JAFP-12-0129

ENCLOSURE 2

Core Operating Limits Report
Revision 26

(Non-proprietary Version)

(26 Pages Including Contents)

JAFP-12-0129 Enclosure 2 Contents

Core Operating Limits Report	**25 Pages**

Entergy

ENTERGY NUCLEAR OPERATIONS, INC.
JAMES A. FITZPATRICK NUCLEAR POWER PLANT
REPORT

CORE OPERATING LIMITS REPORT
REVISION 26

APPROVED BY: William Drews [signature] DATE: 9/25/12
REACTOR ENGINEERING SUPERVISOR

APPROVED BY: [signature] DATE: 10/3/2012
GENERAL MANAGER – PLANT OPERATIONS

REVISION RECORD

Revision	Cycle	Date	Description
26	**21**	Sept. 2012	Cycle 21 Revision

<table>
<tr><th colspan="3">Summary of Changes</th></tr>
<tr><td rowspan="7">Rev. 26</td><td rowspan="7">Effective upon final approval</td><td>Applicable for use during Cycle 21 Operation. Revision issued to update this document for FitzPatrick Reload 20 Cycle 21 cycle dependent data.</td></tr>
<tr><td>Removed any GE14 fuel design type pertinent information and references as this fuel design was discharged at EOC20.</td></tr>
<tr><td>GESTAR reference updated to the latest revision 19 (Ref. 3.7).
Update to cycle specific references.
One new reference added that removed cycle exposure limitation in the stability analysis results for Exclusion and Buffer Zones (3.18).</td></tr>
<tr><td>Cycle 21 COLR cycle exposure applicability range of 0 GMD/ST to 11 GWD/ST for operation was added.</td></tr>
<tr><td>Content of TABLE 8.4 defining MCPR Operating Limit for Final Feedwater Temperature Reduction was deleted as FWTR will not be utilized in Cycle 21.</td></tr>
<tr><td>PRIME Gad fuel rods suppression is reported in the LHGR table</td></tr>
<tr><td>This revision record and summary added.</td></tr>
</table>

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1.0 PURPOSE

This report provides the cycle-specific operating limits for Cycle 21 of the James A. FitzPatrick Nuclear Power Plant for the cycle exposure range of 0 MWD/ST to 11,000 MWD/ST. The following limits are addressed:

- Operating Limit Minimum Critical Power Ratio (MCPR)
- Flow Dependent MCPR Limits
- Average Planar Linear Heat Generation Rate (APLHGR)
- Linear Heat Generation Rate (LHGR)
- Flow-Biased Average Power Range Monitor (APRM) and Rod Block Monitor (RBM) Allowable Values
- Stability Option ID Exclusion Region

2.0 APPLICABILITY

The plant shall be operated within the limits specified in this report. If any of these limits are exceeded, the corrective actions specified in the Technical Specifications shall be taken.

3.0 REFERENCES

3.1 EN-LI-113, Licensing Basis Document Change process

3.2 JAFNPP Technical Specifications

3.3 EC32096, Cycle 21 Core Reload

3.4 EN-DC-503, 3D Monicore New Cycle Update and Databank Maintenance.

3.5 Plant Operation Up To 100% Power With One Steam Line Isolated, JAF-SE-96-035.

3.6 GE Report, J.A. FitzPatrick Nuclear Power Plant APRM/RBM/Technical Specifications / Maximum Extended Operating Domain (ARTS/MEOD), NEDC-33087P, Revision 1, September 2005

3.7 General Electric Standard Application for Reactor Fuel, NEDE-24011-P-A-19, May 2012; and the U.S. Supplement, NEDE-24011-P-A-19-US, May 2012.

3.8 GNF Report, Supplemental Reload Licensing Report for James A. FitzPatrick Reload 20 Cycle 21, 0000-0100-9172-SRLR, Revision 0, Class I, July, 2012. [EC38736, ECH-NE-12-00062 R0]

3.9 "GNF2 Fuel Design Cycle-Independent Analyses for Entergy FitzPatrick", GE Report, GEH-0000-0074-2662-R1, June 2010. [EC23634, JAF-RPT-08-00013 R1]

3.10 Licensing Topical Report, ODYSY Application for Stability Licensing Calculations Including Option I-D and II Long Term Solutions, NEDE-33213P-A, April 2009

3.11 GE Letter, R. Kingston to P. Lemberg, Scram Time versus Notch Positions for Option B, REK-E: 02-009, May 28, 2002

3.12 GE Report, James A. FitzPatrick Nuclear Power Plant Final Feedwater Temperature Reduction NEDC-33077, September 2002.

3.13 JD-02-122, Final Feedwater Temperature Reduction Implementation.

3.14 deleted

3.15 GNF Report, Fuel Bundle Information Report for James A. FitzPatrick Reload 20 Cycle 21, 0000-0100-9172-FBIR, Revision 0, July 2012. [EC38820, ECH-NE-12-00063 R0]

3.16 JF-03-00402, ARTS/MEOD Phase 1 Implementation

3.17 JAF-RPT-MISC-04489, Rev.7, Power-Flow Map Report

3.18 GE Hitachi, "Effect of Cycle Extension on the Reload Stability Analyses for Options I-D, II and III", 0000-0125-2402-R0, November 2010

4.0 DEFINITIONS

4.1 Average Planar Linear Heat Generation Rate (APLHGR):

The APLHGR shall be applicable to a specific planar height and is equal to the sum of the heat generation rate per unit length of fuel rod for all the fuel rods in the specified assembly at the specified height divided by the number of fuel rods in the fuel assembly at the height.

4.2 Linear Heat Generation Rate (LHGR):

The LHGR shall be the heat generation rate per unit length of fuel rod. It is the integral of the heat flux over the heat transfer area associated with the unit length.

4.3 Minimum critical power ratio (MCPR):

The MCPR shall be the smallest critical power ratio (CPR) that exists in the core for each type of fuel. The CPR is that power in the assembly that is calculated by application of the appropriate correlation(s) to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.

