ATTACHMENT

Byron Unit 1 Cycle 7

Operating Limits Report (OLR)

Revision 2

BYRON UNIT 1 CYCLE 7
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 1 Nuclear Plant Technical Specifications.

The Fxy limits for RATED THERMAL POWER within specified core planes for Cycle 7 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:

$F_{xy}^{RTP} \leq 1.950$ Cycle Burnup $\geq$ 0 MWD/MTU

2) For all unrodded core planes:

$F_{xy}^{RTP} \leq 1.732$	0	$\leq$ Cycle Burnup $\leq$	10,000 MWD/MTU
≤ 1.746	10,000	$<$ Cycle Burnup $<$	16,000 MWD/MTU
≤ 1.716		Cycle Burnup $\geq$	16,000 MWD/MTU

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:

$F_{xy}^{RTP} \leq 1.890$ Cycle Burnup $\geq$ 0 MWD/MTU

2) For all unrodded core planes:

$F_{xy}^{RTP} \leq 1.784$	0	$\leq$ Cycle Burnup $\leq$	10,000 MWD/MTU
≤ 1.807	10,000	$<$ Cycle Burnup $<$	16,000 MWD/MTU
≤ 1.769		Cycle Burnup $\geq$	16,000 MWD/MTU

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

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

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

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 are met, along with the ECCS acceptance criteria of 10 CFR 50.46.

See the Attached Figure 1 for the plot of $[F_Q^T (z) \times P_{rel}]$ vs. Axial Core Height.

BYRON UNIT 1 CYCLE 7
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 -4.1×10^{-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 -3.2×10^{-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

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OPERATING LIMITS REPORT

Table 1
Maximum F_Q * P vs. Axial Core Height During Normal Operation

		CORE HEIGHT (FEET)	MAXIMUM F_Q * P
BOTTOM	1	0.1252	0.41
	2	0.3756	0.77
	3	0.6259	1.83
	4	0.8763	2.13
	5	1.1267	2.37
	6	1.3771	2.47
	7	1.6274	2.50
	8	1.8778	2.47
	9	2.1282	2.27
	10	2.3786	2.40
	11	2.6289	2.44
	12	2.8793	2.47
	13	3.1297	2.48
	14	3.3801	2.49
	15	3.6305	2.50
	16	3.8808	2.30
	17	4.1312	2.49
	18	4.3816	2.49
	19	4.6320	2.48
	20	4.8823	2.46
	21	5.1327	2.44
	22	5.3831	2.40
	23	5.6335	2.18
	24	5.8838	2.35
	25	6.1342	2.44
	26	6.3846	2.45
	27	6.6350	2.46
	28	6.8853	2.46
	29	7.1357	2.44
	30	7.3861	2.28
	31	7.6365	2.42
	32	7.8868	2.39
	33	8.1372	2.35
	34	8.3876	2.32
	35	8.6380	2.32
	36	8.8883	2.27
	37	9.1387	2.19
	38	9.3891	2.31
	39	9.6395	2.31
	40	9.8898	2.34
	41	10.1402	2.36
	42	10.3906	2.36
	43	10.6410	2.23
	44	10.8914	2.13
	45	11.1417	1.94
	46	11.3921	1.66
	47	11.6425	0.71
TOP	48	11.8929	0.41

Figure 1

Byron Unit 1 Cycle 7

FQ(Z) X P versus CORE HEIGHT

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