

ATTACHMENT

Core Operating Limits Report

for

LaSalle County Station

Unit 2, Reload 4 (Cycle 5)

1

9203230315 920318  
PDR ADDCK 05000374  
P PDR  
ZWLAP

## ISSUANCE OF CHANGES SUMMARY

Cycle 5

# CORE OPERATING LIMITS REPORT

## TABLE OF CONTENTS

	Page
REFERENCES . . . . .	iii
LIST OF FIGURES . . . . .	iv
LIST OF TABLES . . . . .	v
1.0 AVERAGE PLANAR LINEAR HEAT GENERATION RATE (3/4.2.1). . . . .	1-1
1.1 Tech Spec Reference . . . . .	1-1
1.2 Description . . . . .	1-1
2.0 MINIMUM CRITICAL POWER RATIO (3/4.2.3). . . . .	2-1
2.1 Tech Spec Reference . . . . .	2-1
2.2 Description . . . . .	2-1
3.0 LINEAR HEAT GENERATION RATE (3/4.2.4) . . . . .	3-1
3.1 Tech Spec Reference . . . . .	3-1
3.2 Description . . . . .	3-1
4.0 CONTROL ROD WITHDRAWAL BLOCK INSTRUMENTATION (3/4.3.6). . . . .	4-1
4.1 Tech Spec Reference . . . . .	4-1
4.2 Description . . . . .	4-1

## CORE OPERATING LIMITS REPORT

### REFERENCES

1. Commonwealth Edison Company Docket No. 50-373, LaSalle County Station, Unit 2 Facility Operating License, License No. NPF-18.
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 2, Reload 4 (Cycle 5), 23A7135, Rev. 0, October 1991.
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).

## CORE OPERATING LIMITS REPORT

### LIST OF FIGURES

<u>FIGURE</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGE</u>
2.2-1	Power Distribution Limits, MCPR vs. $\tau$ At Increased Core Flow with Final Feedwater Temperature Reduction	2-2
2.2-2	Kf Factor vs. Core Flow %	2-3

# CORE OPERATING LIMITS REPORT

## LIST OF TABLES

TABLE	TITLE/DESCRIPTION	PAGE
1.2-1	Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) vs. Average Planar Exposure for Fuel Type BP8CRN299L.	1-2
1.2-2	Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) vs. Average Planar Exposure for Fuel Type BC320C.	1-3
1.2-3	Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) vs. Average Planar Exposure for Fuel Type BC300D.	1-4
1.2-4	Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) vs. Average Planar Exposure for Fuel Type P8CWB303-9GZ.	1-5
1.2-5	Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) vs. Average Planar Exposure for Fuel Type P8CWB303-10GZ.	1-6
1.2-6	Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) vs. Average Planar Exposure for Fuel Type P8CWB300-9GZ.	1-7
1.2-7	Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) vs. Average Planar Exposure for Fuel Type P8CWB302-9GZ.	1-8
4.2-1	Control Rod Withdrawal Block Instrumentation Setpoints.	4-1

## CORE OPERATING LIMITS REPORT

### 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 Rates (MAPLHGR) versus Average Planar Exposure for fuel type BP8CRB299L is determined from Table 1.2-1. |

The Maximum Average Planar Linear Heat Generation Rates (MAPLHGR) versus Average Planar Exposure for fuel type BC320C is determined from Table 1.2-2. |

The Maximum Average Planar Linear Heat Generation Rates (MAPLHGR) versus Average Planar Exposure for fuel type BC300D is determined from Table 1.2-3. |

The Maximum Average Planar Linear Heat Generation Rates (MAPLHGR) versus Average Planar Exposure for fuel type P8CWB303-9GZ is determined from Table 1.2-4. |

The Maximum Average Planar Linear Heat Generation Rates (MAPLHGR) versus Average Planar Exposure for fuel type P8CWB303-10GZ is determined from Table 1.2-5. |

The Maximum Average Planar Linear Heat Generation Rates (MAPLHGR) versus Average Planar Exposure for fuel type P8CWB300-9GZ is determined from Table 1.2-6. |

The Maximum Average Planar Linear Heat Generation Rates (MAPLHGR) versus Average Planar Exposure for fuel type P8CWB302-9GZ is determined from Table 1.2-7. |

