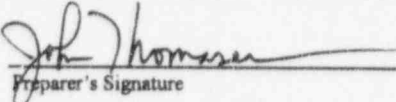
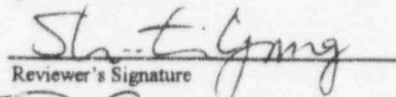



NUCLEAR FUEL SERVICES DEPARTMENT NUCLEAR DESIGN INFORMATION TRANSMITTAL					
<input checked="" type="checkbox"/> SAFETY RELATED <input type="checkbox"/> NON-SAFETY RELATED <input type="checkbox"/> REGULATORY RELATED	Originating Organization <input checked="" type="checkbox"/> Nuclear Fuel Services <input type="checkbox"/> Other (specify) _____	NDIR No. <u>95-074</u> Rev. No. <u>0</u> Page 1 of 5			
Station <u>Byron</u> Unit <u>1</u> Cycle <u>7</u> Generic _____ To: G. W. Stauffer					
Subject <u>Byron Unit 1 Cycle 7 Operating Limits Report - Revision 3</u>					
John P. Thomassen Preparer	 Preparer's Signature	<u>12/19/95</u> Date			
S. Yang Reviewer	 Reviewer's Signature	<u>12/19/95</u> Date			
D. R. Redden NFS Supervisor	 NFS Supervisor's Signature	<u>12/19/95</u> Date			
Status of Information: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Verified <input type="checkbox"/> Unverified <input type="checkbox"/> Engineering Judgement 					
Method and Schedule of Verification for Unverified NDIRs: _____					
Description of Information: Revision 3 of the Byron Unit 1 Cycle 7 Operating Limits Report. The maximum F_Q information contained in Table 1 and Figure 1 remains the same as that in Revision 2 of the BY1C7 OLR. Therefore, Revision 1 of Figure 4.1 and Revision 1 of Table B.1 of the Nuclear Design Report, NFSR-0106, remain valid and do not need to be changed. Byron Station is requested to perform an On-Site Review of this document. Upon completion of the OSR, Byron Station is to notify the NLA who will then transmit the OLR to the NRC pursuant to Technical Specification 6.9.1.9.					
Purpose of Information: Provides the revised Operating Limits for Cycle 7 for burnup $\geq 13,200$ MWD/MTU. New values reflect the 2 degree Tave increase following B1P02.					
Source of Information: PWR Nuclear Design Calc. Note. Project: BY1C7B NDR, Calculation Number: NR-48, File: BY1C7NDN 10.6					
Supplemental Distribution: <table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">M. Lesniak NDIT File Byron Central File</td> <td style="width: 33%;">S. Yang/B. L. Manges PSS-CF</td> <td style="width: 33%;">K. N. Kovar/S. Ahmed NFS-CF (w/o Att.)</td> </tr> </table>			M. Lesniak NDIT File Byron Central File	S. Yang/B. L. Manges PSS-CF	K. N. Kovar/S. Ahmed NFS-CF (w/o Att.)
M. Lesniak NDIT File Byron Central File	S. Yang/B. L. Manges PSS-CF	K. N. Kovar/S. Ahmed NFS-CF (w/o Att.)			
CHRON No:					

Revision 3

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:

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

2) For all unrodded core planes:

$$F_{xy}^{RTP} \leq 1.736 \quad 13,200 \leq \text{Cycle Burnup} < 16,000 \text{ MWD/MTU}$$

$$\leq 1.712 \quad \text{Cycle Burnup} \geq 16,000 \text{ MWD/MTU}$$

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:

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

2) For all unrodded core planes:

$$F_{xy}^{RTP} \leq 1.804 \quad 13,200 \leq \text{Cycle Burnup} < 16,000 \text{ MWD/MTU}$$

$$\leq 1.769 \quad \text{Cycle Burnup} \geq 16,000 \text{ MWD/MTU}$$

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 $[F_Q(z) \times P]$ versus Core Height.

Revision 3

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 $-4.1 \times 10^{-4} \Delta k/k/^\circ F$.

- 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

Revision 3

Byron Unit 1 Cycle 7
 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
		2	0.3756
		3	0.6259
		4	0.8763
		5	1.1267
		6	1.3771
		7	1.6274
		8	1.8778
		9	2.1282
		10	2.3786
		11	2.6289
		12	2.8793
		13	3.1297
		14	3.3801
		15	3.6305
		16	3.8808
		17	4.1312
		18	4.3816
		19	4.6320
		20	4.8823
		21	5.1327
		22	5.3831
		23	5.6335
		24	5.8838
		25	6.1342
		26	6.3846
		27	6.6350
		28	6.8853
		29	7.1357
		30	7.3861
		31	7.6365
		32	7.8868
		33	8.1372
		34	8.3876
		35	8.6380
		36	8.8883
		37	9.1387
		38	9.3891
		39	9.6395
		40	9.8898
		41	10.1402
		42	10.3906
		43	10.6410
		44	10.8914
		45	11.1417
		46	11.3921
		47	11.6425
	TOP	48	11.8929

Revision 3

Figure 1
Byron Unit 1 Cycle 7
FQ(Z) X P versus CORE HEIGHT

