

ATTACHMENT A

Core Operating Limits Report

for

LaSalle County Station

Unit 1, Reload 6 (Cycle 7)

9406230240 940616
PDR ADDCK 05000373
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SYSENG3

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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
References	iii	References for new EOOS Analysis	3/92
List of Figures	iv	Revised Title/Description for New EOOS Analysis	3/92
2.0	2-2	Revised MCPR Power Distribution Limits (all fuel types) for New EOOS Analysis	3/92
All	All	Original Issue (Cycle 6)	12/92
4.0	4-1	Rod Block Monitor Upscale SETPOINT to 114%	6/93
2.0	2-2	Revised MCPR Power Distribution Limits (all fuel types) for New TCV Slow Closure Event Analysis	6/93
2.0	2-4	MCPR Power Distribution Limits (all fuel types) for Coastdown Analysis	6/93
All	All	Original Issue (Cycle 7)	3/94

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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.
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).
6. Extended Operating Domain and Equipment Out-of-Service for LaSalle County Station Units 1 and 2, NEDE-31455 (latest approved version).
7. Equipment Out-of-Service in the Increased Core Flow Domain for LaSalle County Station Units 1 and 2, GE-NE-187-62-1191 (latest approved version).
8. Evaluation of a Postulated Slow Turbine Control Valve Closure Event for LaSalle County Station, Unit 1 and 2, GE-NE-187-13-0792, February, 1993.

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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.

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TABLE for
Maximum Average
Planar Heat
Generation Rates
(MAPLHGR)

Fuel Type

1.2-1	NBC301G
1.2-2	NBC325A
1.2-3	P8CW303-9GZ
1.2-4	P8CW313-9GZ
1.2-5	P8CW314-9GZ
1.2-6	P8CW322-11GZ
1.2-7	P8CW320-9GZ

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MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR) VS.
AVERAGE PLANAR EXPOSURE FOR FUEL TYPE NBC3010 (GE9B-P8CWB301-11GE)

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TABLE 1.2-1

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
46850	5.21	-	-	-	-	5.21
51200	-	-	-	5.90	-	-
51300	-	-	-	-	5.89	-
51860	-	-	5.80	-	-	-
51880	-	5.81	-	-	-	-
CMC LATTICE TYPE	1	3	4	5	9	7
LATTICE No.	733	843	840	842	841	844

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

CORE OPERATING LIMITS REPORT

TABLE 1.2-2

CMC BUNDLE TYPE 9

EXPOSURE (MWD/ST)	Lattice Specific MAPLHGR (kw/ft)					
	P8CWL071 NOG	P8CWL350 7G5.0/ 3G4.0	P8CWL365 4G5.0/ 6G4.0	P8CWL365 6G5.0/ 6G4.0	P8CWL350 4G5.0/ 6G4.0	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
46850	5.21	-	-	-	-	5.21
50330	-	-	-	5.87	-	-
50570	-	-	5.86	-	-	-
51690	-	5.86	-	-	-	-
51750	-	-	-	-	5.86	-
CMC LATTICE TYPE	27	17	18	19	20	6
LATTICE NO.	733	829	830	831	832	833

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MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR)
vs. AVERAGE PLANAR EXPOSURE FOR FUEL TYPE P8CWB303-9G3

CORE OPERATING LIMITS REPORT

TABLE 1.2-2

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
46850	5.21	-	-	-	5.21
51460	-	-	5.90	-	-
51790	-	5.82	-	-	-
51850	-	-	-	5.81	-
CMC LATTICE TYPE	28	21	22	23	24
LATTICE No.	733	884	885	886	887

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MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR) VS.
AVERAGE PLANAR EXPOSURE FOR FUEL TYPE GE9B-PBCWB313-9GE

