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**ENCLOSURE 3 CONTAINS PROPRIETARY INFORMATION
WITHHOLD FROM PUBLIC DISCLOSURE IN ACCORDANCE WITH 10 CFR 2.390(b)(4)**

January 11, 2022

L-MT-22-003
Technical Specification 5.6.3

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Monticello Nuclear Generating Plant
Docket No. 50-263
Renewed Facility Operating License
No. DPR-22

Submittal of Revision 1 of the Core Operating Limits Report for Cycle 31

Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (hereafter "NSPM"), is providing in accordance with Technical Specification (TS) 5.6.3, "Core Operating Limits Report (COLR)," a revised COLR for the Monticello Nuclear Generating Plant (MNGP). The COLR provides the cycle-specific values of the limits established using U.S. Nuclear Regulatory Commission (NRC) approved methodologies such that the applicable limits of the plant safety analysis are met.

The U.S. Nuclear Regulatory Commission approved adoption of the TSTF-564, Revision 2, "Safety Limit MCPR [Minimum Critical Power Ratio]," traveler approach for the MNGP in Amendment No. 207. Revision 1 of the Cycle 31 COLR contained herein reflects the changes in MCPR limits with the approval of this amendment.

Enclosure 1 provides a revised non-proprietary version of the MNGP COLR for Cycle 31, (NAD-MN-050NP, Revision 1). The proprietary version of the COLR contains information of the type that Global Nuclear Fuels (GNF) maintains in confidence and withholds from public disclosure. Enclosure 2 provides an executed affidavit from GNF. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the NRC and addresses with specificity the considerations listed in 10 CFR 2.390, "Public inspections, exemptions, requests for withholding," and 10 CFR 9.17, "Agency records exempt from public disclosure." Enclosure 3 provides the revised proprietary version of the COLR for Cycle 31 (NAD-MN-050P, Revision 1).

Summary of Commitments

This letter makes no new commitments and no revisions to existing commitments.

Should you have any questions regarding this letter, please contact Mr. Richard Loeffler at (612) 342-8981 or Rick.A.Loeffler@xcelenergy.com.

Thomas A. Conboy
Site Vice President, Monticello Nuclear Generating Plant
Northern States Power Company – Minnesota

Enclosure

cc: Administrator, Region III, US NRC
Project Manager, Monticello, US NRC
Resident Inspector, Monticello, US NRC

ENCLOSURE 1

MONTICELLO NUCLEAR GENERATING PLANT

CYCLE 31

NON-PROPRIETARY

CORE OPERATING LIMITS REPORT

REVISION 1

NAD-MN-050NP

(35 pages follow)

Monticello Nuclear Generating Plant

Cycle 31

Non-Proprietary

Core Operating Limits Report

Revision 1

NAD-MN-050NP

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Information Notice

This is a non-proprietary version of the Monticello Nuclear Generating Plant Cycle 31 COLR, NAD-MN-050, Revision 1, which has proprietary information removed. Portions of the document that have been removed are indicated by white space inside open and closed brackets as shown here [[ ]].

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1.0 Core Operating Limits Report (COLR)

This Core Operating Limits Report for Monticello Nuclear Generating Plant (MNGP) Cycle 31 is prepared in accordance with the requirements of Technical Specification 5.6.3. The core operating limits are developed using NRC-approved methodology as listed in Section 7 of this COLR and are established such that all applicable thermal limits of the plant safety analysis are met.

Note that AREVA has changed its name to Framatome.

A 0.03 penalty has been applied to the SLMCPR when the ratio of core power to core flow is ≥ 42 MWt / Mlbm/hr in the EFW region. This penalty has been incorporated into the OLMCPR. The 0.03 penalty is not applied when MNGP is operating in the Maximum Extended Load Line Limit (MELLLA) region or operating in the EFW region where the ratio of core power to core flow is < 42 MWt / Mlbm/hr. The OLMCPRs in Section 5 of this COLR were selected to ensure that the MCPR SLs of Tech Spec SL 2.1 are not violated. Note that Single Loop Operation is not permitted in the EFW region.

This report includes the Enhanced Option III (EO-III) long term stability solution, which is required to operate in the Extended Flow Window (EFW) (aka, MELLLA+) region of the Power-flow map.

This report includes using COTRANSA2 (Reference 6.0), XCOBRA (Reference 7.0), XCOBRA-T (Reference 8.0) and CASMO-4/MICROBURN-B2 (Reference 9.0) as described in the AREVA THERMEX methodology report (Reference 7.0) and neutronics methodology report (Reference 10.0).

2.0 References

1.0 ANP-3912P, Revision 1, “Monticello Reload Safety Analysis Report for Cycle 31”, March 2021.

2.0 NEDC-32868P, Revision 5, “GE14 Compliance with Amendment 22 of NEDE-24011-P-A (GESTAR II)”, MFN 13-028, May 2013.

3.0 ANP-10262PA, Revision 0, “Enhanced Option III Long Term Stability Solution”, May 2008.

4.0 Calculation CA-08-051, Rev 0, “Instrument Setpoint Calculation - Rod Block Monitor (RBM) PRNM Setpoints for CLTP and EPU Operation”.

5.0 Letter from D. Musolf (NSP) to Director, Office of Nuclear Reactor Regulation, NRC “Revision 1 to License Amendment Request Dated September 7, 1976, Single Loop Operation” dated July 2, 1982.

6.0 ANF-913(P)(A) Volume 1 Revision 1 and Volume 1 Supplements 2, 3 and 4, “COTRANSA2: A Computer Program for Boiling Water Reactor Transient Analyses”, Advanced Nuclear Fuels Corporation, August 1990.

7.0 XN-NF-80-19(P)(A) Volume 3 Revision 2, “Exxon Nuclear Methodology for Boiling Water Reactors, THERMEX: Thermal Limits Methodology Summary Description”, Exxon Nuclear Company, January 1987.

8.0 XN-NF-84-105(P)(A) Volume 1 and Volume 1 Supplements 1 and 2, “XCOBRA-T: A Computer Code for BWR Transient Thermal-Hydraulic Core Analysis”, Exxon Nuclear Company, February 1987.

9.0 EMF-2158(P)(A) Revision 0, “Siemens Power Corporation Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/MICROBURN-B2”, Siemens Power Corporation, October 1999.

10.0 XN-NF-80-19(P)(A) Volume 1 and Supplements 1 and 2, “Exxon Nuclear Methodology for Boiling Water Reactors - Neutronic Methods for Design and Analysis”, Exxon Nuclear Company, March 1983.

11.0 GHNE-0000-0073-4167-R2, “Reactor Long-Term Stability Solution Option III: Licensing Basis Hot Channel Oscillation Magnitude for Monticello Nuclear Generating Plant”, December 2007.

12.0 Calculation 14-049, Revision 2, “Instrument Setpoint Calculation, Average Power Range Monitor NUMAC PRNM Setpoints – Extended Flow Window Stability”, (EC 601000000063), September 21, 2018.

13.0 ANP-3295P, Revision 3, “Monticello Licensing Analysis For EFW (EPU/MELLLA+)”, February 2016.

14.0 002N3952-R1, Revision 1, “Supplemental Reload Licensing Report for Monticello Reload 27 Cycle 28”, April 2015.

3.0 Rod Block Monitor Operability Requirements

The Rod Withdrawal Error (RWE) analysis (Reference 1.0) validated that the following MCPR values provide the required margin for full withdrawal of any control rod during Monticello Cycle 31:

Note that the RBM is not credited below 30% power as identified below in Section 4.0.

For Power ≥ 30% and < 90%: MCPR ≥ 1.86 (for TLO)

For Power ≥ 30% and < 90%: MCPR ≥ 1.91 (for SLO)

For Power ≥ 90%: MCPR ≥ 1.57 (for TLO)

When the core power is greater than or equal to 30% and less than 90% of rated in two-loop operation and the MCPR is less than 1.86, then a limiting control rod pattern exists and the Rod Block Monitor is required to be operable.

When the core power is greater than or equal to 30% and less than 90% of rated in single loop operation and the MCPR is less than 1.91, then a limiting control rod pattern exists and the Rod Block Monitor is required to be operable.

When the core power is greater than or equal to 90% and the MCPR is less than 1.57, then a limiting control rod pattern exists and the Rod Block Monitor is required to be operable.

Reference: Technical Specification Table 3.3.2.1-1 Function 1.

4.0 Rod Block Monitor Upscale Trip Setpoint

Technical Specification Trip Setpoints and Allowable Values

Function	Trip Setpoint	Allowable Values
Low Power Range – Upscale (a)	≤ 121.2/125 of full scale	≤ 121.6/125 of full scale
Intermediate Power Range – Upscale (b)	≤ 116.2/125 of full scale	≤ 116.6/125 of full scale
High Power Range – Upscale (c), (d)	≤ 111.2/125 of full scale	≤ 111.6/125 of full scale

Applicable Thermal Power

(a) Thermal Power ≥ 30% and < 65% RTP and MCPR is below the limit specified in Section 3.0.
(b) Thermal Power ≥ 65% and < 85% RTP and MCPR is below the limit specified in Section 3.0.
(c) Thermal Power ≥ 85% and < 90% RTP and MCPR is below the limit specified in Section 3.0.
(d) Thermal Power ≥ 90% RTP and MCPR is below the limit specified in Section 3.0.

Reference: Technical Specification Table 3.3.2.1-1 Functions 1.a, 1.b, and 1.c.
The Reference for the "**Trip Setpoints**" and **"Allowable Values"** is Reference 4.0.

5.0 Minimum Critical Power Ratio (MCPR)

The cycle specific MCPR limits protect the $MCPR_{95\%/95\%}$ limit of 1.05 which is a generic value based on the ATRIUM 10XM fuel type and the ACE MCPR correlation.

The cycle specific MCPR limits presented in Figures 3-6, 8, 9 and 12 are based on TLO and SLO $MCPR_{99.9\%}$ values of 1.08 and 1.13 which meets the requirement in Technical Specification. 2.1.1.3.

5.1 Tech. Spec. Scram Speed (TSSS)

The Operating Limit Minimum Critical Power Ratio (OLMCPR) for TSSS does not account for scram speeds that are faster than those required by Technical Specifications.

5.1.1 TSSS OLMCPR for Two Recirculation Loop Operation

The TSSS OLMCPR shall be determined for two recirculation loop operation (TLO) as follows, where core thermal power is denoted by (P):

For 25% ≤ (P) ≤ 100%:

1. the TSSS OLMCPR is the greater of {MCPR(P) from Figure 3} or {MCPR(F) from Figure 6}

Reference: Technical Specification Section 3.2.2.

5.2 Nominal Scram Speed (NSS)

The OLMCPR for NSS does take into account the measured scram speeds that are faster than the Technical Specification requirements, thus reducing the potential consequences of a limiting transient.

5.2.1 NSS OLMCPR for Two Recirculation Loop Operation

The NSS OLMCPR shall be determined for two recirculation loop operation as follows:

For 25% ≤ (P) ≤ 100%:

1. If cycle exposure ≤ 11900 MWd/MTU**,** the NSS OLMCPR is the greater of {MCPR(P) from Figure 4} or {MCPR(F) from Figure 6}

2. If cycle exposure > 11900 MWd/MTU**,** the NSS OLMCPR is the greater of {MCPR(P) from Figure 5} or {MCPR(F) from Figure 6}

Reference: Technical Specification Section 3.2.2.

5.3 Technical Specification Scram Time Dependence

Technical Specification 3.1.4 and Table 3.1.4-1 provide the scram insertion time versus position requirements for continued operations. Technical Specification Surveillance Requirements SR 3.1.4.1 – SR 3.1.4.4 provide the surveillance requirements for the CRDs. Data from testing of the CRDs, or from an unplanned scram, is summarized in Surveillance Test 0081.

Using this cycle specific information, values of τ^{P}_{ave} can be calculated in accordance with the equation below for each notch position (P = 46, 36, 26, and 06).

The Equation (1) used to calculate the average of the current scram times for the cycle is:

$$\tau^{P}_{ave} = \frac{\sum_{i=1}^{N} \tau^{P}_{i}}{N} \qquad (1)$$

where:

τ^{P}_{i} = the scram time to notch position P for control rod i from its most recent surveillance test;

N = The number of operable control rods (N $\leq$ 121).

P = The notch position (P = 46, 36, 26, and 06)

$\sum_{i=1}^{N} \tau^{P}_{i}$ = sum of the most recent scram times for all operable control rods (N) measured to notch position P to comply with the Technical Specification surveillance requirements SR 3.1.4.1, SR 3.1.4.2, SR 3.1.4.3, SR 3.1.4.4.

