

October 27, 2000  
BW000106

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Braidwood Station, Unit 2  
Facility Operating License No. NPF-77  
NRC Docket No. STN 50-457

Subject: Unit 2 Cycle 9 Core Operating Limits Report

The purpose of this letter is to transmit the Unit 2 Cycle 9 Core Operation Limits Report (COLR) consistent with Generic Letter 88-16, "Removal of Cycle-Specific Parameter Limits From Technical Specifications."

The Braidwood Station Unit 2 core, which consists of NRC approved fuel designs, was designed to operate within approved fuel design criteria, Technical Specifications and related Bases such that:

1. Core operating characteristics will be equivalent to or less limiting than those previously reviewed and accepted; and
2. Re-analyses or re-evaluations have been performed to demonstrate that the limiting postulated Update Final Safety Analysis Report (UFSAR) events which could be affected by the re-load are within allowable limits.

Commonwealth Edison (ComEd) Company has performed a detailed review of the relevant reload licensing documents. Based on that review a safety evaluation was prepared, as required by 10CFR50.59, "Changes, tests, and experiments," which concluded there are no unreviewed safety questions and no Technical Specification changes are needed. The Braidwood Independent Technical Review (ITR) has been completed.

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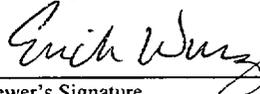
If there are any questions regarding this matter please contact T. W. Simpkin, Regulatory Assurance Manager, at (815) 458-2801, extension 2980.

A handwritten signature in black ink, appearing to read 'T. Tulon', with a long horizontal flourish extending to the right.

T.J. Tulon  
Site Vice President  
Braidwood Station

Attachment: Core Operating Limits Report, Braidwood Unit 2 Cycle 9

cc: Regional Administrator – USNRC, RIII  
NRC Senior Resident Inspector – Braidwood Station

NUCLEAR FUEL MANAGEMENT DEPARTMENT TRANSMITTAL OF DESIGN INFORMATION														
<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 Management <input type="checkbox"/> Other (specify) _____	Doc No. <u>NFM0000143</u> Rev. No. <u>0</u> Page 1 of 18												
Station <u>Braidwood</u> Unit <u>2</u> Cycle <u>9</u> Generic _____ To: Lonnie K. Kepley														
Subject <u>Braidwood Unit 2 Cycle 9 Core Operating Limits Report</u>														
R. Lee Preparer	 Preparer's Signature	<u>9/27/00</u> Date												
E. Wurz Reviewer	 Reviewer's Signature	<u>9/28/00</u> Date												
E. Young NFM Supervisor	 Supervisor's Signature	<u>9/29/00</u> Date												
Status of Information: <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Verified</li> <li><input type="checkbox"/> Unverified</li> <li><input type="checkbox"/> Engineering Judgement</li> </ul>														
Method and Schedule of Verification for Unverified NDITs: _____														
Description of Information: Attached is the Braidwood Unit 2 Cycle 9 Core Operating Limits Report (COLR) in the ITS format and W(z) function.														
Purpose of Information: Braidwood Station is requested to perform a Plant Review of this document. Upon completion of the Plant Review, Braidwood Station is to transmit the COLR portion to the Nuclear Regulatory Commission. Please provide NFM (Rob Lee) with a copy of Braidwood Station's completed ITR and COLR submittal to the NRC.														
Source of Information: 1) Westinghouse letter 00CB-G-0130/CAC-00-289, "Braidwood 2 Cycle 9 Input for COLR," dated 9/26/00 2) TODI NFM0000126 Rev. 0, "Braidwood Unit 2 Cycle 9 Reload Design Key Parameter Checklist (RDKPC)," dated 9/25/00														
Supplemental Distribution: <table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">J. Bauer (DG)</td> <td style="width: 33%;">M. G. Needham (BW)</td> <td style="width: 33%;">P. Boyle (BW)</td> </tr> <tr> <td>M. G. Kim (DG)</td> <td>H. S. Kim/J. Dunlap (DG)</td> <td>D. R. Redden</td> </tr> <tr> <td>Braidwood Central File</td> <td>D. G. Central Files</td> <td>T. Simpkin (BW)</td> </tr> <tr> <td>K. Root (DG)</td> <td></td> <td></td> </tr> </table>			J. Bauer (DG)	M. G. Needham (BW)	P. Boyle (BW)	M. G. Kim (DG)	H. S. Kim/J. Dunlap (DG)	D. R. Redden	Braidwood Central File	D. G. Central Files	T. Simpkin (BW)	K. Root (DG)		
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## CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

1.0 CORE OPERATING LIMITS REPORT

This Core Operating Limits Report (COLR) for Braidwood Station Unit 2 Cycle 9 has been prepared in accordance with the requirements of Technical Specification 5.6.5 (ITS).

The Technical Specifications affected by this report are listed below:

SL	2.1.1	Reactor Core Safety Limits (SLs)
LCO	3.1.1	Shutdown Margin (SDM)
LCO	3.1.3	Moderator Temperature Coefficient
LCO	3.1.4	Rod Group Alignment Limits
LCO	3.1.5	Shutdown Bank Insertion Limits
LCO	3.1.6	Control Bank Insertion Limits
LCO	3.1.8	Physics Tests Exceptions – Mode 2
LCO	3.2.1	Heat Flux Hot Channel Factor ( $F_Q(Z)$ )
LCO	3.2.2	Nuclear Enthalpy Rise Hot Channel Factor ( $F_{\Delta H}^N$ )
LCO	3.2.3	Axial Flux Difference (AFD)
LCO	3.3.1	Reactor Trip System (RTS) Instrumentation
LCO	3.3.9	Boron Dilution Protection System (BDPS)
LCO	3.4.1	Reactor Coolant System (RCS) DNB Parameters
LCO	3.9.1	Boron Concentration

The portions of the Technical Requirements Manual affected by this report are listed below:

TRM TLCO	3.1.b	Boration Flow Paths - Operating
TRM TLCO	3.1.d	Charging Pumps - Operating
TRM TLCO	3.1.f	Borated Water Sources - Operating
TRM TLCO	3.1.h	Shutdown Margin (SDM) – MODE 1 and MODE 2 with $keff \geq 1.0$
TRM TLCO	3.1.i	Shutdown Margin (SDM) – MODE 5
TRM TLCO	3.1.j	Shutdown and Control Rods
TRM TLCO	3.1.k	Position Indication System – Shutdown (Special Test Exception)

CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

2.0 OPERATING LIMITS

The cycle-specific parameter limits for the specifications listed in Section 1.0 are presented in the following subsections. These limits are applicable for the entire cycle unless otherwise identified. These limits have been developed using the NRC-approved methodologies specified in Technical Specification 5.6.5.

2.1 Reactor Core Limits (SL 2.1.1)

2.1.1 In Modes 1 and 2, the combination of Thermal Power, Reactor Coolant System (RCS) highest loop average temperature, and pressurizer pressure shall not exceed the limits specified in Figure 2.1.1.