4.4 Rated Recirculation Flow :

That drive flow which produces a core flow of 77.0 x 10^6 lb/hr.

5.0 RESPONSIBILITIES

NOTE: See EN-LI-113 (Reference 3.1)

5.1 **Shift Manager:**

Assure that the reactor is operated within the limits described herein.

5.2 **Reactor Engineering Supervisor:**

Assure that the limits described herein are properly installed in the 3D-Monicore databank used for thermal limit surveillance (Reference 3.4)

6.0 SPECIAL INSTRUCTIONS/REQUIREMENTS

Final Feedwater Temperature Reduction will not be utilized in the Cycle 21 operation.

7.0 PROCEDURE

7.1 Operating Limit MCPR

During operation, with thermal power $\geq$ 25% of rated thermal power (RTP), the Operating Limit MCPR shall be equal to or greater than the limits given below.

7.1.1 Technical Specification LCO 3.2.2, Minimum Critical Power Ratio (MCPR)

7.1.2 The Operating Limit MCPR shall be determined based on the following requirement:

7.1.2.1 The average scram time to notch position 36 shall be:

$$\tau_{AVE} \leq \tau_B$$

7.1.2.2 The average scram time to notch position 36 is determined as follows:

$$\tau_{AVE} = \frac{\sum_{i=1}^{n} N_i \tau_i}{\sum_{i=1}^{n} N_i}$$

WHERE:

n = Number of surveillance tests performed to date in the cycle,

N_i = Number of active rods measured in the surveillance i

τ_i = Average scram time to notch position 36 of all rods measured in surveillance test i.

7.1.2.3 The adjusted analysis mean scram time is calculated as follows:

$$\tau_B(\sec) = \mu + 1.65\sigma \left[\frac{N_1}{\sum_{i=1}^{n} N_i} \right]^{1/2}$$

WHERE:

μ = Mean of the distribution for the average scram insertion time to the dropout of notch position 36 = 0.830 sec.

σ = Standard deviation of the distribution for average scram insertion time to the dropout of notch position 36 = 0.019 sec.

N_1 = The total number of active rods measured in Technical Specification SR 3.1.4.4.

The number of rods to be scram tested and the test intervals are given in Technical Specification LCO 3.1.4, Control Rod Scram Times

7.1.3 When requirement of 7.1.2.1 is met, the Operating Limit MCPR shall not be less than that specified in Table8.1, Table8.2, Table8.3, or Table8.4 as applicable for $\tau = 0$.

7.1.4 **WHEN** the requirement 7.1.2.1 is not met (i.e. $\tau_{AVE} > \tau_B$), **THEN** the Operating Limit MCPR values (as a function of τ) are given in Tables 8.1, 8.2, 8.3, or 8.4 as applicable.

$$\tau = \frac{(\tau_{AVE} - \tau_B)}{(\tau_A - \tau_B)}$$

WHERE:

τ_{AVE} = The average scram time to notch position 36 as defined in 7.1.2.2.

τ_B = The adjusted analysis mean scram time as defined in 7.1.2.3.

τ_A = the scram time to notch position 36 as defined in Technical Specification Table 3.1.4-1.

7.1.5 During single-loop operation, the Operating Limit MCPR shall be increased by 0.03.

7.1.6 The Operating Limit MCPR is the greater of the flow and power dependent MCPR operating limits, MCPR(F) and MCPR(P).

Operating Limit MCPR = MAX (MCPR(P), MCPR(F))

The flow dependent MCPR operating limit, MCPR(F), is provided in Figure 8.1.

For core thermal powers equal to or greater than 25%, MCPR (P) is the product of the rated Operating Limit MCPR presented in Tables 8.1, 8.2, 8.3, or 8.4 and the K (P) factor presented in Figure 8.2.

7.2 Average Planar Linear Heat Generation Rate (APLHGR)

7.2.1 Technical Specification LCO 3.2.1, Average Planar Linear Heat Generation Rate (APLHGR)

7.2.2 During operation, with thermal power ≥ 25% rated thermal power (RTP), the APLHGR shall be within the limits given in Table 8. 5 for the appropriate fuel type.

7.2.3 During single loop operation, the APLHGR for each fuel type shall not exceed the values given in 7.2.2 above multiplied by the appropriate value (0.85 for GNF2 fuel, per Ref. 3.8).

7.3 **Linear Heat Generation Rate (LHGR)**

7.3.1 Technical Specification LCO 3.2.3, Linear Heat Generation Rate (LHGR)

7.3.2 During operation, with thermal power $\geq$ 25% rated thermal power (RTP), the applicable limiting LHGR values for each fuel rod as a function of axial location and exposure shall be the smaller of the power and flow dependent LHGR limits multiplied by the applicable power and flow adjustment or the LHGR limit multiplied by 0.85 (for GNF2) when in single loop operation.

LHGR limit = MIN (LHGR (P), LHGR (F)).

Power-dependent LHGR limit, LHGR (P), is the product of the LHGR power dependent LHGR limit adjustment factor, LHGRFAC (P), shown in Figure 8.4 and the $LHGR_{std}$ in Table 8.6.

$LHGR (P) = LHGRFAC(P) \times LHGR_{std}$

The flow-dependent LHGR limit, LHGR (F), is the product of the LHGR flow dependent LHGR limit adjustment factor, LHGRFAC (F), shown in Figure 8.3 and the $LHGR_{std}$ in Table 8.6.

