Progress Energy

July 17, 2008

SERIAL: BSEP 08-0093

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

Subject: Brunswick Steam Electric Plant, Unit No. 2
Docket No. 50-324/License No. DPR-62
Unit 2 Cycle 18 Core Operating Limits Report, Revision 1

Ladies and Gentlemen:

Enclosed is Revision 1 of the Core Operating Limits Report (COLR) for the Brunswick Steam Electric Plant (BSEP), Unit 2, Cycle 18 operation. Carolina Power & Light Company, now doing business as Progress Energy Carolinas, Inc., is providing the enclosed Revision 1 of the COLR in accordance with BSEP Technical Specification 5.6.5.d, which requires that the COLR, including any mid-cycle revisions or supplements, be provided to the NRC upon issuance. The COLR revision becomes effective on July 30, 2008. The enclosed revision of the COLR supersedes the Revision 0 report previously submitted by letter dated April 2, 2007, (i.e., ADAMS Accession Numbers ML070990198 and ML070990200).

No regulatory commitments are contained in this submittal. Please refer any questions regarding this submittal to Mr. Gene Atkinson, Supervisor – Licensing/Regulatory Programs, at (910) 457-2056.

Sincerely,

Philip A Leich

Philip A. Leich
Manager – Support Services
Brunswick Steam Electric Plant

LJG/ljg

Enclosure: Brunswick Unit 2, Cycle 18 Core Operating Limits Report, June 2008
Revision 1

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Brunswick Unit 2, Cycle 18

Core Operating Limits Report

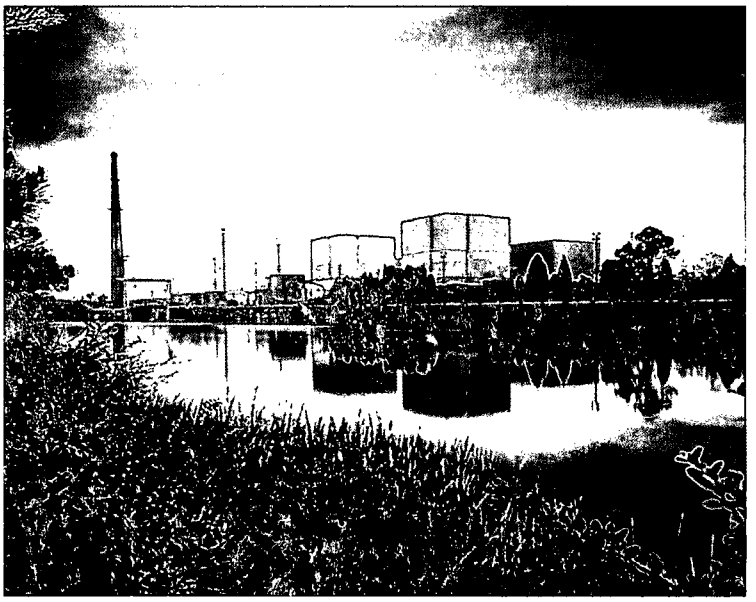
June 2008

Revision 1

BRUNSWICK UNIT 2, CYCLE 18

CORE OPERATING LIMITS REPORT

June 2008



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CAUTION

References to COLR Figures or tables should be made using titles only; figure and table numbers may change from cycle to cycle.

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Introduction and Summary

CAUTION
References to COLR Figures or Tables should be made using titles only; figure and table numbers may change from cycle to cycle.

This report provides the values of the power distribution limits and control rod withdrawal block instrumentation setpoints for Brunswick Unit 2, Cycle 18 as required by TS 5.6.5.

OPERATING LIMIT	REQUIREMENT
Average Planar Linear Heat Generation Rate (APLHGR) limits (with associated core flow and core power adjustment factors)	TS 5.6.5.a.1
Minimum Critical Power Ratio (MCPR) limits (with associated core flow and core power adjustment factors)	TS 5.6.5.a.2
Period Based Detection Algorithm (PBDA) Setpoint for Function 2.f of TS 3.3.1.1, Oscillation Power Range Monitor (OPRM)	TS 5.6.5.a.3
Allowable Values and power range setpoints for Rod Block Monitor Upscale Functions of TS 3.3.2.1	TS 5.6.5.a.4

Per TS 5.6.5.b and 5.6.5.c, these values have been determined using NRC approved methodology and are established such that all applicable limits of the plant safety analysis are met. The limits specified in this report support single recirculation loop operation (SLO) as required by TS LCO 3.4.1 and inoperable Main Turbine Bypass System as required by TS 3.7.6.

In order to support the Stability Option III with an inoperable OPRM scram function, the following is also included in this report:

OPERATING LIMIT	REQUIREMENT
BWROG Interim Corrective Action Stability Regions	TS LCO 3.3.1.1, Condition I

The generation of this COLR is documented in Reference 1 and is based on analysis results summarized in Reference 12.

Single Loop Operation

Brunswick Unit 2, Cycle 18 may operate over the entire MEOD range with SLO over the entire cycle as permitted by TS 3.4.1 with applicable limits specified in the COLR for TS LCO's 3.2.1, and 3.2.2. The applicable limits are:

LCO 3.2.1, Average Planar Linear Heat Generation Rate (APLHGR) Limits: per Reference 1, the Figures 9 and 10 described in the APLHGR Limits section below include a SLO limitation of 0.8 on the MAPLHGR(F) and MAPLHGR(P) multipliers.

LCO 3.2.2, Minimum Critical Power Ratio (MCPR) Limits: per Reference 1, Table 1 and Figures 11 and 12, the MCPR limits presented apply to SLO without modification.

Various indicators on the Power/Flow maps are provided not as operating limits but rather as a convenience for the operators: a single loop operation (SLO) Entry Rod Line is shown on the two loop operation maps to avoid regions of instability in the event of a pump trip; a maximum core flow line is shown on the single loop operation maps to avoid vibration problems; a maximum core power of 50% RTP in SLO mitigates a spurious trip signal which could result from APRM noise; and Average Power Range Monitors (APRM) Simulated Thermal Power (STP) Scram and Rod Block nominal trip setpoint limits are shown to illustrate where these setpoints occur. *Note that the APRM STP setpoints are only approximations, shown at the estimated core flow corresponding to the actual drive flow-based setpoints. The approximations serve to indicate where the operator may encounter the APRM STP - High Allowable Value setpoints (LCO 3.3.1.1, Table 3.3.1.1-1: Reactor Protection System Instrumentation, Function 2.b).*

Inoperable Main Turbine Bypass System

Brunswick Unit 2, Cycle 18 may operate with an inoperable Main Turbine Bypass System in accordance with TS 3.7.6 with applicable limits specified in the COLR for TS LCO 3.2.1 and LCO 3.2.2. The applicable limits are as follows:

LCO 3.2.1, Average Planar Linear Heat Generation Rate (APLHGR) Limits: in accordance with Reference 1 as shown in Figure 10, TBPOOS does not require an additional reduction in the MAPLGHR(P) limits, as the Turbine Bypass Operable and Inoperable limits are identical.

LCO 3.2.2, Minimum Critical Power Ratio (MCPR) Limits: in accordance with Reference 1, TBPOOS does not require an additional increase in the MCPR(P) multiplier as shown in Figure 12, as the Turbine Bypass Operable and Inoperable limits are identical. TBPOOS requires increased MCPR limits, included in Table 1.

The system response time assumed by the safety analyses from event initiation to start of bypass valve opening is 0.10 seconds, with 80% of the bypass flow capacity achieved in 0.30 seconds. Although the Turbine Bypass Out-of-Service (TBPOOS) analysis supports operation with all bypass valves inoperable for the entire maximum extended operating domain (MEOD) range and up to 110°F rated equivalent feedwater temperature reduction, three or more turbine bypass valves inoperable renders the Main Turbine Bypass System inoperable.

Feedwater Temperature Reduction

A variation within 10°F of nominal feedwater temperature or a power level less than 30% RTP has been evaluated as being in compliance with normal feedwater temperature operating limits. A feedwater temperature reduction in excess of 10°F together with the reactor power at a minimum of 30% rated requires the use of the Reduced FWTR MCPR limits (Table 1) and Stability Option III Power/Flow limits (Figures 17 and 18).

APLHGR Limits

The limiting APLHGR value for the most limiting lattice (excluding natural uranium) of each fuel type as a function of planar average exposure is given in Figures 1 through 7. These values were determined with the SAFER/GESTR LOCA methodology described in GESTAR-II (Reference 2). Figures 1 through 7 are to be used only when hand calculations are required as specified in the bases for TS 3.2.1. Hand calculated results may not match a POWERPLEX calculation since normal monitoring of the APLHGR limits with POWERPLEX uses the complete set of lattices for each fuel type provided in Reference 3.

The core flow and core power adjustment factors for use in TS 3.2.1 are presented in Figures 9 and 10. For any given flow/power state, the minimum of MAPLHGR(F) determined from Figure 9 and MAPLHGR(P) determined from Figure 10 is used to determine the governing limit.

MCPR Limits

The Scram Speed MCPR OPTION A, OPTION B, and non-pressurization transient MCPR limits for use in TS 3.2.2 for each fuel type as a function of cycle average exposure are given in Table 1. These values were determined with the GEMINI(TRACG) methodology and GEXL14 critical power correlation described in GESTAR-II (Reference 2) without assuming EOC-RPT, and are consistent with a Safety Limit MCPR of 1.11 specified by TS 2.1.1.2.

The core flow and core power adjustment factors for use in TS 3.2.2 are presented in Figures 11 and 12. For any given power/flow state, the maximum of MCPR(F) determined from Figure 11 and MCPR(P) determined from Figure 12 is used to determine the governing limit. All MCPR limits presented in Table 1, Figure 11 and Figure 12 apply to two recirculation pump operation (TLO) and SLO without modification.

RBM Rod Block Instrumentation Setpoints

The nominal trip setpoints and allowable values of the control rod withdrawal block instrumentation for use in TS 3.3.2.1 (Table 3.3.2.1-1) are presented in Table 2. These values were determined to be consistent with the bases of the ARTS program, and the determination of MCPR limits with the GEMINI(TRACG) methodology and the GEXL-PLUS critical power correlation described in GESTAR-II (Reference 2) as well as the NUMAC PRNM system as discussed in Reference 8. The table also includes the cycle-specific MCPR limits regarding the required operability of the RBM, consistent with Technical Specification Table 3.3.2.1-1.

Stability Option III

Brunswick Unit 2 has implemented BWROG Long Term Stability Solution Option III using Oscillation Power Range Monitors (OPRMs) with the methodology described in Reference 4. Plant specific analysis incorporating the Option III hardware is described in Reference 5. Reload validation has been performed in accordance with Reference 6. The resulting stability based MCPR Operating Limit is provided for two conditions as a function of OPRM amplitude setpoint in Table 3. *If desirable, Table 3 would support higher stability limits for various MCPR operating limits greater than the least limiting AOO OLMCPR values provided in Table 1 or Figures 11 or 12, but the suggested stability setpoints ensure no OLMCPR restrictions from Option III.* Table 3 shows that for an OPRM setpoint

(Amplitude Setpoint S_p) of 1.13, OLMCPR(SS) is less restrictive than Figure 11 at 45% maximum flow or Figure 12 at 60.6% maximum power. Table 3 also shows that OLMCPR(2PT) is less restrictive than any limiting Table 1 OLMCPR for S_p equal to 1.13. Therefore the OPRM Period Based Detection Algorithm (PBDA) setpoint limit for Amplitude S_p referenced by function 2.f of Table 3.3.1.1-1 of Technical Specification 3.3.1.1 is 1.13 for Cycle 18. Per Table 3-2 of Reference 6, an S_p value of 1.13 supports selection of a Confirmation Count Setpoint N_p of 15 or less.

Stability Option III also affects the power/Flow maps as described below.

Power/Flow Maps

Six Power/Flow maps for use at up to 2923 MWt (Figures 13-18) were developed based on References 1 and 7 to facilitate operation under Stability Option III as implemented by LCO 3.3.1.1, Condition I and function 2.f of Table 3.3.1.1-1 of the Technical Specifications. All six maps illustrate the region of the power/flow map above 25% power and below 60% drive flow where the system is required to be enabled. **[Note that the power/flow maps can only approximate the licensed Enabled Region, because the maps display core flow, while the Enabled Region is based on drive flow].**

Figures 13, 15 and 17 support an operable OPRM function 2.f and Figures 14, 16 and 18 support an inoperable OPRM function 2.f for TLO, SLO or FWTR, respectively. Each figure for an operable OPRM shows a Scram Avoidance Region where the OPRM system may generate a scram to avoid an instability event. The figures for an inoperable OPRM event show the additional stability regions which address BWROG-94078 Interim Corrective Actions required to support LCO 3.3.1.1, Condition I . Figures 14, 16 and 18 for OPRM inoperable also includes a 5% Buffer Region around the Immediate Exit Region as an operator aid **[Note for Figure 16 (SLO), the 5% Buffer Region does not fully enclose the Immediate Exit Region as on Figures 14 and 18]**.

