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NUCLEAR DESIGN INFORMATION TRANSMITTAL

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Originating Organization  
☒ Nuclear Fuel Services  
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Page 1 of 5

Station Braidwood Unit 2 Cycle 6 Generic \_\_\_\_\_

To: L. K. Kepiey

Subject Braidwood Unit 2 Cycle 6 Operating Limits Report

Tyrone L. Stevens  
Preparer

Tyrone L. Stevens  
Preparer's Signature

3/6/96  
Date

John P. Thomsen  
Reviewer

John P. Thomsen  
Reviewer's Signature

3/6/96  
Date

for  
Daniel R. Redden  
NFS Supervisor

E. J. [Signature]  
NFS Supervisor's Signature

3/11/96  
Date

Status of Information:

☒ Verified  
☐ Unverified  
☐ Engineering Judgment

Method and Schedule of Verification for Unverified NDITs: \_\_\_\_\_

Description of Information: Attached is the Braidwood Unit 2, Cycle 6 Operating Limits Report (OLR).

Purpose of Information: Braidwood station is requested to perform an On-Site Review (OSR) of this document. Upon completion of the OSR, Braidwood Station is to notify Harry Pontious (DG x7205) of the Nuclear Licensing Department. Nuclear Licensing will then transmit the OLR to the Nuclear Regulatory Commission pursuant to Technical Specification 6.9.1.9. Please provide NFS with a copy of Braidwood Station's completed OSR for incorporation into the BR2C6 reload licensing file.

Source of Information: PWR Nuclear Design

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**Braidwood Unit 2 Cycle 6**  
**Operating Limit Report - Fxy Portion**

This Radial Peaking Factor Limit Report is provided in accordance with Paragraph 6.9.1.9 of the Braidwood 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:

$$F_{xy}^{RTP} \leq 2.803$$

2. For all unrodded core planes:

$$F_{xy}^{RTP} \leq 1.729$$

- 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:

$$F_{xy}^{RTP} \leq 2.103$$

2. For all unrodded core planes:

$$F_{xy}^{RTP} \leq 1.810$$

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:

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

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

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 and the ECCS acceptance criteria of 10 CFR 50.46 are met.

See the attached table and figure for [ F<sub>Q</sub>(z) x P<sub>rel</sub> ] vs. Axial Core Height information.

**Braidwood Unit 2 Cycle 6**  
**Operating Limit Report - MTC Portion**

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

1. The BOL/ARO/HZP-MTC shall be less positive than  $+4.0 \times 10^{-5} \Delta k/k/^{\circ}F$ .
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

BRAIDWOOD UNIT 2 CYCLE 6  
Fxy LIMIT EVALUATION  
Summary of Fq vs. Core Height

Core Height (feet)	Maximum Fq x P	Fq SPIL LIMIT
0.2504	0.6204	2.5000
0.6259	1.8479	2.5000
0.8763	2.2390	2.5000
1.1267	2.3931	2.5000
1.3771	2.4681	2.5000
1.6274	2.4997	2.5000
1.8778	2.4999	2.5000
2.1282	2.2956	2.5000
2.3786	2.3666	2.5000
2.6289	2.3276	2.5000
2.8793	2.3561	2.5000
3.1297	2.3792	2.5000
3.3801	2.3948	2.5000
3.6305	2.4087	2.5000
3.8808	2.2272	2.5000
4.1312	2.4099	2.5000
4.3816	2.4126	2.5000
4.6320	2.4044	2.5000
4.8823	2.3915	2.5000
5.1327	2.3743	2.5000
5.3831	2.3905	2.5000
5.6335	2.2404	2.5000
5.8838	2.4268	2.5000
6.1342	2.4648	2.4957
6.3846	2.4878	2.4878
6.6350	2.4582	2.4799
6.8853	2.4457	2.4720
7.1357	2.4196	2.4640
7.3861	2.3648	2.4561
7.6365	2.4273	2.4482
7.8868	2.4195	2.4402
8.1372	2.4039	2.4323
8.3876	2.3792	2.4244
8.6380	2.3479	2.4165
8.8883	2.3011	2.4085
9.1387	2.2127	2.4006
9.3891	2.3076	2.3927
9.6395	2.3110	2.3847
9.8899	2.3407	2.3768
10.140	2.3681	2.3689
10.391	2.3588	2.3610
10.641	2.2303	2.3530
10.891	2.1606	2.3451
11.142	2.0435	2.3372
11.392	1.6694	2.3292
11.768	0.6246	2.3174

Unshaded area shows surveillance region.

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

Braidwood Unit 2 Cycle 6  
FQ(Z) x P versus Core Height