$LHGR (F) = LHGRFAC(F) \times LHGR_{std}$

7.4 **APRM Allowable Values (Digital Flow Cards)**

7.4.1 **APRM Flow Referenced Flux Scram Allowable Value (Run Mode)**

7.4.1.1 Technical Specifications:
LCO 3.3.1.1, Reactor Protection System (RPS) Instrumentation

7.4.1.2 When operating in Mode 1, the APRM Neutron Flux-High (Flow Biased) Allowable Value shall be

for two loop operation:

S≤ (% RTP) = 0.38*W+61.0%	0< W ≤ 24.7%
S≤ (% RTP) = 1.15*W+42.0%	24.7< W ≤ 47.0%
S≤ (% RTP) = 0.63*W+73.7%	47.0< W ≤ 68.7%
S≤ (% RTP) = 117.00% (Clamp)	W > 68.7%

for single loop operation:

S≤ (% RTP) = 0.38*W+57.9%	0< W ≤ 32.7%
S≤ (% RTP) = 1.15*W+32.8%	32.7< W ≤ 50.1%
S≤ (% RTP) = 0.58*W+61.3%	50.1< W ≤ 95.9%
S≤ (% RTP) = 117.00% (Clamp)	W > 95.9%

WHERE:

S = Allowable value in percent of rated thermal power;

W = Recirculation flow in percent of rated;

7.4.2 APRM Neutron Flux-High (Flow Biased) Rod Block Allowable Value (Relocated to the Technical Requirements Manual)

7.5 **RBM Upscale Rod Block Allowable Value**

7.5.1 Technical Specification LCO 3.3.2.1, Control Rod Block Instrumentation

7.5.2 The RBM upscale rod block allowable value shall be:

$S \leq 0.66W + K$ for two loop operation;

$S \leq 0.66W + K - 0.66\,\Delta W$ for single loop operation;

WHERE:

S	=	rod block allowable value in percent of initial;
W	=	Loop flow in percent of rated
K	=	Any intercept value may be used because the RBM intercept value does not effect the MCPR Operating Limit and the RBM is not assumed to function to protect the Safety Limit MCPR.
ΔW	=	Difference between two loop and single loop effective drive flow at the same core flow.

NOTE: If K can be any value, then $K - 0.66\Delta W$ can also be any value, and the allowable value adjustment for single loop operation is not necessary.

7.6 **Stability Option 1-D Exclusion Region and Buffer Zone.**

7.6.1 Technical Specification LCO 3.4.1, Recirculation Loops Operating

7.6.2 The reactor shall not be intentionally operated within the Exclusion Region given in Figure 8.5 when the SOLOMON Code is operable.

7.6.3 The reactor shall not be intentionally operated within the Buffer Zone given in Figure 8.5 when the SOLOMON Code is inoperable.

8.0 TABLES AND FIGURES

8.1 Following pages present Tables 8.1 through 8.6, and Figures 8.1 through 8.6. Exact tables and figures names are listed in the Table of Content on page 3.

TABLE 8.1
MCPR Operating Limit For Incremental Cycle Core Average Exposure

		GNF2 (Reload 19 & 20)		GNF2 (Reload 18)	
τ		BOC to MOC	MOC to EOC	BOC to MOC	MOC to EOC
= 0		1.42	1.46	1.43	1.46
>0.0	≤0.1	1.43	1.47	1.43	1.47
>0.1	≤0.2	1.44	1.48	1.44	1.48
>0.2	≤0.3	1.45	1.49	1.45	1.49
>0.3	≤0.4	1.46	1.5	1.46	1.5
>0.4	≤0.5	1.47	1.51	1.47	1.51
>0.5	≤0.6	1.48	1.52	1.48	1.52
>0.6	≤0.7	1.49	1.53	1.49	1.53
>0.7	≤0.8	1.5	1.54	1.50	1.54
>0.8	≤0.9	1.51	1.55	1.51	1.55
>0.9	≤1	1.52	1.56	1.52	1.56

Technical Specification LCO 3.2.2, Minimum Critical Power Ratio (MCPR)

For single loop operation, these limits shall be increased as given in Section 7.1.5.

The MCPR limits in this Table are subject to Power and Flow dependent adjustment per Section 7.1.6

NOTE: 1. When entering a new Exposure Range, check the current value of τ to assure adjustment per Step 7.1.4

2. Applicable for any value of K, see Step 7.5.2

TABLE 8.2
MCPR Operating Limit for Incremental Cycle Core Average Exposure for Operation above 75% of Rated Thermal Power with Three Steam Lines in Service

τ		GNF2	
		BOC to MOC	MOC to EOC
= 0		1.44	1.48
>0.0	≤0.1	1.45	1.49
>0.1	≤0.2	1.46	1.5
>0.2	≤0.3	1.47	1.51
>0.3	≤0.4	1.48	1.52
>0.4	≤0.5	1.49	1.53
>0.5	≤0.6	1.5	1.54
>0.6	≤0.7	1.51	1.55
>0.7	≤0.8	1.52	1.56
>0.8	≤0.9	1.53	1.57
>0.9	≤1	1.54	1.58

Technical Specification LCO 3.2.2, Minimum Critical Power Ratio (MCPR)

For single loop operation, these limits shall be increased as given in Section 7.1.5.

The MCPR limits in this Table are subject to Power and Flow dependent adjustment per Section 7.1.6

NOTE: **1.** When entering a new Exposure Range, check the current value of τ to assure adjustment per Step 7.1.4

2. Applicable for any value of K, see Step 7.5.2

TABLE 8.3
MCPR Operating Limit for Operation with Turbine Bypass Valves Out of Service

		GNF2
τ		BOC to EOC
= 0		1.51
>0.0	≤0.1	1.52
>0.1	≤0.2	1.53
>0.2	≤0.3	1.54
>0.3	≤0.4	1.55
>0.4	≤0.5	1.56
>0.5	≤0.6	1.57
>0.6	≤0.7	1.58
>0.7	≤0.8	1.59
>0.8	≤0.9	1.6
>0.9	≤1	1.61

Technical Specification LCO 3.2.2, Minimum Critical Power Ratio (MCPR)