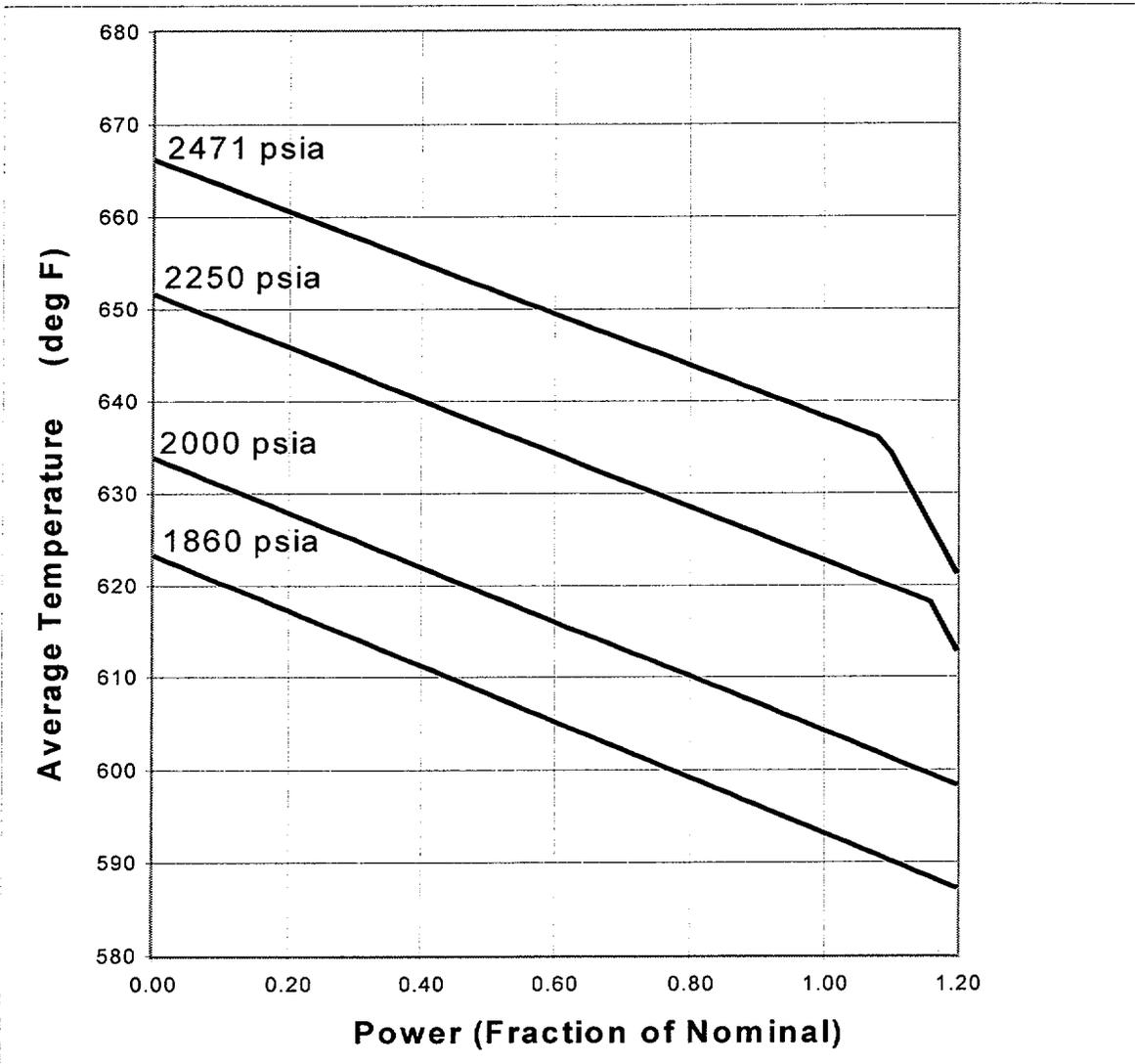


Figure 2.1.1: Reactor Core Limits

## CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

2.2 Shutdown Margin (SDM)

The SDM limit for MODES 1, 2, 3, and 4 is:

2.2.1 The SDM shall be greater than or equal to 1.3%  $\Delta k/k$  (LCOs 3.1.1, 3.1.4, 3.1.5, 3.1.6, 3.1.8, 3.3.9, and 3.9.1; TRM TLCOs 3.1.b, 3.1.d, 3.1.f, 3.1.h, and 3.1.j)

The SDM limits for MODE 5 are:

2.2.2.1 SDM shall be greater than or equal to 1.0%  $\Delta k/k$  (LCO 3.1.1).

2.2.2.2 SDM shall be greater than or equal to 1.3%  $\Delta k/k$  (LCO 3.3.9; TRM TLCO 3.1.i and 3.1.j).

2.3 Moderator Temperature Coefficient (LCO 3.1.3)

The Moderator Temperature Coefficient (MTC) limits are:

2.3.1 The BOL/ARO/HZP-MTC upper limit shall be  $+4.1 \times 10^{-5} \Delta k/k/^{\circ}F$ .

2.3.2 The EOL/ARO/HFP-MTC lower limit shall be  $-4.1 \times 10^{-4} \Delta k/k/^{\circ}F$ .

2.3.3 The EOL/ARO/HFP-MTC Surveillance limit at 300 ppm shall 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  
HFP stands for Hot Full Thermal Power

2.4 Shutdown Bank Insertion Limit (LCO 3.1.5)

2.4.1 All shutdown banks shall be fully withdrawn to at least 224 steps.

2.5 Control Bank Insertion Limits (LCO 3.1.6)

2.5.1 The control banks shall be limited in physical insertion as shown in Figure 2.5.1.

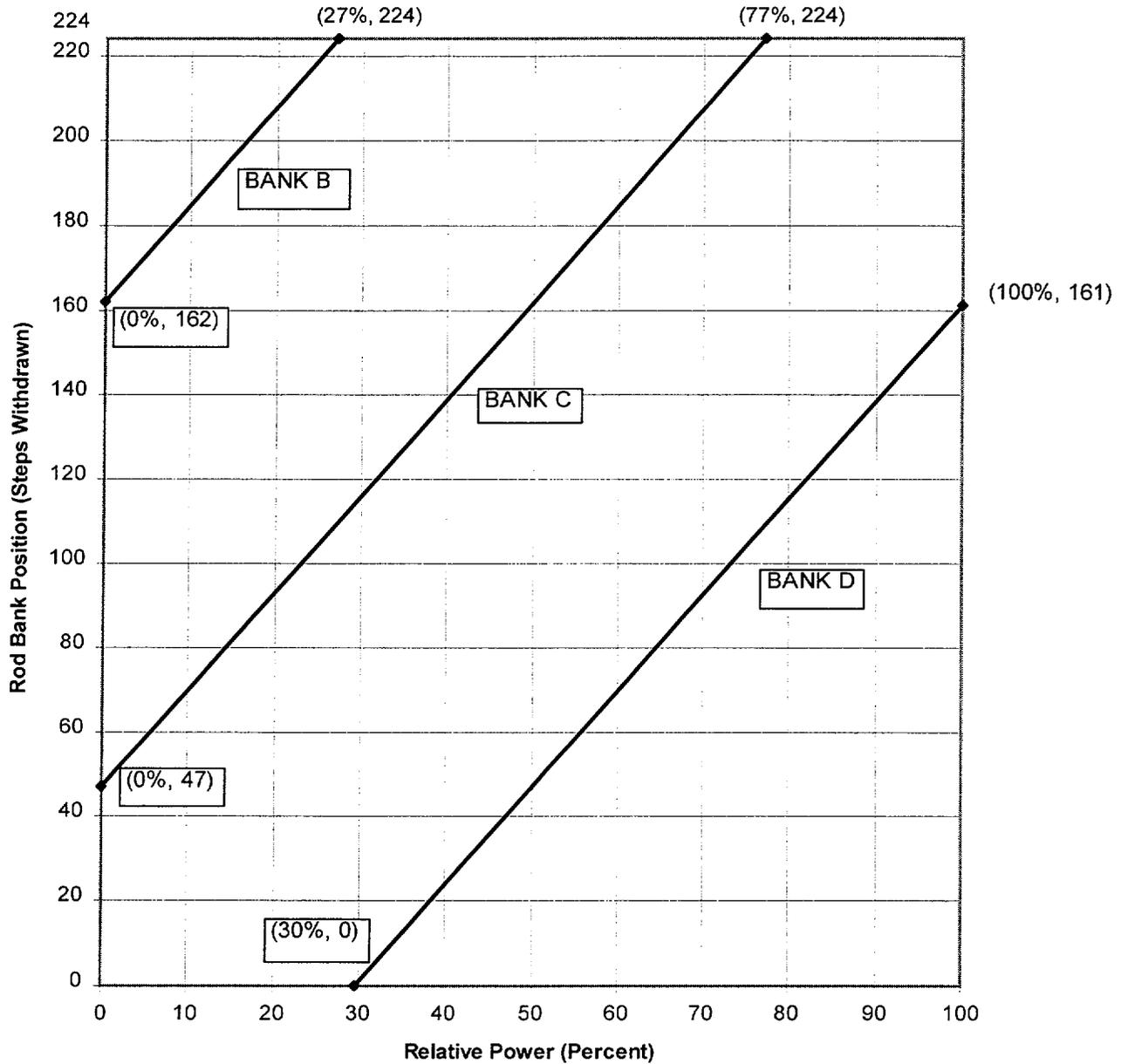
2.5.2 Each control bank shall be considered fully withdrawn from the core at greater than or equal to 224 steps.