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TABLE 1.2-4

CMC BUNDLE TYPE 11

Exposure (MWD/ST)	Lattice Specific MAPLHGR (kw/ft)					
	PBCWLO71 NOG	PBCWL339 7G4.0	PBCWL350 2G4.0/ 5G3.0	PBCWL350 5G3.0	PBCWL339 4G4.0/ 5G3.0	PBCWLO71 2G4.0/ 9GE
0	12.74	12.34	11.79	11.32	12.35	12.74
200	12.67	12.39	11.84	11.40	12.40	12.67
1000	12.48	12.49	11.96	11.55	12.52	12.48
2000	12.42	12.63	12.12	11.73	12.68	12.42
3000	12.41	12.74	12.28	11.92	12.83	12.41
4000	12.44	12.85	12.40	12.11	12.96	12.44
5000	12.46	12.97	12.49	12.27	13.10	12.46
6000	12.49	13.10	12.58	12.39	13.19	12.49
7000	12.51	13.22	12.67	12.52	13.29	12.51
8000	12.54	13.34	12.76	12.65	13.37	12.54
9000	12.55	13.38	12.84	12.78	13.45	12.55
10000	12.57	13.38	12.91	12.89	13.41	12.57
12500	12.41	13.36	12.85	12.85	13.36	12.41
15000	12.04	13.01	12.56	12.56	13.01	12.04
20000	11.27	12.34	11.98	11.97	12.33	11.27
25000	10.49	11.69	11.38	11.37	11.69	10.49
35000	8.95	10.46	10.12	10.11	10.46	8.95
45000	6.15	9.12	8.53	8.50	9.13	6.15
46850	5.21	-	-	-	-	5.21
50360	-	-	-	5.84	-	-
50390	-	-	5.85	-	-	-
51860	-	5.84	-	-	-	-
51880	-	-	-	-	5.84	-
CMC LATTICE TYPE 29		30	31	32	33	34
LATTICE No.	733	1577	1578	1579	1580	1581

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MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR)
vs. AVERAGE PLANAR EXPOSURE FOR FUEL TYPE GE9B-P8CWB314-9GE

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TABLE 1.2-5

CMC BUNDLE TYPE 12

Exposure (MWD/ST)	LATTICE SPECIFIC MAPLHGR (kw/ft)				
	P8CWL071 NOG	P8CWL339 7G4.0	P8CWL350 7G4.0	P8CWL350 9G4.0	P8CWL071 9GE
0.0	12.74	12.34	11.77	11.50	12.74
200	12.67	12.39	11.83	11.55	12.67
1000	12.48	12.49	11.94	11.66	12.48
2000	12.42	12.63	12.08	11.80	12.42
3000	12.41	12.74	12.22	11.93	12.41
4000	12.44	12.85	12.37	12.07	12.44
5000	12.46	12.97	12.47	12.20	12.46
6000	12.49	13.10	12.56	12.34	12.49
7000	12.51	13.22	12.65	12.49	12.51
8000	12.54	13.34	12.74	12.64	12.54
9000	12.55	13.38	12.83	12.79	12.55
10000	12.57	13.38	12.90	12.90	12.57
12500	12.41	13.36	12.84	12.84	12.41
15000	12.04	13.01	12.55	12.55	12.04
20000	11.27	12.34	11.97	11.97	11.27
25000	10.49	11.69	11.38	11.38	10.49
35000	8.95	10.46	10.12	10.11	8.95
45000	6.15	9.12	8.51	8.46	6.15
46850	5.21	-	-	-	5.21
50260	-	-	-	5.85	-
50370	-	-	5.84	-	-
51860	-	5.84	-	-	-
CMC LATTICE TYPE 35		36	37	38	39
LATTICE No. 733		1577	1582	1583	1584

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MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR)
vs. AVERAGE PLANAR EXPOSURE FOR FUEL TYPE GE9B-P8CWB332-1108