The average scram time for notch position (P), τ^{P}_{ave} is tested against the Nominal Scram Speed for that notch position (NSS^{P}) using the following equation:

$$\tau^{P}_{ave} \leq NSS^{P} \qquad (2)$$

where:

NSS^{P} is the Nominal Scram Speed for the specified CRD Notch Position (P) from Table 1

NSS Scram Insertion Time to CRD Notch Position

Table 1
NSS Scram Insertion Time to CRD Notch Position

Notch Position (P)	NSS^{P} (sec)
46	0.304
36	0.820
26	1.355
06	2.477

If the average scram time satisfies the Equation 2 criteria for each notch position, continued plant operation under the NSS operating limit minimum critical power ratio (OLMCPR) for pressurization events is permitted. If the average scram time fails the Equation 2 criteria for any notch position, the TSSS OLMCPR must be used for pressurization events.

No interpolation between NSS and TSSS operating limits is allowed.

5.4 Pressure Regulator Out of Service (PROOS) Operation

This section provides power dependent MCPR limits when a backup pressure regulator is not operational (also called PROOS).

A Pressure Regulator Failure Down-Scale (PRFDS) event without backup pressure regulator was evaluated for Monticello (Reference 1.0). This event resulted in a more restrictive Power Dependent MCPR limit than required for normal reduced power operation with both pressure

regulators operational. The off-rated power dependent limits have been generated for Cycle 31 (Reference 1.0). Figure 8 provides the required more restrictive power dependent MCPR limits. The Pressure Regulator Out of Service limits are applicable for Cycle 31 (Reference 1.0).

Figure 8 shows the more restrictive limits determined in Reference 1.0 for PROOS operation. Figure 8 should only be used for operation without a backup pressure regulator. Figure 8 is valid for both TSSS and NSS OLMCPR limits from BOC through Coastdown.

An interim MFLCPR Limit is provided in Figure 9**.** This limit should only be used if the Gardel thermal limit input has not been modified as described in Section 5.4.1 to account for pressure regulator out of service operation. That is, only Figure 8 or Figure 9 should be used to provide the appropriate PROOS limit. These figures should not be utilized in combination.

5.4.1 OLMCPR for Two Recirculation Loop Operation, WITHOUT A BACKUP PRESSURE REGULATOR.

The PROOS TSSS OLMCPR and NSS OLMCPR shall be determined for two recirculation loop operation as follows:

For 25% ≤ (P) ≤ 100%:

1. the OLMCPR is the greater of {MCPR(P) from Figure 8} or {MCPR(F) from Figure 6}

5.5 OLMCPR for Single Recirculation Loop Operation

For single recirculation loop operation, there are not separate TSSS, NSS and PROOS OLMCPRs. The OLMCPR is bounded in all three conditions by the same limit. It shall be determined as follows:

1. the OLMCPR is the greater of {MCPR(P) from Figure 12} or {MCPR(F) from Figure 6}

Reference: Technical Specification Section 3.2.2.

6.0 Power-Flow Map

The Power-Flow Operating Map based on analysis to support Cycle 31 is shown in Figure 7. The Power-Flow Operating Map is consistent with a rated power of 2004 MWt as described in Reference 13.0. The Backup Stability Protection (BSP) lines are described in Section 9.0 of this report.

Region I in Figure 7 is the Scram Region and Region II is the Controlled Entry Region. These two regions are applicable when the OPRM Upscale Trip is INOPERABLE

7.0 Approved Analytical Methods

NEDE-24011-P-A Rev. 20 "General Electric Standard Application for Reactor Fuel (GESTAR)"

NEDE-24011-P-A-US Rev. 20 "General Electric Standard Application for Reactor Fuel (GESTAR) – Supplement for the United States."

NEDO-31960-A, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology", with Supplement 1, dated November 1995

NEDO-32465-A, "Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology and Reload Applications," August 1996

Engineering Evaluation EC 25987, "Calculation Framework for the Extended Flow Window Stability (EFWS) Setpoints", as docketed in Xcel Energy letter to NRC L-MT-15-065, dated September 29, 2015

XN-NF-81-58(P)(A) Rev. 2 and Supplements 1 and 2, "RODEX2 Fuel Rod Thermal-Mechanical Response Evaluation Model," March 1984

EMF-85-74(P) Rev. 0 Supplement 1(P)(A) and Supplement 2(P)(A), "RODEX2A (BWR) Fuel Rod Thermal-Mechanical Evaluation Model," February 1998

ANF-89-98(P)(A) Rev. 1 and Supplement 1, "Generic Mechanical Design Criteria for BWR Fuel Designs," May 1995

XN-NF-80-19(P)(A) Volume 1 and Supplements 1 and 2, "Exxon Nuclear Methodology for Boiling Water Reactors - Neutronic Methods for Design and Analysis," March 1983

XN-NF-80-19(P)(A) Volume 4 Rev. 1, "Exxon Nuclear Methodology for Boiling Water Reactors: Application of the ENC Methodology to BWR Reloads," June 1986

EMF-2158(P)(A) Rev. 0 "Siemens Power Corporation Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/MICROBURN-B2," October 1999.

XN-NF-80-19(P)(A) Volume 3 Rev. 2, "Exxon Nuclear Methodology for Boiling Water Reactors, THERMEX: Thermal Limits Methodology Summary Description," January 1987

XN-NF-84-105(P)(A) Volume 1 and Volume 1 Supplements 1 and 2, "XCOBRA-T: A Computer Code for BWR Transient Thermal-Hydraulic Core Analysis," February 1987

ANF-913(P)(A) Volume 1 Rev. 1 and Volume 1 Supplements 2, 3, and 4, "COTRANSA2: A Computer Program for Boiling Water Reactor Transient Analyses," August 1990

EMF-2209(P)(A) Rev. 3 "SPCB Critical Power Correlation," September 2009

EMF-2245(P)(A) Rev. 0 "Application of Siemens Power Corporation's Critical Power Correlations to Co-Resident Fuel," August 2000

EMF-2361(P)(A) Rev. 0 "EXEM BWR-2000 ECCS Evaluation Model," May 2001

EMF-2292(P)(A) Rev. 0 "ATRIUM™-10: Appendix K Spray Heat Transfer Coefficients," September 2000

EMF-CC-074(P)(A) Volume 4 Rev. 0, "BWR Stability Analysis: Assessment of STAIF with Input from MICROBURN-B2," August 2000

BAW-10247PA Rev. 0 "Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors," February 2008

ANP-10298PA Rev. 1 "ACE/ATRIUM 10XM Critical Power Correlation," March 2014

ANP-10307PA Rev. 0 "AREVA MCPR Safety Limit Methodology for Boiling Water Reactors," June 2011

BAW-10255PA Rev. 2 "Cycle-Specific DIVOM Methodology Using the RAMONA5-FA Code," May 2008

ANP-10262PA Rev. 0 "Enhanced Option III Long Term Stability Solution," May 2008

8.0 Fuel Rod Heat Generation Rate

8.1 Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) as a Function of Exposure

The MAPLHGR limits in Table 2 through Table 3 are conservative values bounding all fuel lattice types (all GE14 natural uranium lattices are excluded) in a given fuel bundle design and are intended only for use to determine bounding thermal limits as described below to establish MAPLHGR limits for Technical Specification 3.2.1. No channel bow effects are included in the bounding MAPLHGR values in these tables as there are no reused channels.

MAPLHGR limits for the ATRIUM 10XM fuel and for each individual GE14 fuel lattice for a given bundle design as a function of axial location and average planar exposure are determined based on the approved methodology referenced in Monticello Technical Specification 5.6.3.b and are loaded into the process computer for use in core monitoring calculations.

To determine bounding MAPLHGR limits:

8.1.1 Single and Two-Recirculation Loop Operation (MAPLHGR)

At rated core thermal power and core flow conditions, the MAPLHGR value for each fuel bundle design as a function of average planar exposure shall not exceed the bounding limits provided in Table 2 through Table 3.

The MAPLHGR limit for single (SLO) and two recirculation loop (TLO) operation are determined as follows:

1. For ATRIUM 10XM:

    a. For **TLO**, the MAPLHGR limits are listed in Table 2.

    b. For **SLO**, multiply the MAPLHGR limit in Table 2 by <u>0.70</u>.

2. For GE14C:

    a. For **TLO**, the MAPLHGR limits are listed in Table 3. To calculate MAPLHGR , calculate the minimum of:

        i. MAPLHGR(P) = MAPFAC(P) * MAPLHGR limit where MAPFAC(P) is taken from Figure 13

        ii. MAPLHGR(F) = MAPFAC(F) * MAPLHGR limit where MAPFAC(F) is taken from Figure 14

    b. For **SLO** calculate the minimum of:

        i. The calculation above in Section 8.1.1. 2(a)

        <u>OR</u>

        ii. The result when multiplying the MAPLHGR limit in Table 3 by <u>0.83</u>.

Straight line interpolation between nearest data points is permitted only within each individual Table from Table 2 through Table 3.

8.2 Linear Heat Generation Rate (LHGR)

For ATRIUM 10XM fuel, the LHGR limits provided in Table 4 are applicable to all ATRIUM 10XM fuel in Cycle 31. The LHGR limits are provided as a function of fuel rod peak pellet exposure. The LHGR limits are fuel rod nodal limits and are to be applied at every node of the fuel rod including the natural uranium lattices. There are no separate single loop operation specific multipliers applicable to LHGR, as such TLO and SLO limits are the same.

For GE14 fuel, the uranium dioxide (UO_2) and gadolinia LHGR limits provided in Table 5 are applicable to all GE14 fuel lattice types in Cycle 31. The uranium dioxide (UO_2) and gadolinia LHGR limits are provided as a function of fuel rod peak pellet exposure. The gadolinia LHGR limits in Table 5 are conservative values which bound the gadolinia LHGR limits for all the gadolinia concentrations occurring in each of the bundle types used in Cycle 31. The LHGR limits are fuel rod nodal limits and are to be applied at every node of the fuel rod including the natural uranium lattices.

The individual LHGR limits for the uranium dioxide and gadolinia fuel rods in each fuel bundle type used in Cycle 31, as a function of axial location and pellet exposure are determined based on the approved methodology referenced in Monticello Technical Specification 5.6.3.b and are loaded into the process computer for use in core monitoring calculations.

The LHGR limits are presented in this report for use to determine bounding thermal limits to demonstrate compliance with Technical Specification 3.2.3.

To determine bounding LHGR limits:

8.2.1 Single and Two-Recirculation Loop Operation (LHGR)

At rated core thermal power and core flow conditions, the LHGR limit for each fuel bundle design as a function of peak pellet exposure and fuel pin type shall not exceed the bounding limits provided in Table 4 and Table 5.

LHGR limits are adjusted for off-rated core thermal power and core flow conditions as follows:

1. For ATRIUM 10XM calculate the minimum of:

    a. LHGR(P) = LHGRFAC(P) * LHGR limit from Table 4 where LHGRFAC(P) comes from Figure 1.

    _OR_

    b. LHGR(F) = LHGRFAC(F) * LHGR limit from Table 4 where LHGRFAC(F) comes from Figure 2.

2. For GE14C calculate the minimum of:

    a. LHGR(P) = LHGRFAC(P) * LHGR limit from Table 5 where LHGRFAC(P) comes from Figure 1.

    _OR_

    b. LHGR(F) = LHGRFAC(F) * LHGR limit from Table 5 where LHGRFAC(F) comes from Figure 2.

8.3 Pressure Regulator Out of Service (PROOS) Operation

This section provides power dependent MAPLHGR and LHGR limits when a backup pressure regulator is not operational (also called PROOS).

The Pressure Regulator Failure Down-Scale (PRFDS) event without backup pressure regulator evaluated for Monticello in Reference 1.0 resulted in more restrictive power dependent LHGR limits than required for normal reduced power operation with both pressure regulators operational. When this event was evaluated for Cycle 31 (Reference 1.0), the results showed for ATRIUM 10XM, the MAPLHGR limits are unchanged from Section 8.1 and the LHGR limits are unchanged from Section 8.2. The MAPLHGR and LHGR limits with PROOS are more limiting than the base case for GE14C.

The MAPLHGR and LHGR limits for GE14C are adjusted for off-rated core thermal power and core flow conditions by determining the following:

1. For GE14C:

   a. MAPLHGR limit is calculated as the minimum of:

      i. MAPLHGR(P) = MAPFAC(P) * MAPLHGR limit from Table 3 where MAPFAC(P) comes from Figure 15.

         OR

      ii. MAPLHGR(F) = MAPFAC(F) * MAPLHGR limit from Table 3 where MAPFAC(F) comes from Figure 14.

   b. LHGR limit is calculated as the minimum of:

      i. LHGR(P) = LHGRFAC(P) * LHGR limit from Table 5 where LHGRFAC(P) comes from Figure 10.

         OR

      ii. LHGR(F) = LHGRFAC(F) * LHGR limit from Table 5 where LHGRFAC(F) comes from Figure 2.

Figure 10 shows the more restrictive limits determined in Reference 1.0 for PROOS operation. Figure 10 should only be used for operation without a backup pressure regulator.

Interim MFLPD Limits are provided in Figure 11 to address the more restrictive LHGR Limits identified in the Reference 1.0 analysis. These limits should only be used if the Gardel thermal limit input has not been modified to account for PROOS operation. That is, only Figure 10 or Figure 11 should be used to provide the appropriate PROOS LHGR limit. Figure 10 should not be utilized in combination with Figure 11.

