

Core Operating Limits Report

for

LaSalle County Station

Unit 1, Reload 4 (Cycle 5)

ZWLAP

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ISSUANCE OF CHANGES SUMMARY

Affected Section	Affected Pages	Summary of Changes	Date
All	All	Original Issue (Cycle 4)	12/89
All	All	Original Issue (Cycle 5)	4/91

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REFERENCES

1. Commonwealth Edison Company Docket No. 50-373, LaSalle County Station, Unit 1 Facility Operating License, License No. NPF-11.
2. Letter from D. M. Crutchfield to All Power Reactor Licensees and Applicants, Generic Letter 88-16; Concerning the Removal of Cycle-Specific Parameter Limits from Tech Specs, dated October 4, 1988.
3. Supplemental Reload License Submittal for LaSalle County Station, Unit 1, Reload 4 (Cycle 5), 23A6525, Rev. 0, October 1990.
4. LaSalle County Station, Units 1 and 2, SAFER/GESTR LOCA Loss-of-Coolant-Accident Analysis, NEDC, 3151OP (latest approved version).
5. General Electric Standard Application for Reactor Fuel (GESTAR), NEDE-24011-P-A (latest approved version).

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1.0 AVERAGE PLANAR LINEAR HEAT GENERATION RATE (3/4.2.1)

1.1 Tech Spec REFERENCE:

Tech Spec 3.2.1.

1.2 DESCRIPTION:

The Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) versus Average Planar Exposure for fuel type BP8CRB299L is determined from Table 1.2-1.

The Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) versus Average Planar Exposure for fuel type BC301A is determined from Table 1.2-2.

The Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) versus Average Planar Exposure for fuel type BC320B is determined from Table 1.2-3.

The Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) versus Average Planar Exposure for fuel type NBC301G is determined from Table 1.2-4.

The Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) versus Average Planar Exposure for fuel type NBC325A is determined from Table 1.2-5.

The Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) versus Average Planar Exposure for fuel type P8CWB303-9GZ is determined from Table 1.2-6.

MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR) VS.
AVERAGE PLANAR EXPOSURE FOR FUEL TYPE BP8CRB299L (GE7B-P8CRB299-6G3.0)

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TABLE 1.2-1

CMC BUNDLE TYPE 5

Exposure (MWD/ST) Lattice Specific MAPLHGR (kw/ft)

	P8CILO71 NOG	P8CRL319 6G3.0
200	10.80	10.80
1000	11.00	11.00
5000	11.80	11.80
10000	12.30	12.30
15000	12.40	12.40
20000	12.30	12.30
25000	11.80	11.80
35000	10.70	10.70
45000	9.20	9.20
CMC LATTICE TYPE	25	8

MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR) VS.
AVERAGE PLANAR EXPOSURE FOR FUEL TYPE BC301A (GE8B-P8CQB301-8GZ)

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TABLE 1.2-2

CMC BUNDLE TYPE 6

Exposure (MWD/ST)	Lattice Specific MAPLHGR (kw/ft)			
	P8CQL071 NOG	P8CQL319 6G3.0	P8CQL319 2G4.0/6G3.0	P8CQL071 8GE
0	12.44	11.77	11.32	12.44
200	12.36	-	-	12.36
1000	12.15	-	-	12.15
2000	12.08	12.33	11.93	12.08
3000	12.08	-	12.24	12.08
4000	12.10	12.91	12.56	12.10
5000	-	13.22	12.90	-
10000	12.25	13.45	13.40	12.25
12500	-	13.47	13.45	-
15000	-	13.18	-	-
25000	10.15	-	-	10.15
35000	8.60	10.71	10.69	8.60
45000	-	8.82	8.79	-
45600	5.09	-	-	5.09
50000	-	6.65	6.55	-
CMC LATTICE TYPE	10	11	12	13

MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR) VS.
AVERAGE PLANAR EXPOSURE FOR FUEL TYPE BC320B (GE8B-P8CQB320-9GZ)