Figures 15 and 16 for SLO show the maximum allowable core flow at 45 Mlbs/hr and has the STP scram and rod block limits appropriately reduced. Note that the STP scram and rod block limits are defined in Technical Specifications, the Technical Requirements Manual, and Plant procedures. Figures 15 and 16 also implement the corrective action for A/R 217345 which restricts reactor operation to no more than 50% RTP in SLO with OPRM operable or inoperable. This operator aid is intended to mitigate a spurious trip signal which could result from APRM noise while operating at high power levels.

Figures 17 and 18 for FWTR differ from TLO and SLO by including extended scram regions to provide additional stability protection. Although the scram region for SLO above 50% RTP is more restrictive, intentional operation with SLO and FWTR is prohibited.

References

1) BNP Design Calculation 2B21-1267, "Preparation of the B2C18 Core Operating Limits Report," Revision 1, June 2008.

2) NEDE-24011-P-A (including U.S. supplement), "General Electric Standard Application for Reactor Fuel," Revision 15, September 2005.

3) NEDC-31624P, "Loss-of-Coolant Accident Analysis Report for Brunswick Steam Electric Plant Unit 2 Reload 17 Cycle 18," Supplement 2, Revision 10, January 2007.

4) NEDO-31960-A, "BWR Owners Group Long-Term Stability Solutions Licensing Methodology," November 1995.

5) GE-NE-C51-00251-00-01, Revision 0, "Licensing Basis Hot Bundle Oscillation Magnitude for Brunswick 1 and 2," March 2001.

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

7) BNP Design Calculation 0B21-1015, Revision 7, "Power/Flow Maps," March 2008.

8) BNP Design Calculation 2C51-0001 Revision 3, "Power Range Neutron Monitoring System Setpoint Uncertainty and Scaling Calculation (2-C51-APRM 1 through 4 Loops and 2-C51-RBM-A and B Loops," May 26, 2004.

9) NEDE-32906P-A, Revision 1, and Supplements, "TRACG Application for Anticipated Operational Occurrences (AOO) Transient Analyses," April 2003.

10) GE-NE-0000-0022-8180-R0, "Brunswick Nuclear Station TRACG Implementation for Reload Licensing Transient Analysis," February 2004.

11) GE-NE-0000-0036-9469-R1, Revision 1, "Brunswick 1 and 2 Off-Rated Analyses Below the PLU Power Level," April 2006.

12) Global Nuclear Fuel Document 0000-0052-0675-SRLR, Rev. 0; "Supplemental Reload Licensing Report for Brunswick Steam Electric Plant Unit 2, Reload 17 Cycle 18," February 2007.

Table 1

MCPR Limits
(EOC RPT not required)

Non-pressurization Transient MCPR Limits	
Fuel Type	Exposure Range: BOC - EOC
GE14	1.30

Pressurization Transient MCPR Limits					
Turbine Bypass System Operable?	Feedwater Temperature Normal?	Fuel Type	Scram Speed MCPR Option	100% Power OLMCPR	
				Exposure Range: BOC to EOR-5900 MWd/MT	Exposure Range: EOR-5900 MWd/MT to EOC
Operable	Normal	GE14	A	1.53	1.57
			B	1.35	1.39
Operable	Reduced	GE14	A	1.53	1.57
			B	1.35	1.39
Inoperable	Normal	GE14	A	1.61	1.61
			B	1.43	1.43
Inoperable	Reduced	GE14	A	1.61	1.61
			B	1.43	1.43

This Table is referred to by Technical Specifications 3.2.2, 3.4.1 and 3.7.6.

Table 2

RBM System Setpoints

Setpoint[a]	Trip Setpoint	Allowable Value
Lower Power Setpoint (LPSP[b])	27.7	≤ 29.0
Intermediate Power Setpoint (IPSP[b])	62.7	≤ 64.0
High Power Setpoint (HPSP[b])	82.7	≤ 84.0
Low Trip Setpoint (LTSP[c])	≤ 114.1	≤ 114.6
Intermediate Trip Setpoint (ITSP[c])	≤ 108.3	≤ 108.8
High Trip Setpoint (HTSP[c])	≤ 104.5	≤ 105.0
RBM Time Delay (t_{d2})	≤ 2.0 seconds	≤ 2.0 seconds

[a] RBM Operability requirements are not applicable:
(1) if MCPR ≥ 1.76; or
(2) if MCPR ≥ 1.45 and thermal power ≥ 90% Rated Thermal Power.

[b] Setpoints in percent of Rated Thermal Power.

[c] Setpoints relative to a full scale reading of 125.
For example, ≤ 114.1 means ≤ 114.1/125.0 of full scale.

This Table is referred to by Technical Specification 3.3.2.1 (Table 3.3.2.1-1).

Table 3

PBDA Setpoints

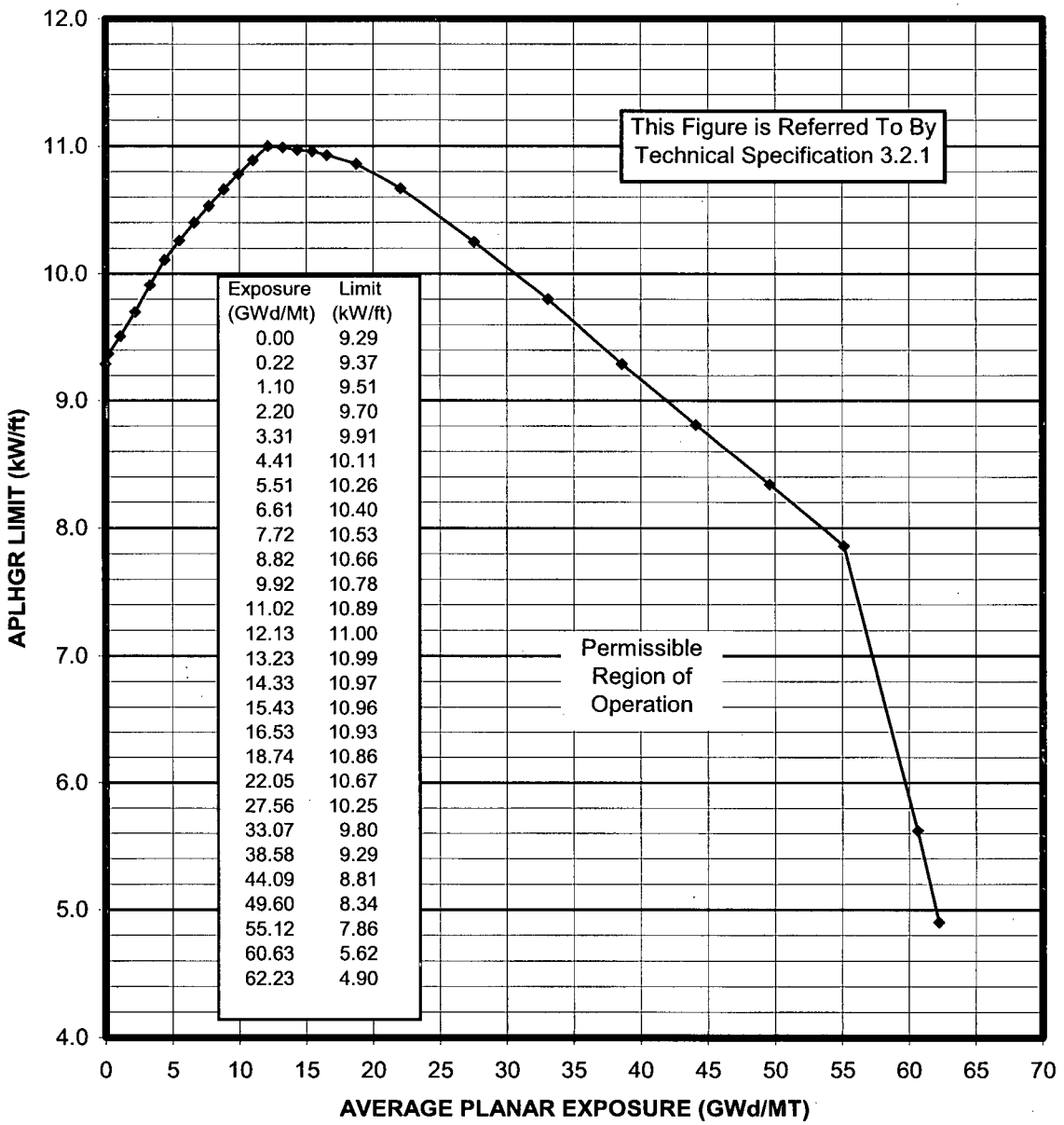
OPRM Setpoint	OLMCPR(SS)	OLMCPR(2PT)
1.05	1.224	1.097
1.06	1.248	1.119
1.07	1.273	1.142
1.08	1.300	1.165
1.09	1.327	1.190
1.10	1.356	1.215
1.11	1.384	1.241
1.12	1.414	1.268
1.13	**1.445**	**1.295**
1.14	1.477	1.324
1.15	1.511	1.355
Acceptance Criteria	Off-rated OLMCPR @ 45% Flow, 60.6% power	Rated Power OLMCPR

PBDA Setpoint	**Setpoint Value**
Amplitude S_p	**1.13**
Confirmation Count N_p	**15**

This Table is referred to by Technical Specification 3.3.1.1 (Table 3.3.1.1-1).

Figure 1

Fuel Type GE14-P10DNAB420-18GZ-100T-150-T-2572
Average Planar Linear Heat Generation Rate (APLHGR) Limit
Versus Average Planar Exposure - EDB# 2572



Exposure (GWd/Mt)	Limit (kW/ft)
0.00	9.29
0.22	9.37
1.10	9.51
2.20	9.70
3.31	9.91
4.41	10.11
5.51	10.26
6.61	10.40
7.72	10.53
8.82	10.66
9.92	10.78
11.02	10.89
12.13	11.00
13.23	10.99
14.33	10.97
15.43	10.96
16.53	10.93
18.74	10.86
22.05	10.67
27.56	10.25
33.07	9.80
38.58	9.29
44.09	8.81
49.60	8.34
55.12	7.86
60.63	5.62
62.23	4.90

Figure 2

Fuel Type GE14-P10DNAB419-6G7.0/7G6.0/3G2.0-100T-150-T-2573
Average Planar Linear Heat Generation Rate (APLHGR) Limit
Versus Average Planar Exposure - EDB# 2573