Technical Specification LCO 3.7.6, Main Turbine Bypass System

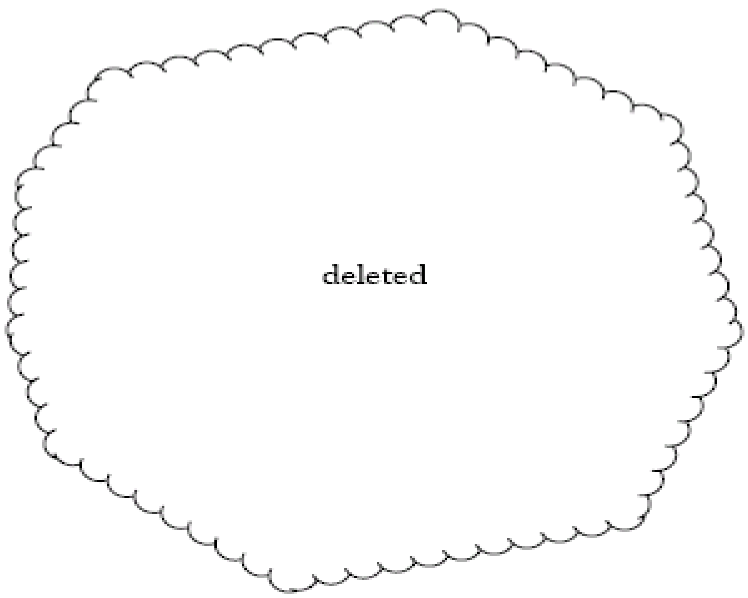
For single loop operation, these limits shall be increased as given in Section 7.1.5.

The MCPR limits in this Table are subject to Power and Flow dependent adjustment per Section 7.1.6

NOTE: **1.** When entering a new Exposure Range, check the current value of τ to assure adjustment per Step 7.1.4

2. Applicable for any value of K, see Step 7.5.2

TABLE 8.4
MCPR Operating Limit for Operation with Final Feedwater Temperature Reduction



Technical Specification LCO 3.2.2, Minimum Critical Power Ratio (MCPR)

For single loop operation, these limits shall be increased as given in Section 7.1.5.

The MCPR limits in this Table are subject to Power and Flow dependent adjustment per Section 7.1.6

NOTE: 1. When entering a new Exposure Range, check the current value of τ to assure adjustment per Step 7.1.4

2. Applicable for any value of K, see Step 7.5.2

MCPR Operating Limits in this table apply when at reduced feedwater temperature near end-of-cycle, see JD-02-122 (Reference 3.13) for further information.

TABLE 8.5
Exposure Dependent APLHGR Limits

GNF2 Fuel Types

Average Planar Exposure	**APLHGR Limit**
GWd/ST	**kW/ft**
0.00	13.78
13.24	13.78
17.52	13.78
60.78	7.50
63.50	6.69

Technical Specification LCO 3.2.1, Average Planar Linear Heat Generation Rate (APLHGR)

For single loop operation these APLHGR values shall be multiplied by 0.85 for GNF2 fuel.

Linearly interpolate for APLHGR at intermediate exposure.

TABLE 8.6
Maximum LHGR

Maximum LHGR – GNF2

Peak Pellet Exposure, GWD/ST	UO_2 LHGR Limit, kW/ft
[[	
	]]

Peak Pellet Exposure, GWd/ST	Most Limiting Gadolinia LHGR Limit, kW/ft
[[	
	]]

Technical Specification LCO 3.2.3, Linear Heat Generation Rate (LHGR)

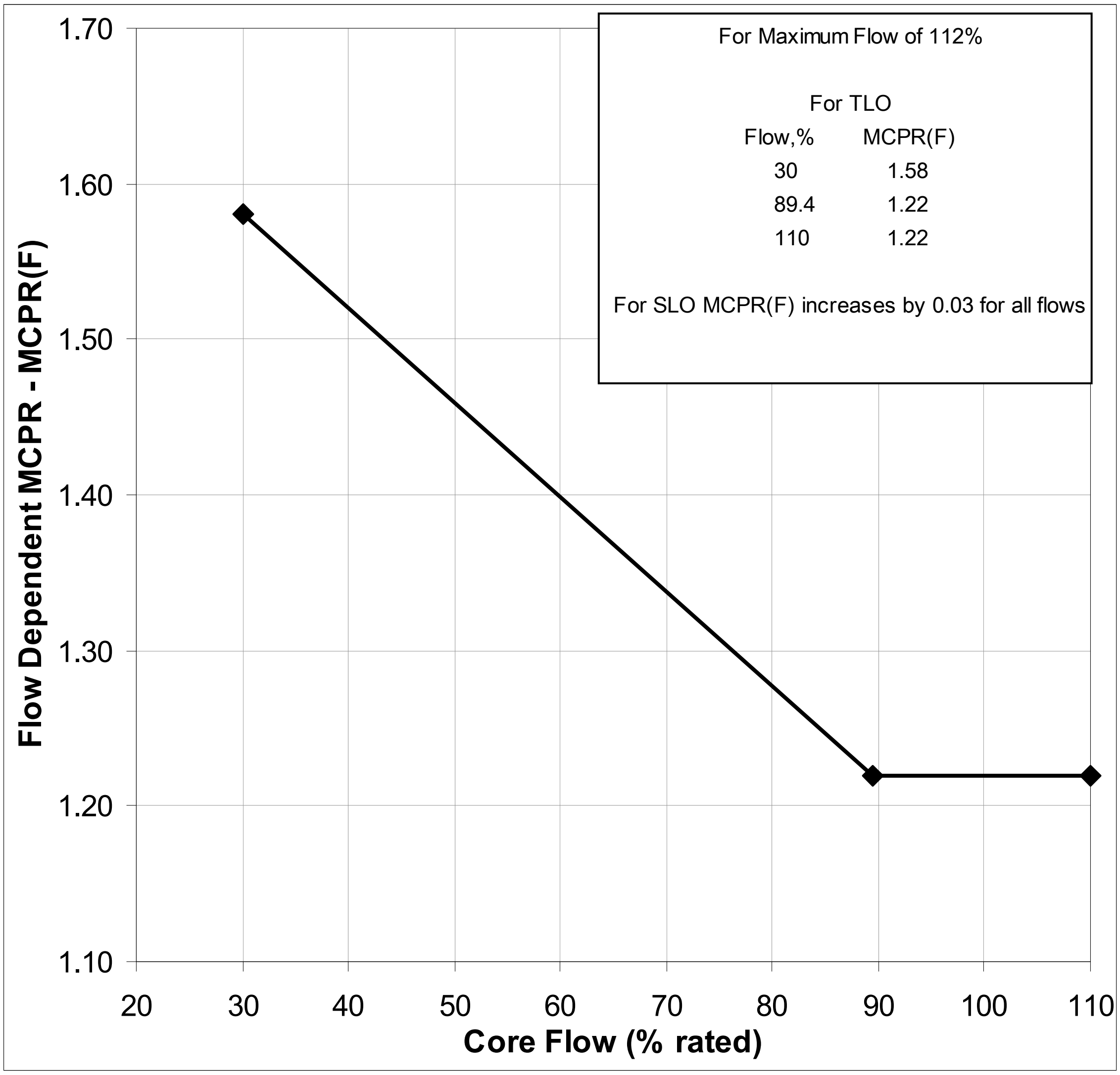
Design features of the fuel assemblies in the Cycle 21 core are provided in References 3.3, 3.15.