CORE OPERATING LIMITS REPORT

TABLE 1.2-6

CMC BUNDLE TYPE 1

EXPOSURE (MYD/ST)	LATTICE SPECIFIC MAPLHGR (kw/ft)					
	P8CWL071 NOG	P8CWL345 5G5.0/4G4.0	P8CWL362 9G4.0	P8CWL362 2G5.0/9G4.0	P8CWL345 9G4.0	P8CWL071 11GE
0.0	12.74	12.09	11.65	11.25	12.11	12.74
200	12.67	12.13	11.70	11.32	12.15	12.67
1000	12.48	12.22	11.83	11.46	12.25	12.48
2000	12.42	12.35	12.00	11.61	12.39	12.42
3000	12.41	12.48	12.14	11.77	12.54	12.41
4000	12.44	12.62	12.28	11.94	12.70	12.44
5000	12.46	12.77	12.43	12.11	12.86	12.46
6000	12.49	12.90	12.58	12.29	13.02	12.49
7000	12.51	13.03	12.73	12.46	13.19	12.51
8000	12.54	13.16	12.88	12.64	13.33	12.54
9000	12.55	13.30	13.01	12.82	13.43	12.55
10000	12.57	13.42	13.12	12.98	13.44	12.57
12500	12.41	13.41	13.08	13.04	13.40	12.41
15000	12.04	13.05	12.78	12.77	13.06	12.04
20000	11.27	12.38	12.16	12.16	12.40	11.27
25000	10.49	11.74	11.51	11.51	11.76	10.49
35000	8.95	10.52	10.22	10.22	10.53	8.95
45000	6.15	9.13	8.75	8.68	9.13	6.15
46850	5.21	-	-	-	-	5.21
50680	-	-	-	5.86	-	-
50830	-	-	5.85	-	-	-
51870	-	5.83	-	-	-	-
51910	-	-	-	-	5.83	-
CMC LATTICE TYPE 40		41	42	43	44	45
LATTICE No. 733		1817	1818	1819	1820	1821

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MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR)
vs. AVERAGE PLANAR EXPOSURE FOR FUEL TYPE GE9B-P8CWB320-9GE

CORE OPERATING LIMITS REPORT

TABLE 1.2-7

CMC BUNDLE TYPE 2

Exposure (MWD/ST)	LATTICE SPECIFIC MAPLHGR (kw/ft)					
	P8CWL071 NOG	P8CWL346 4G5.0/3G4.0	P8CWL358 7G4.0	P8CWL358 2G5.0/7G4.0	P8CWL346 7G4.0	P8CWL071 9GE2
0.0	12.74	12.05	11.62	11.10	12.09	12.74
200	12.67	12.09	11.64	11.15	12.14	12.67
1000	12.48	12.19	11.73	11.27	12.25	12.48
2000	12.42	12.32	11.86	11.44	12.39	12.42
3000	12.41	12.44	11.99	11.62	12.53	12.41
4000	12.44	12.57	12.13	11.80	12.67	12.44
5000	12.46	12.70	12.27	11.96	12.81	12.46
6000	12.49	12.83	12.42	12.09	12.89	12.49
7000	12.51	12.97	12.54	12.23	12.98	12.51
8000	12.54	13.07	12.62	12.37	13.07	12.54
9000	12.55	13.15	12.70	12.51	13.15	12.55
10000	12.57	13.20	12.77	12.66	13.22	12.57
12500	12.41	13.19	12.70	12.67	13.20	12.41
15000	12.04	12.89	12.40	12.40	12.90	12.04
20000	11.27	12.29	11.82	11.82	12.30	11.27
25000	10.49	11.69	11.25	11.25	11.70	10.49
35000	8.95	10.46	10.07	10.07	10.46	8.95
45000	6.15	9.09	8.35	8.26	9.09	6.15
46850	5.21	-	-	-	-	5.21
49790	-	-	-	5.87	-	-
49990	-	-	5.86	-	-	-
51490	-	-	-	-	5.88	-
51500	-	5.88	-	-	-	-
CMC LATTICE TYPE 46	47	48	49	50	51	
LATTICE No. 733	1812	1813	1814	1815	1816	

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CORE OPERATING LIMITS REPORT

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.