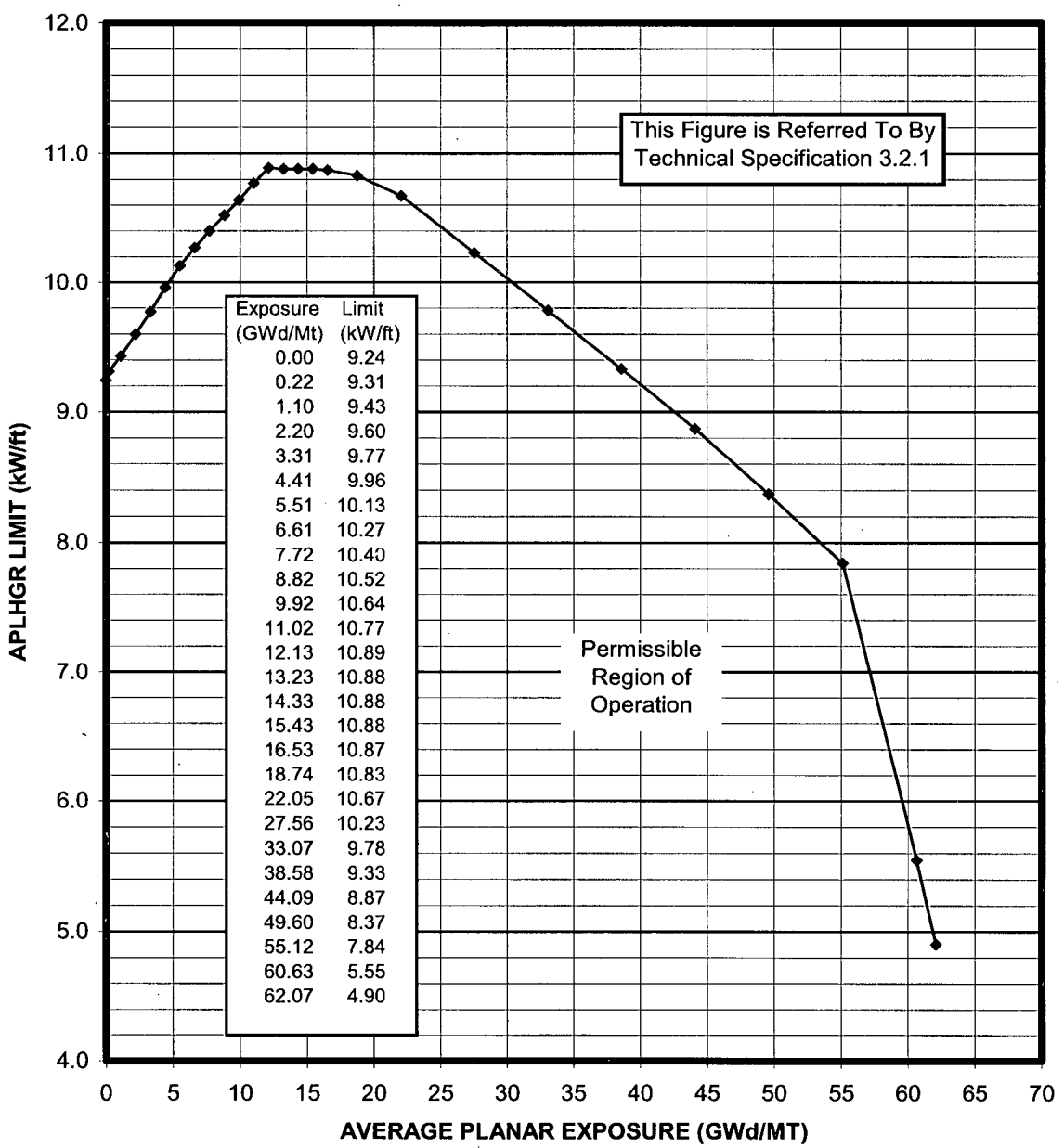


Figure 3

Fuel Type GE14-P10DNAB425-3G7.0/14G6.0/1G2.0-100T-150-T-2574
Average Planar Linear Heat Generation Rate (APLHGR) Limit
Versus Average Planar Exposure - EDB# 2574

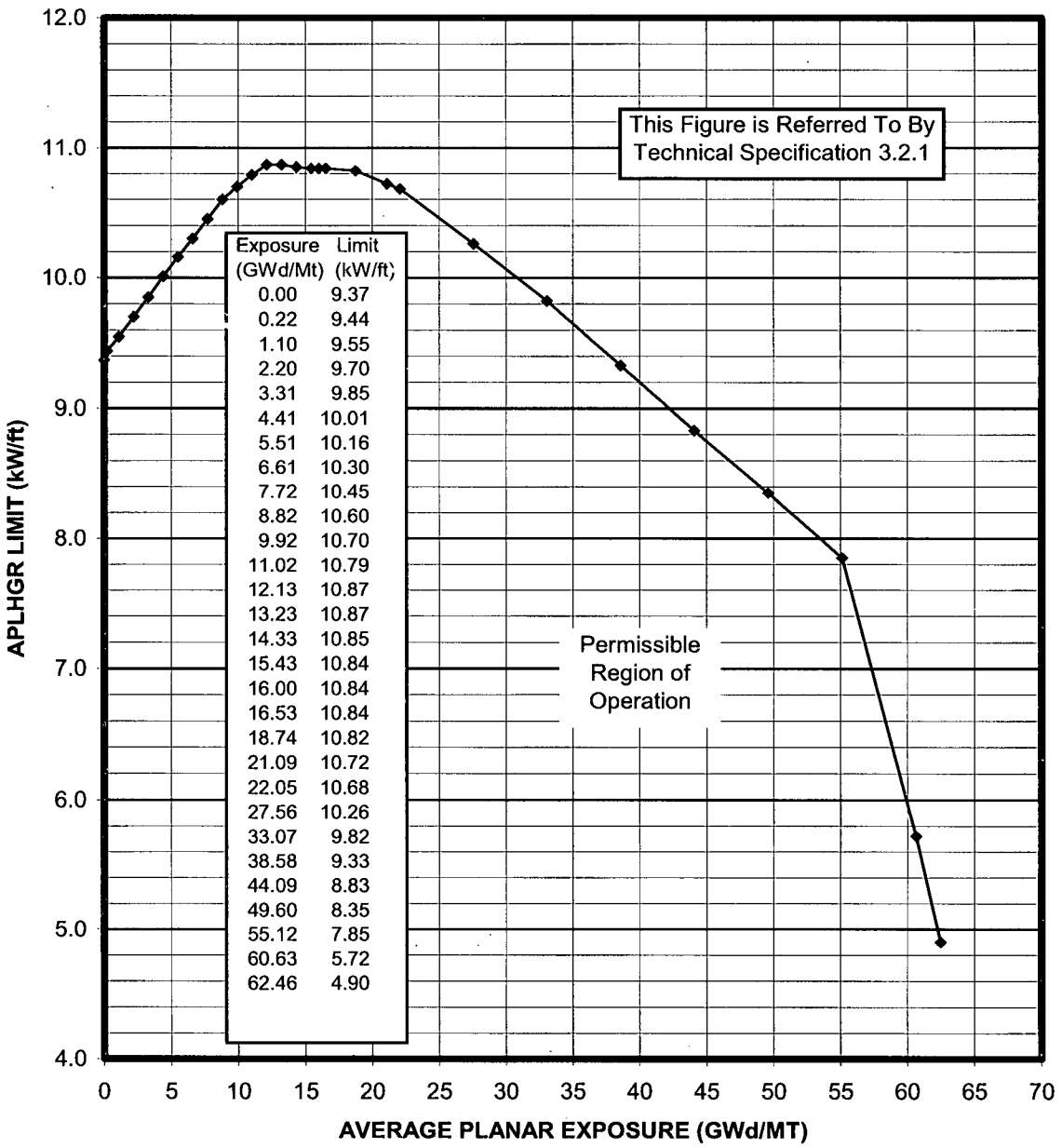
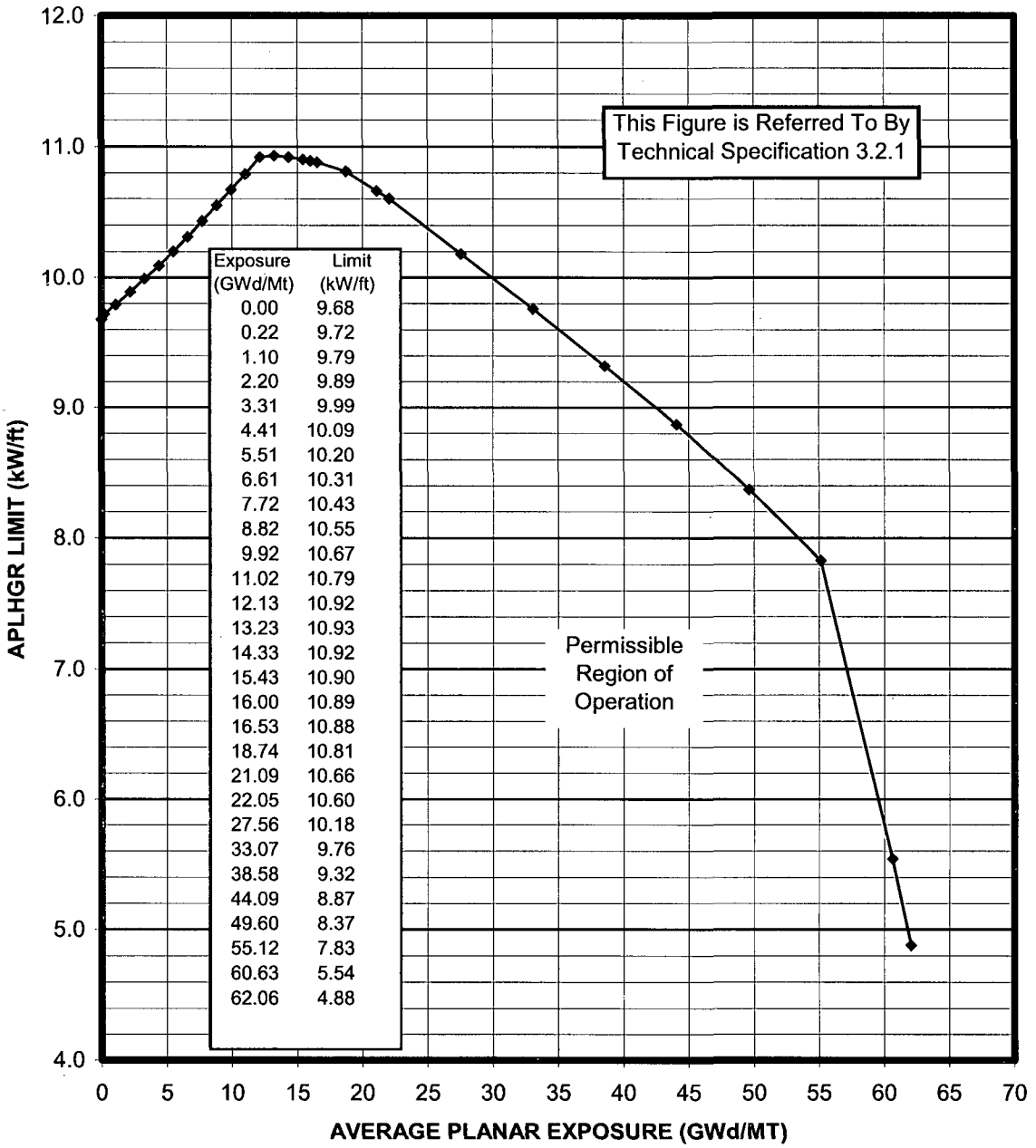


Figure 4

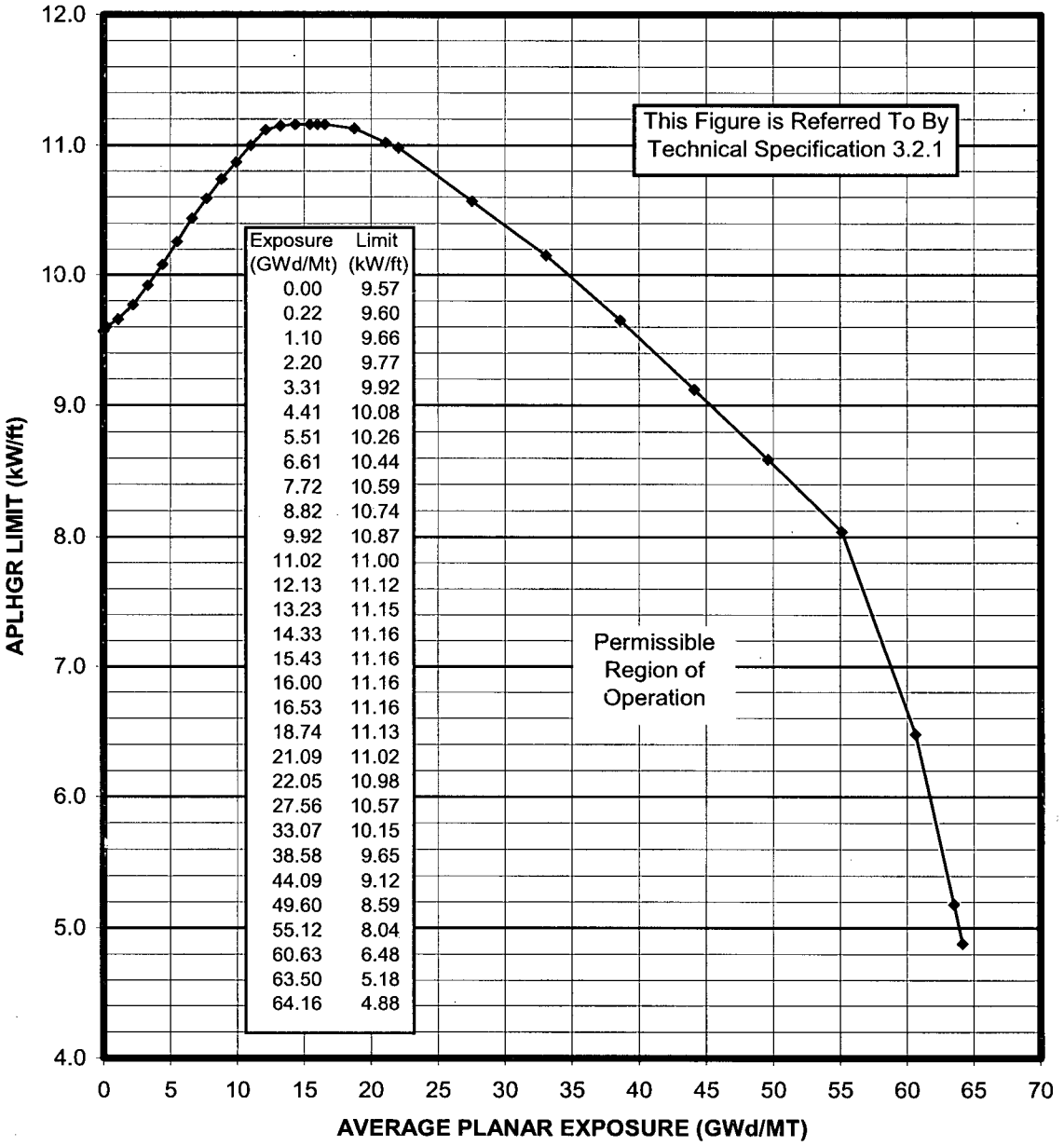
Fuel Type GE14-P10DNAB439-12G6.0-100T-150-T-2575
Average Planar Linear Heat Generation Rate (APLHGR) Limit
Versus Average Planar Exposure - EDB# 2575