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TABLE 1.2-3

CMC BUNDLE TYPE 7

Exposure (MWD/ST)	Lattice Specific MAPLHGR (kw/ft)				
	P8CQL071 NOG	P8CQL340 7G4.0	P8CQL340 7G3.0	P8CQL340 2G4.0/7G3.0	P8CQL071 9GE
0	12.44	11.57	11.62	11.20	12.44
200	12.36	-	-	-	12.36
1000	12.15	-	-	-	12.15
2000	12.08	-	-	-	12.08
3000	12.08	-	12.21	11.86	12.08
4000	12.10	12.23	12.41	12.09	12.10
6000	-	12.57	12.83	-	-
7000	-	-	-	12.77	-
8000	-	12.94	13.06	12.90	-
10000	12.25	13.11	-	13.08	12.25
12500	-	13.04	13.04	13.02	-
15000	-	12.72	12.73	-	-
25000	10.15	-	-	-	10.15
35000	8.60	10.22	10.23	10.22	8.60
45000	-	8.59	8.64	8.55	-
45600	5.09	-	-	-	5.09
50000	-	6.08	6.13	6.04	-
CMC LATTICE TYPE	10	14	15	16	26

MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR) VS.
AVERAGE PLANAR EXPOSURE FOR FUEL TYPE NBC301G (GE9B-P8CWB301-11GZ)

CORE OPERATING LIMITS REPORT

TABLE 1.2-4

CMC BUNDLE TYPE 8

Exposure (MWD/ST)	Lattice Specific MAPLHGR (kw/ft)					
	P8CWL071 NOG	P8CWL323 9G3.0	P8CWL323 5G4.0/4G3.0	P8CWL337 2G4.0/9G3.0	P8CWL337 9G3.0	P8CWL071 11GE
0	12.74	12.11	12.05	10.93	11.37	12.74
200	12.67	12.19	12.13	11.03	11.46	12.67
1000	12.48	12.39	12.31	11.24	11.67	12.48
2000	12.42	12.69	12.57	11.54	11.96	12.42
3000	12.41	13.02	12.87	11.86	12.26	12.41
4000	12.44	13.29	13.18	12.21	12.59	12.44
5000	12.46	13.36	13.32	12.58	12.90	12.46
6000	12.49	13.39	13.45	12.95	13.05	12.49
7000	12.51	13.44	13.57	13.10	13.18	12.51
8000	12.54	13.50	13.55	13.21	13.27	12.54
9000	12.55	13.54	13.53	13.29	13.32	12.55
10000	12.57	13.57	13.54	13.35	13.36	12.57
12500	12.41	13.59	13.57	13.30	13.31	12.41
15000	12.04	13.26	13.25	12.97	12.98	12.04
20000	11.27	12.57	12.57	12.33	12.34	11.27
25000	10.49	11.79	11.78	11.70	11.71	10.49
35000	8.95	10.33	10.32	10.41	10.42	8.95
45000	6.15	9.00	8.99	9.02	9.04	6.15
46900	5.21	-	-	-	-	5.21
51200	-	-	-	5.90	-	-
51300	-	-	-	-	5.89	-
51900	-	5.81	5.80	-	-	-
CMC LATTICE TYPE	1	3	4	5	9	7
LATTICE No.	733	843	840	842	841	844

MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR) VS.
AVERAGE PLANAR EXPOSURE FOR FUEL TYPE NBC325A (GE9B-P8CWB325-12GZ)

CORE OPERATING LIMITS REPORT

TABLE 1.2-5

CMC BUNDLE TYPE 9

Exposure (MWD/ST)	Lattice Specific MAPLHGR (kw/ft)					
	P8CWL071 NOG	P8CWL350 7G5.0/ 3G4.0	P8CWL365 4G5.0/ 5G4.0	P8CWL365 5G5.0/ 5G4.0	P8CWL350 4G5.0/ 5G4.0	P8CWL071 12GE
0	12.74	11.54	11.11	10.78	11.56	12.74
200	12.67	11.57	11.17	10.86	11.60	12.67
1000	12.48	11.66	11.30	11.00	11.69	12.48
2000	12.42	11.83	11.46	11.20	11.88	12.42
3000	12.41	12.06	11.67	11.39	12.12	12.41
4000	12.44	12.30	11.85	11.60	12.33	12.44
5000	12.46	12.50	12.04	11.77	12.54	12.46
6000	12.49	12.70	12.24	11.91	12.73	12.49
7000	12.51	12.90	12.37	12.05	12.86	12.51
8000	12.54	13.07	12.52	12.23	13.03	12.54
9000	12.55	13.23	12.70	12.47	13.26	12.55
10000	12.57	13.42	12.92	12.74	13.49	12.57
12500	12.41	13.49	13.06	13.01	13.49	12.41
15000	12.04	13.14	12.80	12.79	13.14	12.04
20000	11.27	12.46	12.18	12.17	12.46	11.27
25000	10.49	11.80	11.53	11.52	11.80	10.49
35000	8.95	10.55	10.22	10.21	10.55	8.95
45000	6.15	9.13	8.65	8.54	9.14	6.15
46900	5.21	-	-	-	-	5.21
50300	-	-	-	5.87	-	-
50600	-	-	5.86	-	-	-
51700	-	5.86	-	-	5.86	-
CMC LATTICE TYPE	1	17	18	19	20	6
LATTICE No.	733	829	830	831	832	833

MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR)
vs. AVERAGE PLANAR EXPOSURE FOR FUEL TYPE P8CWB303-9GZ

CORE OPERATING LIMITS REPORT

TABLE 1.2-6

CMC BUNDLE TYPE 10

<u>Exposure</u> <u>(MWd/ST)</u>	<u>LATTICE SPECIFIC MAPLHGR (kw/ft)</u>				
	<u>P8CWL071</u> <u>NOG</u>	<u>P8CWL327</u> <u>9G5.0</u>	<u>P8CWL338</u> <u>4G5.0/5G4.0</u>	<u>P8CWL327</u> <u>4G5.0/5G4.0</u>	<u>P8CWL071</u> <u>9GE</u>
0.0	12.74	11.98	11.35	12.01	12.74
200	12.67	12.05	11.39	12.08	12.67
1000	12.48	12.17	11.48	12.22	12.48
2000	12.42	12.37	11.67	12.43	12.42
3000	12.41	12.56	11.90	12.61	12.41
4000	12.44	12.69	12.16	12.78	12.44
5000	12.46	12.81	12.38	12.91	12.46
6000	12.49	12.92	12.56	13.03	12.49
7000	12.51	13.04	12.75	13.15	12.51
8000	12.54	13.16	12.94	13.27	12.54
9000	12.55	13.29	13.13	13.37	12.55
10000	12.57	13.41	13.29	13.47	12.57
12500	12.41	13.49	13.33	13.51	12.41
15000	12.04	13.18	13.05	13.20	12.04
20000	11.27	12.54	12.46	12.55	11.27
25000	10.49	11.84	11.87	11.84	10.49
35000	8.95	10.35	10.54	10.36	8.95
45000	6.15	9.02	9.14	9.02	6.15
46900	5.21	-	-	-	5.21
51500	-	-	5.90	-	-
51800	-	5.82	-	5.81	-
CMC LATTICE TYPE 1		21	22	23	24
LATTICE No. 733		884	885	886	887

LaSalle - Unit 1

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Cycle 5

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CORE OPERATING LIMITS RL

2.0 MINIMUM CRITICAL POWER RATIO (3/4.2.3)

2.1 Tech Spec REFERENCE:

Tech Spec 3.2.3.

2.2 DESCRIPTION:

a. Single Recirculation Loop Operation

The MCPR limit when in Single Recirculation Loop Operation is determined from Figure 2.2-1 plus 0.01, times the Kf factor determined from Figure 2.2-2. |

b. Two Recirculation Loop Operation

The MCPR limit when in Dual Recirculation Loop Operation is determined from Figure 2.2-1 times the Kf factor determined from Figure 2.2-2. |

c. Two Recirculation Loop Operation with Main Turbine Bypass Inoperable

The MCPR limit when in Dual Recirculation Loop Operation with the Main Turbine Bypass Inoperable (per Tech Spec 3.7.10) is determined from Figure 2.2-1 times the Kf factor determined from Figure 2.2-2. |

d. Two Recirculation Loop Operation with End-of-Cycle Recirculation Pump Trip System Inoperable

The MCPR limit when in Dual Recirculation Loop Operation with the End-of-Cycle Recirculation Pump Trip System (RPT) Inoperable (per Tech Spec 3.3.4.2) is determined from Figure 2.2-1 times the Kf factor determined from Figure 2.2-2. |