Interim MAPRAT Limits are provided in Figure 16 to address the more restrictive MAPLHGR Limits identified in the Reference 14.0 analysis. These limits should only be used if the Gardel thermal limit input has not been modified to account for PROOS operation. That is, only Figure 15 or Figure 16 should be used to provide the appropriate PROOS MAPLHGR limit. Figure 15 should not be utilized in combination with Figure 16.

Table 2
MAPLHGR Limits, ATRIUM 10XM

Average Planar Exposure GWD/MTU (GWD/STU)	MAPLHGR Limit (kW/ft)(1)(2)
0.00 (0.00)	12.5
20.00 (18.14)	12.5
67.00 (60.78)	7.6

Notes:
(1) Applicable multipliers per Section 8.1 will be applied to the data in this table for two recirculation loop and single recirculation loop operations.
(2) MAPLHGR Data, Reference 1.0.

Table 3
MAPLHGR Limits, GE14C EDB-4332

GE14-P10DNAB374-16GZ-100T-145-T6-4332 (2)

Average Planar Exposure GWD/MTU (GWD/STU)	MAPLHGR Limit (kW/ft)(1)(3)
0.00 (0.00)	8.19
0.22 (0.20)	8.23
1.10 (1.00)	8.31
2.20 (2.00)	8.42
3.31 (3.00)	8.54
4.41 (4.00)	8.66
5.51 (5.00)	8.79
6.61 (6.00)	8.92
7.72 (7.00)	9.06
8.82 (8.00)	9.21
9.92 (9.00)	9.35
11.02 (10.00)	9.50
12.13 (11.00)	9.59
13.23 (12.00)	9.37
14.33 (13.00)	9.26
15.43 (14.00)	9.28
16.53 (15.00)	9.28
17.64 (16.00)	9.28
18.74 (17.00)	9.26
19.84 (18.00)	9.23
20.94 (19.00)	9.19
22.05 (20.00)	9.15
23.15 (21.00)	9.11
24.25 (22.00)	9.07
26.46 (24.00)	9.00
27.56 (25.00)	8.96
33.07 (30.00)	8.81
38.58 (35.00)	8.57
38.85 (35.24)	8.55
44.09 (40.00)	8.11
49.60 (45.00)	7.57
55.12 (50.00)	6.58
55.50 (50.35)	6.47
60.63 (55.00)	5.03
61.91 (56.16)	4.64
62.57 (56.76)	4.64
63.37 (57.49)	4.64
63.50 (57.60)	4.64

Notes:
(1) Applicable multipliers per Section 8.1 will be applied to the data in this table for two recirculation loop and single recirculation loop operations.
(2) Engineering Data Bank (EDB) number, Reference 14.0.
(3) MAPLHGR Data, Reference 14.0.

Table 4
ATRIUM 10XM Steady-State LHGR Limits

Peak Pellet Exposure GWD/MTU (GWD/STU)	LHGR Limit [(a)(b)(c)] (kW/ft)
0.0 (0.0)	14.1
18.9 (17.15)	14.1
74.4 (67.49)	7.4

Notes:
(a) Applicable multipliers per Section 8.2 will be applied to the data in this table for two recirculation loop and single recirculation loop operations.
(b) LHGR Data is from Reference 1.0.
(c) Extrapolation beyond the exposure in this table is allowed as long as the peak pin exposure does not exceed the licensing limit of 62.0 GWD/MTU.

Table 5
GE14 UO2/Gd Thermal Mechanical LHGR Limits

Peak Pellet Exposure GWD/MTU (GWD/STU)	UO2 LHGR Limit [(a)(b)(c)] (kW/ft)	Peak Pellet Exposure GWD/MTU (GWD/STU)	Most Limiting Gadolinia LHGR Limit [(a)(b)(c)] (kW/ft)
[[			
			]]

Notes:
(a) Applicable multipliers per Section 8.2 will be applied to the data in this table for two recirculation loop and single recirculation loop operations.
(b) These bounding Thermal Mechanical LHGR Limits may be used with all GE14 fuel loaded in Cycle 31.
(c) Tables D-2 and D-4 in Reference 2.0.

9.0 Core Stability Requirements

9.1 Stability EO-III Solution

Monticello has implemented the AREVA Enhanced Option III (EO-III) Long Term Stability solution using the Oscillation Power Range Monitor (OPRM) as described in Reference 3.0. Plant-specific Hot Channel Oscillation Magnitude (HCOM) (Reference 11.0) and other cycle specific stability parameters are used in the Cycle 31 EO-III Stability Evaluation, which is documented in Reference 1.0. A Backup Stability Protection (BSP) evaluation is also documented in Reference 1.0.

Reference: Technical Specification 3.3.1.1

9.2 Enhanced Option III OPRM Setpoints

A reload Enhanced Option III evaluation has been performed in accordance with the licensing methodology described in Reference 3.0.

The OPRM setpoints for Two Loop Operation (TLO) are conservative relative to Single Loop Operation (SLO) and are, therefore, bounding. The OPRM Period Based Detection Algorithm (PBDA) instrumentation setpoints for use in Technical Specification LCO 3.3.1.1 Table 3.3.1.1-1 Function 2f shall not exceed the following:

Table 6
Licensed OPRM Amplitude Setpoint

Confirmation Count Setpoint	OPRM Amplitude Setpoint
13	1.10

Reference: Technical Specification 3.3.1.1

9.3 Extended Flow Window Stability – High Scram

Reference 3.0 describes the single channel instability exclusion and backup stability protection provided by the Extended Flow Window Stability (EFWS) scram. The EFWS APRM setpoints from Reference 12.0 are confirmed for Cycle 31 and defined in Table 7.

Table 7
EFWS Nominal Setpoints for the Scram Region

Parameter	Allowable Value	NTSP
Slope of EFWS APRM flow-biased trip linear segment.	2.49	2.49
Constant Power Line for Trip from zero Drive Flow to Flow Breakpoint value.	40.6 % RTP*	38.6 % RTP*
Constant Flow Line for Trip.	48.7 % RDF**	49.7 % RDF**
Flow Breakpoint value	30.3 % RDF**	31.3 % RDF**

Notes:
* RTP – Rated Thermal Power
** RDF – Recirculation Drive Flow

Reference: Technical Specification 3.3.1.1

9.4 Backup Stability Protection Regions

The Backup Stability Protection (BSP) regions are shown in Figure 7. The BSP regions are an integral part of the Tech Spec-required alternative method to detect and suppress thermal hydraulic instability oscillations in that they identify areas of the power/flow map where there is an increased probability that the reactor core could experience a thermal hydraulic instability.

Regions are identified that are either excluded from planned entry and continued operation (Scram Region), or where planned entry is not permitted unless specific operating restrictions are met and specific actions are required to be taken to immediately leave the region following inadvertent or forced entry (Controlled Entry Region). The boundaries of these regions are established on a cycle-specific basis based upon core decay ratio calculations performed using NRC-approved methodology (Reference 1.0).

The BSP regions are only applicable when the Upscale Trip function of the OPRM is inoperable. However, immediate action is required to leave Region I even if the OPRMs are operable. The BSP region boundaries were calculated for Monticello Cycle 31 for nominal feedwater temperature conditions. The endpoints of the regions are defined in Table 8. The region boundaries shown in Figure 7 are defined using the Generic Shape Function (GSF), which is described in Reference 3.0.

Table 8
BSP Endpoints for Normal Feedwater Temperature

Endpoint	Power (%)	Flow (%)	Definition
A1	56.5	40.0	Scram Region Boundary, HFCL
B1	42.5	33.7	Scram Region Boundary, NCL
A2	64.4	50.0	Controlled Entry Region Boundary, HFCL
B2	28.5	31.2	Controlled Entry Region Boundary, NCL

Reference: Technical Specification 3.3.1.1

9.5 Actions For Entry Into Scram Region

Immediate manual scram upon determination that the region has been entered. If entry is unavoidable, early scram initiation is appropriate.

Reference: Technical Specification 3.3.1.1

9.6 Actions For Entry Into Controlled Entry Region

If entry is inadvertent or forced, immediate exit from region is required. The region can be exited by control rod insertion or core flow increase. Increasing the core flow by restarting an idle recirculation pump is not an acceptable method of exiting the region.

Deliberate entry into the Controlled Entry Region requires compliance with at least one of the stability controls outlined below:

1. Maintain core average boiling boundary (BB) ≥ 4.0 feet.
2. Maintain core decay ratio (DR) < 0.6 as calculated by an on-line stability monitor.
3. Continuous dedicated monitoring of real time control room neutron monitoring instrumentation with manual scram required upon indication of a reactor instability induced power oscillation.

Caution is required whenever operating near the Controlled Entry Region boundary (i.e., within approximately 10% of core power or core flow), and it is recommended that the amount of time spent operating near this region be minimized.

Reference: Technical Specification 3.3.1.1

10.0 Turbine Bypass System Response Time

The TURBINE BYPASS SYSTEM RESPONSE TIME shall be that time interval from when the main turbine trip solenoid is activated until 80% of the turbine bypass capacity is established. The TURBINE BYPASS SYSTEM RESPONSE TIME shall be ≤ 1.1 seconds.

Reference: Technical Specification 1.1, Surveillance Requirement 3.7.7.3.

11.0 APRM Simulated Thermal Power – High, Delta W Allowable Value

The APRM Simulated Thermal Power – High Flow Biased Scram Setpoint Allowable Value shall be:

For Two Loop Operation (TLO):

$S_{STP} \leq (0.61(W) + 67.2\%RTP)$ and $\leq 116\%RTP$

where:

S_{STP} = Scram setting in percent of rated thermal power (2004 MWt)

W = Loop recirculation flow rate in percent of rated

For Single Loop Operation (SLO):

$S_{STP} \leq (0.55(W-\Delta W) + 61.5\%RTP)$

where:

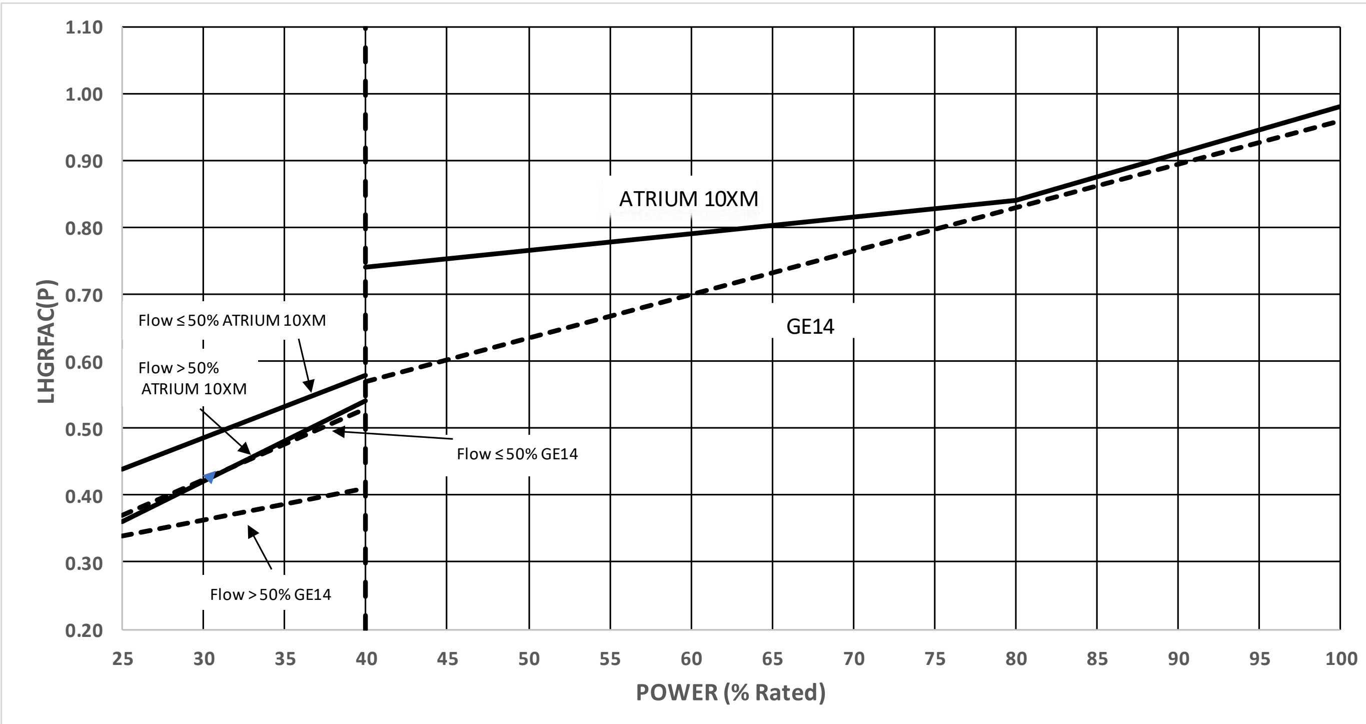
S_{STP} = Scram setting in percent of rated thermal power (2004 MWt)

