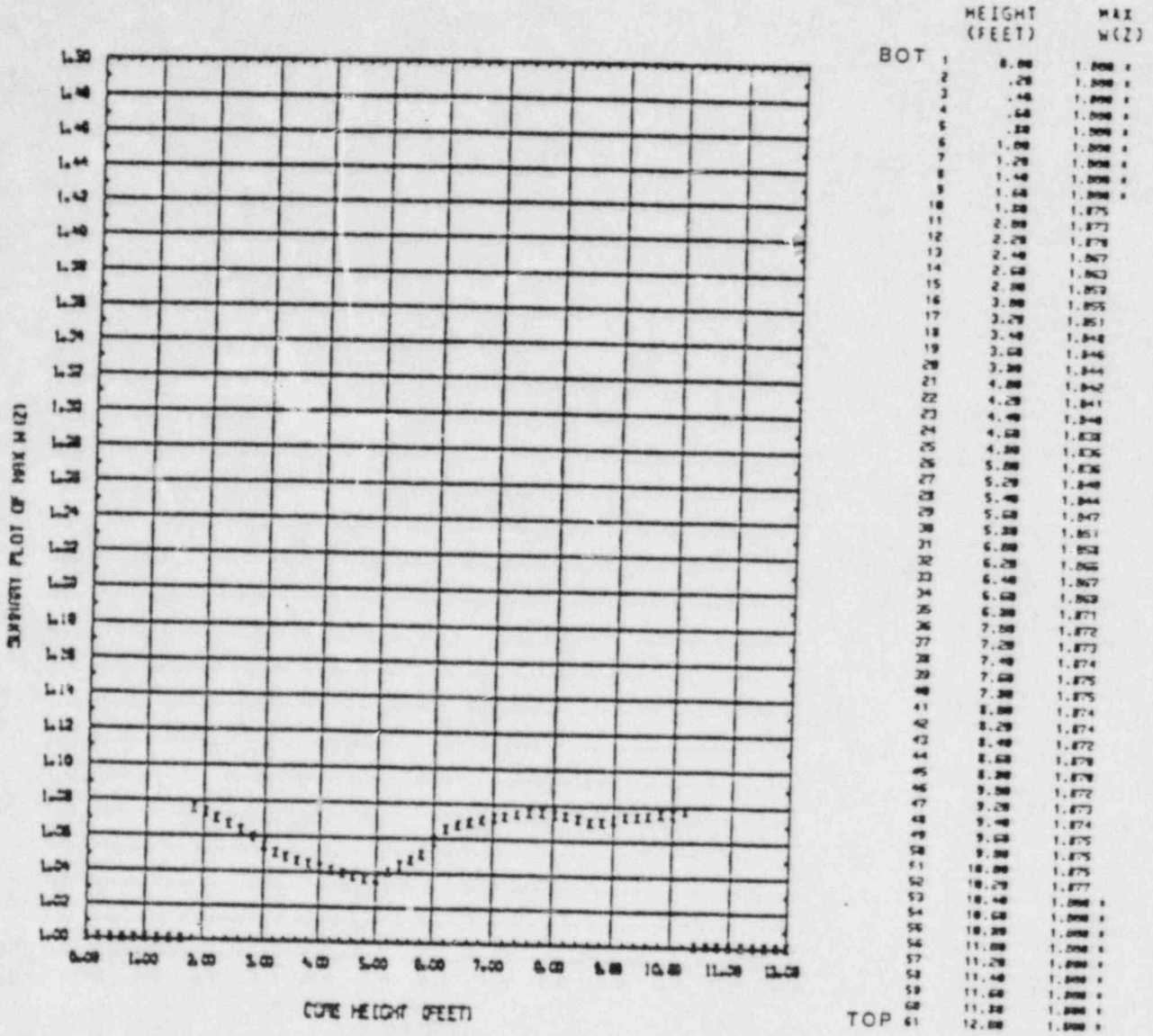
FIGURE 1

McGUIRE UNIT 1, CYCLE 2

BASELOAD W(z) FOR POWERS BETWEEN 80% AND 100% OF RATED THERMAL POWER

WITHIN ± 3 PERCENT AFD OF THE MEASURED TARGET

1200 MWD/MTU



* Top and bottom 15 % excluded as per Technical Specification 4.2.2.4.g

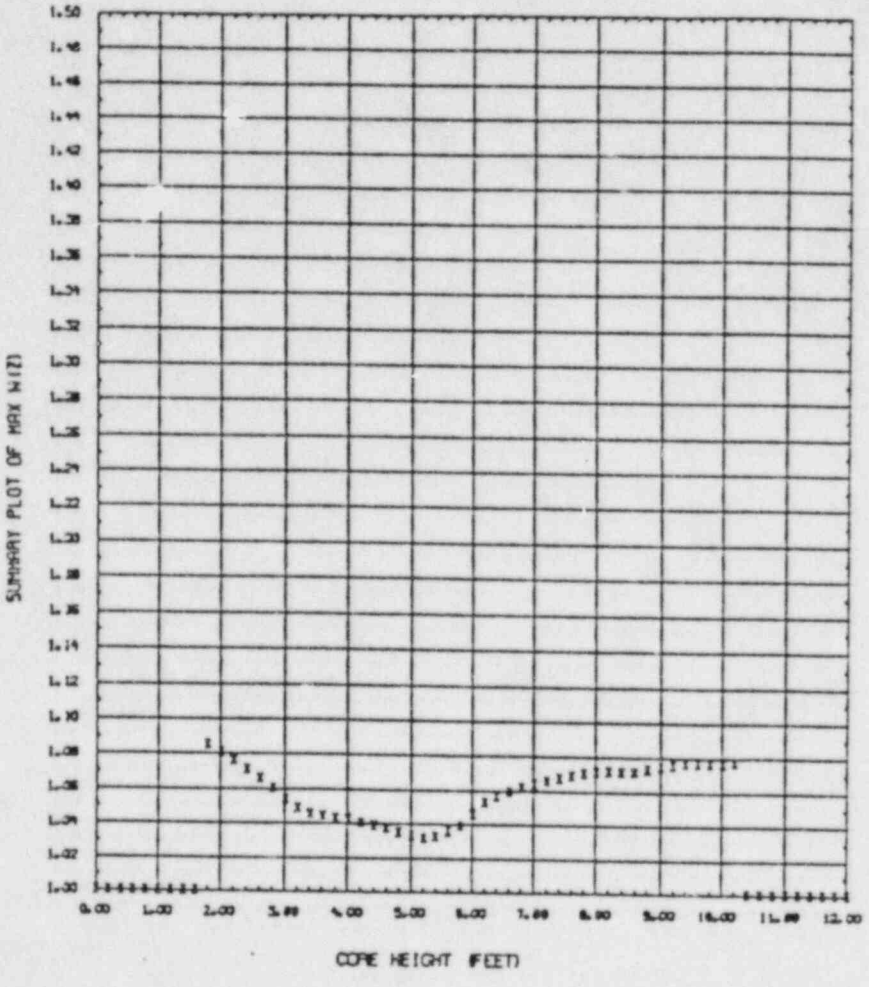
FIGURE 2

McGUIRE UNIT 1, CYCLE 2

BASELOAD W(z) FOR POWERS BETWEEN 80% AND 100% OF RATED THERMAL POWER

WITHIN ± 3 PERCENT AFD OF THE MEASURED TARGET

3000 MWD/MTU



		HEIGHT (FEET)	MAX W(Z)
BOT	1	0.00	1.000 *
	2	.25	1.000 *
	3	.50	1.000 *
	4	.75	1.000 *
	5	1.00	1.000 *
	6	1.25	1.000 *
	7	1.50	1.000 *
	8	1.75	1.000 *
	9	2.00	1.000 *
	10	2.25	1.000 *
	11	2.50	1.000 *
	12	2.75	1.000 *
	13	3.00	1.000 *
	14	3.25	1.000 *
	15	3.50	1.000 *
	16	3.75	1.000 *