Exposure (GWd/Mt)	Limit (kW/ft)
0.00	9.68
0.22	9.72
1.10	9.79
2.20	9.89
3.31	9.99
4.41	10.09
5.51	10.20
6.61	10.31
7.72	10.43
8.82	10.55
9.92	10.67
11.02	10.79
12.13	10.92
13.23	10.93
14.33	10.92
15.43	10.90
16.00	10.89
16.53	10.88
18.74	10.81
21.09	10.66
22.05	10.60
27.56	10.18
33.07	9.76
38.58	9.32
44.09	8.87
49.60	8.37
55.12	7.83
60.63	5.54
62.06	4.88

Figure 5

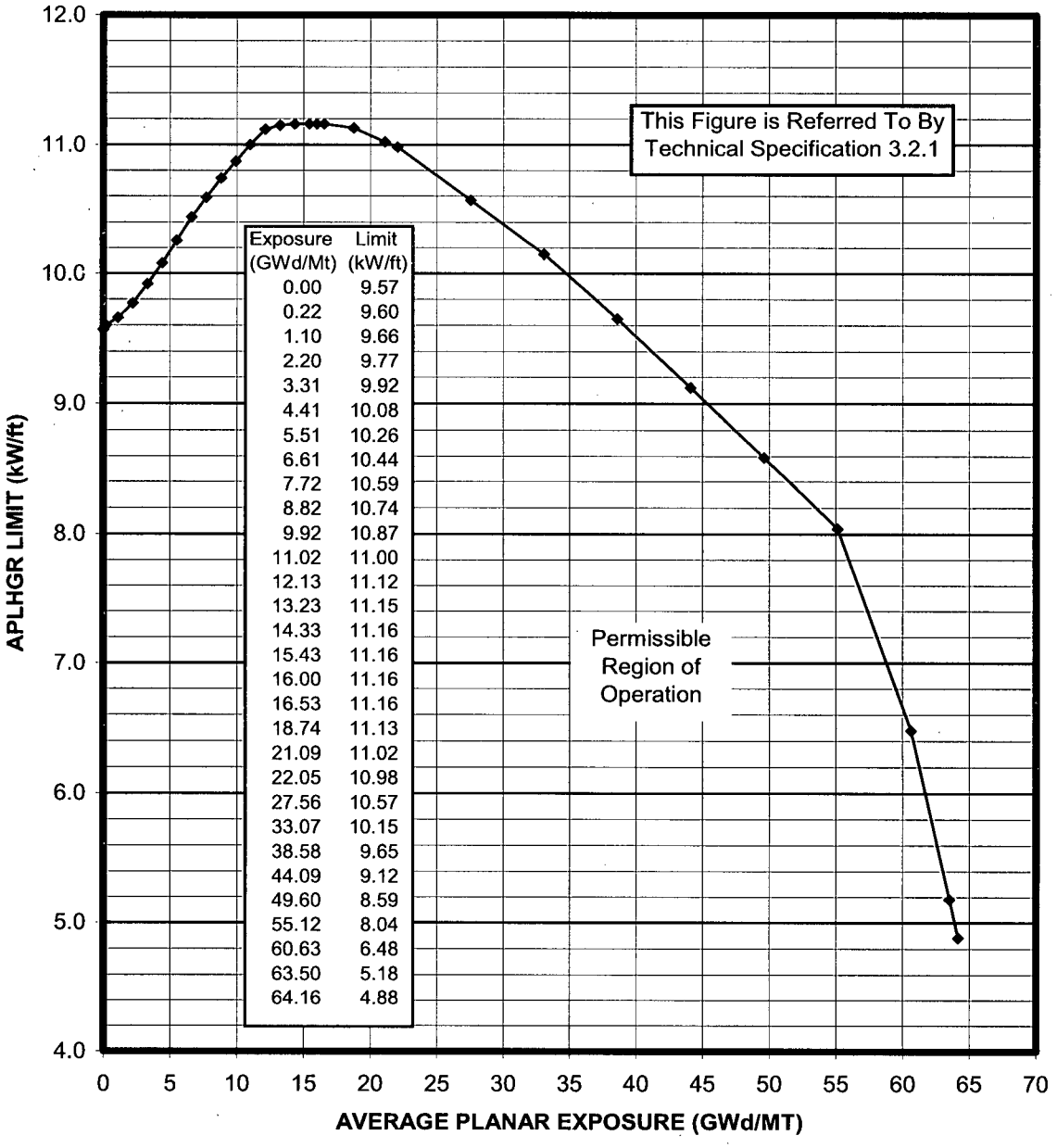
Fuel Type GE14-P10DNAB413-16GZ-100T-150-T-2660
Average Planar Linear Heat Generation Rate (APLHGR) Limit
Versus Average Planar Exposure - EDB# 2660



Exposure (GWd/Mt)	Limit (kW/ft)
0.00	9.57
0.22	9.60
1.10	9.66
2.20	9.77
3.31	9.92
4.41	10.08
5.51	10.26
6.61	10.44
7.72	10.59
8.82	10.74
9.92	10.87
11.02	11.00
12.13	11.12
13.23	11.15
14.33	11.16
15.43	11.16
16.00	11.16
16.53	11.16
18.74	11.13
21.09	11.02
22.05	10.98
27.56	10.57
33.07	10.15
38.58	9.65
44.09	9.12
49.60	8.59
55.12	8.04
60.63	6.48
63.50	5.18
64.16	4.88

Figure 5

Fuel Type GE14-P10DNAB413-16GZ-100T-150-T-2660
Average Planar Linear Heat Generation Rate (APLHGR) Limit
Versus Average Planar Exposure - EDB# 2660



Exposure (GWd/Mt)	Limit (kW/ft)
0.00	9.57
0.22	9.60
1.10	9.66
2.20	9.77
3.31	9.92
4.41	10.08
5.51	10.26
6.61	10.44
7.72	10.59
8.82	10.74
9.92	10.87
11.02	11.00
12.13	11.12
13.23	11.15
14.33	11.16
15.43	11.16
16.00	11.16
16.53	11.16
18.74	11.13
21.09	11.02
22.05	10.98
27.56	10.57
33.07	10.15
38.58	9.65
44.09	9.12
49.60	8.59
55.12	8.04
60.63	6.48
63.50	5.18
64.16	4.88

Figure 6

Fuel Type GE14-P10DNAB407-16GZ-100T-150-T-2853
Average Planar Linear Heat Generation Rate (APLHGR) Limit
Versus Average Planar Exposure - EDB# 2853

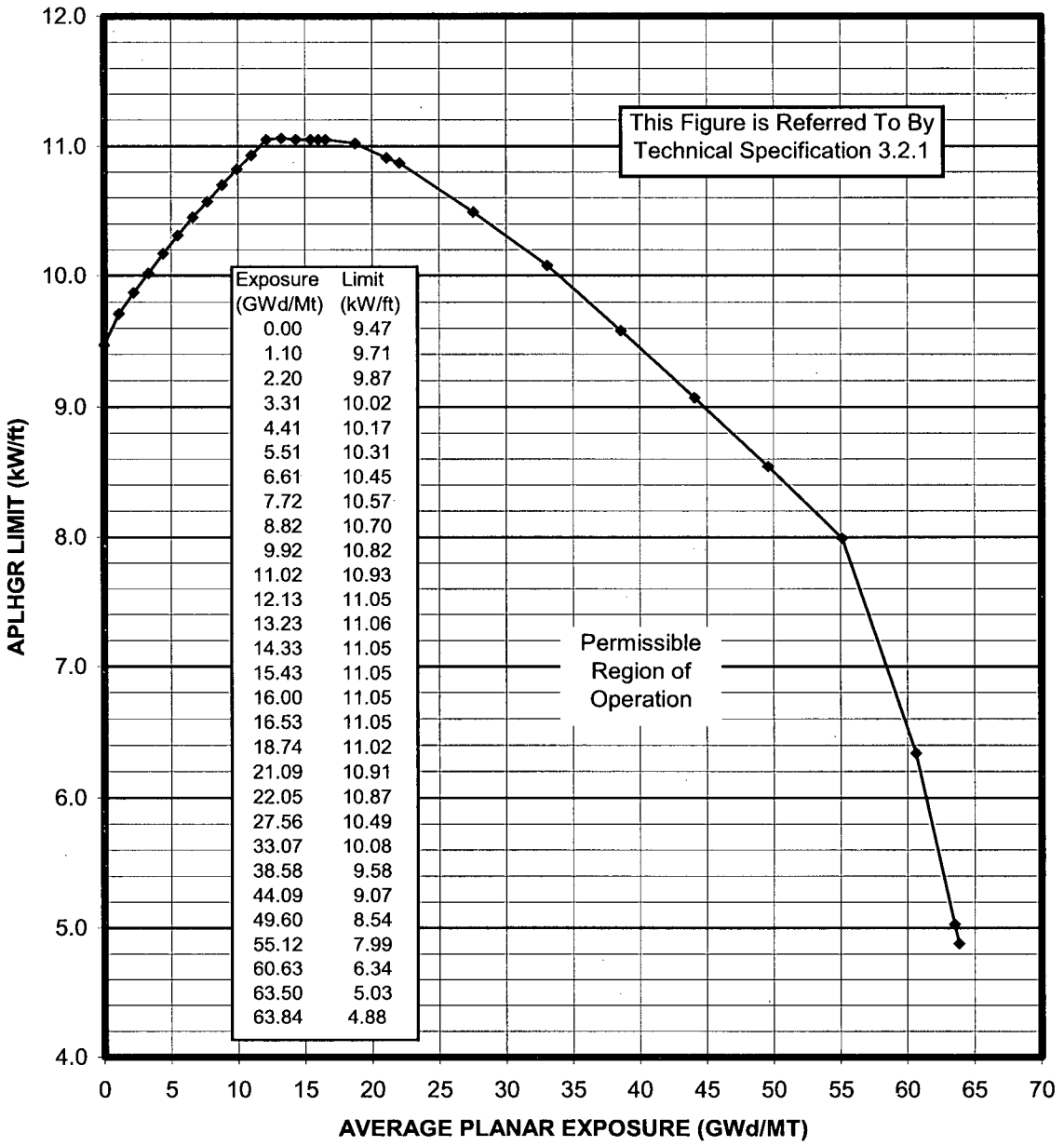
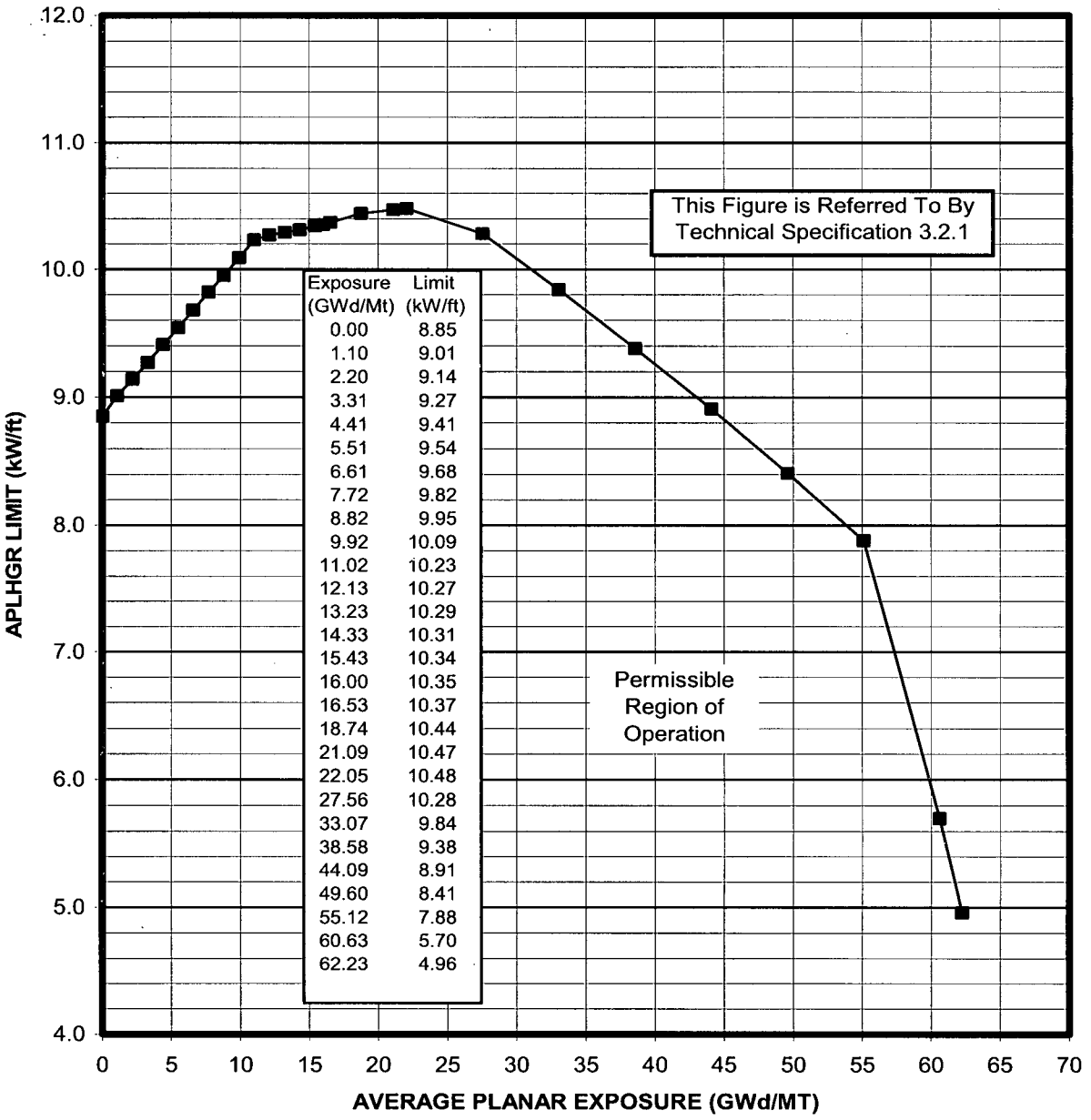