W = Loop recirculation flow rate in percent of rated

ΔW = Difference between two-loop and single-loop effective recirculation flow at the same core flow (ΔW = 5.4% for single loop operation, ΔW = 0.0 for two-loop operation)

Reference: Technical Specification 5.6.3, item 5, Technical Specification Table 3.3.1.1-1, Function 2.b, footnote (b), and Reference 5.0

Figure 1
Power Dependent LHGR Multipliers



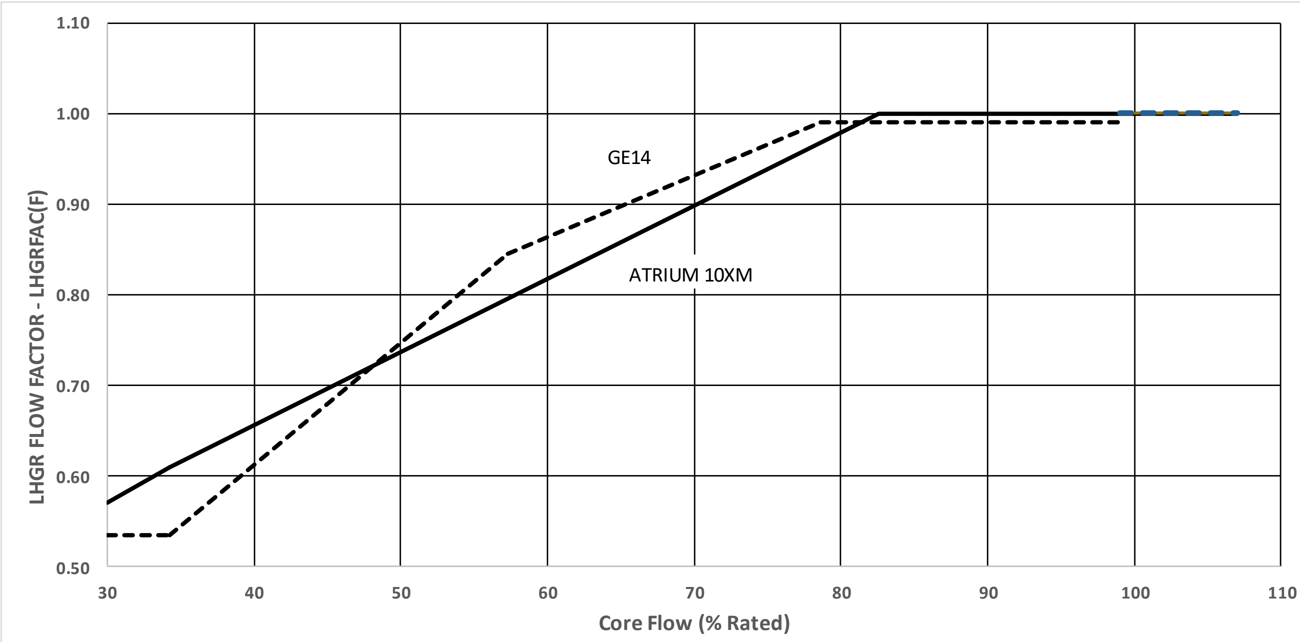
$$LHGRFAC_P = A + B*P$$

Flow	Type	Power	A	B
F ≤ 50	A10XM	25 ≤ P ≤ 40	0.2067	0.00933
F > 50	A10XM	25 ≤ P ≤ 40	0.0600	0.01200
All	A10XM	40 < P ≤ 80	0.6400	0.00250
All	A10XM	80 < P ≤ 100	0.2800	0.00700
F ≤ 50	GE14	25 ≤ P ≤ 40	0.1032	0.01067
F > 50	GE14	25 ≤ P ≤ 40	0.2232	0.00467
All	GE14	40 < P ≤ 100	0.3100	0.00650

P = Percent of Rated Core Power
F = Percent of Rated Core Flow

Results from the Table above are accurate to three decimal places.

Figure 2
Flow Dependent LHGR Multipliers



$$LHGRFAC_F = A + B*F$$

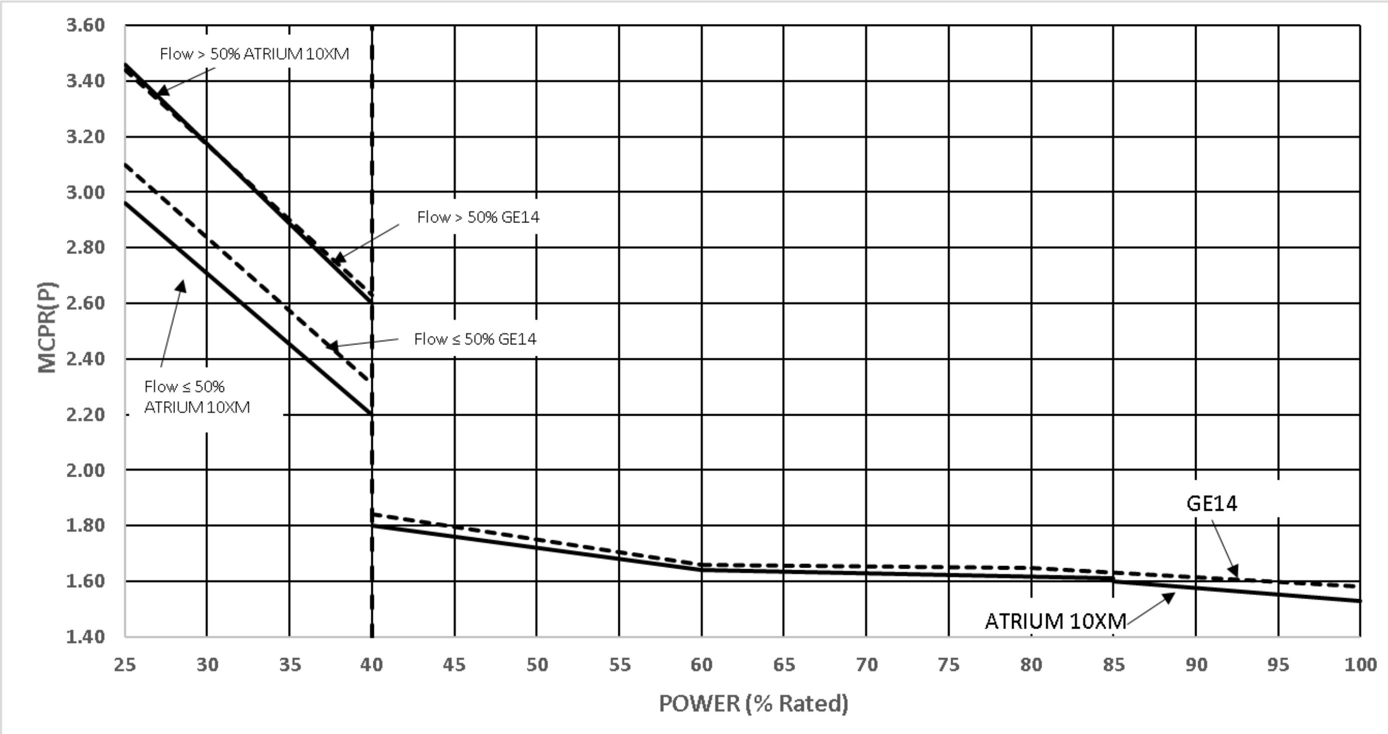
Flow	Type	Power	A	B
30 ≤ F ≤ 34.2	A10XM	All	0.2844	0.00952
34.2 < F ≤ 82.6	A10XM	All	0.3343	0.00806
82.6 < F ≤ 107	A10XM	All	1.0000	0.00000
30 ≤ F ≤ 34.2	GE14	All	0.5343	0.00000
34.2 < F ≤ 57.26	GE14	All	0.0729	0.01349
57.26 < F ≤ 78.65	GE14	All	0.4560	0.00680
78.65 < F ≤ 99	GE14	All	0.9908	0.00000
99 < F ≤ 107	GE14	All	1.0000	0.00000

F = Percent of Rated Core Flow

Results from the Table above are accurate to three decimal places.

In addition to the flow dependent multipliers, Monticello also requires an ECCS MAPLHGR multiplier of 0.9908 for operation at or below 99% core flow for GE14 fuel. This multiplier ensures that the off-rated limits assumed in the EPU ECCS-LOCA analyses bound the cycle-specific off-rated limits calculated for EFW operation.

Figure 3
Power Dependent MCPR(P) Limits for TSSS Insertion Rates



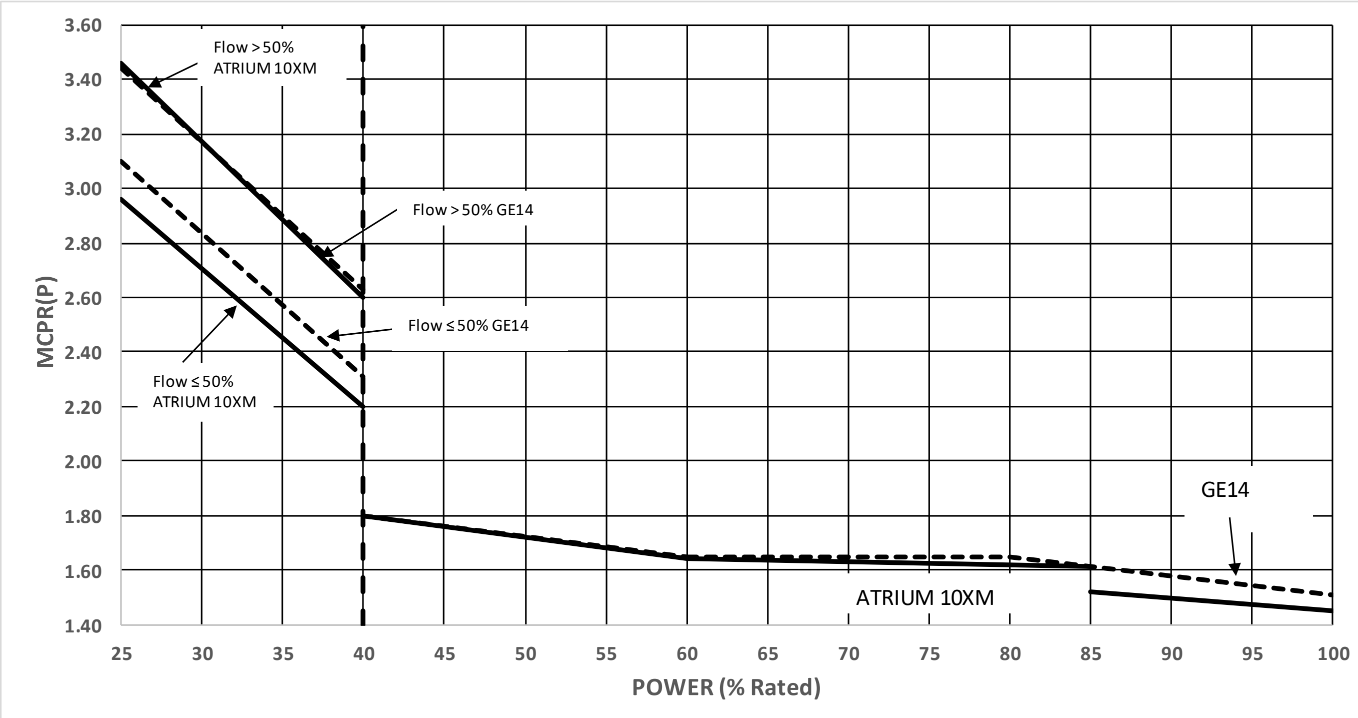
$$MCPR_P = A + B*P$$

Flow	Type	Power	A	B
F ≤ 50	A10XM	25 ≤ P ≤ 40	4.2268	-0.05067
F > 50	A10XM	25 ≤ P ≤ 40	4.8933	-0.05733
All	A10XM	40 < P ≤ 60	2.1200	-0.00800
All	A10XM	60 < P ≤ 85	1.7120	-0.00120
All	A10XM	85 < P ≤ 100	1.9970	-0.00467
F ≤ 50	GE14	25 ≤ P ≤ 40	4.4168	-0.05267
F > 50	GE14	25 ≤ P ≤ 40	4.7900	-0.05400
All	GE14	40 < P ≤ 60	2.2000	-0.00900
All	GE14	60 < P ≤ 80	1.6900	-0.00050
All	GE14	80 < P ≤ 100	1.9300	-0.00350

P = Percent of Rated Core Power
F = Percent of Rated Core Flow

Results from the Table above are accurate to three decimal places.