2.5.3 The control banks shall be operated in sequence by withdrawal of Bank A, Bank B, Bank C and Bank D. The control banks shall be sequenced in reverse order upon insertion.

2.5.4 Each control bank not fully withdrawn from the core shall be operated with a 113 step overlap limit.

CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

**Figure 2.5.1:  
Control Bank Insertion Limits Versus Percent Rated Thermal Power**



## CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

2.6 Heat Flux Hot Channel Factor ( $F_q(Z)$ ) (LCO 3.2.1)

## 2.6.1

$$F_q(Z) \leq \frac{F_q^{RTP}}{0.5} \times K(Z) \text{ for } P \leq 0.5$$

$$F_q(Z) \leq \frac{F_q^{RTP}}{P} \times K(Z) \text{ for } P > 0.5$$

where: P = the ratio of THERMAL POWER to RATED THERMAL POWER

$$F_q^{RTP} = 2.60$$

K(Z) for assembly average burnup > 4000 MWD/MTU is provided in Figure 2.6.1. K(Z) for assembly average burnup  $\leq$  4000 MWD/MTU is provided in Figure 2.6.1.a.

## 2.6.2 W(Z) is provided in Figures 2.6.2.a through 2.6.2.d.

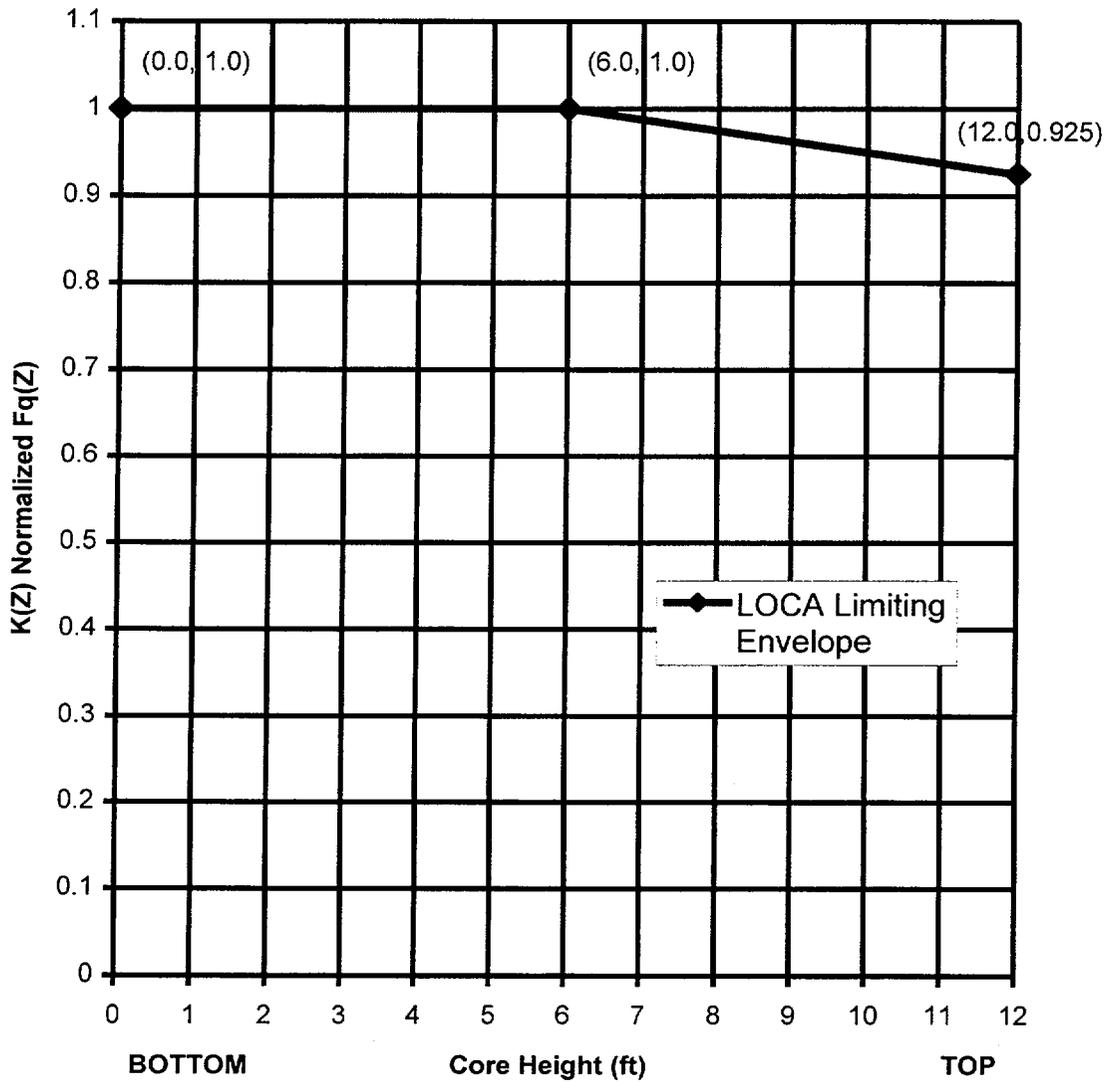
The normal operation W(Z) values have been determined at burnups of 150, 3000, 10000, and 18000 MWD/MTU.