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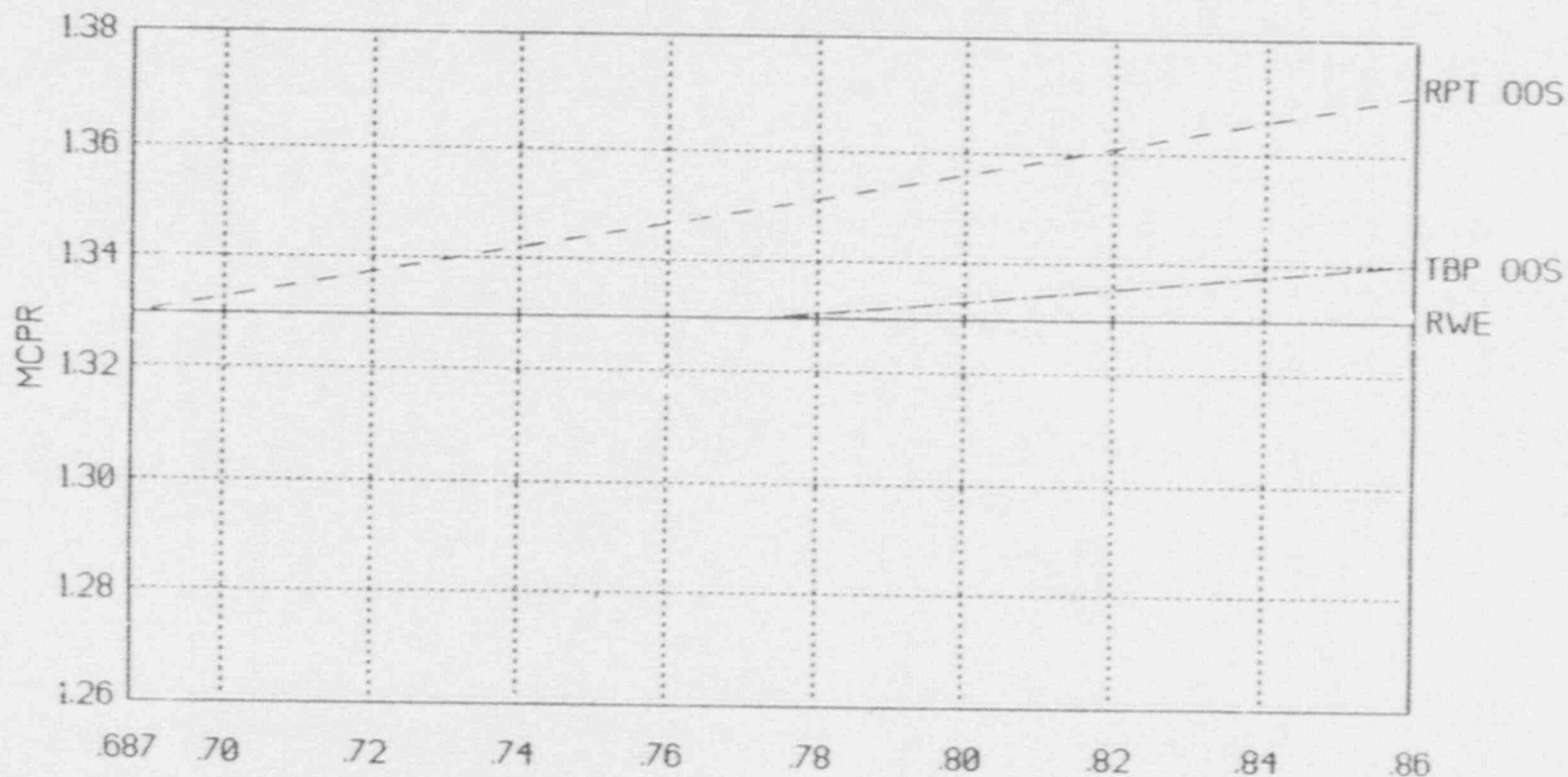
LaSalle - Unit 1

2-2

Cycle 5

Power Distribution Limits

MCPR (all fuel types)