Figure 4
Power Dependent MCPR(P) Limits for NSS – BOC to 11.9 GWd/MTU



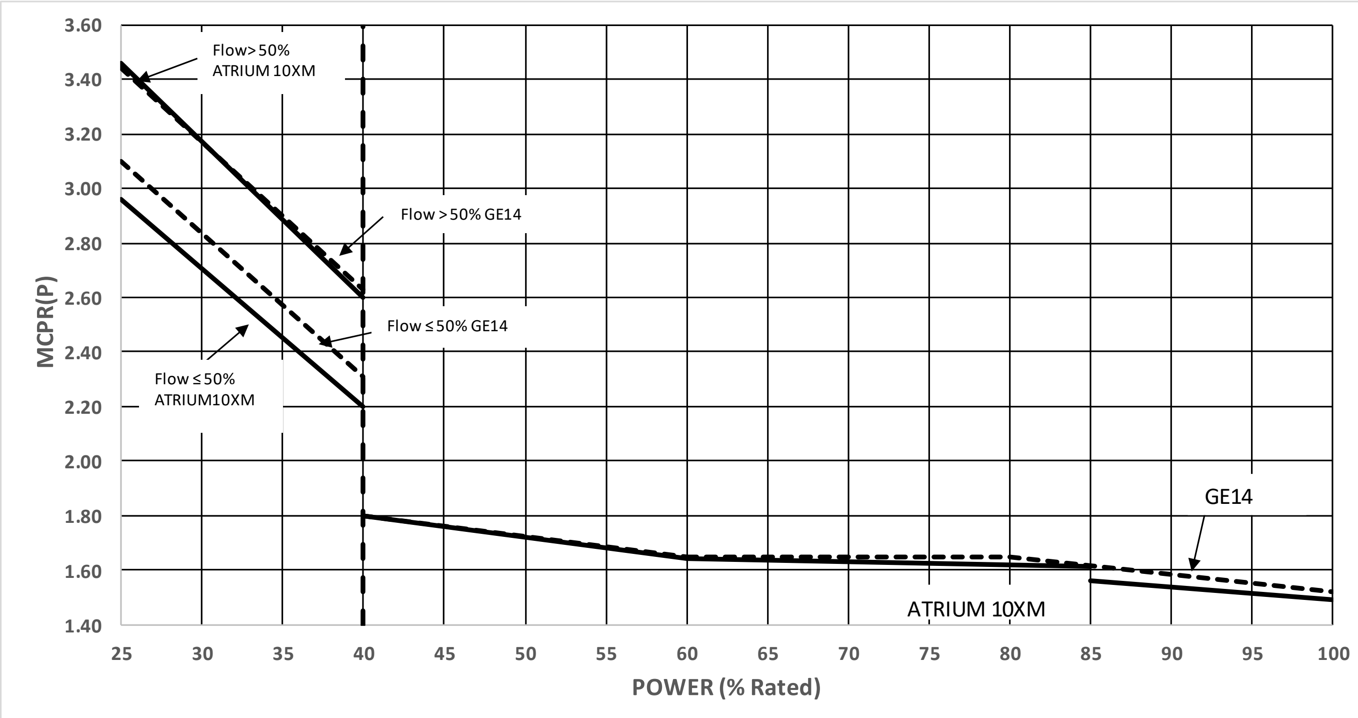
$$MCPR_P = A + B*P$$

Flow	Type	Power	A	B
F ≤ 50	A10XM	25 ≤ P ≤ 40	4.2268	-0.05067
F >50	A10XM	25 ≤ P ≤ 40	4.8933	-0.05733
All	A10XM	40 < P ≤ 60	2.1200	-0.00800
All	A10XM	60 < P ≤ 85	1.7120	-0.00120
All	A10XM	85 < P ≤ 100	1.9170	-0.00467
F ≤ 50	GE14	25 ≤ P ≤ 40	4.4168	-0.05267
F >50	GE14	25 ≤ P ≤ 40	4.7900	-0.05400
All	GE14	40 < P ≤ 60	2.1000	-0.00750
All	GE14	60 < P ≤ 80	1.6500	0.00000
All	GE14	80 < P ≤ 100	2.2100	-0.00700

P = Percent of Rated Core Power
F = Percent of Rated Core Flow

Results from the Table above are accurate to three decimal places.

Figure 5
Power Dependent MCPR(P) Limits for NSS – BOC to Coastdown



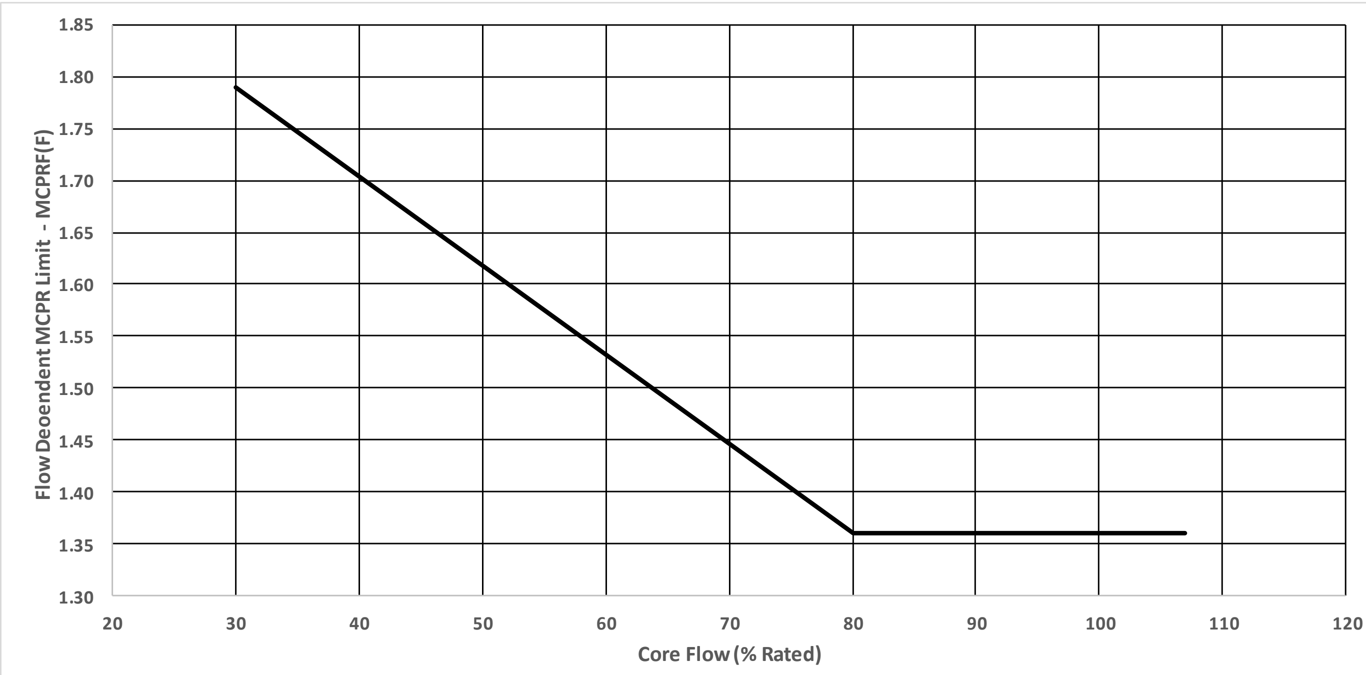
$$MCPR_P = A + B*P$$

Flow	Type	Power	A	B
F ≤ 50	A10XM	25 ≤ P ≤ 40	4.2268	-0.05067
F >50	A10XM	25 ≤ P ≤ 40	4.8933	-0.05733
All	A10XM	40 < P ≤ 60	2.1200	-0.00800
All	A10XM	60 < P ≤ 85	1.7120	-0.00120
All	A10XM	85 < P ≤ 100	1.9570	-0.00467
F ≤ 50	GE14	25 ≤ P ≤ 40	4.4168	-0.05267
F >50	GE14	25 ≤ P ≤ 40	4.7900	-0.05400
All	GE14	40 < P ≤ 60	2.1000	-0.00750
All	GE14	60 < P ≤ 80	1.6500	0.00000
All	GE14	80 < P ≤ 100	2.1700	-0.00650

P = Percent of Rated Core Power
F = Percent of Rated Core Flow

Results from the Table above are accurate to three decimal places.

Figure 6
Flow Dependent MCPR(F) Limits



$$MCPR_F = A + B*F$$

Flow	Type	Power	A	B
30 ≤ F ≤ 80	Both	All	2.0480	-0.00860
80 < F ≤ 107	Both	All	1.3600	0.00000

F = Percent of Rated Core Flow

Results from the Table above are accurate to three decimal places.

The flow-dependent MCPR limits shown above apply to both GE14 fuel and ATRIUM 10XM fuel.

Figure 7
Power/Flow Map

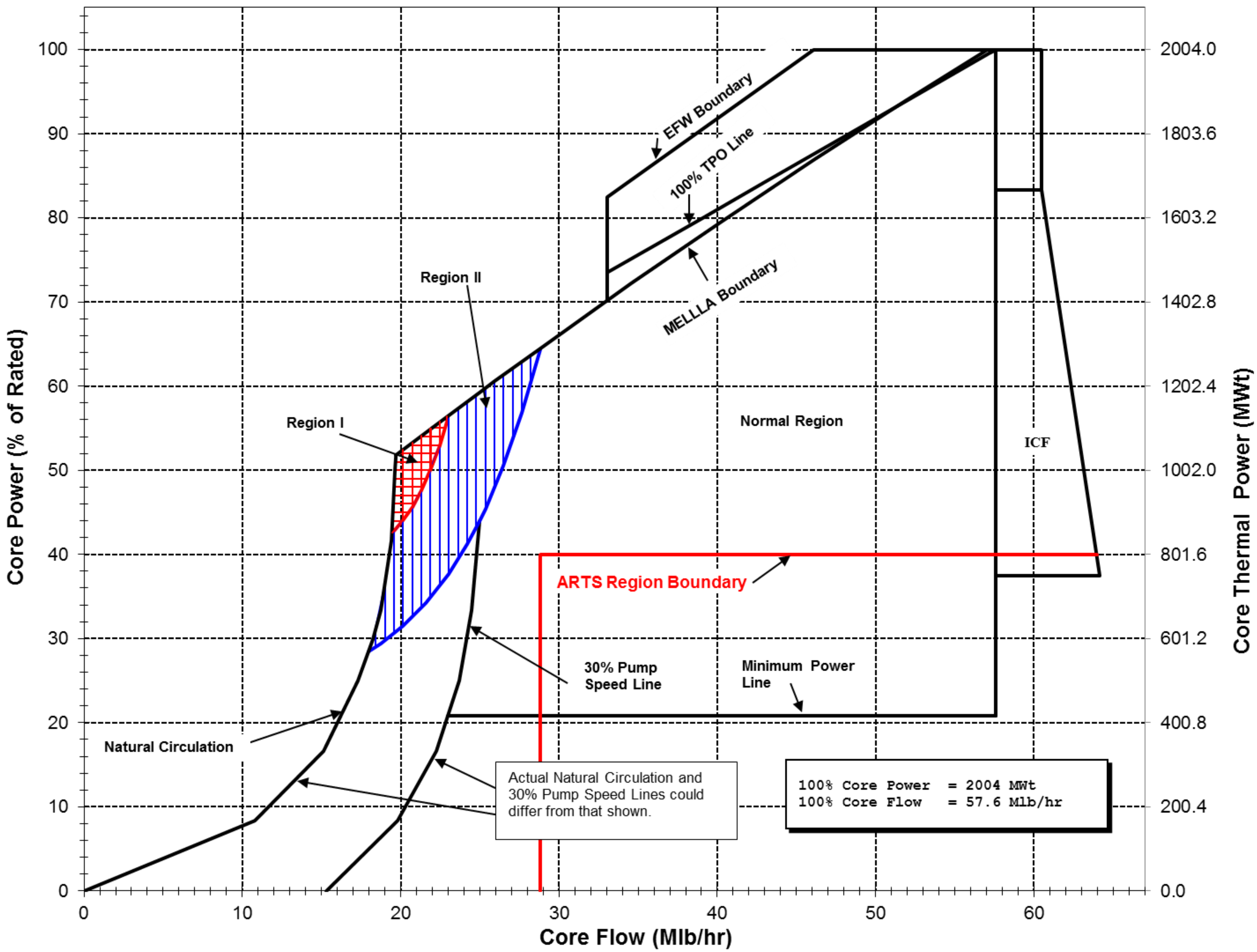
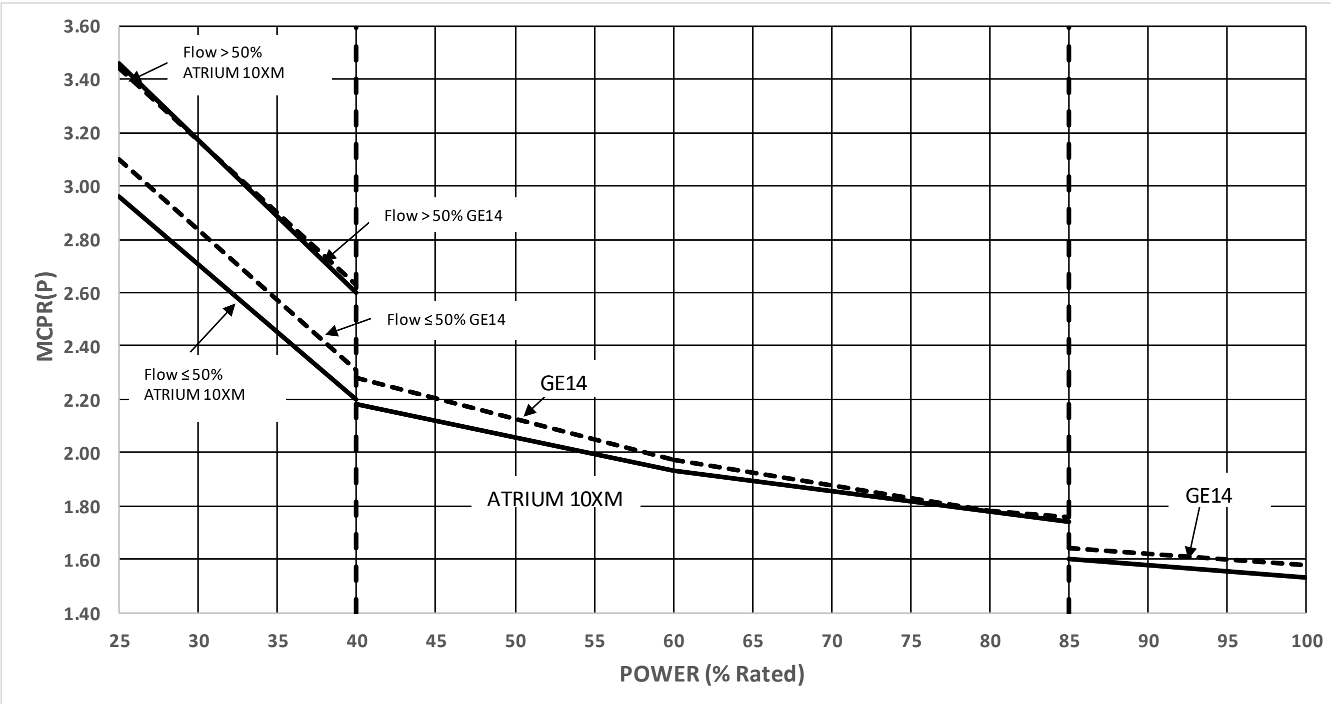