Table 2.6.2 shows the  $F_{q,c}(z)$  penalty factors that are greater than 2% per 31 Effective Full Power Days. These values shall be used to increase the  $F_{q,w}(z)$  as per Surveillance Requirement 3.2.1.2. A 2% penalty factor shall be used at all cycle burnups that are outside the range of Table 2.6.2.

$$\text{Multiplication Factor} = 1.02$$

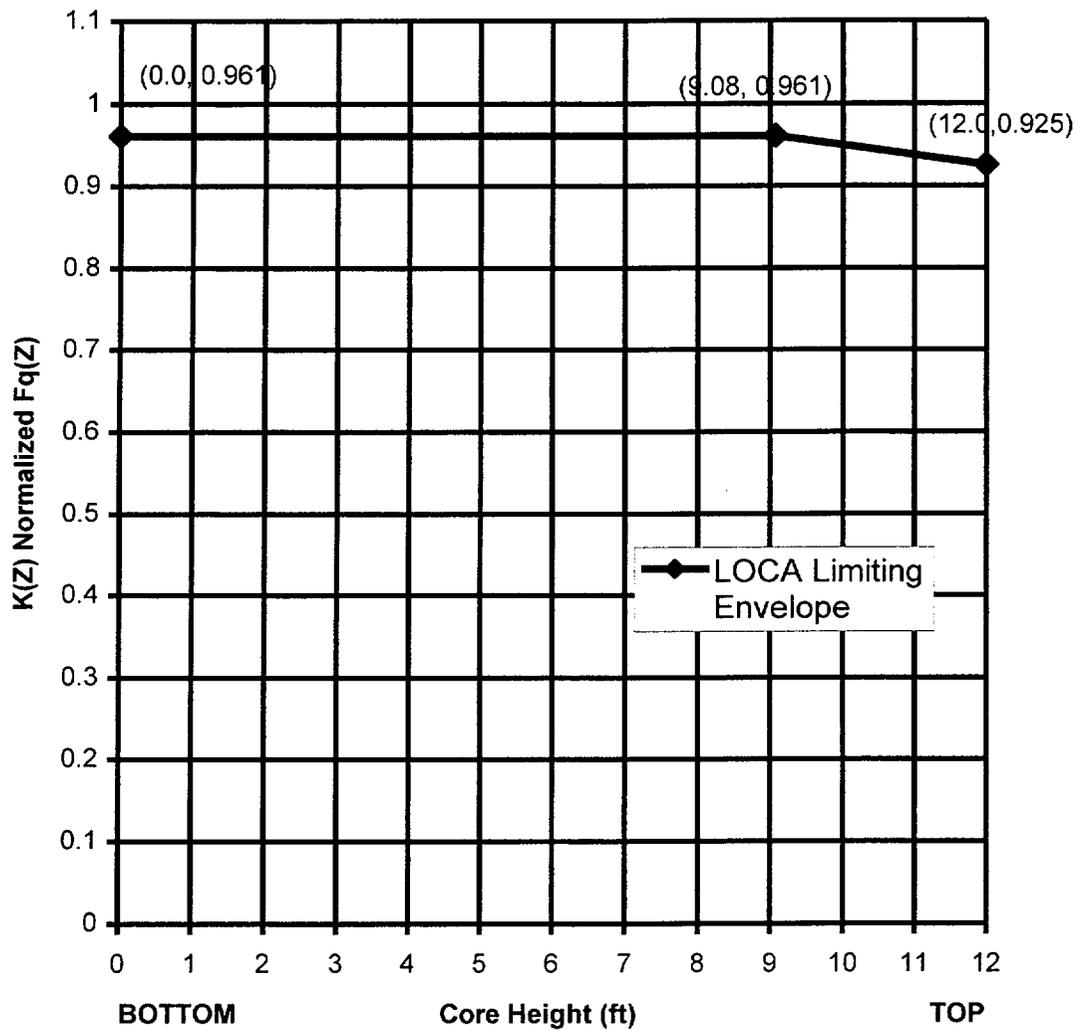
CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

Figure 2.6.1:  $K(Z)$  - Normalized  $F_q(Z)$  as a Function of Core Height (Assembly BU > 4000 MWD/MTU)



CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

**Figure 2.6.1.a: K(Z) - Normalized Fq(Z) as a Function of Core Height (Assembly BU  $\leq$  4000 MWD/MTU)**



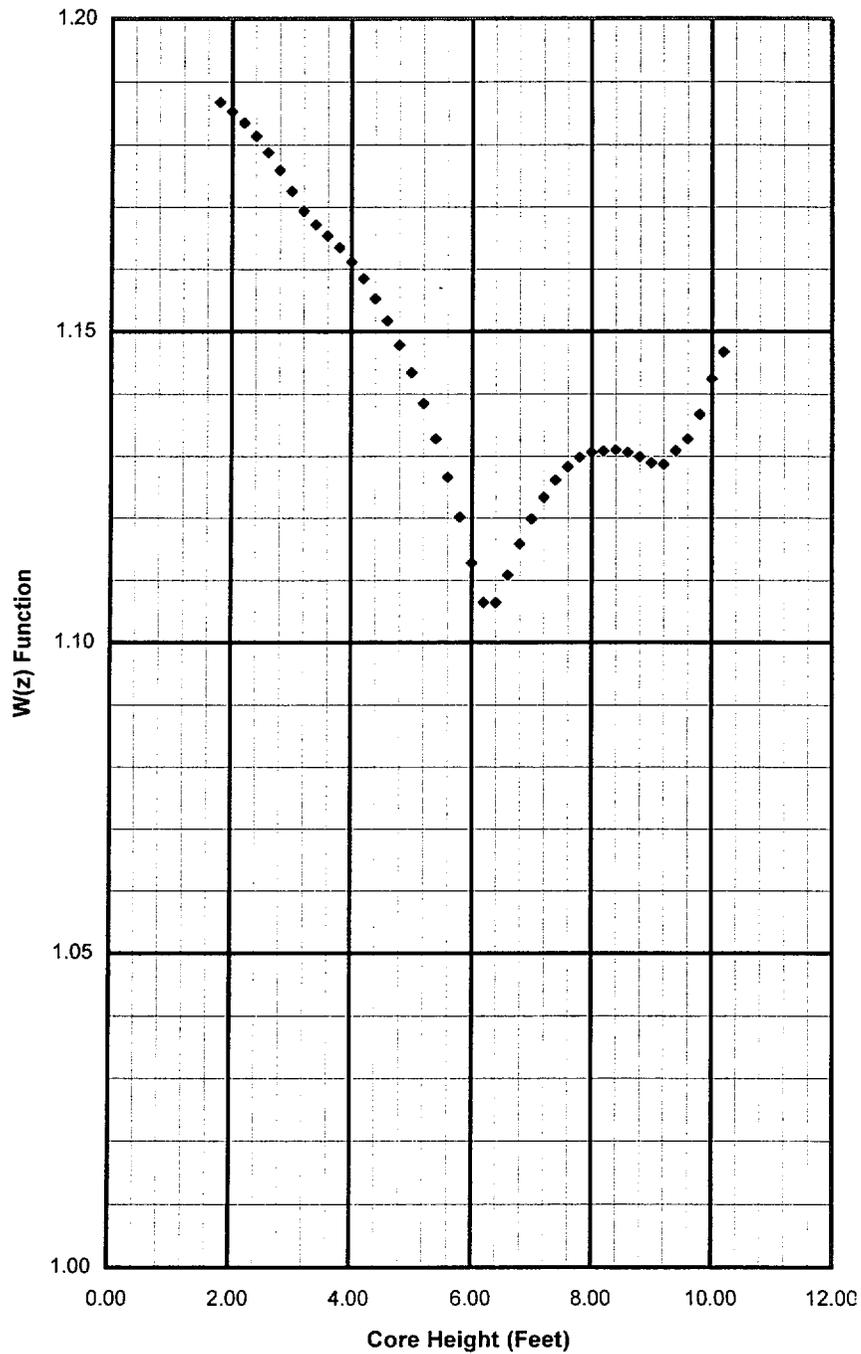
CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