Figure 7

Fuel Type GE14-P10DNAB425-18GZ-100T-150-T-2854
Average Planar Linear Heat Generation Rate (APLHGR) Limit
Versus Average Planar Exposure - EDB# 2854



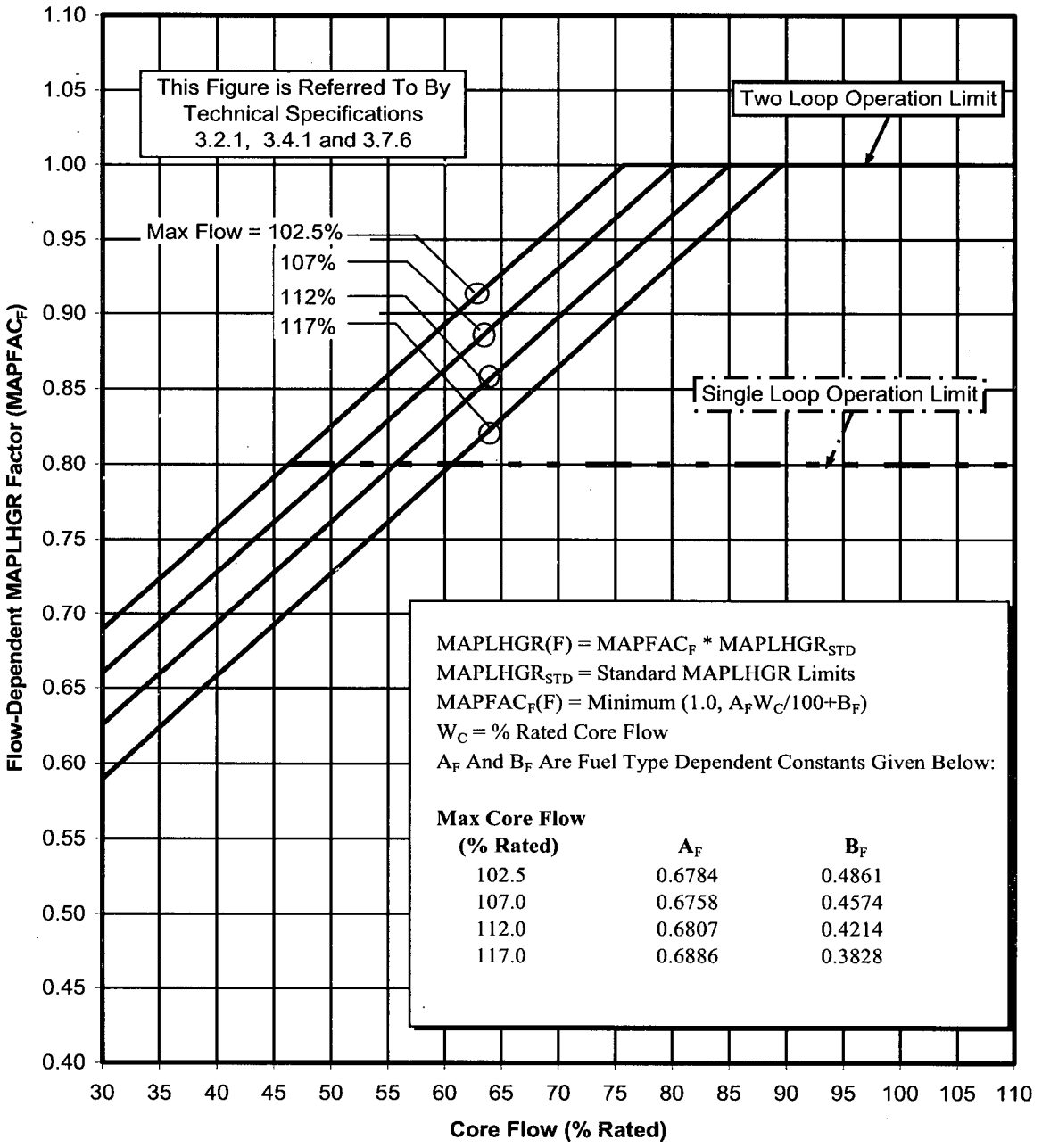
Exposure (GWd/Mt)	Limit (kW/ft)
0.00	8.85
1.10	9.01
2.20	9.14
3.31	9.27
4.41	9.41
5.51	9.54
6.61	9.68
7.72	9.82
8.82	9.95
9.92	10.09
11.02	10.23
12.13	10.27
13.23	10.29
14.33	10.31
15.43	10.34
16.00	10.35
16.53	10.37
18.74	10.44
21.09	10.47
22.05	10.48
27.56	10.28
33.07	9.84
38.58	9.38
44.09	8.91
49.60	8.41
55.12	7.88
60.63	5.70
62.23	4.96

Figure 8

[Not Used]

Figure 9

Flow-Dependent MAPLHGR Limit, MAPLHGR(F)



Max Core Flow (% Rated)	A_F	B_F
102.5	0.6784	0.4861
107.0	0.6758	0.4574
112.0	0.6807	0.4214
117.0	0.6886	0.3828

Figure 10

Power-Dependent MAPLHGR Limit, MAPLHGR (P)

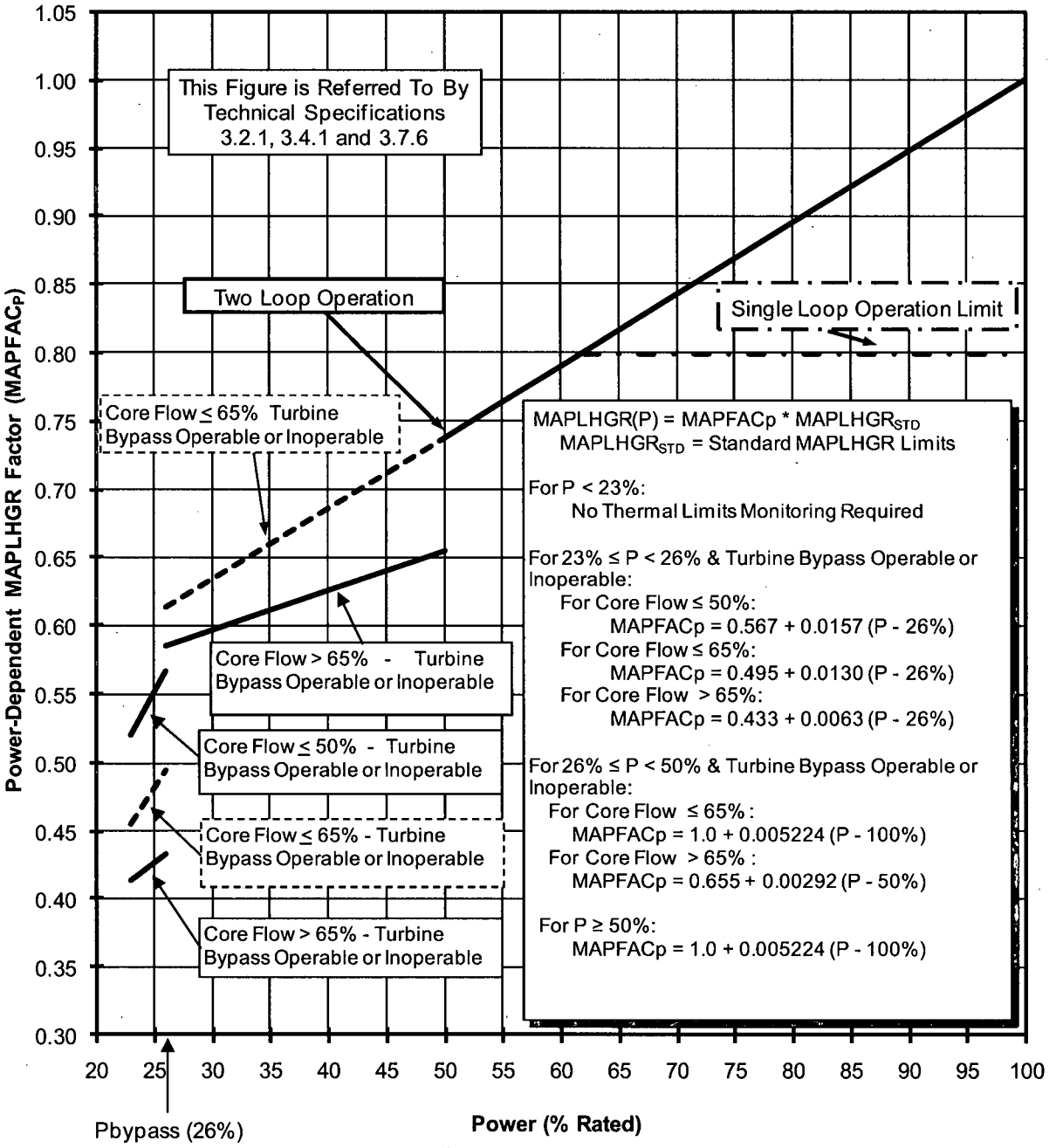


Figure 11

Flow-Dependent MCPR Limit, MCPR(F)