Figure 8
Power Dependent MCPR(P) Limits for
Pressure Regulator Out of Service (PROOS)



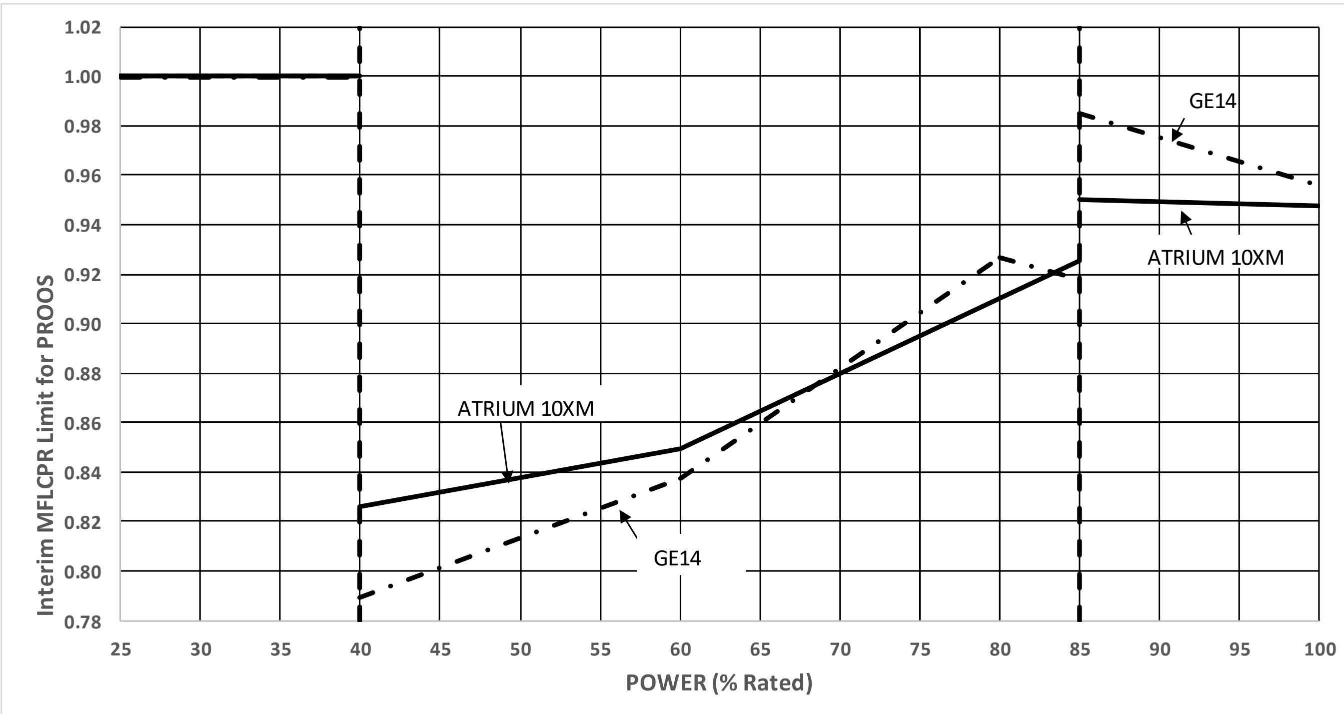
$$MCPR_P = A + B*P$$

Flow	Type	Power	A	B
F ≤ 50	A10XM	25 ≤ P ≤ 40	4.2268	-0.05067
F > 50	A10XM	25 ≤ P ≤ 40	4.8933	-0.05733
All	A10XM	40 < P ≤ 60	2.6800	-0.01250
All	A10XM	60 < P ≤ 85	2.3860	-0.00760
All	A10XM	85 < P ≤ 100	1.9970	-0.00467
F ≤ 50	GE14	25 ≤ P ≤ 40	4.4168	-0.05267
F > 50	GE14	25 ≤ P ≤ 40	4.7900	-0.05400
All	GE14	40 < P ≤ 60	2.9000	-0.01550
All	GE14	60 < P ≤ 80	2.5400	-0.00950
All	GE14	80 < P ≤ 85	2.1000	-0.00400
All	GE14	85 < P ≤ 100	1.9800	-0.00400

P = Percent of Rated Core Power
F = Percent of Rated Core Flow

Results from the Table above are accurate to three decimal places.

Figure 9
Pressure Regulator Out Of Service
Interim MFLCPR Limit



MFLCPR = A + B*P

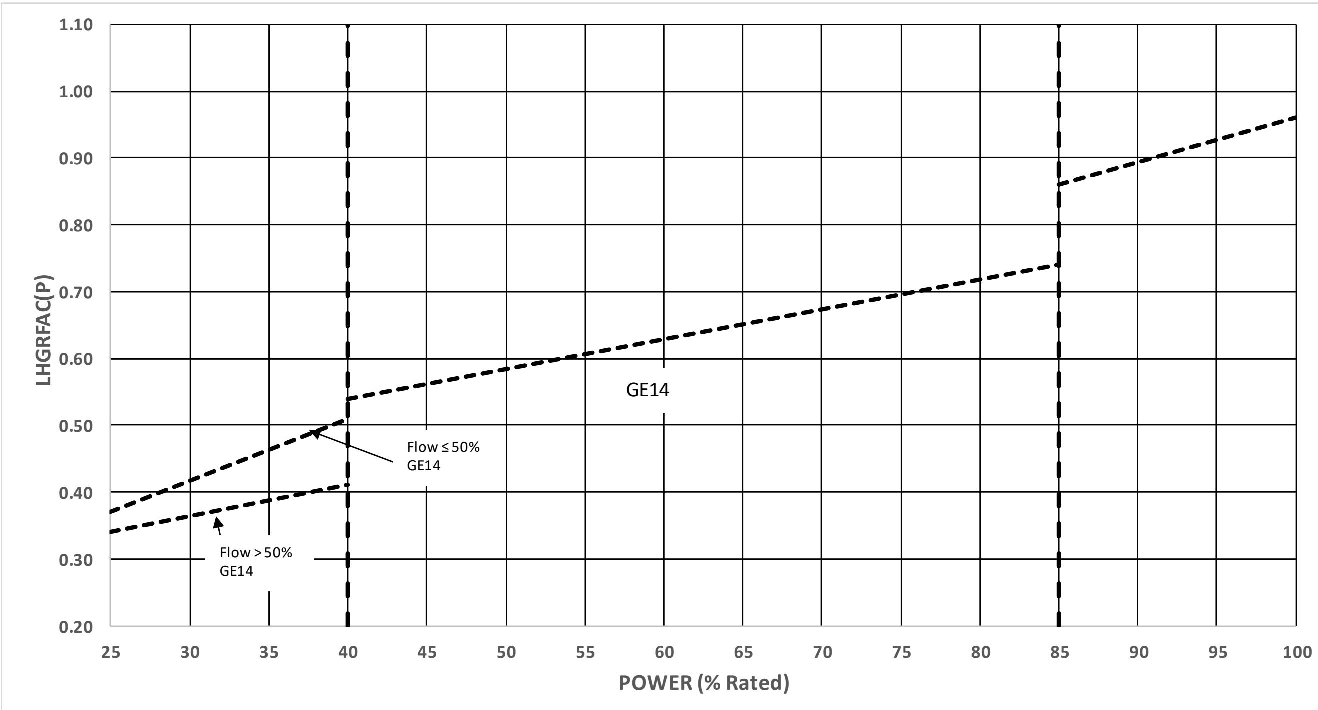
Flow	Type	Power	A	B
All	A10XM	25 ≤ P ≤ 40	1.0000	0.00000
All	A10XM	40 < P ≤ 60	0.7776	0.00120
All	A10XM	60 < P ≤ 85	0.6685	0.00302
All	A10XM	85 < P ≤ 100	0.9627	-0.00015
All	GE14	25 ≤ P ≤ 40	1.0000	0.00000
All	GE14	40 < P ≤ 60	0.6934	0.00240
All	GE14	60 < P ≤ 80	0.5693	0.00447
All	GE14	80 < P ≤ 85	1.0765	-0.00187
All	GE14	85 < P ≤ 100	1.1496	-0.00194

P = Percent of Rated Core Power

Table is valid for NSS and TSSS times.
The limits are not dependent on core flow.

Results from the Table above are accurate to two decimal places

Figure 10
Power Dependent LHGR Multipliers
for Pressure Regulator Out of Service (PROOS)



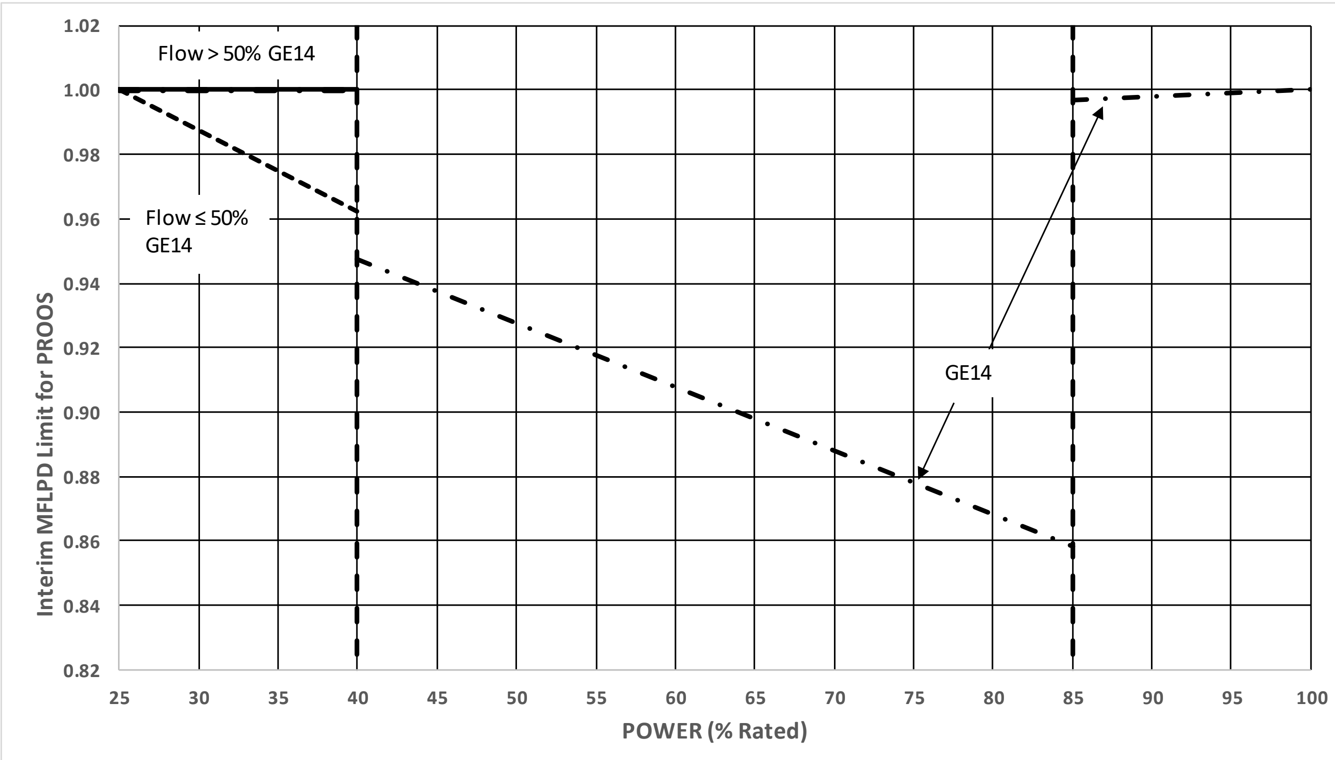
$$LHGRFAC_P = A + B*P$$

Flow	Type	Power	A	B
F ≤ 50	GE14	25 ≤ P ≤ 40	0.1367	0.00933
F > 50	GE14	25 ≤ P ≤ 40	0.2232	0.00467
All	GE14	40 < P ≤ 85	0.3624	0.00444
All	GE14	85 < P ≤ 100	0.2930	0.00667

P = Percent of Rated Core Power
F = Percent of Rated Core Flow

Results from the Table above are accurate to three decimal places.