$LHGR_{std}$ values in the above Table 8.6 are subject to Power and Flow dependent adjustments per Section 7.3

For single loop operation these LHGR values shall be multiplied by 0.85 (for GNF2 fuel)

Linearly interpolate for LHGR at intermediate exposure

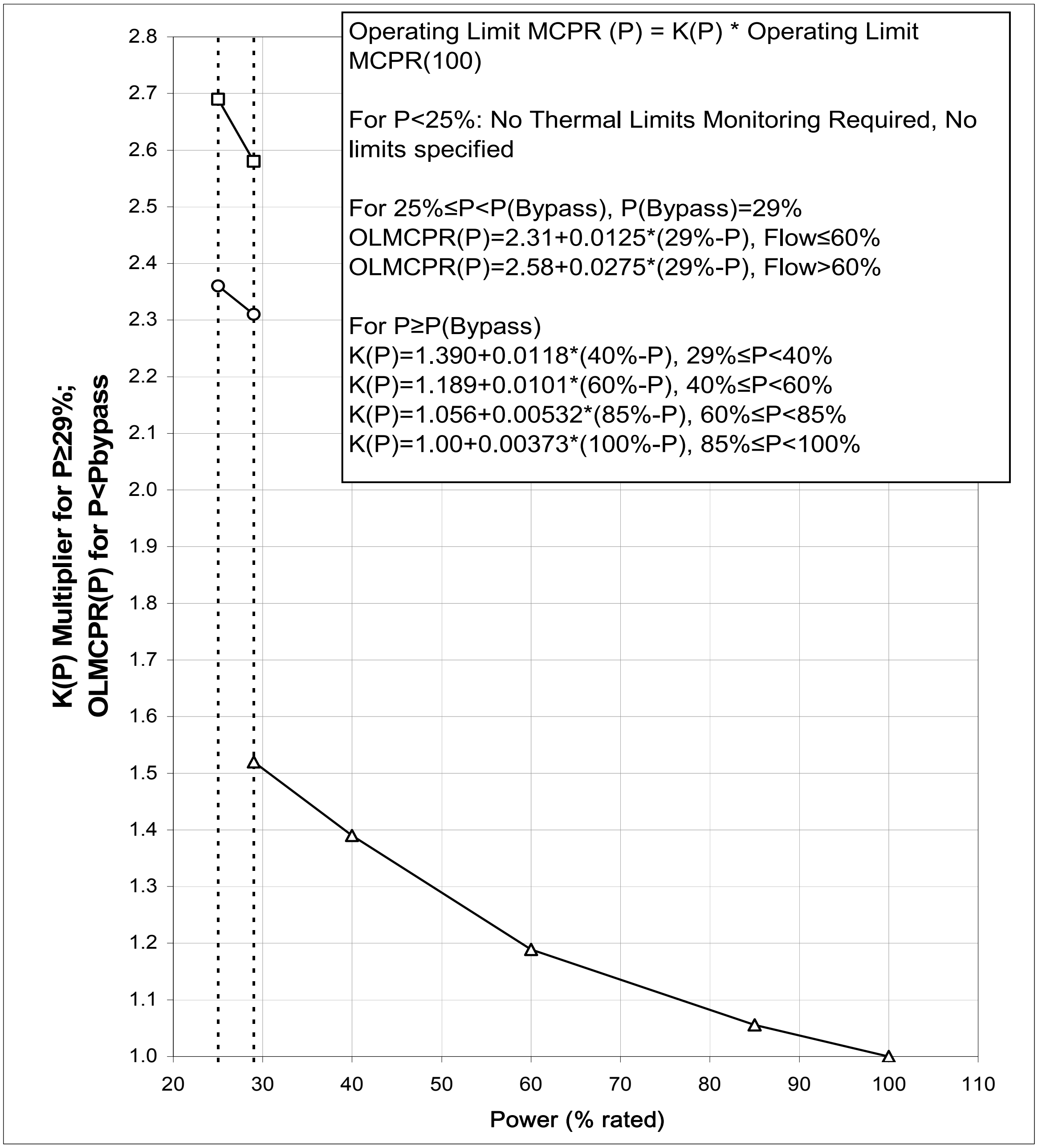
Figure 8.1
MCPR(F) Factor



Technical Specification LCO 3.2.2, Minimum Critical Power Ratio (MCPR)