Height (Feet)	W(z)
0.00	1.0000
0.20	1.0000
0.40	1.0000
0.60	1.0000
0.80	1.0000
1.00	1.0000
1.20	1.0000
1.40	1.0000
1.60	1.0000
1.80	1.1867
2.00	1.1852
2.20	1.1834
2.40	1.1813
2.60	1.1787
2.80	1.1759
3.00	1.1725
3.20	1.1693
3.40	1.1671
3.60	1.1653
3.80	1.1634
4.00	1.1611
4.20	1.1584
4.40	1.1552
4.60	1.1517
4.80	1.1478
5.00	1.1434
5.20	1.1384
5.40	1.1328
5.60	1.1266
5.80	1.1201
6.00	1.1127
6.20	1.1064
6.40	1.1064
6.60	1.1108
6.80	1.1158
7.00	1.1198
7.20	1.1233
7.40	1.1261
7.60	1.1283
7.80	1.1298
8.00	1.1306
8.20	1.1308
8.40	1.1310
8.60	1.1306
8.80	1.1299
9.00	1.1289
9.20	1.1287
9.40	1.1309
9.60	1.1328
9.80	1.1367
10.00	1.1424
10.20	1.1467
10.40	1.0000
10.60	1.0000
10.80	1.0000
11.00	1.0000
11.20	1.0000
11.40	1.0000
11.60	1.0000
11.80	1.0000
12.00	1.0000

Braidwood Unit 2 Cycle 9

Figure 2.6.2.a

Summary of W(z) Function at 150 MWD/MTU  
(top and Bottom 15% Excluded per WCAP-10216)



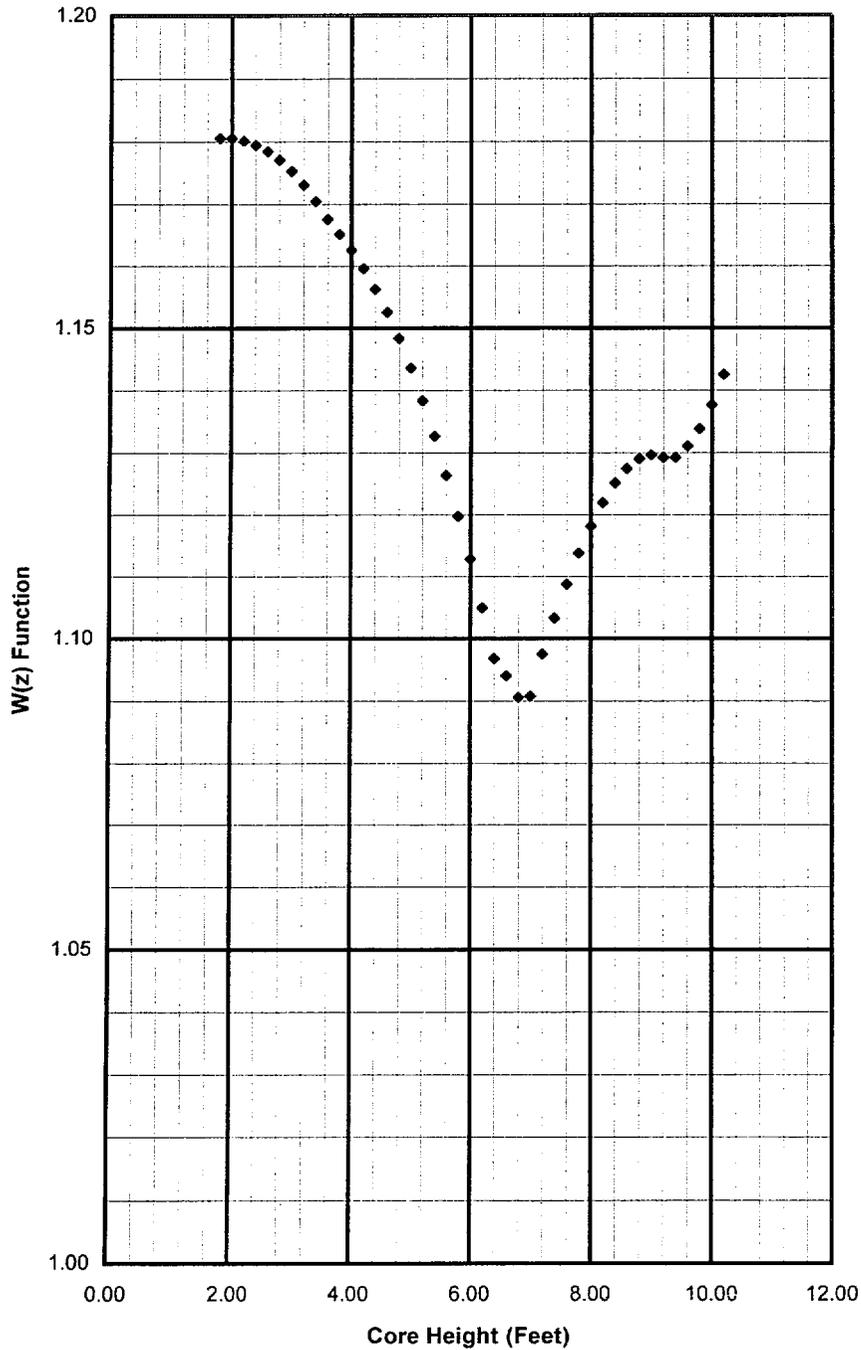
CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

Height (Feet)	W(z)
0.00	1.0000
0.20	1.0000
0.40	1.0000
0.60	1.0000
0.80	1.0000
1.00	1.0000
1.20	1.0000
1.40	1.0000
1.60	1.0000
1.80	1.1805
2.00	1.1805
2.20	1.1801
2.40	1.1794
2.60	1.1784
2.80	1.1770
3.00	1.1752
3.20	1.1730
3.40	1.1704
3.60	1.1675
3.80	1.1651
4.00	1.1625
4.20	1.1595
4.40	1.1562
4.60	1.1525
4.80	1.1483
5.00	1.1436
5.20	1.1383
5.40	1.1326
5.60	1.1263
5.80	1.1197
6.00	1.1128
6.20	1.1049
6.40	1.0968
6.60	1.0940
6.80	1.0905
7.00	1.0907
7.20	1.0975
7.40	1.1033
7.60	1.1087
7.80	1.1137
8.00	1.1181
8.20	1.1219
8.40	1.1251
8.60	1.1274
8.80	1.1290
9.00	1.1296
9.20	1.1292
9.40	1.1292
9.60	1.1310
9.80	1.1338
10.00	1.1376
10.20	1.1425
10.40	1.0000
10.60	1.0000
10.80	1.0000
11.00	1.0000
11.20	1.0000
11.40	1.0000
11.60	1.0000
11.80	1.0000
12.00	1.0000