Figure 11
Pressure Regulator Out of Service (PROOS)
Interim MFLPD Limit



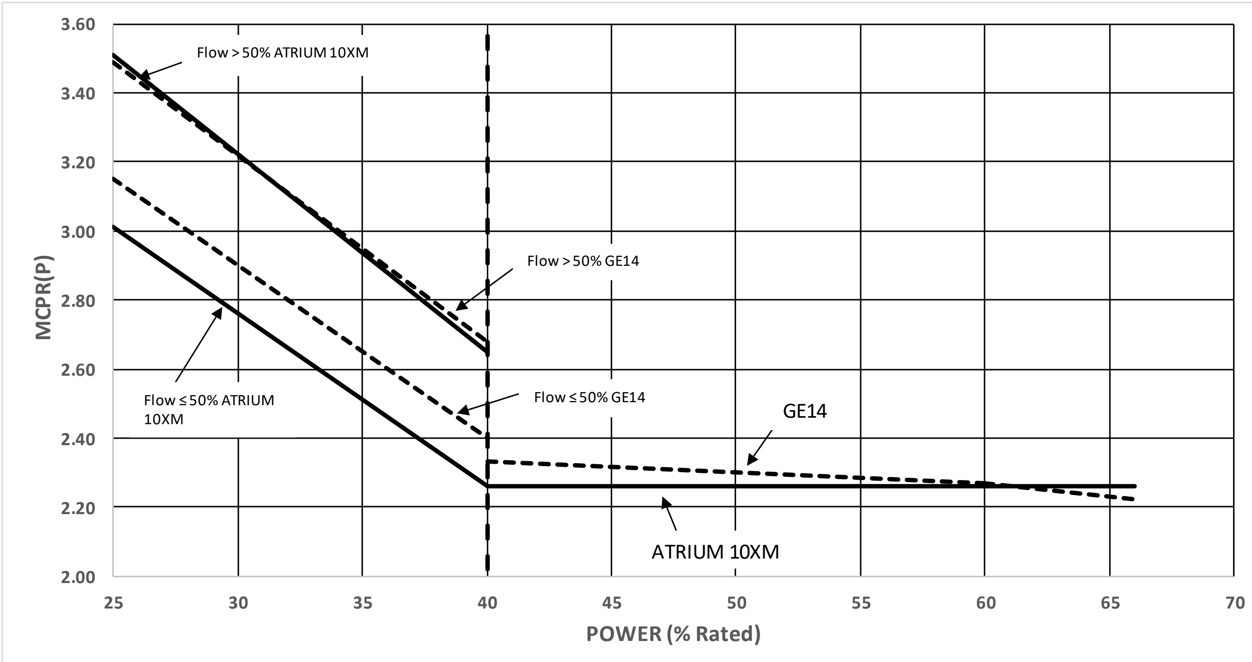
$$MFLPD = A + B*P$$

Flow	Type	Power	A	B
F ≤ 50	GE14	25 ≤ P ≤ 40	1.0630	-0.00252
F > 50	GE14	25 ≤ P ≤ 40	1.0000	0.00000
All	GE14	40 < P ≤ 85	1.0269	-0.00199
All	GE14	85 < P ≤ 100	0.9809	0.00019

P = Percent of Rated Core Power

Results from the Table above are accurate to two decimal places.

Figure 12
Power Dependent MCPR(P) Limits for SLO with NSS/TSSS Insertion Rates



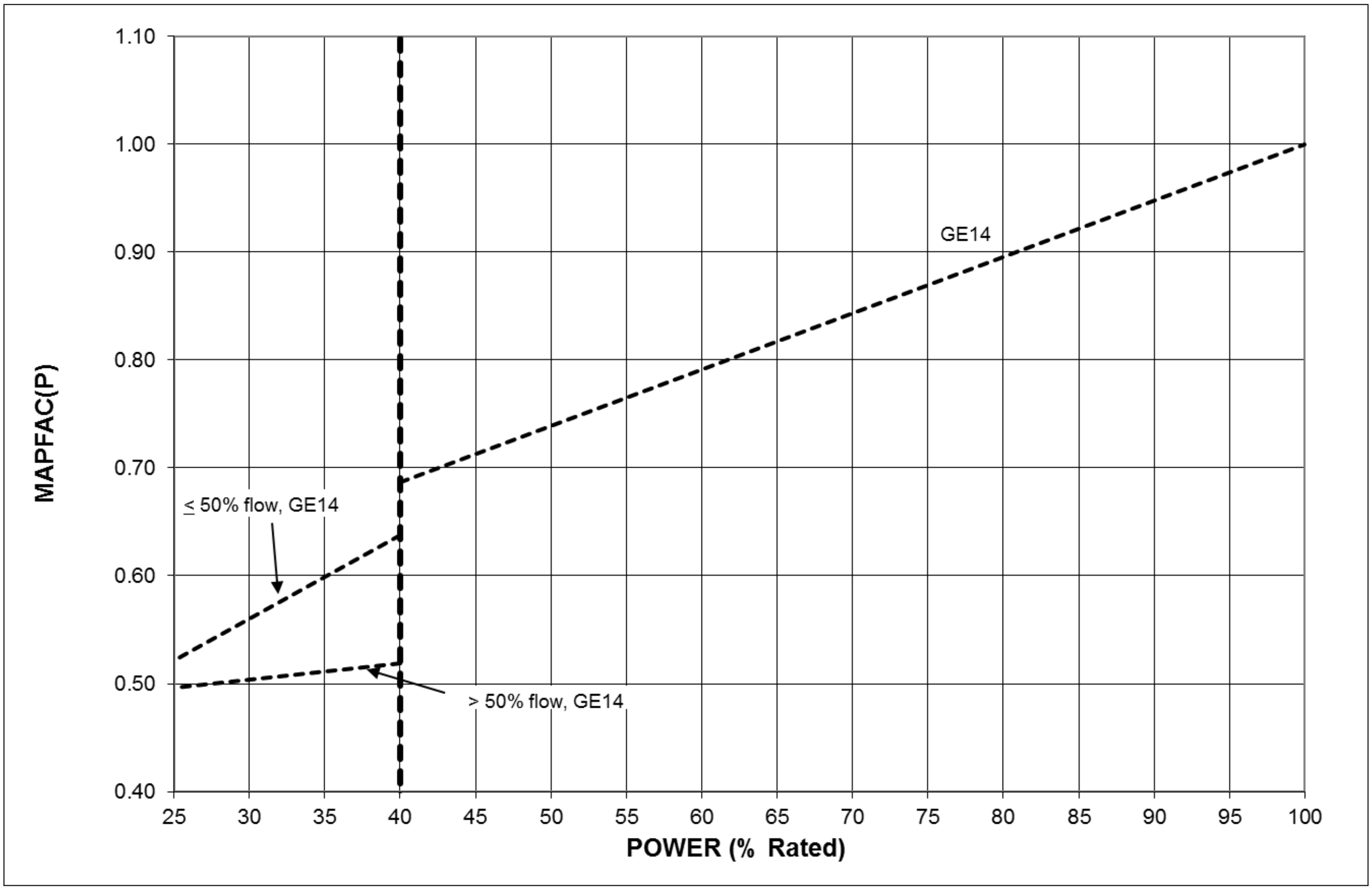
$$MCPR_P = A + B*P$$

Flow	Type	Power	A	B
F ≤ 50	A10XM	25 ≤ P ≤ 40	4.2600	-0.05000
F > 50	A10XM	25 ≤ P ≤ 40	4.9433	-0.05733
All	A10XM	40 < P ≤ 66	2.2600	0.00000
F ≤ 50	GE14	25 ≤ P ≤ 40	4.4000	-0.05000
F > 50	GE14	25 ≤ P ≤ 40	4.8400	-0.05400
All	GE14	40 < P ≤ 60	2.4500	-0.00300
All	GE14	60 < P ≤ 66	2.7698	-0.00833

P = Percent of Rated Core Power
F = Percent of Rated Core Flow

Results from the Table above are accurate to three decimal places.

Figure 13
Power Dependent MAPLHGR Multipliers



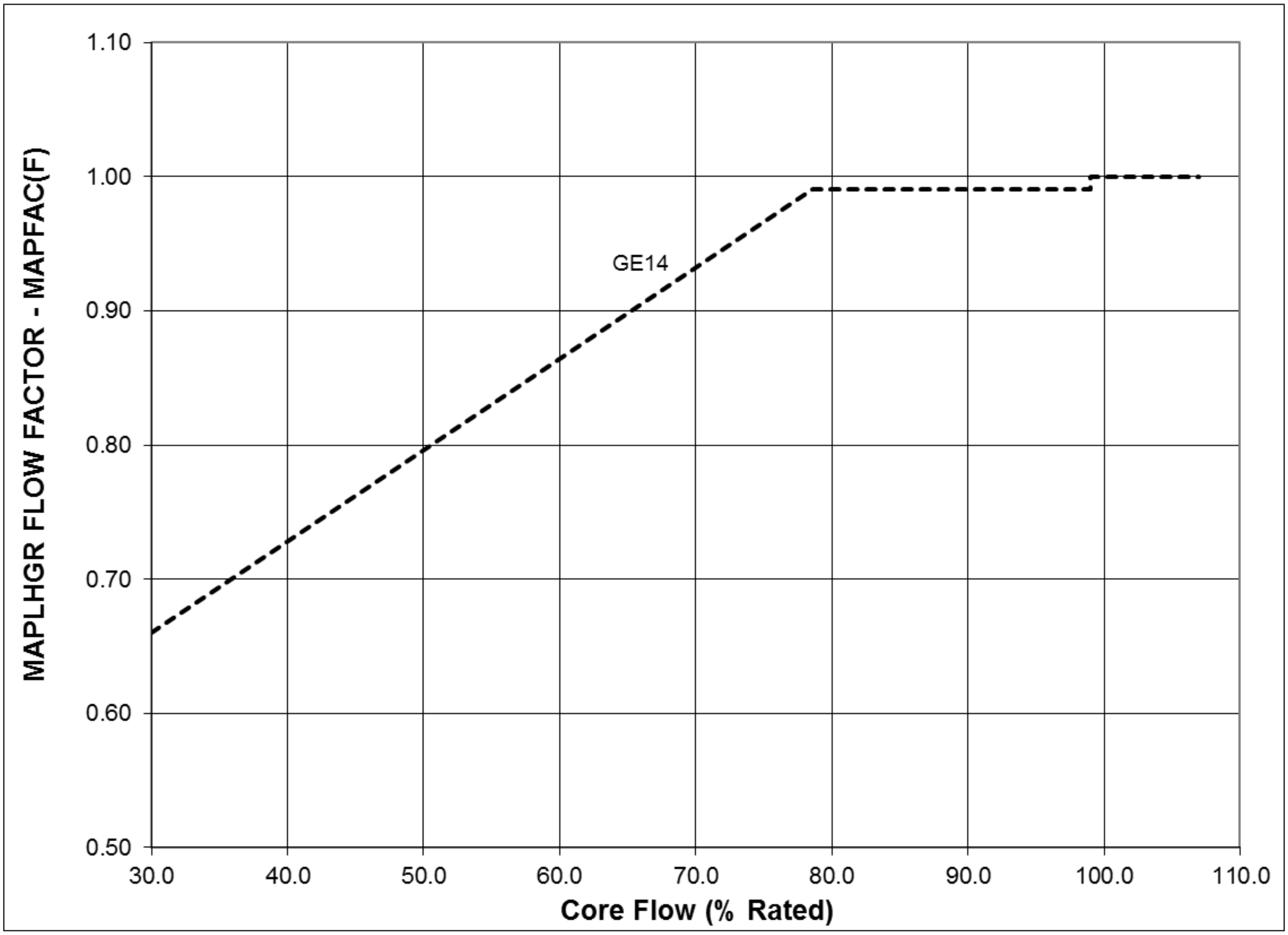
$$MAPFAC_P = A + B*P$$

Flow	Type	Power	A	B
F ≤ 50	GE14	25 ≤ P ≤ 40	0.3287	0.00773
F > 50	GE14	25 ≤ P ≤ 40	0.4577	0.00153
All	GE14	40 < P ≤ 100	0.4780	0.00522

P = Percent of Rated Core Power
F = Percent of Rated Core Flow

Results from the Table above are accurate to three decimal places.