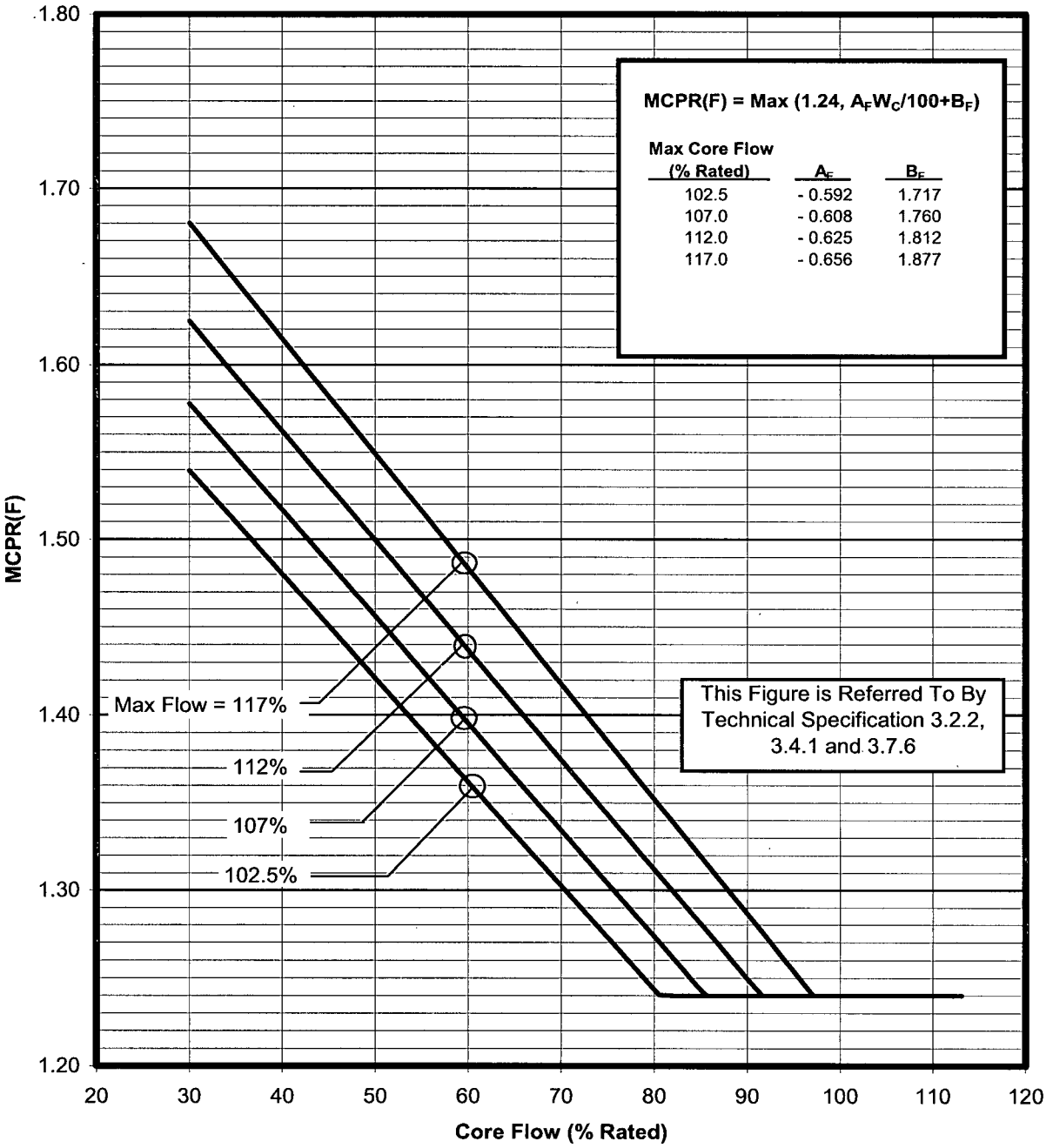


Figure 12

Power-Dependent MCPR Limit, MCPR (P)

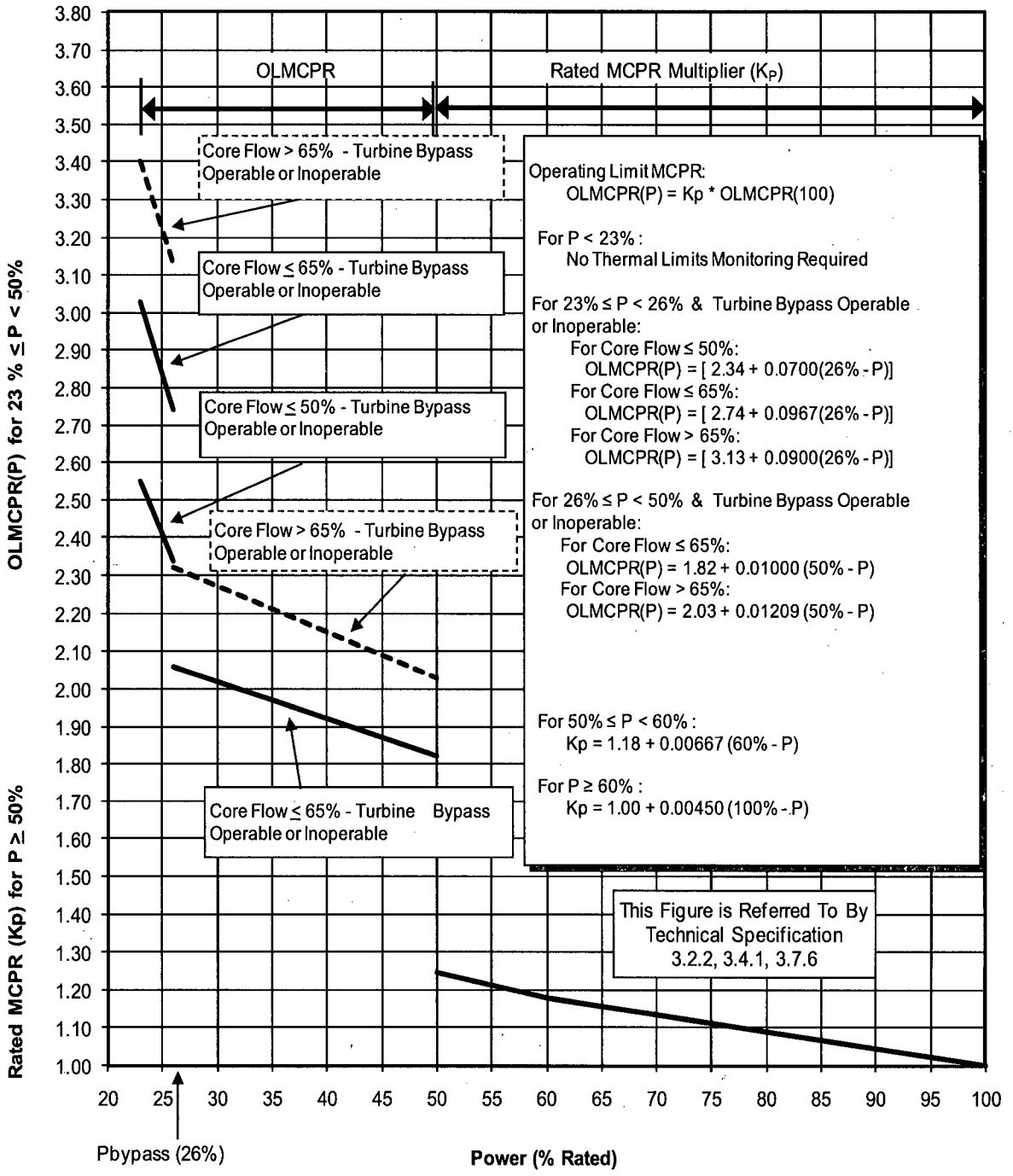
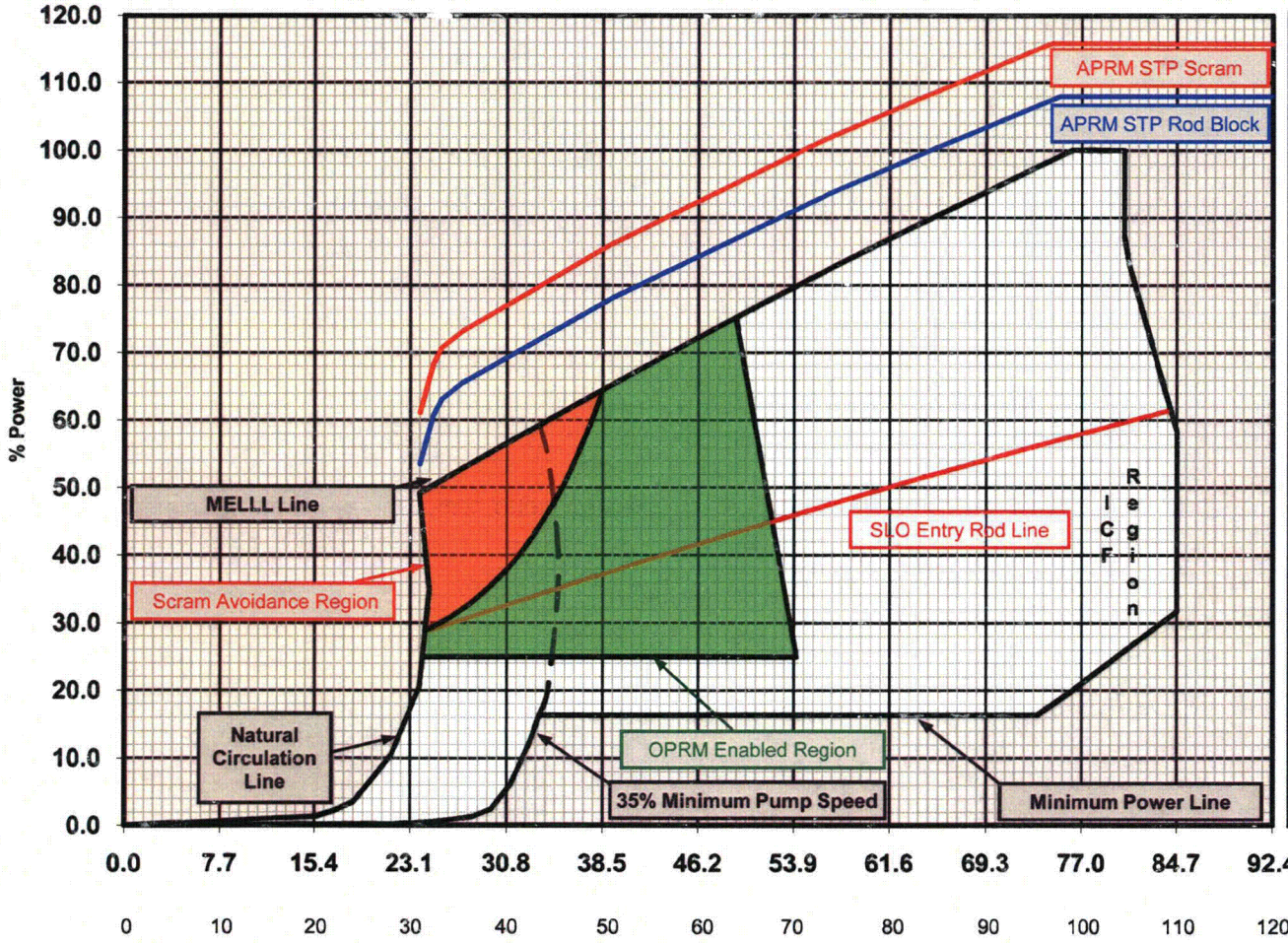


Figure 13
Stability Option III Power/Flow Map

OPRM Operable, Two Loop Operation, 2923 MWt

This Figure supports Improved Technical Specification 3.3.1.1 and the Technical Requirements Manual Specification 3.3