	17	4.00	1.000 *
	18	4.25	1.000 *
	19	4.50	1.000 *
	20	4.75	1.000 *
	21	5.00	1.000 *
	22	5.25	1.000 *
	23	5.50	1.000 *
	24	5.75	1.000 *
	25	6.00	1.000 *
	26	6.25	1.000 *
	27	6.50	1.000 *
	28	6.75	1.000 *
	29	7.00	1.000 *
	30	7.25	1.000 *
	31	7.50	1.000 *
	32	7.75	1.000 *
	33	8.00	1.000 *
	34	8.25	1.000 *
	35	8.50	1.000 *
	36	8.75	1.000 *
	37	9.00	1.000 *
	38	9.25	1.000 *
	39	9.50	1.000 *
	40	9.75	1.000 *
	41	10.00	1.000 *
	42	10.25	1.000 *
	43	10.50	1.000 *
	44	10.75	1.000 *
	45	11.00	1.000 *
	46	11.25	1.000 *
	47	11.50	1.000 *
	48	11.75	1.000 *
	49	12.00	1.000 *
	50	12.25	1.000 *
	51	12.50	1.000 *
	52	12.75	1.000 *
	53	13.00	1.000 *
	54	13.25	1.000 *
	55	13.50	1.000 *
	56	13.75	1.000 *
	57	14.00	1.000 *
	58	14.25	1.000 *
	59	14.50	1.000 *
	60	14.75	1.000 *
TOP	61	15.00	1.000 *