POWER DISTRIBUTION LIMITS
MCPR (all fuel types)
Figure 2.2-1

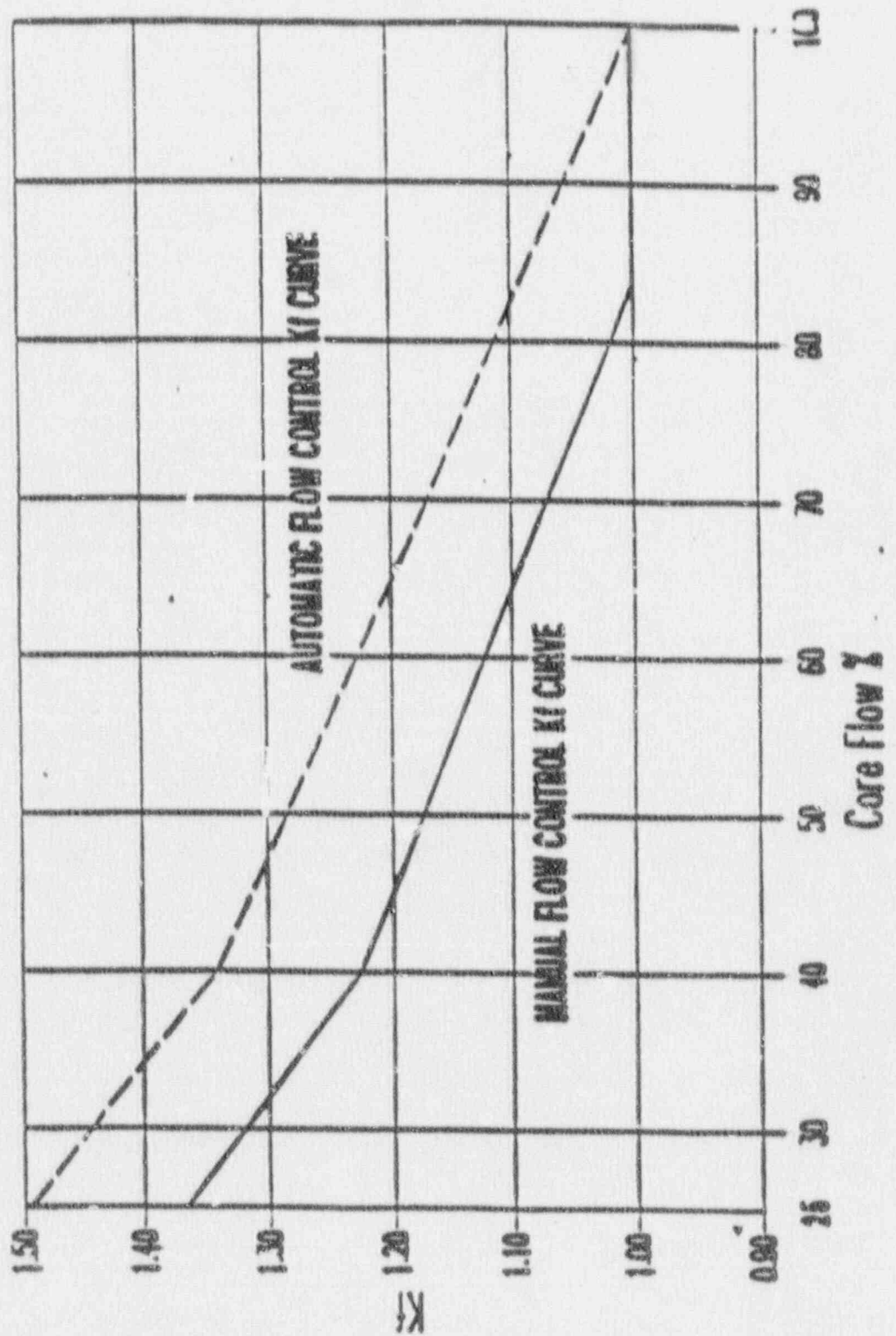
MCPR verses Tau at Rated Flow

Figure 2.2-1

KE FACTOR

FIGURE 2.2-2

Kf Factor



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CORE OPERATING LIMITS REPORT

3.0 LINEAR HEAT GENERATION RATE (3/4.2.4)

3.1 Tech Spec REFERENCE:

Tech Spec 3.2.4.

3.2 DESCRIPTION:

a. The LHGR limit is 13.4 kw/ft for fuel types:

1. BPICRB299L

b. The LHGR limit is 14.4 kw/ft for fuel types:

1. BC301A

2. BC320B

3. NBC301G

4. NBC325A

5. P8CWB303-9GZ

CORE OPERATING LIMITS REPORT

4.0 CONTROL ROD WITHDRAWAL BLOCK INSTRUMENTATION (3/4.3.6)

4.1 Tech Spec REFERENCE:

Tech Spec Table 3.3.6-2.

4.2 DESCRIPTION:

- a. The Rod Block Monitor Upscale Instrumentation Setpoints are determined from the relationships shown in Table 4.2-1.

TABLE 4.2-1

CONTROL ROD WITHDRAWAL BLOCK INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
1.0 <u>ROD BLOCK MONITOR</u>		
A. <u>UPSCALE</u>		
1. Two Recirculation Loop Operation	$\leq 0.66 W + 41 \%^{**}$	$\leq 0.66 W + 44 \%^{**}$
2. Single Recirculation Loop Operation	$\leq 0.66 W + 35.7 \%^{**}$	$\leq 0.66 W + 38.7 \%^{**}$

** Clamped, with an allowable value not to exceed the allowable value for recirculation loop flow (W) of 100%.