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

CORE OPERATING LIMITS REPORT

TABLE 1.2-1

CMC Bundle Type 5

Exposure (MWd/ST)	LATTICE SPECIFIC MAPLHGR (kw/ft)	
	P8CIL07J 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	9	8

LaSalle - Unit 2

1-2

Cycle 5

MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR)  
vs. AVERAGE PLANAR EXPOSURE FOR FUEL TYPE BC320C (GE8B-P8CQB320-7GZ)

CORE OPERATING LIMITS REPORT

TABLE 1.2-2

CMC BUNDLE TYPE 7

Exposure (Mwd/ST)	LATTICE SPECIFIC MAPLHGR (kw/ft)			
	P8CQ071 NOG	P8CQ0340 7G4.0	P8CQ0340 7G3.0	P8CQ071 7GE
0.0	12.44	11.57	11.63	12.44
200	12.36	-	-	12.36
1000	12.15	-	-	12.15
2000	12.08	-	-	12.08
3000	12.08	-	12.21	12.08
4000	12.10	12.23	12.41	12.10
6000	-	12.57	12.83	-
8000	-	12.94	13.06	-
10000	12.25	13.12	-	12.25
12500	-	13.03	13.04	-
15000	-	12.71	12.72	-
25000	10.11	-	-	10.11
35000	8.53	10.15	10.16	8.53
45000	-	8.50	8.55	-
45600	5.09	-	-	5.09
50000	-	6.08	6.12	-
CMC LATTICE TYPE	10	13	14	15

MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR)  
vs. AVERAGE PLANAR EXPOSURE FOR FUEL TYPE BC300D (GE8B-P8CQB300-6G3.0)

CORE OPERATING LIMITS REPORT

TABLE 1.2-3

CMC BUNDLE TYPE 6

Exposure (MWd/ST)	LATTICE SPECIFIC MAPLHGR (kw/ft)		
	P8CQL071 NOG	P8CQL319 6G3.0	P8CQL071 6GE
0.0	12.44	11.77	12.44
200	12.36	-	12.36
1000	12.15	-	12.15
2000	12.08	12.33	12.08
3000	12.08	12.61	12.08
4000	12.10	12.91	12.10
5000	-	13.22	-
10000	12.25	13.45	12.25
15000	-	13.17	-
25000	10.11	-	10.11
35000	8.53	10.65	8.53
45000	-	8.73	-
45600	5.09	-	5.09
50000	-	6.62	-
CMC LATTICE TYPE	10	11	12

LaSalle - Unit 2

1-4

Cycle 5

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

CORE OPERATING LIMITS REPORT

TABLE 1.2-4

CMC BUNDLE TYPE 8

Exposure  
(MWd/ST)

LATTICE SPECIFIC MAPLHGR (kw/ft)

	P8CWL071 NOG	P8CWL327 9G5.0	P8CWL338 4G5.0/5G4.0	P8CWL327 4G5.0/5G4.0	P8CWL071 9GE
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 16		17	18	19	20

LaSalle - Unit 2

1-5

Cycle 5

MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR)  
vs. AVERAGE PLANAR EXPOSURE FOR FUEL TYPE P8CWB303-10GZ

CORE OPERATING LIMITS REPORT

TABLE 1.2-5

CMC BUNDLE TYPE 9

Exposure (MWd/ST)	LATTICE SPECIFIC MAPLHGR (kw/ft)				
	P8CWL011 NOG	P8CWL326 6G5.0/4G4.0	P8CWL338 10G4.0	P8CWL326 10G4.0	P8CWL071 10GE
0.0	12.74	12.02	11.69	12.07	12.74
200	12.67	12.08	11.75	12.14	12.67
1000	12.48	12.23	11.91	12.30	12.48
2000	12.42	12.44	12.09	12.55	12.42
3000	12.41	12.68	12.25	12.81	12.41
4000	12.44	12.89	12.40	12.98	12.44
5000	12.46	13.04	12.56	13.15	12.46
6000	12.49	13.18	12.72	13.29	12.49
7000	12.51	13.33	12.88	13.36	12.51
8000	12.54	13.49	13.05	13.44	12.54
9000	12.55	13.57	13.21	13.53	12.55
10000	12.57	13.59	13.33	13.60	12.57
12500	12.41	13.61	13.29	13.63	12.41
15000	12.04	13.29	12.97	13.31	12.04
20000	11.27	12.63	12.33	12.64	11.27
25000	10.49	11.84	11.70	11.85	10.49
35000	8.95	10.35	10.40	10.36	8.95
45000	6.15	9.00	8.97	9.01	6.15
46900	5.21	-	-	-	5.21
51100	-	-	5.90	-	-
51900	-	5.78	-	-	-
52000	-	-	-	5.79	-
CMC LATTICE TYPE 16		4	5	6	7

MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR)  
VS. AVERAGE PLANAR EXPOSURE FOR FUEL TYPE P8CWB300-9GZ

CORE OPERATING LIMITS REPORT

TABLE 1.2-6

CMC BUNDLE TYPE 11

LATTICE SPECIFIC MAPLHGR (KW/FT)

EXPOSURE (MWD/ST)	P8CWL071	P8CWL320	P8CWL338	P3CWL338	P8CWL320	P8CWL071
	9GE	4G4.0/ 3G3.0	7G3.0	2G4.0/ 7G3.0	7G3.0	NOG
0	12.74	12.41	11.89	11.39	12.48	12.74
200	12.67	12.47	11.96	11.47	12.49	12.67
1000	12.48	12.60	12.12	11.65	12.55	12.48
2000	12.42	12.71	12.29	11.90	12.64	12.42
3000	12.41	12.82	12.43	12.17	12.73	12.41
4000	12.44	12.92	12.51	12.43	12.82	12.44
5000	12.46	13.03	12.58	12.54	12.90	12.46
6000	12.49	13.13	12.65	12.63	12.98	12.49
7000	12.51	13.17	12.71	12.69	13.04	12.51
8000	12.54	13.16	12.75	12.73	13.08	12.54
9000	12.55	13.14	12.78	12.76	13.11	12.55
10000	12.57	13.13	12.80	12.80	13.14	12.57
12500	12.41	13.10	12.72	12.71	13.11	12.41
15000	12.04	12.80	12.41	12.41	12.81	12.04
20000	11.27	12.21	11.82	11.81	12.22	11.27
25000	10.49	11.63	11.23	11.22	11.64	10.49
35000	8.95	10.29	10.04	10.03	10.29	8.95
45000	6.15	8.99	8.31	8.30	9.00	6.15
46850	5.21	-	-	-	-	5.21
49960	-	-	5.84	5.83	-	-
51240	-	-	-	-	5.88	-
51290	-	5.86	-	-	-	-
CMC						
LATTICE TYPE	30	26	27	28	29	21
LATTICE No.	1204	1200	1201	1202	1203	733

LaSalle County - Unit 2

1-7

Cycle 5

MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR)  
VS. AVERAGE PLANAR EXPOSURE FOR FUEL TYPE P8CWB302-9GZ

CORE OPERATING LIMITS REPORT

TABLE 1.2-7

CMC BUNDLE TYPE 10

LATTICE SPECIFIC MAPLHGR (KW/FT)

EXPOSURE (MWD/ST)	P8CWL071 9GE	P8CWL326 5G5.0/4G4.0	P8CWL337 9G4.0	P8CWL326 9G4.0	P8CWL071 NOG
0	12.74	11.99	11.38	12.04	12.74
200	12.67	12.07	11.42	12.11	12.67
1000	12.48	12.21	11.53	12.27	12.48
2000	12.42	12.41	11.74	12.48	12.42
3000	12.41	12.58	11.99	12.63	12.41
4000	12.44	12.72	12.26	12.76	12.44
5000	12.46	12.85	12.46	12.89	12.46
6000	12.49	12.97	12.65	13.03	12.49
7000	12.51	13.08	12.86	13.17	12.51
8000	12.54	13.19	13.07	13.31	12.54
9000	12.55	13.31	13.20	13.43	12.55
10000	12.57	13.41	13.31	13.51	12.57
12500	12.41	13.49	13.34	13.51	12.41
15000	12.04	13.19	13.05	13.19	12.04
20000	11.27	12.55	12.47	12.55	11.27
25000	10.49	11.85	11.88	11.85	10.49
35000	8.95	10.38	10.56	10.38	8.95
45000	6.15	9.05	9.18	9.06	5.15
46850	5.21	-	-	-	5.21
51790	-	-	5.86	-	-
52120	-	5.80	-	-	-
52130	-	-	-	5.80	-
CMC LATTICE TYPE	25	22	23	24	21
LATTICE No.	887	879	880	882	733