* Top and bottom 15 % excluded as per Technical Specification 4.2.2.4.g

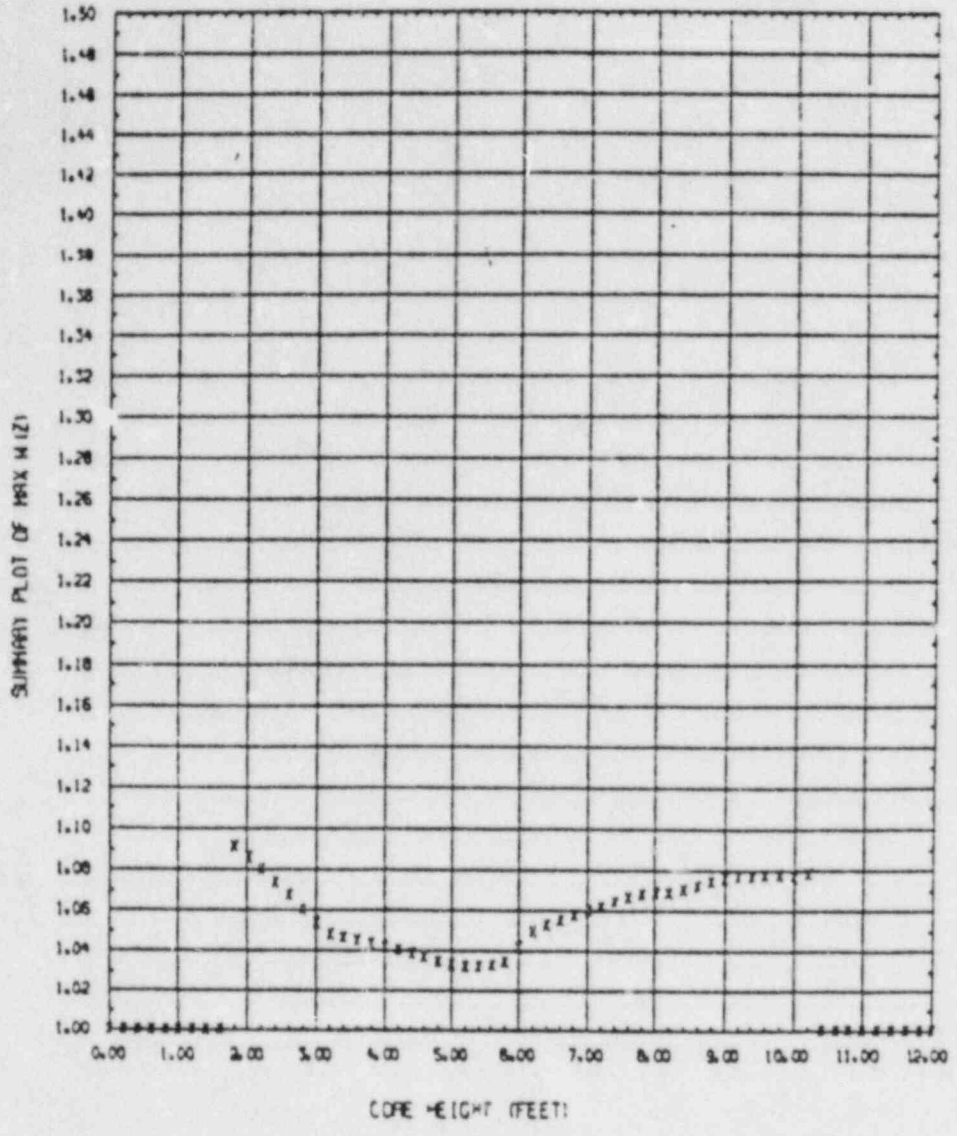
FIGURE 3

McGUIRE UNIT 1, CYCLE 2

BASELOAD W(z) FOR POWERS BETWEEN 90% AND 100% OF RATED THERMAL POWER

WITHIN ± 3 PERCENT AFD OF THE MEASURED TARGET

6000 MWD/MTU



		HEIGHT (FEET)	MAX W(Z)	
BOT	1	0.00	1.000	*
	2	.20	1.000	*
	3	.40	1.000	*
	4	.60	1.000	*
	5	.80	1.000	*
	6	1.00	1.000	*
	7	1.20	1.000	*
	8	1.40	1.000	*
	9	1.60	1.000	*
	10	1.80	1.091	
	11	2.00	1.086	
	12	2.20	1.080	
	13	2.40	1.074	
	14	2.60	1.067	
	15	2.80	1.060	
	16	3.00	1.053	
	17	3.20	1.048	
	18	3.40	1.046	
	19	3.60	1.045	
	20	3.80	1.044	
	21	4.00	1.042	
	22	4.20	1.040	
	23	4.40	1.039	
	24	4.60	1.037	
	25	4.80	1.035	
	26	5.00	1.033	
	27	5.20	1.032	
	28	5.40	1.032	
	29	5.60	1.033	
	30	5.80	1.035	
	31	6.00	1.042	
	32	6.20	1.050	
	33	6.40	1.053	
	34	6.60	1.055	
	35	6.80	1.058	
	36	7.00	1.060	
	37	7.20	1.062	
	38	7.40	1.065	
	39	7.60	1.066	
	40	7.80	1.068	
	41	8.00	1.069	
	42	8.20	1.069	
	43	8.40	1.070	
	44	8.60	1.072	
	45	8.80	1.075	
	46	9.00	1.076	
	47	9.20	1.077	
	48	9.40	1.077	
	49	9.60	1.078	
	50	9.80	1.078	
	51	10.00	1.077	
	52	10.20	1.078	
	53	10.40	1.000	*
	54	10.60	1.000	*
	55	10.80	1.000	*
	56	11.00	1.000	*
	57	11.20	1.000	*
	58	11.40	1.000	*
	59	11.60	1.000	*
	60	11.80	1.000	*
TOP	61	12.00	1.000	*

