

ATTACHMENT

**Braidwood Unit 1 Cycle 5A
Operating Limits Report (OLR)**

Revision 2

**BRAIDWOOD UNIT 1 CYCLE 5A
OPERATING LIMITS REPORT - Fxy PORTION**

This Radial Peaking Factor Limits Report is provided in accordance with paragraph 6.9.1.9 of the Braidwood Unit 1 Nuclear Plant Technical Specifications.

The Fxy limits for RATED THERMAL POWER within specified core planes for Cycle 5A 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:

$$F_{xy}^{RTP} \leq 2.700$$

- 2) For all unrodded core planes:

$$F_{xy}^{RTP} \leq 1.755$$

- 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:

$$F_{xy}^{RTP} \leq 2.052$$

- 2) For all unrodded core planes:

$$F_{xy}^{RTP} \leq 1.772$$

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 the attached Figure for the plot of $[F_Q(z) \times P_{rel}]$ vs. Axial Core Height.

BRAIDWOOD UNIT 1 CYCLE 5A
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

BRICSA
 FXY LIMIT EVALUATION

Revision 2

Summary of Fq vs. Core Height

Axial Position	Peak Fq	Fq SPIL
		LIMIT
0.25038	0.6165	2.5
0.62594	1.7571	2.5
0.87632	2.1781	2.5
1.1267	2.3619	2.5
1.3771	2.4488	2.5
1.6275	2.4958	2.5
1.8778	2.4994	2.5
2.1282	2.3069	2.5
2.3786	2.4146	2.5
2.629	2.4382	2.5
2.8793	2.4287	2.5
3.1297	2.4097	2.5
3.3801	2.3884	2.5
3.6305	2.3677	2.5
3.8808	2.168	2.5
4.1312	2.3279	2.5
4.3816	2.316	2.5
4.632	2.2959	2.5
4.8824	2.2744	2.5
5.1327	2.2516	2.5
5.3831	2.2229	2.5
5.6335	2.0236	2.5
5.8839	2.1773	2.5
6.1342	2.2092	2.4957
6.3846	2.2157	2.4878
6.635	2.2197	2.4799
6.8854	2.2209	2.472
7.1358	2.2405	2.464
7.3861	2.1938	2.4561
7.6365	2.2013	2.4482
7.8869	2.1884	2.4402
8.1373	2.1992	2.4323
8.3876	2.2134	2.4244
8.638	2.2256	2.4165
8.8884	2.2034	2.4085
9.1588	2.1903	2.4006
9.3891	2.3273	2.3927
9.6395	2.3525	2.3847
9.8899	2.3492	2.3768
10.14	2.3308	2.3689
10.391	2.299	2.361
10.641	2.1572	2.353
10.891	2.094	2.3451
11.142	1.9728	2.3372
11.392	1.6042	2.3292
11.768	0.58717	2.3174

Shaded area shows surveillance region. Unshaded area (top and bottom 15%) is ignored for this surveillance.

Braidwood Unit 1 Cycle 5A
FQ(Z) x P versus Core Height
Fxy Limit Analysis

Revision 2

