

ATTACHMENT

Byron Unit 2 Cycle 6

Operating Limits Report (OLR)

Revision 1

BYRON UNIT 2 CYCLE 6
OPERATING LIMITS REPORT - Fxy PORTION

This Radial Peaking Factor Limits Report is provided in accordance with paragraph 6.9.1.9 of the Byron Unit 2 Nuclear Plant Technical Specifications.

The Fxy limits for RATED THERMAL POWER within specified core planes for Cycle 6 shall be:

- a: For the lower core region from greater than or equal to 0% to less than or equal to 50%:

- 1) For all core planes containing bank "D" control rods:

$$F_{xy}^{RTP} \leq 2.052 \quad \text{Cycle Burnup} \geq 0 \text{ MWD/MTU}$$

- 2) For all unrodded core planes:

$$\begin{aligned} F_y^{PTP} &\leq 1.765 & 0 \leq \text{Cycle Burnup} \leq 12,000 \text{ MWD/MTU} \\ F_{xy}^{RTP} &\leq 1.774 & \text{Cycle Burnup} > 12,000 \text{ MWD/MTU} \end{aligned}$$

- b: For the upper core region from greater than 50% to less than or equal to 100%:

- 1) For all core planes containing bank "D" control rods:

$$F_{xy}^{RTP} \leq 1.944 \quad \text{Cycle Burnup} \geq 0 \text{ MWD/MTU}$$

- 2) For all unrodded core planes:

$$\begin{aligned} F_{xy}^{RTP} &\leq 1.750 & 0 \leq \text{Cycle Burnup} \leq 12,000 \text{ MWD/MTU} \\ F_{xy}^{RTP} &\leq 1.786 & \text{Cycle Burnup} > 12,000 \text{ MWD/MTU} \end{aligned}$$

These Fxy(z) limits were used to confirm that the heat flux hot channel factor FQ(z) will be limited to the Technical Specification values of

$$F_Q(z) \leq \frac{[2.50][K(Z)]}{P} \quad \text{for } P > 0.5 \text{ and,}$$

$$F_Q(z) \leq [5.00][K(Z)] \quad \text{for } P \leq 0.5$$

assuming the most limiting axial power distributions expected to result from the insertion and removal of control Banks C and D during operation, including the accompanying variations in the axial xenon and power distributions as described in the "Power Distribution Control and Load Following Procedures," WCAP-8403, September, 1974. Therefore, these Fxy limits provide assurance that the initial conditions assumed in the LOCA analysis and the ECCS acceptance criteria of 10 CFR 50.46 are met.

See Figures 1 and 2 for the plots of $[F_Q^T(z) \times P_{rel}]$ Versus Axial Core Height and Tables 1 and 2 for the data plotted in Figures 1 and 2.

BYRON UNIT 2 CYCLE 6
OPERATING LIMITS REPORT- MTC PORTION

a) The Moderator Temperature Coefficient (MTC) limits are:

- 1) The BOL/ARO/HZP-MTC shall be less positive than $0 \Delta k/k/^{\circ}F$.
- 2) The EOL/ARO/RTP-MTC shall be less negative than $-4.1 \times 10^{-4} \Delta k/k/^{\circ}F$.

b) The MTC surveillance limit is:

The 300 ppm/ARO/RTP-MTC should be less negative than or equal to $-3.2 \times 10^{-4} \Delta k/k/^{\circ}F$.

where: BOL stands for Beginning of Cycle Life
ARO stands for All Rods Out
HZP stands for Hot Zero Thermal Power
EOL stands for End of Cycle Life
RTP stands for RATED THERMAL POWER

Figure 1
Byron Unit 2 Cycle 6
FQ(Z) x P versus Core Height
Burnup Range of 0 to 12K MWD/MTU