* Top and bottom 15 % excluded as per Technical Specification 4.2.2.4.g

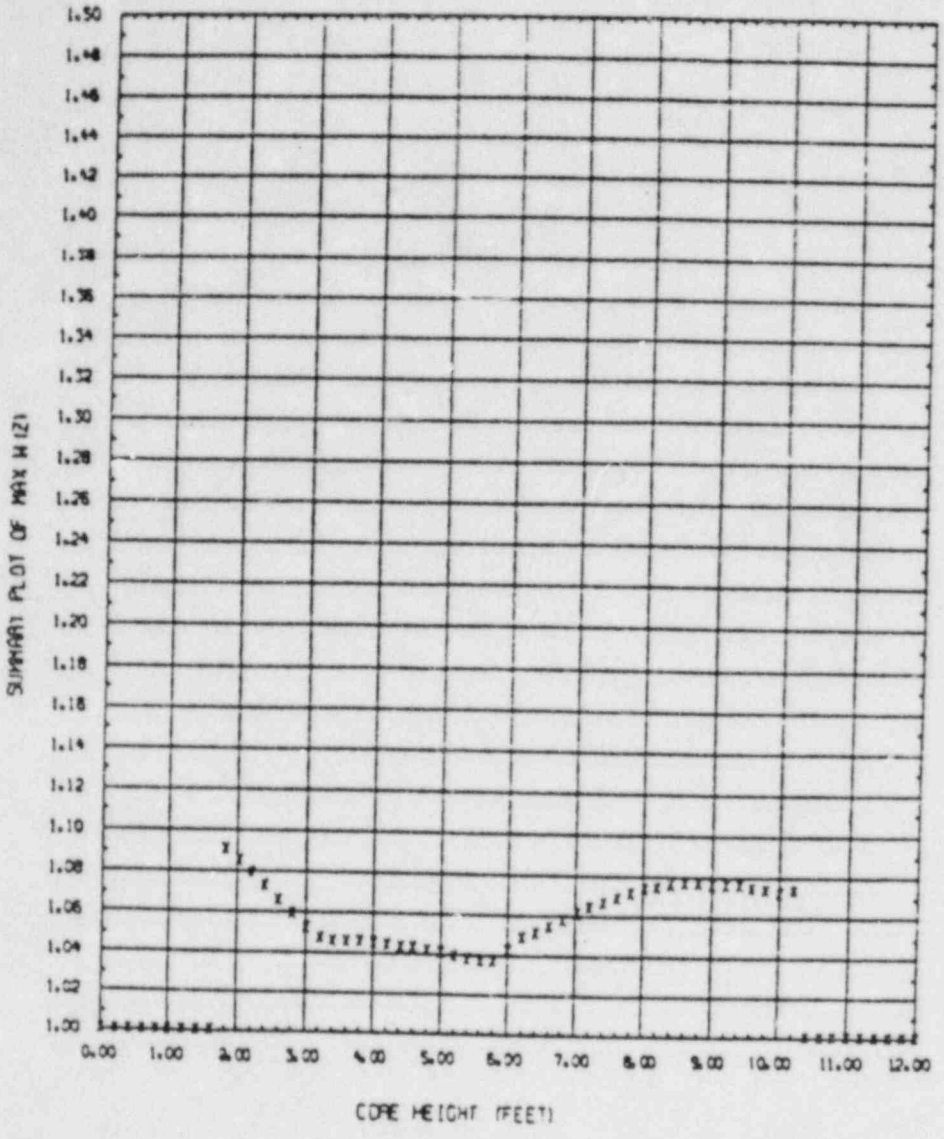
FIGURE 4

McGUIRE UNIT 1, CYCLE 2

BASELOAD W(z) FOR POWERS BETWEEN 80% AND 100% OF RATED THERMAL POWER

WITHIN ± 3 PERCENT AFD OF THE MEASURED TARGET

8000 MWD/MTU



		HEIGHT (FEET)	MAX W(Z)	
BOT	1	0.00	1.000	X
	2	.20	1.000	X
	3	.40	1.000	X
	4	.60	1.000	X
	5	.80	1.000	X
	6	1.00	1.000	X
	7	1.20	1.000	X
	8	1.40	1.000	X
	9	1.60	1.000	X
	10	1.80	1.090	
	11	2.00	1.085	
	12	2.20	1.079	
	13	2.40	1.073	
	14	2.60	1.066	
	15	2.80	1.059	
	16	3.00	1.052	
	17	3.20	1.047	
	18	3.40	1.046	
	19	3.60	1.046	
	20	3.80	1.046	
	21	4.00	1.045	
	22	4.20	1.044	
	23	4.40	1.044	
	24	4.60	1.043	
	25	4.80	1.042	
	26	5.00	1.041	
	27	5.20	1.039	
	28	5.40	1.038	
	29	5.60	1.037	