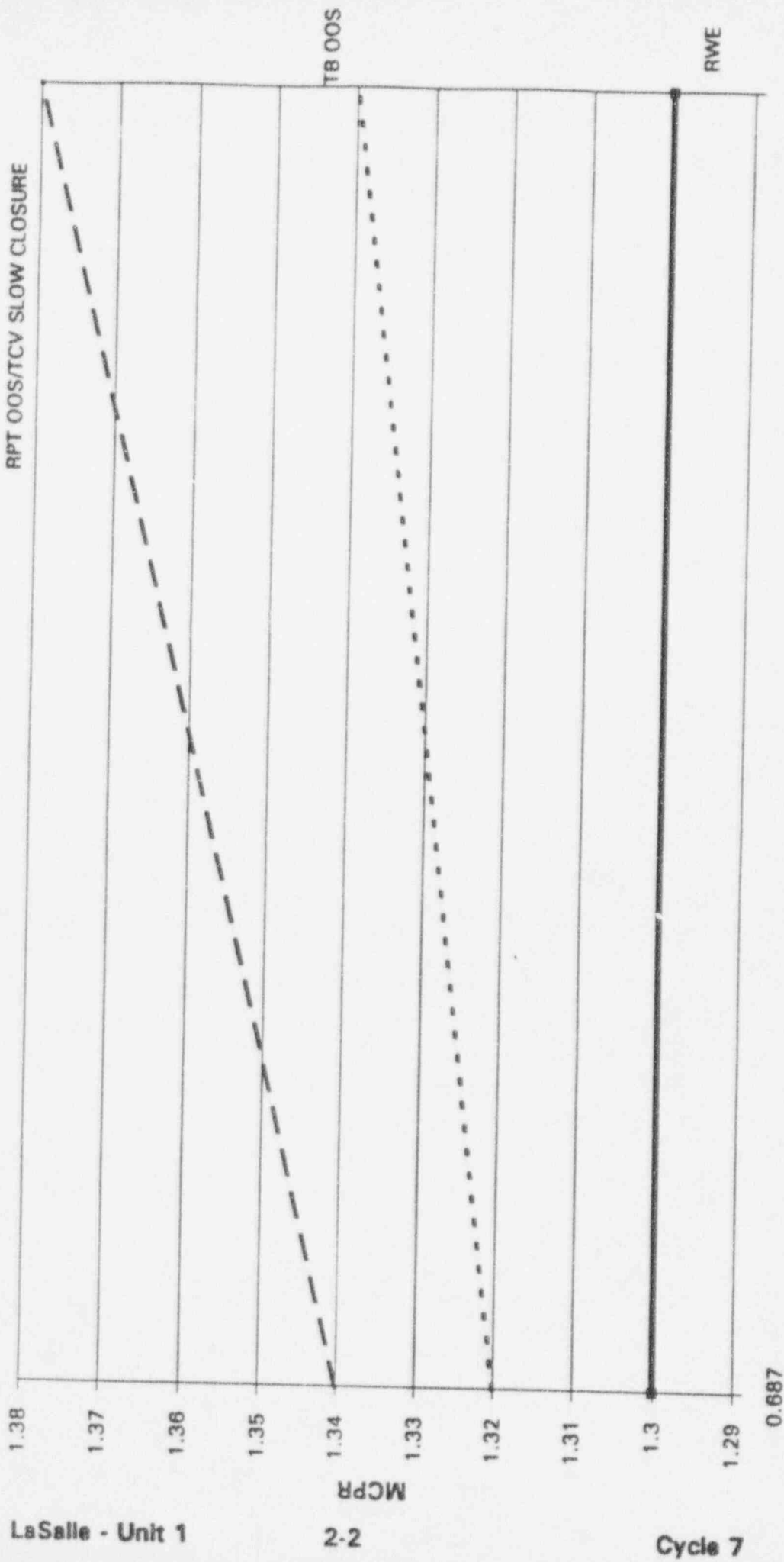
d. Two Recirculation Loop Operation with End-of-Cycle Recirculation Pump Trip System Inoperable and/or a Postulated Slow Turbine Control Valve Closure Event

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) and/or one or more Turbine Control Valve slow closing is determined from Figure 2.2-1* times the Kf factor determined from Figure 2.2-2.

- * If, during Unit Coastdown, power operation exceeding the equilibrium power level is desired, then Figure 2.2-3 shall be used.

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POWER DISTRIBUTION LIMITS
MCPR (all fuel types)