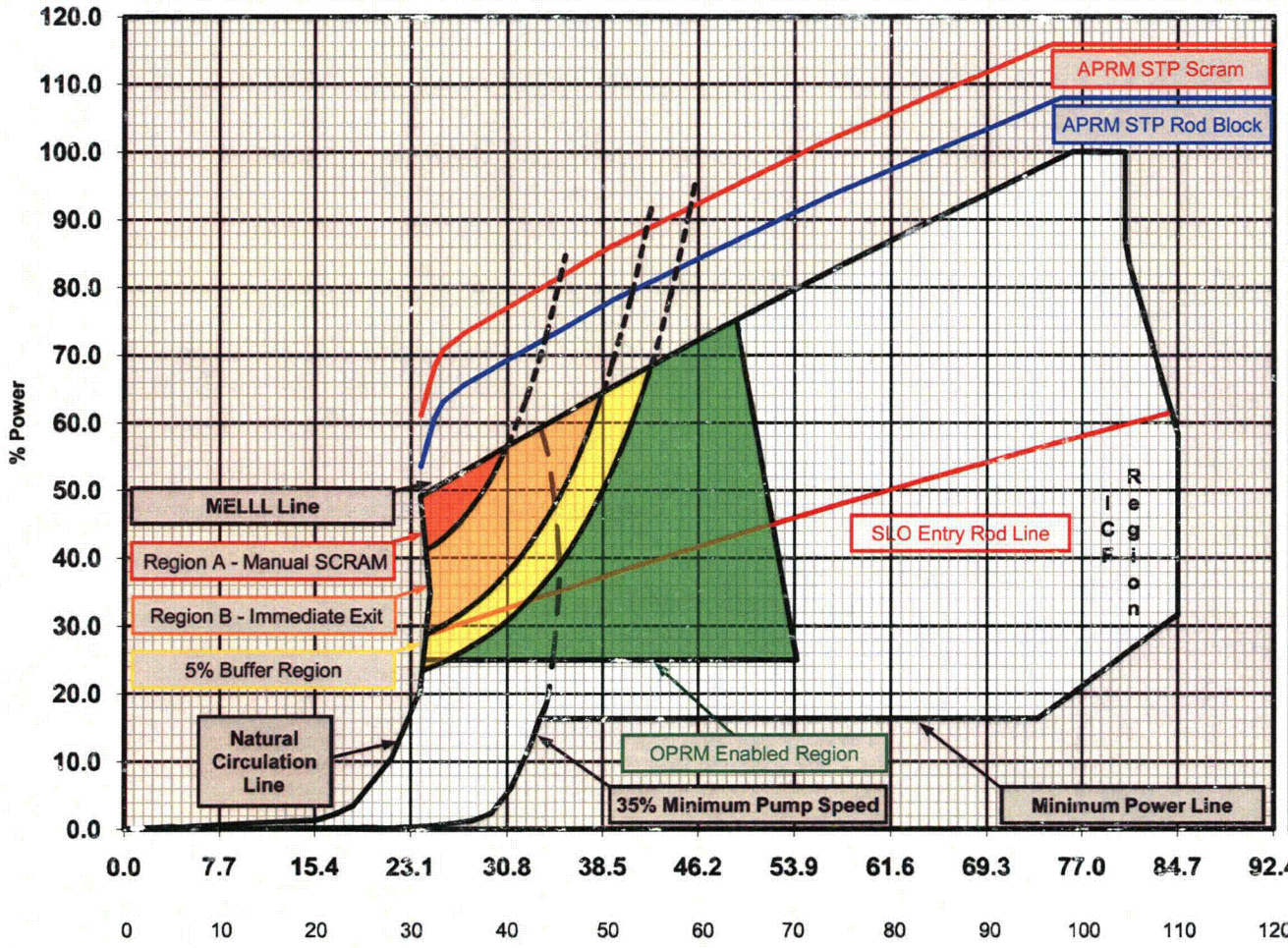
Power %	Minimum (MELLL) Core Flow Mlbs/hr	Maximum (ICF) Core Flow Mlbs/hr
100	76.19	80.47
99	75.04	80.47
98	73.89	80.47
97	72.75	80.47
96	71.61	80.47
95	70.49	80.47
94	69.36	80.47
93	68.25	80.47
92	67.13	80.47
91	66.03	80.47
90	64.93	80.47
89	63.83	80.47
88	62.74	80.47
87	61.66	80.51
86	60.58	80.60
85	59.50	80.69
84	58.43	80.79
83	57.37	80.90
82	56.31	81.05
81	55.25	81.21
80	54.20	81.36
79	53.16	81.51
78	52.12	81.67
77	51.08	81.82
76	50.05	81.98
75	49.02	82.13
74	48.00	82.29
73	46.98	82.44
72	45.96	82.60
71	44.95	82.75
70	43.94	82.91
69	42.94	83.06
68	41.94	83.22
67	40.95	83.37
66	39.96	83.52
65	38.97	83.68
64	37.99	83.83
63	37.01	83.99
62	36.04	84.14
61	35.06	84.30
60	34.10	84.45
59	33.13	84.61
58	32.17	84.70

Reference: 0B21-1015, Revision 7

Figure 14
Stability Option III Power/Flow Map

OPRM Inoperable, Two Loop Operation, 2923 MWt

This Figure supports Improved Technical Specification 3.3.1.1 and the Technical Requirements Manual Specification 3.3



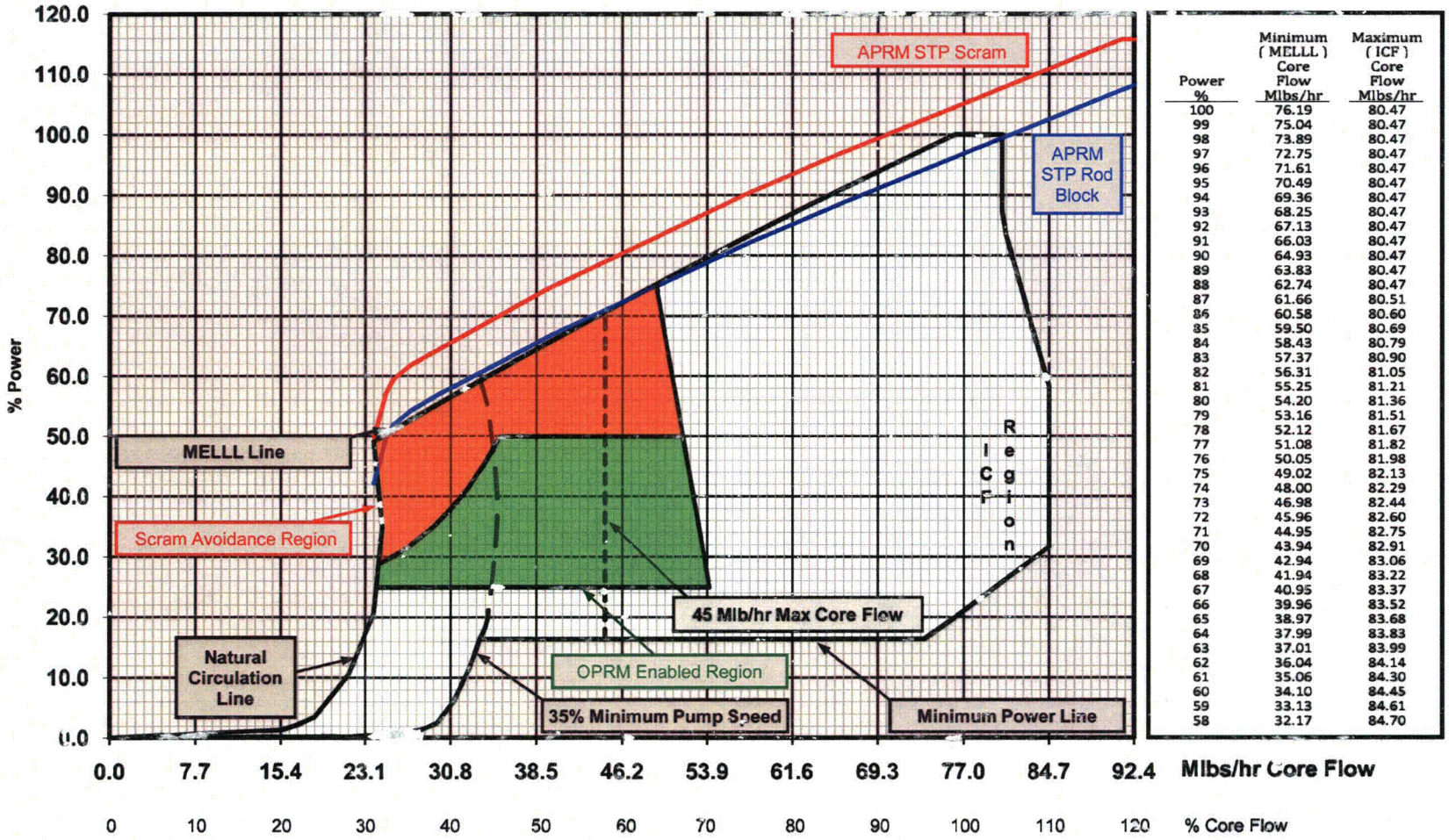
Power %	Minimum (MELLL) Core Flow Mlbs/hr	Maximum (ICF) Core Flow Mlbs/hr
100	76.19	80.47
99	75.04	80.47
98	73.89	80.47
97	72.75	80.47
96	71.61	80.47
95	70.49	80.47
94	69.36	80.47
93	68.25	80.47
92	67.13	80.47
91	66.03	80.47
90	64.93	80.47
89	63.83	80.47
88	62.74	80.47
87	61.66	80.51
86	60.58	80.60
85	59.50	80.69
84	58.43	80.79
83	57.37	80.90
82	56.31	81.05
81	55.25	81.21
80	54.20	81.36
79	53.16	81.51
78	52.12	81.67
77	51.08	81.82
76	50.05	81.98
75	49.02	82.13
74	48.00	82.29
73	46.98	82.44
72	45.96	82.60
71	44.95	82.75
70	43.94	82.91
69	42.94	83.06
68	41.94	83.22
67	40.95	83.37
66	39.96	83.52
65	38.97	83.68
64	37.99	83.83
63	37.01	83.99
62	36.04	84.14
61	35.06	84.30
60	34.10	84.45
59	33.13	84.61
58	32.17	84.70

Reference: 0B21-1015, Revision 7

Figure 15
Stability Option III Power/Flow Map

OPRM Operable, Single Loop Operation, 2923 MWt

This Figure supports Improved Technical Specification 3.3.1.1 and the Technical Requirements Manual Specification 3.3



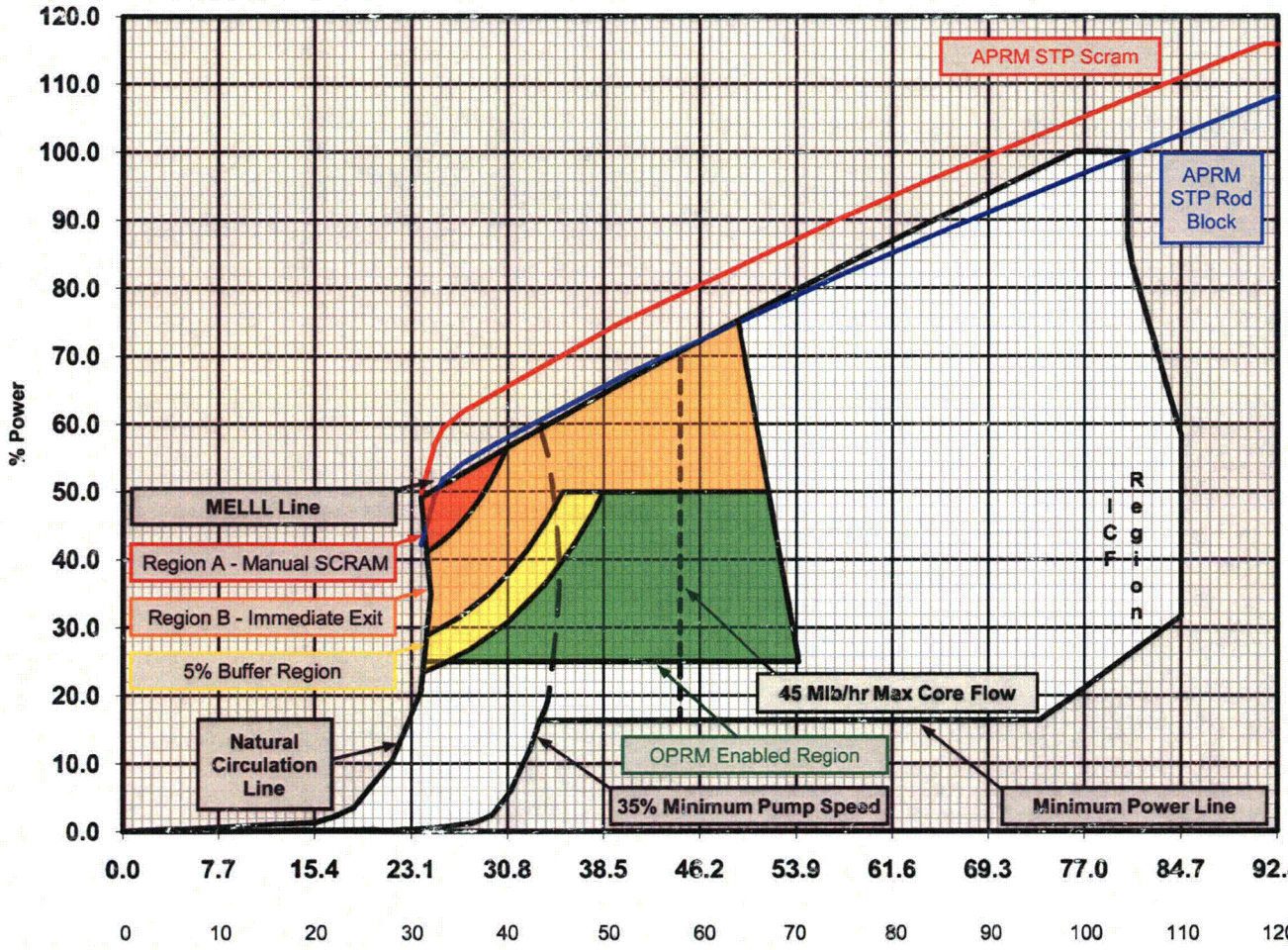
Power %	Minimum (MELLL) Core Flow Mlbs/hr	Maximum (ICF) Core Flow Mlbs/hr
100	76.19	80.47
99	75.04	80.47
98	73.89	80.47
97	72.75	80.47
96	71.61	80.47
95	70.49	80.47
94	69.36	80.47
93	68.25	80.47
92	67.13	80.47
91	66.03	80.47
90	64.93	80.47
89	63.83	80.47
88	62.74	80.47
87	61.66	80.51
86	60.58	80.60
85	59.50	80.69
84	58.43	80.79
83	57.37	80.90
82	56.31	81.05
81	55.25	81.21
80	54.20	81.36
79	53.16	81.51
78	52.12	81.67
77	51.08	81.82
76	50.05	81.98
75	49.02	82.13
74	48.00	82.29
73	46.98	82.44
72	45.96	82.60
71	44.95	82.75
70	43.94	82.91
69	42.94	83.06
68	41.94	83.22
67	40.95	83.37
66	39.96	83.52
65	38.97	83.68
64	37.99	83.83
63	37.01	83.99
62	36.04	84.14
61	35.06	84.30
60	34.10	84.45
59	33.13	84.61
58	32.17	84.70