	30	5.80	1.037	
	31	6.00	1.043	
	32	6.20	1.049	
	33	6.40	1.051	
	34	6.60	1.054	
	35	6.80	1.058	
	36	7.00	1.061	
	37	7.20	1.064	
	38	7.40	1.066	
	39	7.60	1.069	
	40	7.80	1.072	
	41	8.00	1.073	
	42	8.20	1.075	
	43	8.40	1.076	
	44	8.60	1.077	
	45	8.80	1.077	
	46	9.00	1.076	
	47	9.20	1.076	
	48	9.40	1.076	
	49	9.60	1.075	
	50	9.80	1.073	
	51	10.00	1.072	
	52	10.20	1.074	
	53	10.40	1.000	X
	54	10.60	1.000	X
	55	10.80	1.000	X
	56	11.00	1.00	X
	57	11.20	1.00	X
	58	11.40	1.00	X
	59	11.60	1.0	X
	60	11.80	1.0	X
TOP	61	12.00	1.000	X

X Top and bottom 15 % excluded as per Technical Specification 4.2.2.4.g

FIGURE 5

McGUIRE UNIT 1, CYCLE 2

BASELOAD W(z) FOR POWERS BETWEEN 80% AND 100% OF RATED THERMAL POWER

WITHIN ± 3 PERCENT AFD OF THE MEASURED TARGET

9500 MWD/MTU