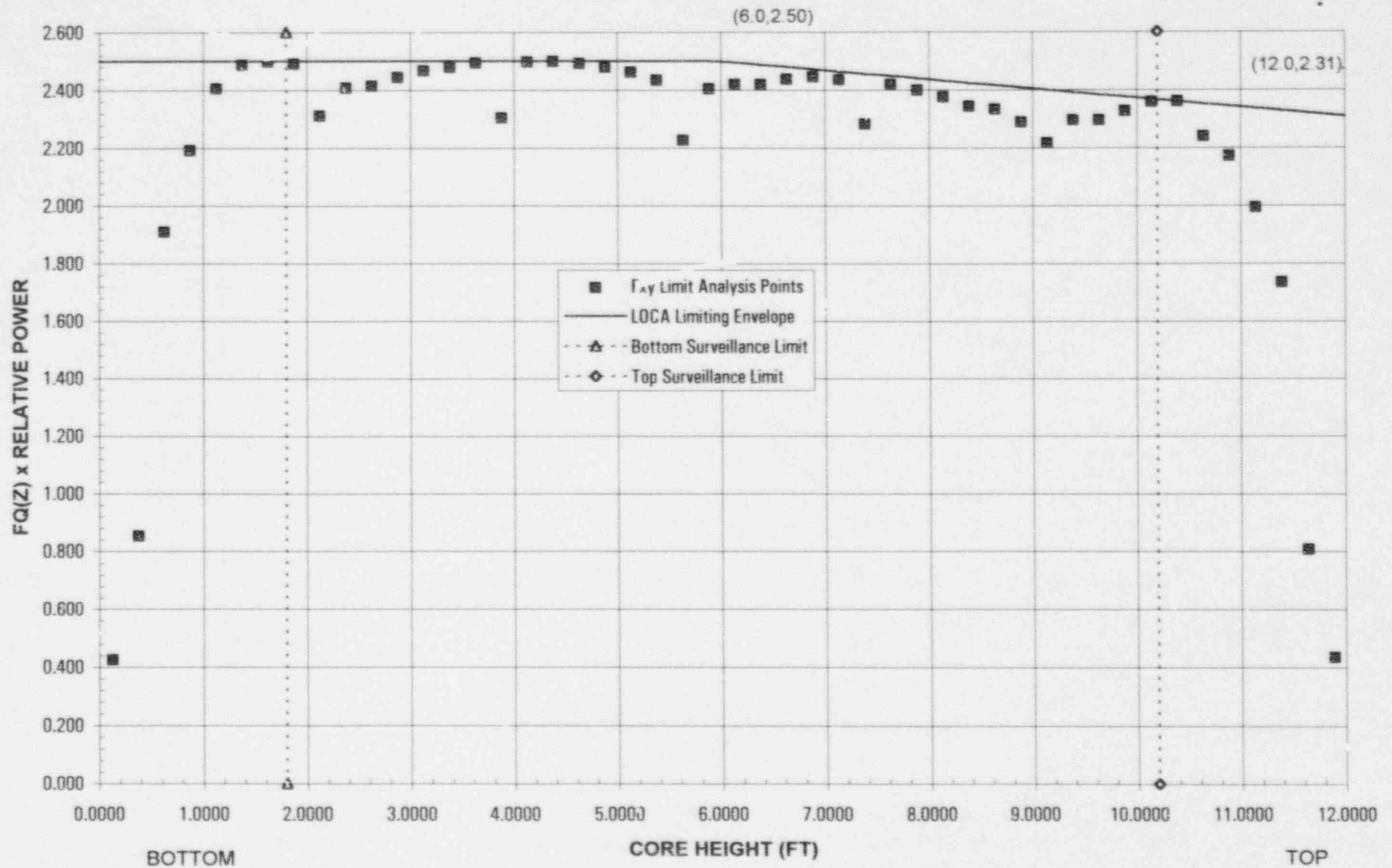