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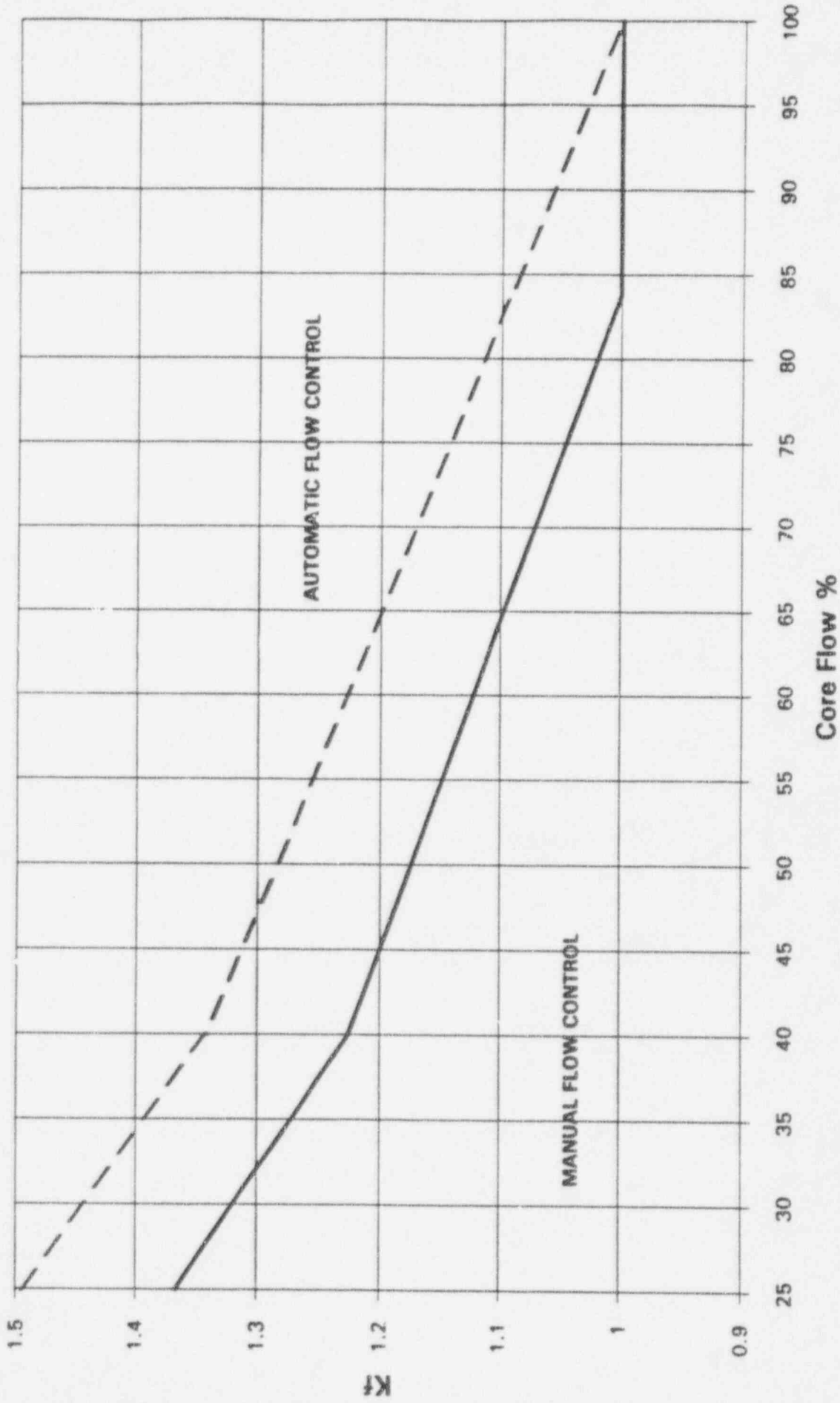
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MCPR versus Tau at ICF and FFWTR