Reference: 0B21-1015, Revision 7

Figure 16
Stability Option III Power/Flow Map

OPRM Inoperable, Single Loop Operation, 2923 MWt

This Figure supports Improved Technical Specification 3.3.1.1 and the Technical Requirements Manual Specification 3.3



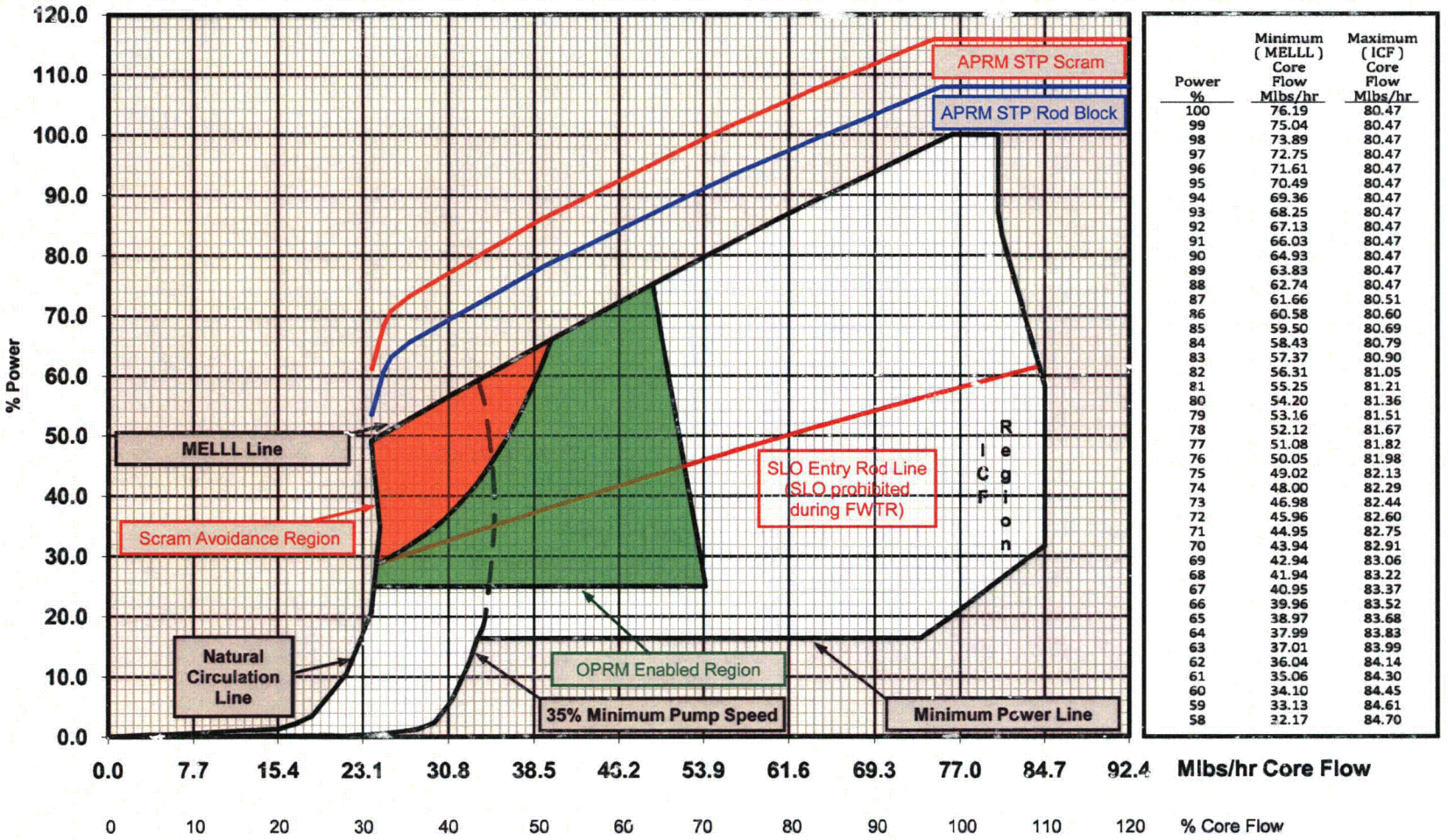
Power %	Minimum (MELLL) Core Flow Mlbs/hr	Maximum (ICF) Core Flow Mlbs/hr
100	76.19	80.47
99	75.04	80.47
98	73.89	80.47
97	72.75	80.47
96	71.61	80.47
95	70.49	80.47
94	69.36	80.47
93	68.25	80.47
92	67.13	80.47
91	66.03	80.47
90	64.93	80.47
89	63.83	80.47
88	62.74	80.47
87	61.66	80.51
86	60.58	80.60
85	59.50	80.69
84	58.43	80.79
83	57.37	80.90
82	56.31	81.05
81	55.25	81.21
80	54.20	81.36
79	53.16	81.51
78	52.12	81.67
77	51.08	81.82
76	50.05	81.98
75	49.02	82.13
74	48.00	82.29
73	46.98	82.44
72	45.96	82.60
71	44.95	82.75
70	43.94	82.91
69	42.94	83.06
68	41.94	83.22
67	40.95	83.37
66	39.96	83.52
65	38.97	83.68
64	37.99	83.83
63	37.01	83.99
62	36.04	84.14
61	35.06	84.30
60	34.10	84.45
59	33.13	84.61
58	32.17	84.70

Reference: 0B21-1015, Revision 7

Figure 17
Stability Option III Power/Flow Map

OPRM Operable, FWTR, 2923 MWt

This Figure supports Improved Technical Specification 3.3.1.1 and the Technical Requirements Manual Specification 3.3



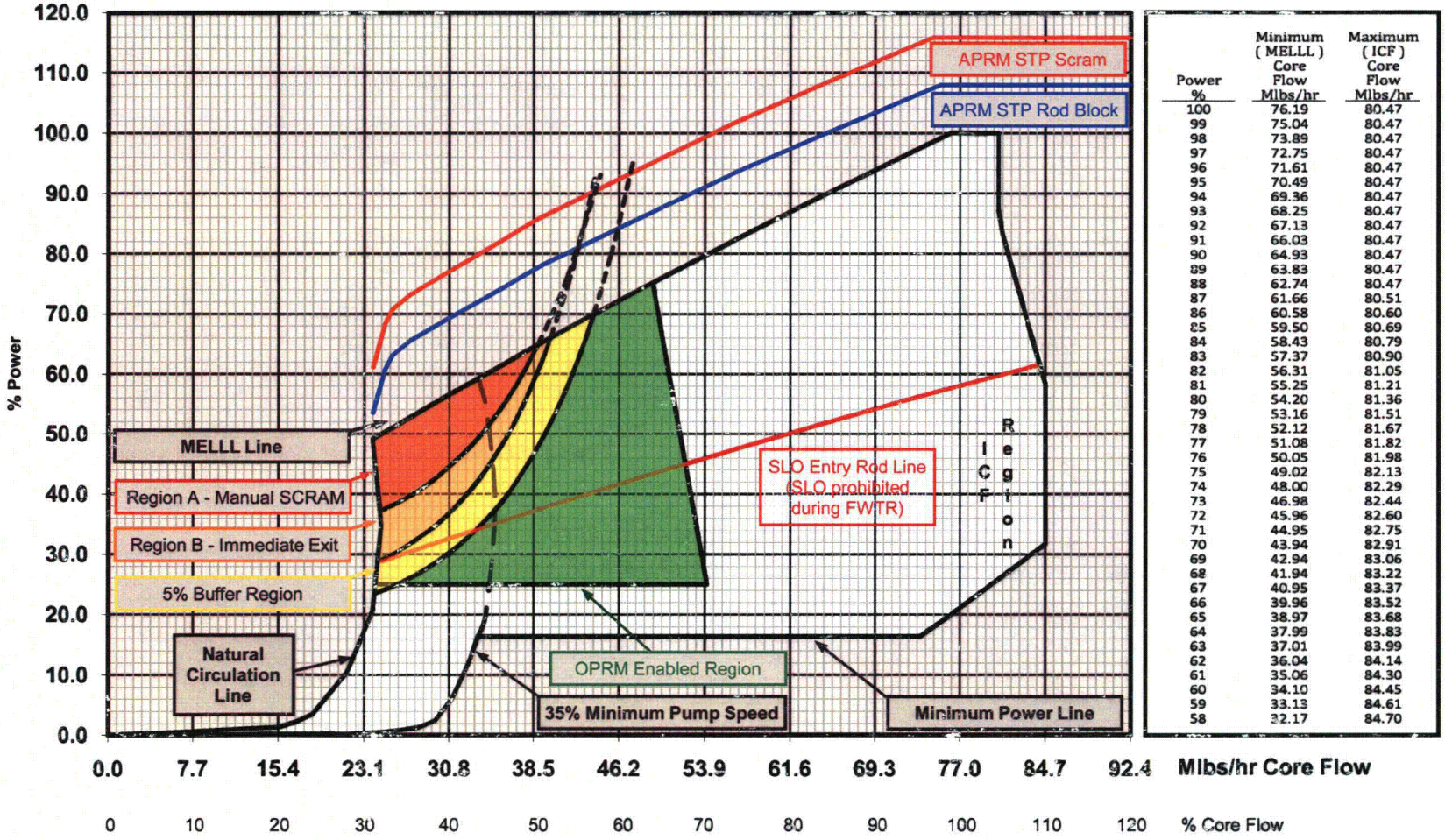
Power %	Minimum (MELLL) Core Flow Mlbs/hr	Maximum (ICF) Core Flow Mlbs/hr
100	76.19	80.47
99	75.04	80.47
98	73.89	80.47
97	72.75	80.47
96	71.61	80.47
95	70.49	80.47
94	69.36	80.47
93	68.25	80.47
92	67.13	80.47
91	66.03	80.47
90	64.93	80.47
89	63.83	80.47
88	62.74	80.47
87	61.66	80.51
86	60.58	80.60
85	59.50	80.69
84	58.43	80.79
83	57.37	80.90
82	56.31	81.05
81	55.25	81.21
80	54.20	81.36
79	53.16	81.51
78	52.12	81.67
77	51.08	81.82
76	50.05	81.98
75	49.02	82.13
74	48.00	82.29
73	46.98	82.44
72	45.96	82.60
71	44.95	82.75
70	43.94	82.91
69	42.94	83.06
68	41.94	83.22
67	40.95	83.37
66	39.96	83.52
65	38.97	83.68
64	37.99	83.83
63	37.01	83.99
62	36.04	84.14
61	35.06	84.30
60	34.10	84.45
59	33.13	84.61
58	32.17	84.70

Reference: 0B21-1015, Revision 7

Figure 18
Stability Option III Power/Flow Map

OPRM Inoperable, FWTR, 2923 MWt

This Figure supports Improved Technical Specification 3.3.1.1 and the Technical Requirements Manual Specification 3.3



Power %	Minimum (MELLL) Core Flow Mlbs/hr	Maximum (ICF) Core Flow Mlbs/hr
100	76.19	80.47
99	75.04	80.47
98	73.89	80.47
97	72.75	80.47
96	71.61	80.47
95	70.49	80.47
94	69.36	80.47
93	68.25	80.47
92	67.13	80.47
91	66.03	80.47
90	64.93	80.47
89	63.83	80.47
88	62.74	80.47
87	61.66	80.51
86	60.58	80.60
85	59.50	80.69
84	58.43	80.79
83	57.37	80.90
82	56.31	81.05
81	55.25	81.21
80	54.20	81.36
79	53.16	81.51
78	52.12	81.67
77	51.08	81.82
76	50.05	81.98
75	49.02	82.13
74	48.00	82.29
73	46.98	82.44
72	45.96	82.60
71	44.95	82.75
70	43.94	82.91
69	42.94	83.06
68	41.94	83.22
67	40.95	83.37
66	39.96	83.52
65	38.97	83.68
64	37.99	83.83
63	37.01	83.99
62	36.04	84.14
61	35.06	84.30
60	34.10	84.45
59	33.13	84.61
58	32.17	84.70

Reference: 0B21-1015, Revision 7