Braidwood Unit 2 Cycle 9

Figure 2.6.2.b

Summary of W(z) Function at 3000 MWD/MTU  
(top and Bottom 15% Excluded per WCAP-10216)



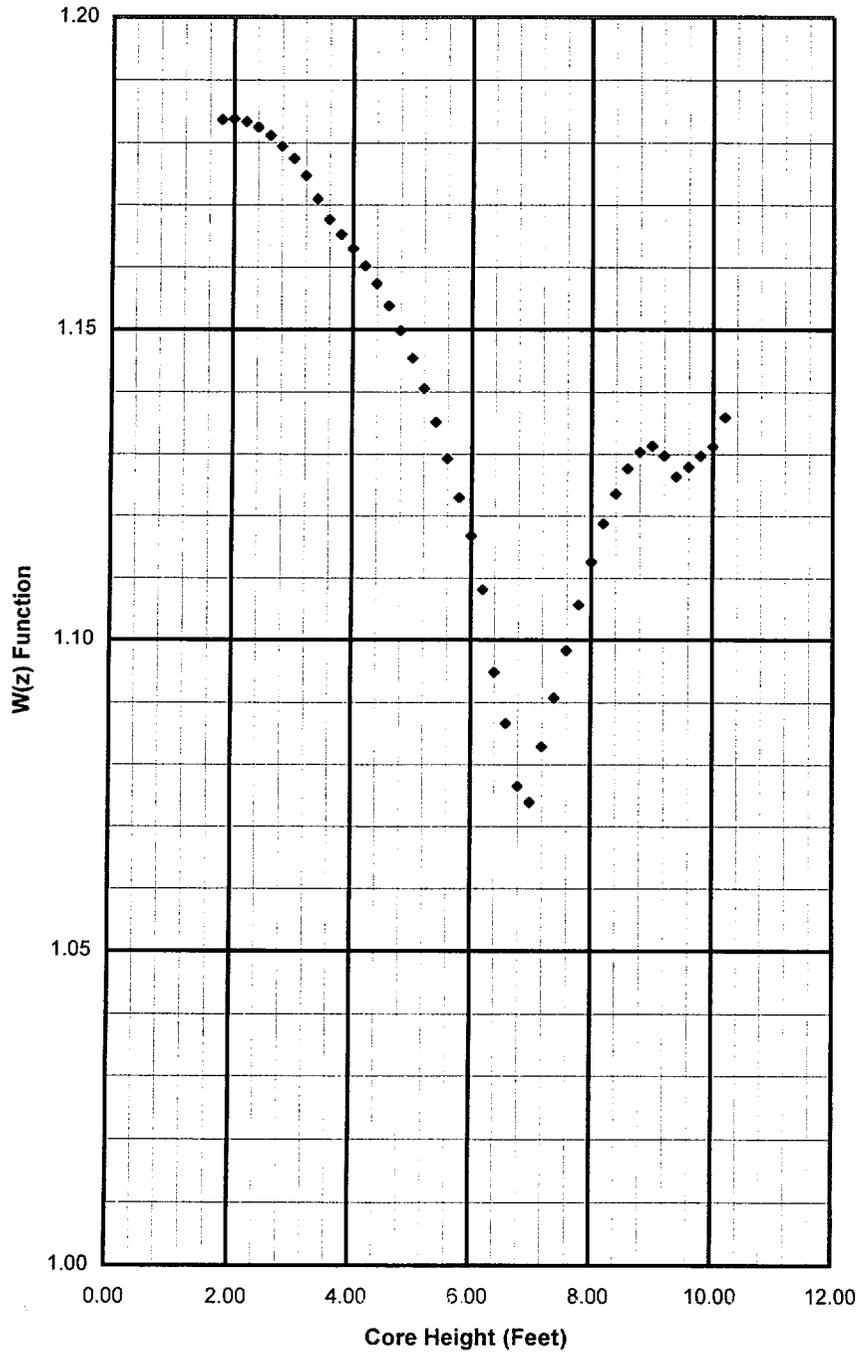
CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

Height (Feet)	W(z)
0.00	1.0000
0.20	1.0000
0.40	1.0000
0.60	1.0000
0.80	1.0000
1.00	1.0000
1.20	1.0000
1.40	1.0000
1.60	1.0000
1.80	1.1836
2.00	1.1837
2.20	1.1833
2.40	1.1824
2.60	1.1811
2.80	1.1794
3.00	1.1774
3.20	1.1747
3.40	1.1709
3.60	1.1676
3.80	1.1652
4.00	1.1629
4.20	1.1602
4.40	1.1573
4.60	1.1538
4.80	1.1498
5.00	1.1454
5.20	1.1405
5.40	1.1351
5.60	1.1292
5.80	1.1229
6.00	1.1167
6.20	1.1081
6.40	1.0948
6.60	1.0866
6.80	1.0765
7.00	1.0739
7.20	1.0829
7.40	1.0907
7.60	1.0983
7.80	1.1056
8.00	1.1125
8.20	1.1187
8.40	1.1235
8.60	1.1276
8.80	1.1303
9.00	1.1313
9.20	1.1297
9.40	1.1263
9.60	1.1279
9.80	1.1297
10.00	1.1312
10.20	1.1359
10.40	1.0000
10.60	1.0000
10.80	1.0000
11.00	1.0000
11.20	1.0000
11.40	1.0000
11.60	1.0000
11.80	1.0000
12.00	1.0000

Braidwood Unit 2 Cycle 9

Figure 2.6.2.c

Summary of W(z) Function at 10000 MWD/MTU  
(top and Bottom 15% Excluded per WCAP-10216)