Figure 14
Flow Dependent MAPLHGR Multipliers



$$MAPFAC_F = A + B*F$$

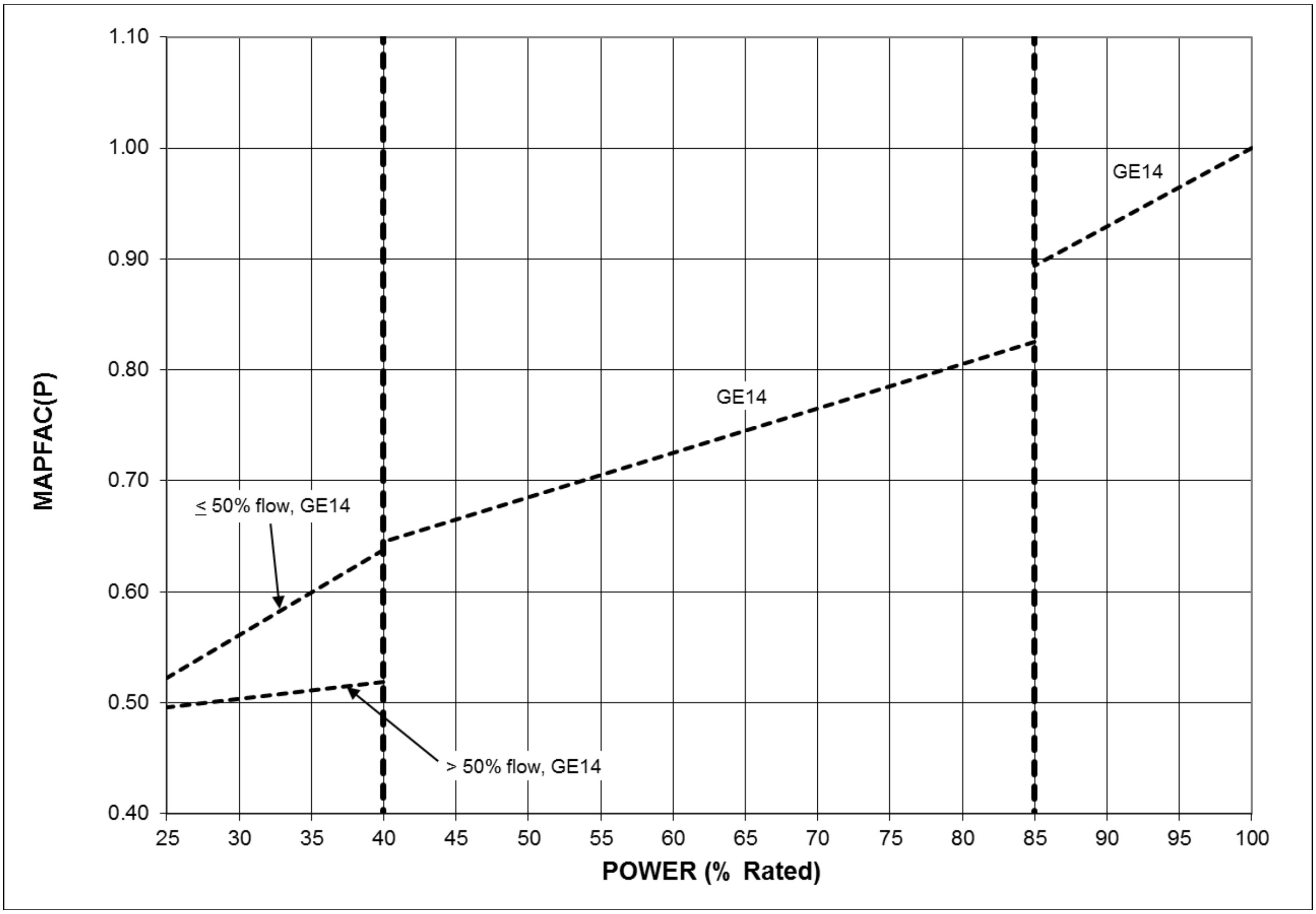
Flow	Type	Power	A	B
30 ≤ F ≤ 78.6	GE14	All	0.4560	0.00680
78.6 < F ≤ 99	GE14	All	0.9908	0.00000
99 < F ≤ 107	GE14	All	1.0000	0.00000

F = Percent of Rated Core Flow

In addition to the flow dependent multipliers, Monticello also requires an ECCS MAPLHGR multiplier of 0.9908 for operation at or below 99% core flow for GE14 fuel. This multiplier ensures that the off-rated limits assumed in the EPU ECCS-LOCA analyses bound the cycle-specific off-rated limits calculated for EFW operation.

Results from the Table above are accurate to three decimal places.

Figure 15
Pressure Regulator Out Of Service (PROOS)
Power Dependent MAPLHGR Multipliers



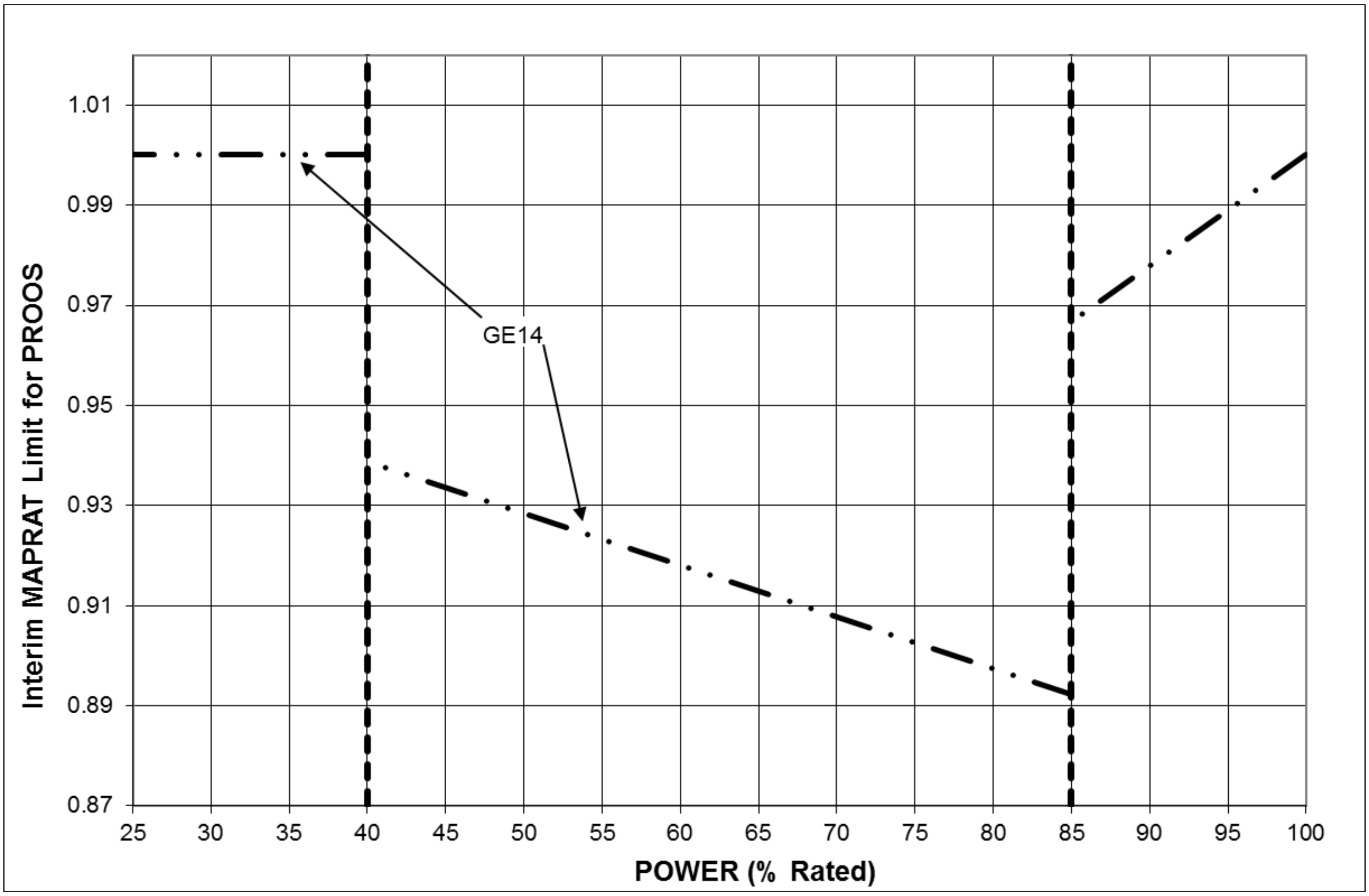
$$MAPFAC_P = A + B*P$$

Flow	Type	Power	A	B
F ≤ 50	GE14	25 ≤ P ≤ 40	0.3287	0.00773
F > 50	GE14	25 ≤ P ≤ 40	0.4577	0.00153
All	GE14	40 < P ≤ 85	0.4850	0.00400
All	GE14	85 < P ≤ 100	0.2930	0.00707

P = Percent of Rated Core Power
F = Percent of Rated Core Flow

Results from the Table above are accurate to three decimal places.

Figure 16
Pressure Regulator Out of Service (PROOS)
Interim MAPRAT Limits



MAPRAT = A + B*P

Flow	Type	Power	A	B
All	GE14	25 ≤ P < 40	1.0000	0.00000
All	GE14	40 ≤ P ≤ 85	0.9790	-0.00100
All	GE14	85 < P ≤ 100	0.8000	0.00200

P = Percent of Rated Core Power

Results from the Table above are accurate to three decimal places.

ENCLOSURE 2

AFFIDAVIT FOR

MONTICELLO NUCLEAR GENERATING PLANT

CYCLE 31

PROPRIETARY

CORE OPERATING LIMITS REPORT

REVISION 1

NAD-MN-050P

(3 pages follow)

Global Nuclear Fuel – Americas

AFFIDAVIT

I, Kent E. Halac, state as follows:

(1) I am a Senior Engineer, Regulatory Affairs, Global Nuclear Fuel – Americas, LLC ("GNF-A"), and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.

(2) The information sought to be withheld is contained in Revision 1 of "Monticello Nuclear Generating Plant, Cycle 31, Proprietary, Core Operating Limits Report NAD-MN-047P," dated January 2022. GNF proprietary information in Revision 1 of the Monticello Nuclear Generating Plant Cycle 31 COLR is identified by a dotted underline inside double square brackets. [[This sentence is an example.{3}]] In each case, the superscript notation {3} refers to Paragraph (3) of this affidavit, which provides the basis for the proprietary determination.

(3) In making this application for withholding of proprietary information of which it is the owner or licensee, GNF-A relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), and 2.390(a)(4) for "trade secrets" (Exemption 4). The material for which exemption from disclosure is here sought also qualify under the narrower definition of "trade secret", within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).

(4) Some examples of categories of information which fit into the definition of proprietary information are:

a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by GNF-A's competitors without license from GNF-A constitutes a competitive economic advantage over other companies;

b. Information which, if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;

c. Information which reveals aspects of past, present, or future GNF-A customer-funded development plans and programs, resulting in potential products to GNF-A;

d. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4)a. and (4)b. above.

(5) To address 10 CFR 2.390 (b) (4), the information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GNF-A, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GNF-A, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs (6) and (7) following.

(6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge, or subject to the terms under which it was licensed to GNF-A.

(7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist or other equivalent authority, by the manager of the cognizant marketing function (or his delegate), and by the Legal Operation, for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GNF-A are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.

(8) The information identified in paragraph (2) is classified as proprietary because it contains details of GNF-A’s fuel design and licensing methodology.

The development of the methods used in these analyses, along with the testing, development and approval of the supporting methodology was achieved at a significant cost to GNF-A or its licensor.

(9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GNF-A's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GNF-A's comprehensive BWR safety and technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical, and NRC review costs comprise a substantial investment of time and money by GNF-A.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GNF-A's competitive advantage will be lost if its competitors are able to use the results of the GNF-A experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GNF-A would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GNF-A of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing and obtaining these very valuable analytical tools.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 10th day of January 2022.

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