LaSalle County - Unit 2

1-8

Cycle 5

## 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.

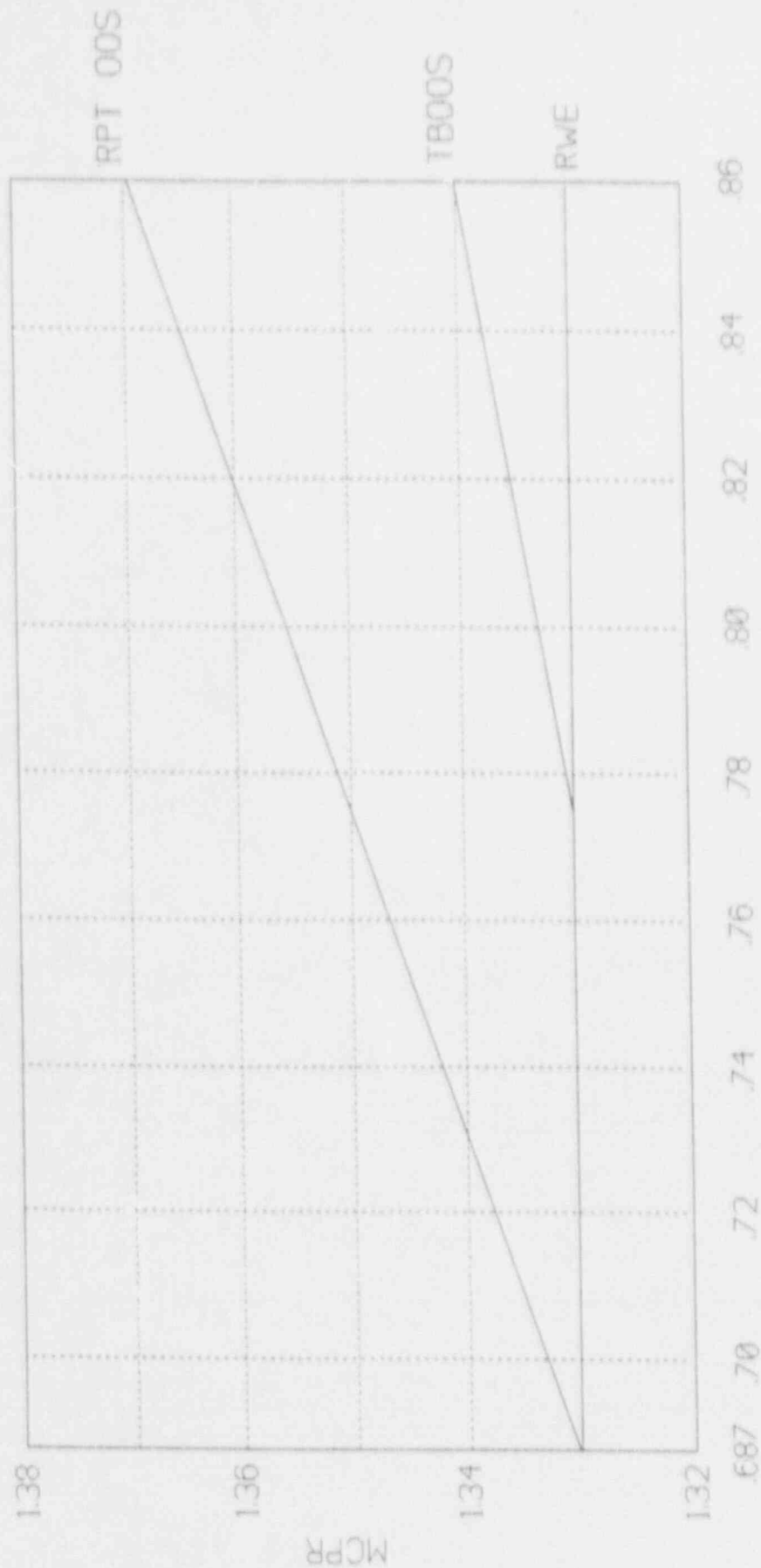
##### c. Two Recirculation Loop Operation with Main Turbine Bypass Inoperable

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

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.