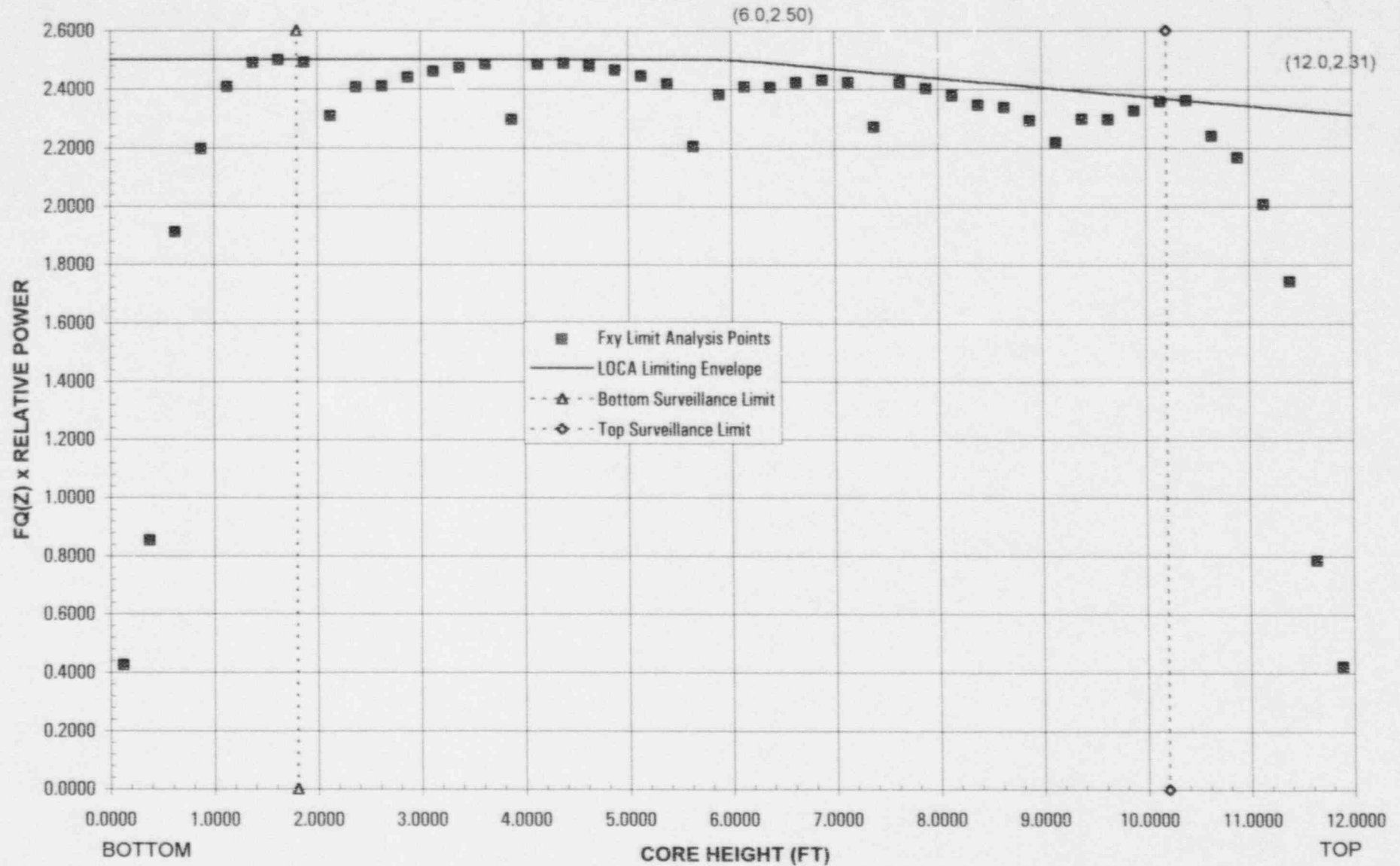