Reference 3.8

Figure 8.2
K(P), OLMCPR(P) Factor

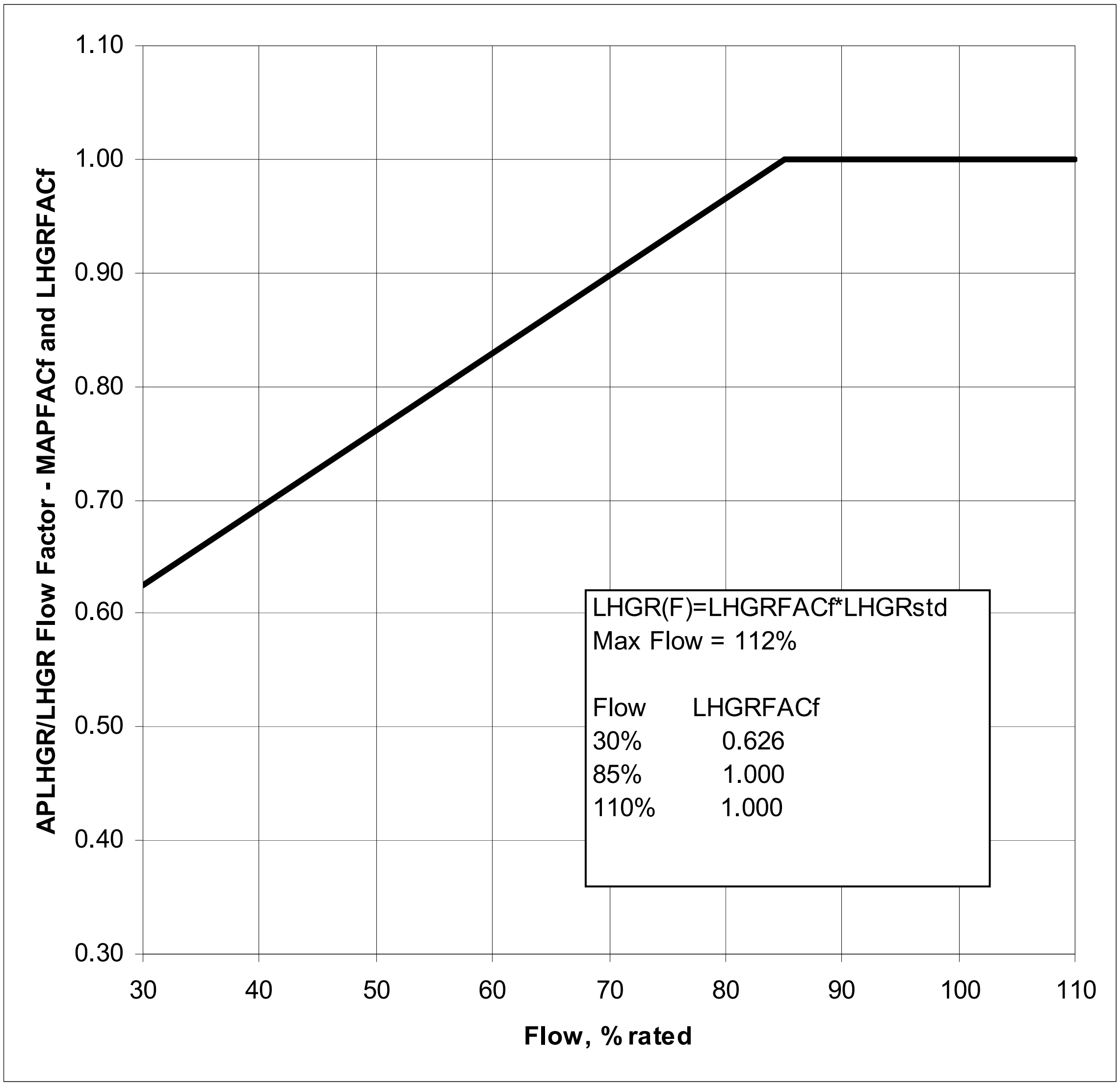


See Table 8.1, 8.2, 8.3,and Table 8.4 for Operating Limit MCPR(100)

Technical Specification LCO 3.2.2, Minimum Critical Power Ratio (MCPR)

Reference 3.8, 3.9

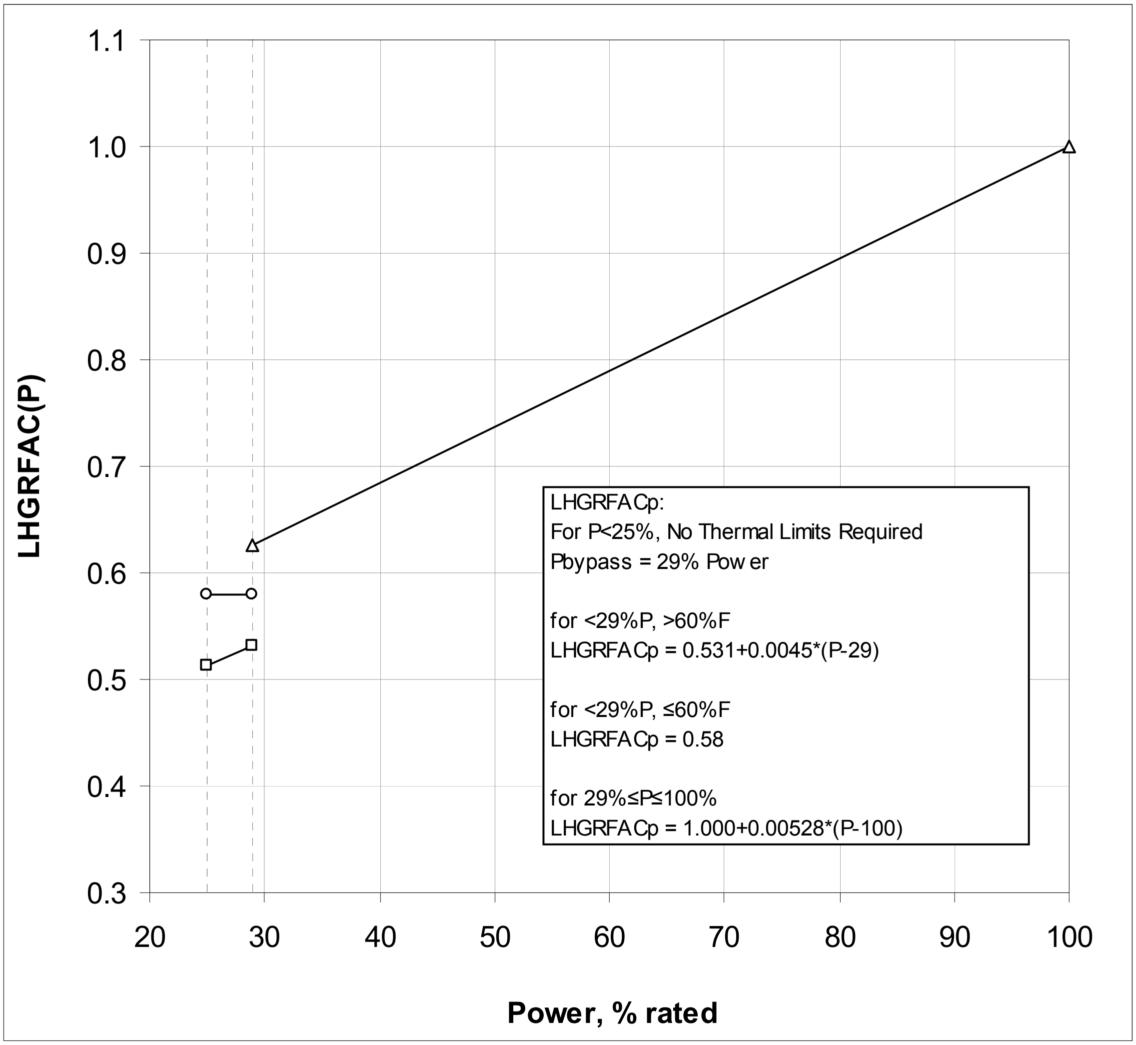
Figure 8.3
Flow-Dependent LHGR Multiplier, LHGRFAC(F)