# Power Distribution Limits MCPR (all fuel types)

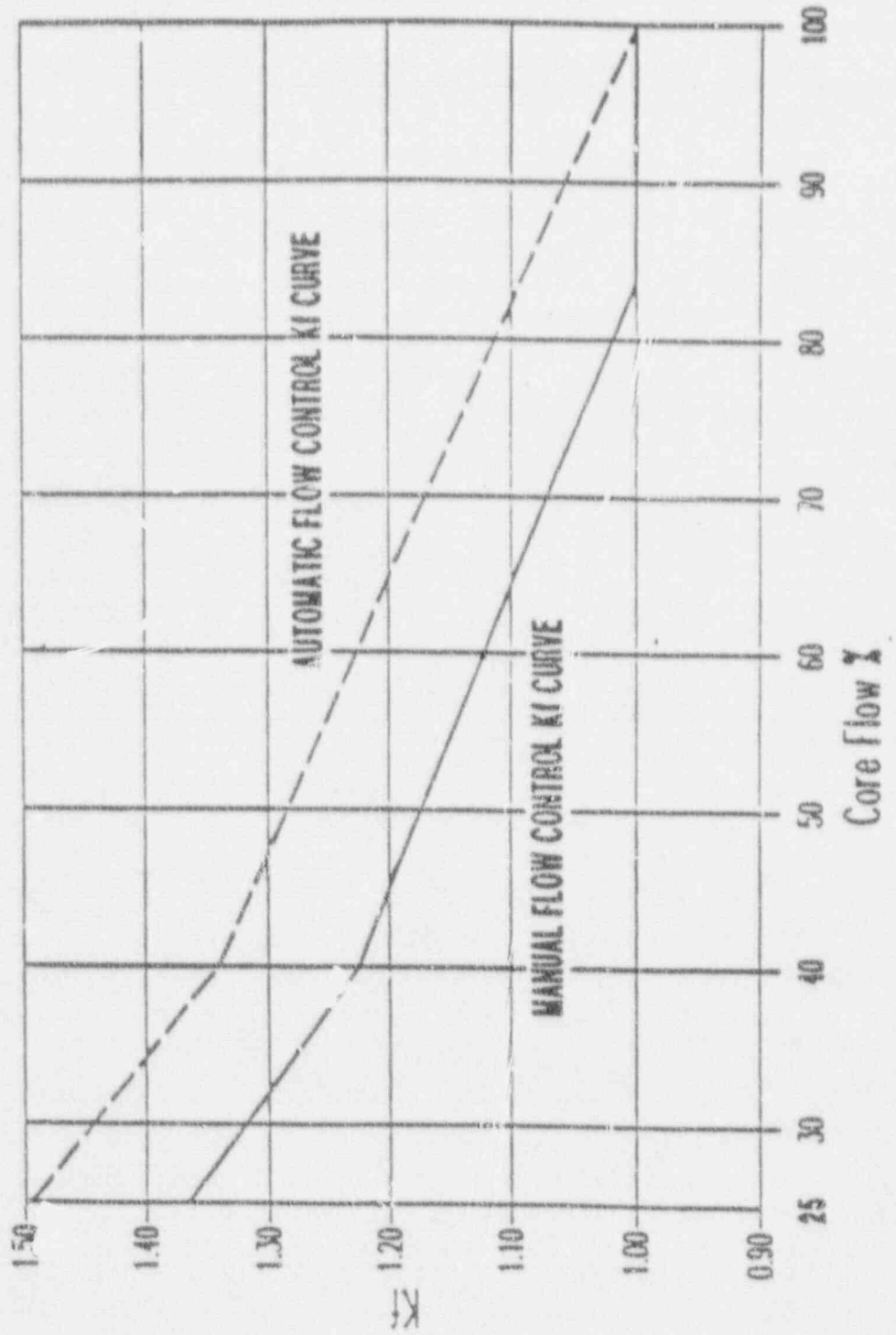


MCPR versus Tau AT ICF WITH FFWTR

Figure 2.2-1

Kf FACTOR  
FIGURE 2.2-2

Kf Factor



## CORE OPERATING LIMITS REPORT

### 3.0 LOCAL 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 type:

1. BP8CRB299L

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

1. BC300D
2. BC320C
3. P8CWB303-9GZ
4. P8CWB303-10GZ
5. P8CWB300-9GZ
6. P8CWB302-9GZ

## 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%.