Figure 2.2-1

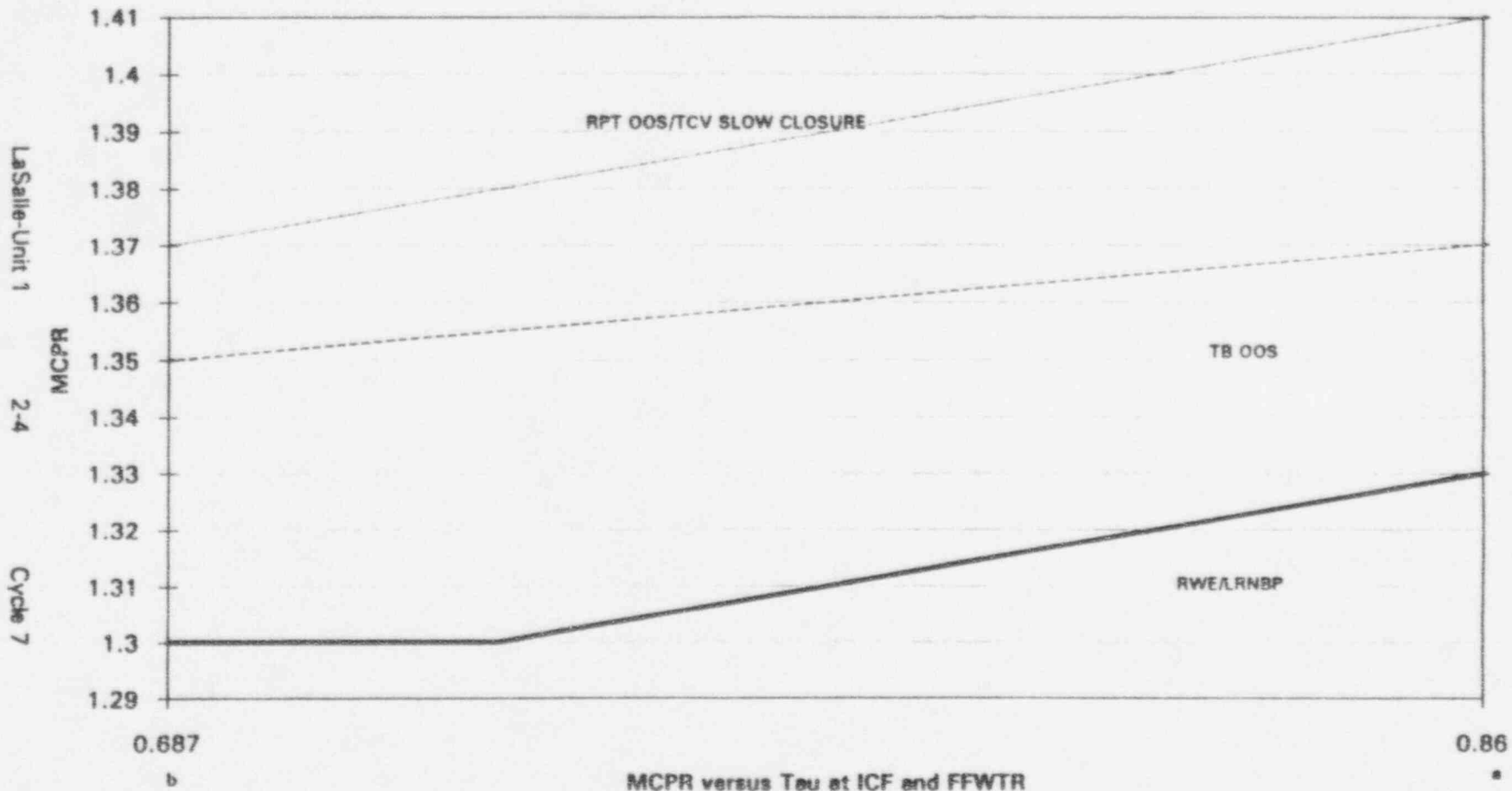
K1 FACTOR
Figure 2.2-2



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POWER DISTRIBUTION LIMITS
MCPR (all fuel types) During Coastdown

Figure 2.2-3



MCPR versus Tau at ICF and FFWR
Figure 2.2-3

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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 14.4 kw/ft for fuel types:

1. NBC301G
2. NBC325A
3. PBCWB303-9GZ
4. PBCWB313-9GZ
5. PBCWB314-9GZ
6. PBCWB322-11GZ
7. PBCWB320-9GZ

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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	$\leq 0.66 W + 45 \%^{**}$	$\leq 0.66 W + 48 \%^{**}$
2. Single Recirculation* Loop Operation	$\leq 0.66 W + 39.7\%^{**}$	$\leq 0.66 W + 42.7\%^{**}$

* This setpoint may be lower and will still comply with the RWE Analysis.

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

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5.0 ANALYTICAL METHODS

- 5.1 The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC in the latest approved revision or supplement of the Topical Reports describing the methodology. For LaSalle County Station Unit 1, the Topical Reports are:
- a. NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel", (latest approved revision).
 - b. Commonwealth Edison Topical Report NFSR-0085, "Benchmark of BWR Nuclear Design Methods", (latest approved revision).
 - c. Commonwealth Edison Topical Report NFSR-0085, Supplement 1, "Benchmark of BWR Nuclear Design Methods - Quad Cities Gamma Scan Comparisons", (latest approved revision).
 - d. Commonwealth Edison Topical Report NFSR-0085, Supplement 2, "Benchmark of BWR Nuclear Design Methods - Neutronic Licensing Analyses", (latest approved revision).