See Table 8.6 for $LHGR_{STD}$ value

Reference 3.8, 3.9

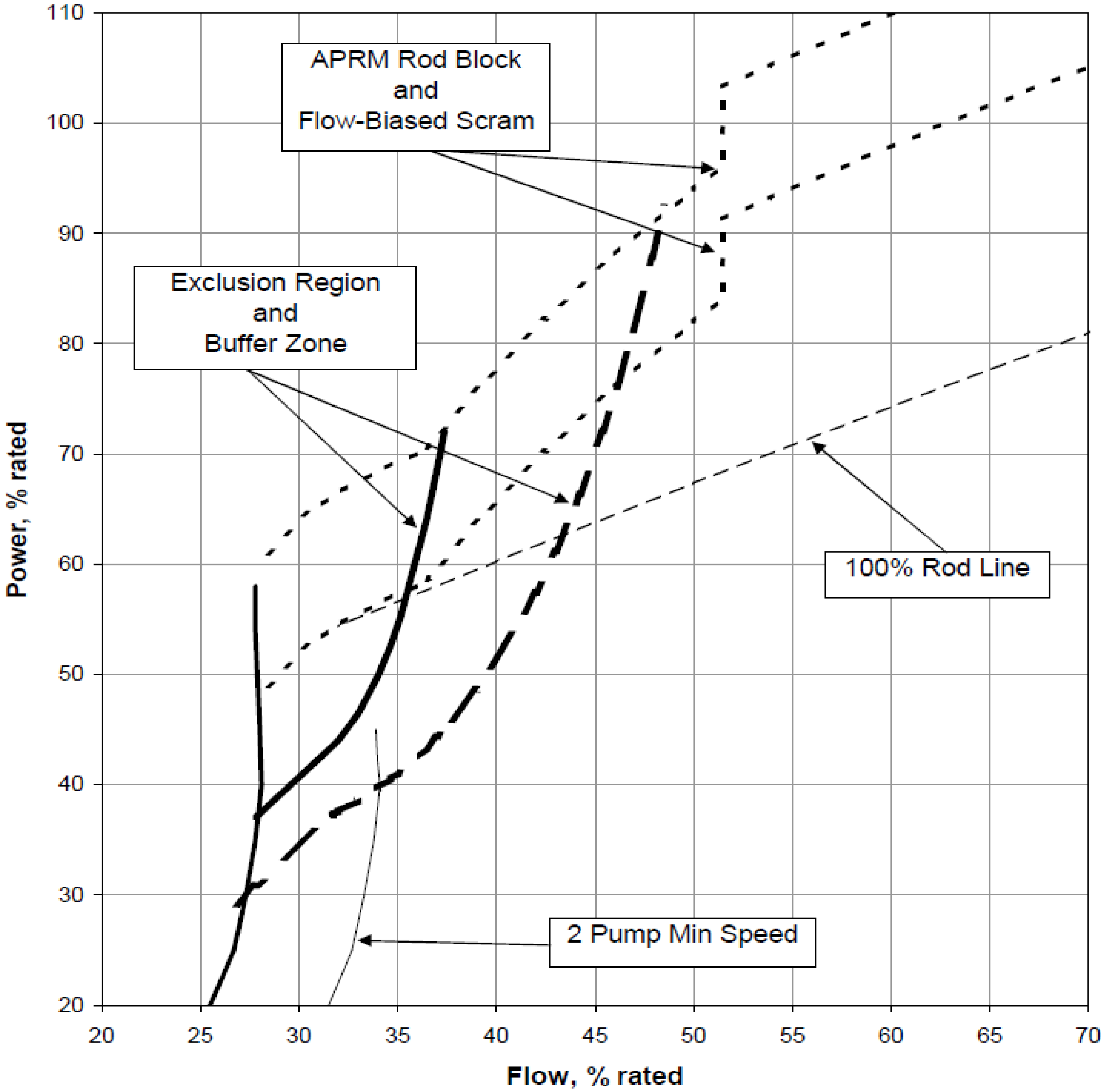
Figure 8.4
Power-Dependent LHGR Multiplier, LHGRFAC(P)



See Table 8.6 for $LHGR_{STD}$ values

Reference 3.8, 3.9

Figure 8.5
Stability Option 1-D Exclusion Region



See References 3.17 and 3.8 for details

Reference 3.18 generically removes cycle exposure limitation statement in the Supplemental Reload Licensing Report stability analysis.