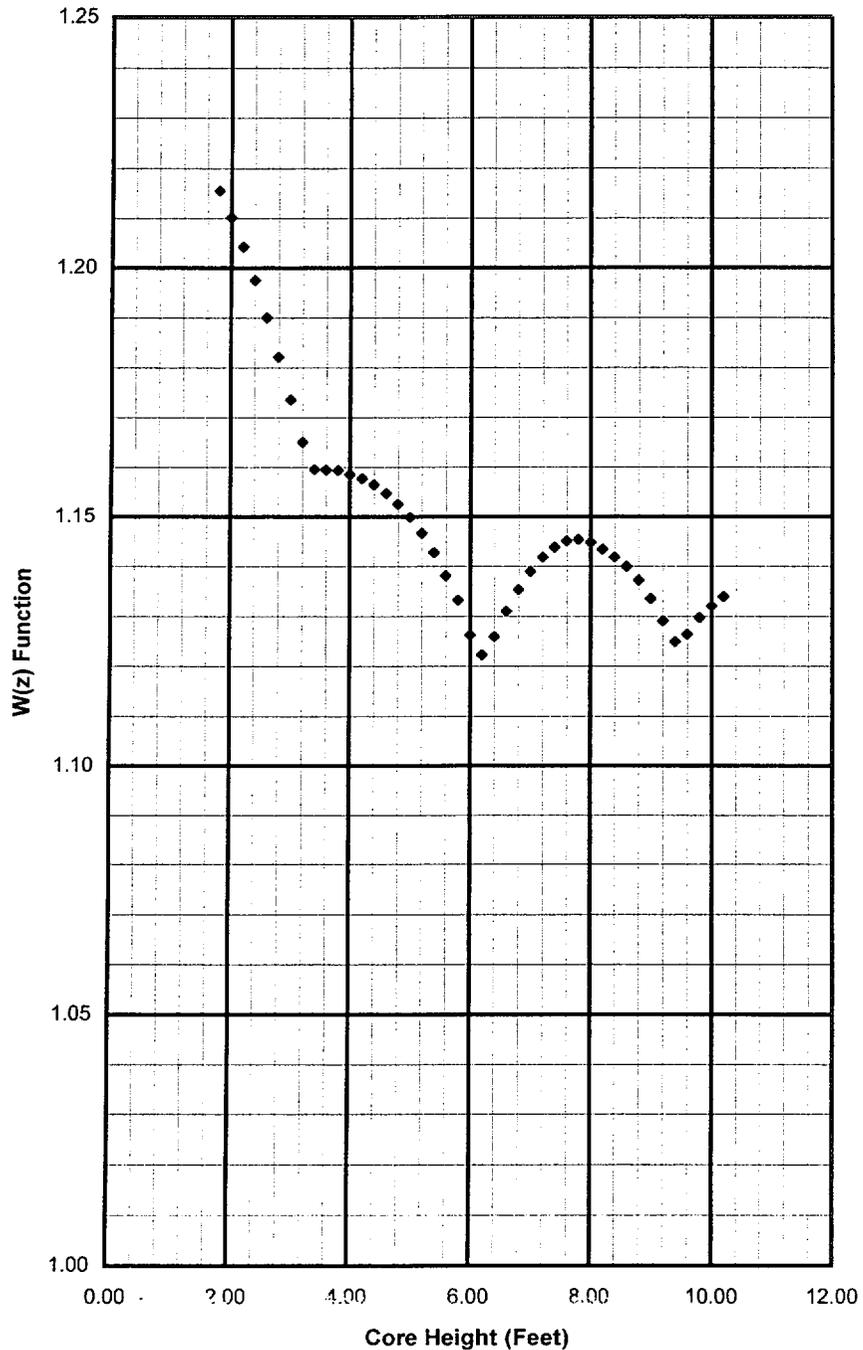
CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

Height (Feet)	W(z)
0.00	1.0000
0.20	1.0000
0.40	1.0000
0.60	1.0000
0.80	1.0000
1.00	1.0000
1.20	1.0000
1.40	1.0000
1.60	1.0000
1.80	1.215
2.00	1.210
2.20	1.204
2.40	1.197
2.60	1.190
2.80	1.182
3.00	1.174
3.20	1.165
3.40	1.160
3.60	1.159
3.80	1.159
4.00	1.159
4.20	1.158
4.40	1.156
4.60	1.155
4.80	1.153
5.00	1.150
5.20	1.147
5.40	1.143
5.60	1.138
5.80	1.133
6.00	1.126
6.20	1.122
6.40	1.126
6.60	1.131
6.80	1.135
7.00	1.139
7.20	1.142
7.40	1.144
7.60	1.145
7.80	1.145
8.00	1.145
8.20	1.143
8.40	1.142
8.60	1.140
8.80	1.137
9.00	1.134
9.20	1.129
9.40	1.125
9.60	1.126
9.80	1.130
10.00	1.132
10.20	1.134
10.40	1.0000
10.60	1.0000
10.80	1.0000
11.00	1.0000
11.20	1.0000
11.40	1.0000
11.60	1.0000
11.80	1.0000
12.00	1.0000

Braidwood Unit 2 Cycle 9

Figure 2.6.2.d

Summary of W(z) Function at 18000 MWD/MTU  
(top and Bottom 15% Excluded per WCAP-10216)



## CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

Table 2.6.2	
Fq Margin Decreases in Excess of 2% per 31 EFPD	
Cycle Burnup (MWD/MTU)	Max % Decrease in Fq Margin
150	2.00
275	2.42
400	2.97
525	3.45
650	3.84
775	4.12
900	4.30
1025	4.35
1150	4.28
1275	4.11
1400	3.86
1525	3.55
1650	3.21
1775	2.85
1900	2.48
2025	2.16
≥2150	2.00

Note: All cycle burnups outside the range of the table shall use a 2% decrease in Fq margin for compliance with the 3.2.1.2 Surveillance Requirements.

## CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

2.7 Nuclear Enthalpy Rise Hot Channel Factor ( $F_{\Delta H}^N$ ) (LCO 3.2.2)

2.7.1 
$$F_{\Delta H}^N \leq F_{\Delta H}^{RTP} [1.0 + PF_{\Delta H}(1.0 - P)]$$

where: P = the ratio of THERMAL POWER to RATED THERMAL POWER

$$F_{\Delta H}^{RTP} = 1.70$$

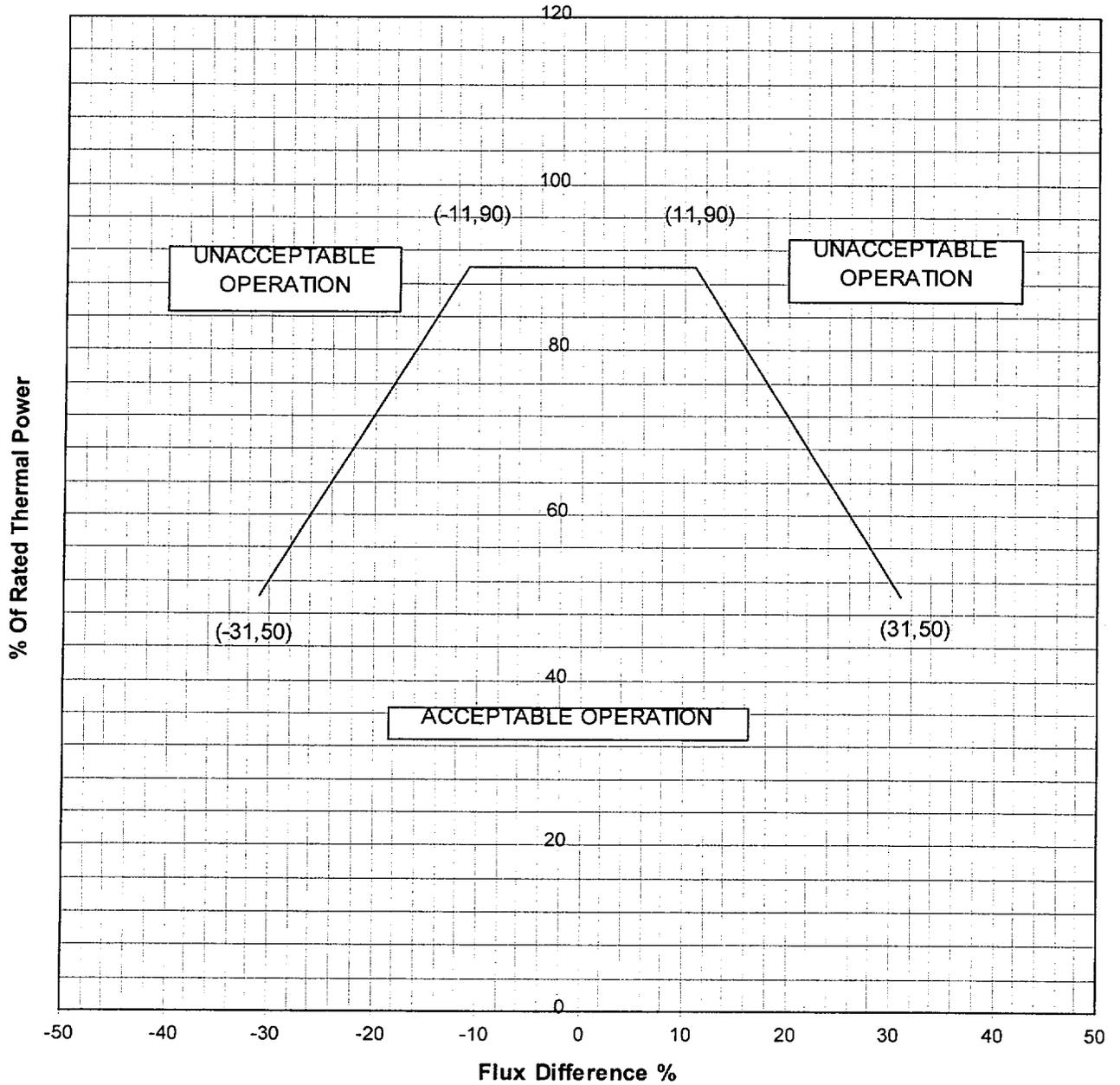
$$PF_{\Delta H} = 0.3$$

2.8 Axial Flux Difference (AFD) (LCO 3.2.3)

2.8.1 The AXIAL FLUX DIFFERENCE (AFD) target band is +5, -10% of the target flux difference.

2.8.2 The AFD Acceptable Operation Limits are provided in Figure 2.8.1.

**FIGURE 2.8.1: Axial Flux Difference Limits As A Function of Rated Thermal Power**



## CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

2.9 Reactor Trip System Overtemperature  $\Delta T$  Setpoint Parameter Values (LCO 3.3.1)

- 2.9.1 The Overtemperature  $\Delta T$  reactor trip setpoint  $K_1$  shall be equal to 1.325.
- 2.9.2 The Overtemperature  $\Delta T$  reactor trip setpoint  $T_{avg}$  coefficient  $K_2$  shall be equal to 0.0297 / °F.
- 2.9.3 The Overtemperature  $\Delta T$  reactor trip setpoint pressure coefficient  $K_3$  shall be equal to 0.00181 / psig.
- 2.9.4 The nominal  $T_{avg}$  at RTP (indicated)  $T'$  shall be less than or equal to 588.4 °F.
- 2.9.5 The nominal RCS operating pressure (indicated)  $P'$  shall be equal to 2235 psig.
- 2.9.6 The measured reactor vessel  $\Delta T$  lead/lag time constant  $\tau_1$  shall be equal to 8 sec.
- 2.9.7 The measured reactor vessel  $\Delta T$  lead/lag time constant  $\tau_2$  shall be equal to 3 sec.
- 2.9.8 The measured reactor vessel  $\Delta T$  lag time constant  $\tau_3$  shall be less than or equal to 2 sec.
- 2.9.9 The measured reactor vessel average temperature lead/lag time constant  $\tau_4$  shall be equal to 33 sec.
- 2.9.10 The measured reactor vessel average temperature lead/lag time constant  $\tau_5$  shall be equal to 4 sec.
- 2.9.11 The measured reactor vessel average temperature lag time constant  $\tau_6$  shall be less than or equal to 2 sec.
- 2.9.12 The  $f_1(\Delta I)$  "positive" breakpoint shall be +10%  $\Delta I$ .
- 2.9.13 The  $f_1(\Delta I)$  "negative" breakpoint shall be -24%  $\Delta I$ .
- 2.9.14 The  $f_1(\Delta I)$  "positive" slope shall be +4.11% / %  $\Delta I$ .
- 2.9.15 The  $f_1(\Delta I)$  "negative" slope shall be -3.35% / %  $\Delta I$ .

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- 2.10 Reactor Trip System Overpower  $\Delta T$  Setpoint Parameter Values (LCO 3.3.1)
- 2.10.1 The Overpower  $\Delta T$  reactor trip setpoint  $K_4$  shall be equal to 1.072.
  - 2.10.2 The Overpower  $\Delta T$  reactor trip setpoint  $T_{avg}$  rate/lag coefficient  $K_5$  shall be equal to 0.02 / °F for increasing  $T_{avg}$ .
  - 2.10.3 The Overpower  $\Delta T$  reactor trip setpoint  $T_{avg}$  rate/lag coefficient  $K_5$  shall be equal to 0 / °F for decreasing  $T_{avg}$ .
  - 2.10.4 The Overpower  $\Delta T$  reactor trip setpoint  $T_{avg}$  heatup coefficient  $K_6$  shall be equal to 0.00245 / °F when  $T > T''$ .
  - 2.10.5 The Overpower  $\Delta T$  reactor trip setpoint  $T_{avg}$  heatup coefficient  $K_6$  shall be equal to 0 / °F when  $T \leq T''$ .
  - 2.10.6 The nominal  $T_{avg}$  at RTP (indicated)  $T''$  shall be less than or equal to 588.4 °F.
  - 2.10.7 The measured reactor vessel  $\Delta T$  lead/lag time constant  $\tau_1$  shall be equal to 8 sec.
  - 2.10.8 The measured reactor vessel  $\Delta T$  lead/lag time constant  $\tau_2$  shall be equal to 3 sec.
  - 2.10.9 The measured reactor vessel  $\Delta T$  lag time constant  $\tau_3$  shall be less than or equal to 2 sec.
  - 2.10.10 The measured reactor vessel average temperature lag time constant  $\tau_6$  shall be less than or equal to 2 sec.
  - 2.10.11 The measured reactor vessel average temperature rate/lag time constant  $\tau_7$  shall be equal to 10 sec.
  - 2.10.12 The  $f_2(\Delta I)$  "positive" breakpoint shall be 0 for all  $\Delta I$ .
  - 2.10.13 The  $f_2(\Delta I)$  "negative" breakpoint shall be 0 for all  $\Delta I$ .
  - 2.10.14 The  $f_2(\Delta I)$  "positive" slope shall be 0 for all  $\Delta I$ .
  - 2.10.15 The  $f_2(\Delta I)$  "negative" slope shall be 0 for all  $\Delta I$ .

## CORE OPERATING LIMITS REPORT (COLR) for BRAIDWOOD UNIT 2 CYCLE 9

2.11 Reactor Coolant System (RCS) DNB Parameter Limits (LCO 3.4.1)

2.11.1 The pressurizer pressure shall be greater than or equal to 2219 psig.

2.11.2 The RCS average temperature ( $T_{avg}$ ) shall be less than or equal to 591.2 °F.

2.11.3 The RCS total flow rate shall be greater than or equal to 371,400 gpm.

2.12 Boron Concentration

2.12.1 The refueling boron concentration shall be greater than or equal to 2000 ppm (LCO 3.9.1).

2.12.2 The Reactor Coolant System boron concentration shall be greater than or equal to 2041 ppm prior to initial criticality of Cycle 9, or greater than or equal to 2143 ppm at all other times in core life, to maintain adequate shutdown margin for MODES 3, 4, and 5 during performance of rod drop time measurements and during the surveillance of Digital Rod Position Indication (DRPI) for OPERABILITY (TLCO 3.1.k).