Figure 2
Byron Unit 2 Cycle 6
FQ(Z) x P versus Core Height
Burnup Range of > 12K MWD/MTU to EOC



BYRON UNIT 2 CYCLE 6 **OPERATING LIMITS REPORT**

Table 1
Maximum $F_0 * P$ vs. Axial Core Height During Normal Operation
 $0 < \text{Cycle Burnup} \leq 12,000 \text{ MWD/MTU}$

		CORE HEIGHT (FEET)	MAXIMUM $F_0 * P$
BOTTOM	1	0.1252	0.42448
	2	0.3756	0.85152
	3	0.6259	1.90810
	4	0.8763	2.19180
	5	1.1267	2.40480
	6	1.3771	2.48700
	7	1.6274	2.49890
	8	1.8778	2.48990
	9	2.1282	2.31040
	10	2.3786	2.40800
	11	2.6290	2.41430
	12	2.8793	2.44370
	13	3.1297	2.46640
	14	3.3801	2.47950
	15	3.6305	2.49450
	16	3.8808	2.30440
	17	4.1312	2.49700
	18	4.3816	2.49910
	19	4.6320	2.49230
	20	4.8823	2.47810
	21	5.1327	2.46140
	22	5.3831	2.43450
	23	5.6335	2.22670
	24	5.8839	2.40410
	25	6.1342	2.41940
	26	6.3846	2.41900
	27	6.6350	2.43700
	28	6.8854	2.44510
	29	7.1357	2.43540
	30	7.3861	2.28290
	31	7.6365	2.41880
	32	7.8869	2.39840
	33	8.1372	2.37590
	34	8.3876	2.34390
	35	8.6380	2.33360
	36	8.8884	2.28940
	37	9.1388	2.21650
	38	9.3891	2.29550
	39	9.6395	2.29550
	40	9.8899	2.32680
	41	10.140	2.35840
	42	10.391	2.36080
	43	10.641	2.24010
	44	10.891	2.17070
	45	11.142	1.99350
	46	11.392	1.73480
	47	11.643	0.80685
TOP	48	11.893	0.43607

BYRON UNIT 2 CYCLE 6 **OPERATING LIMITS REPORT**

Table 2
Maximum $F_0 \cdot P$ vs. Axial Core Height During Normal Operation
Cycle Burnup > 12,000 MWD/MTU

		CORE HEIGHT (FEET)	MAXIMUM $F_0 \cdot P$
BOTTOM	1	0.1252	0.4253
	2	0.3756	0.8531
	3	0.6259	1.9117
	4	0.8763	2.1960
	5	1.1267	2.4069
	6	1.3771	2.4892
	7	1.6274	2.4987
	8	1.8778	2.4896
	9	2.1282	2.3079
	10	2.3786	2.4054
	11	2.6290	2.4093
	12	2.8793	2.4386
	13	3.1297	2.4568
	14	3.3801	2.4718
	15	3.6305	2.4844
	16	3.8808	2.2950
	17	4.1312	2.4844
	18	4.3816	2.4865
	19	4.6320	2.4773
	20	4.8823	2.4631
	21	5.1327	2.4441
	22	5.3831	2.4174
	23	5.6335	2.2045
	24	5.8839	2.3802
	25	6.1342	2.4067
	26	6.3846	2.4063
	27	6.6350	2.4219
	28	6.8854	2.4299
	29	7.1357	2.4228
	30	7.3861	2.2710
	31	7.6365	2.4224
	32	7.8869	2.4019
	33	8.1372	2.3772
	34	8.3876	2.3451
	35	8.6380	2.3373
	36	8.8884	2.2930
	37	9.1388	2.2179
	38	9.3891	2.2970
	39	9.6395	2.2950
	40	9.8899	2.3262
	41	10.140	2.3580
	42	10.391	2.3604
	43	10.641	2.2398
	44	10.891	2.1660
	45	11.142	2.0071
	46	11.392	1.7428
	47	11.643	0.7844
TOP	48	11.893	0.4229