Figure 8.6
Cycle 21 Loading Pattern by Bundle Design

North ⇓

52									9	8	10	9	9	7	9	8	8	7								
50								8	10	7	7	7	6	6	7	7	7	7	7							
48					8	7	9	9	7	14	16	13	16	16	13	16	14	9	10	9	10	8				
46				10	9	7	7	16	17	17	14	17	14	14	17	14	17	17	16	9	7	9	10			
44			9	7	9	12	16	20	19	13	20	19	19	19	19	20	13	19	20	16	12	9	7	8		
42			10	7	12	17	17	17	16	20	14	18	16	16	18	14	20	16	17	17	17	12	9	10		
40			7	9	16	17	20	13	18	16	18	12	18	18	12	18	16	18	13	20	17	16	9	7		
38		10	9	16	20	17	16	20	16	18	12	18	16	16	18	12	18	16	20	16	17	20	16	7	7	
36	9	10	7	17	19	16	18	16	20	16	20	16	20	20	16	20	16	20	16	18	16	19	17	7	10	9
34	8	7	14	17	13	20	16	18	16	20	12	18	16	16	18	12	20	16	18	16	20	13	17	14	7	8
32	8	7	16	14	20	13	18	16	20	12	20	16	20	20	16	20	12	20	16	18	13	20	14	16	7	9
30	7	7	13	17	19	18	12	18	12	18	16	20	14	14	20	16	18	12	18	12	18	19	17	13	7	7
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16		7	10	16	20	17	16	20	16	18	12	18	16	16	18	12	18	16	20	16	17	20	16	9	7	
14			7	9	16	17	20	13	18	16	18	12	18	18	12	18	16	18	13	20	17	16	7	7		
12			10	9	12	17	17	17	16	20	14	18	16	16	18	14	20	16	17	17	17	12	9	10		
10			8	7	7	12	16	20	19	13	20	19	19	19	19	20	13	19	20	16	12	9	7	9		
8				10	7	7	6	16	17	17	14	17	14	14	17	14	17	17	16	6	7	7	8			
6					10	10	6	9	9	14	16	13	16	16	13	16	14	9	6	9	10	9				
4								7	10	7	7	7	7	7	7	10	7	7	7							
2									9	8	8	9	9	10	8	8	8	9								
	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51

Fuel Type

6=GNF2-P10DG2B377-13GZ-100T2-150-T6-3073	(Cycle 19)	14=GNF2-P10DG2B404-12GZ-100T2-150-T6-3297	(Cycle 20)
7=GNF2-P10DG2B379-14GZ-100T2-150-T6-3074	(Cycle 19)	16=GNF2-P10DG2B390-14GZ-100T2-150-T6-3300	(Cycle 20)
8=GNF2-P10DG2B396-15GZ-100T2-150-T6-3075	(Cycle 19)	17=GNF2-P10DG2B404-12GZ-100T2-150-T6-3297	(Cycle 21)
9=GNF2-P10DG2B407-6G6.0/6G5.0-100T2-150-T6-3076	(Cycle 19)	18=GNF2-P10DG2B378-16GZ-100T2-150-T6-3299	(Cycle 21)
10=GNF2-P10DG2B394-13GZ-100T2-150-T6-3077	(Cycle 19)	19=GNF2-P10DG2B390-14GZ-100T2-150-T6-3300	(Cycle 21)
12=GNF2-P10DG2B378-16GZ-100T2-150-T6-3299	(Cycle 20)	20=GNF2-P10DG2B388-14GZ-100T2-150-T6-4114	(Cycle 21)
13=GNF2-P10DG2B380-16GZ-100T2-150-T6-3298	(Cycle 20)		

9.0 USERS GUIDE

The COLR defines thermal limits for the various operating conditions expected during the cycle. At the start of the cycle the 3D-Monicore databank limits are set for;

- Cycle exposure range of BOC to MOC
- $\tau = 0$
- Dual recirculation pump operation
- Four steam line operation, and
- Normal Feedwater Temperature

The following is a table that offers a check to assure the correct limits are applied when operating states or conditions change.

Change in Operating State	Change in Limits	Procedure Reference
Cycle Exposure = EOR21 – 3.144 GWD/ST OLMCPR changes to EOC values at cycle exposure of 10.683 GWD/ST. Databank will use 10.500 GWD/ST to account for uncertainties.	See Table 8.1 for $\tau \neq 0$ for change in MCPR.	EN-DC-503 transition to EOC limits will occur automatically
Scram Time Test Results such that $\tau \neq 0$ Option B limits for OLMCPR must be interpolated with Option A limits	Use new τ and see Table 8.1, 8.2, 8.3,and Table 8.4.	RAP-7.4.1
Single Loop Operation The SLMCPR increases by 0.03 and, therefore OLMCPR limits increase by 0.03. LHGR and MAPLHGR are reduced by a multiplier in SLO.	Increase MCPR Limits by 0.03, or change acceptance criterion in ST-40D (Step 8.2.19) to 0.97. Verify that 3D-Monicore has recognized the idle recirculation loop and is applying the SLO LHGR and MAPLHGR multipliers of 0.85 for GNF2.	ST-40D
Three Steam Line Operation (3SL)	Increase OLMCPR according to Table 8.2.	None
Operation with Turbine Bypass Valves Out-of-Service OLMCPR values increase, no LHGR change required	Increase OLMCPR according to Table 8.3.	None
Operation under Final Feedwater Temperature Reduction	Not utilized in Cycle 21 operation	None