ATTACHMENT A

Core Operating Limits Report

for

LaSalle County Station

Unit 1, Reload 4 (Cycle 5)

CORE OPERATING LIMITS REPORT

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

CORE OPERATING LIMITS REPORT

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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, 31510P (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).

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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)

CORE OPERATING LIMITS REPORT

TABLE 1.2-1

CMC BUNDLE TYPE 5

Exposure (MWD/ST)	Lattice Specific MAPLHGR (kw/ft)	
	P8CIL071 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)

CORE OPERATING LIMITS REPORT

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-P8CQB320-9G)

CORE OPERATING LIMITS REPORT

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 11GZ
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	12.30	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/ 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
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

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
51300	-	-	5.90	-	-
51800	-	5.82	-	5.81	-
CMC LATTICE TYPE	1	21	22	23	24
LATTICE No.	733	884	885	886	887

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.

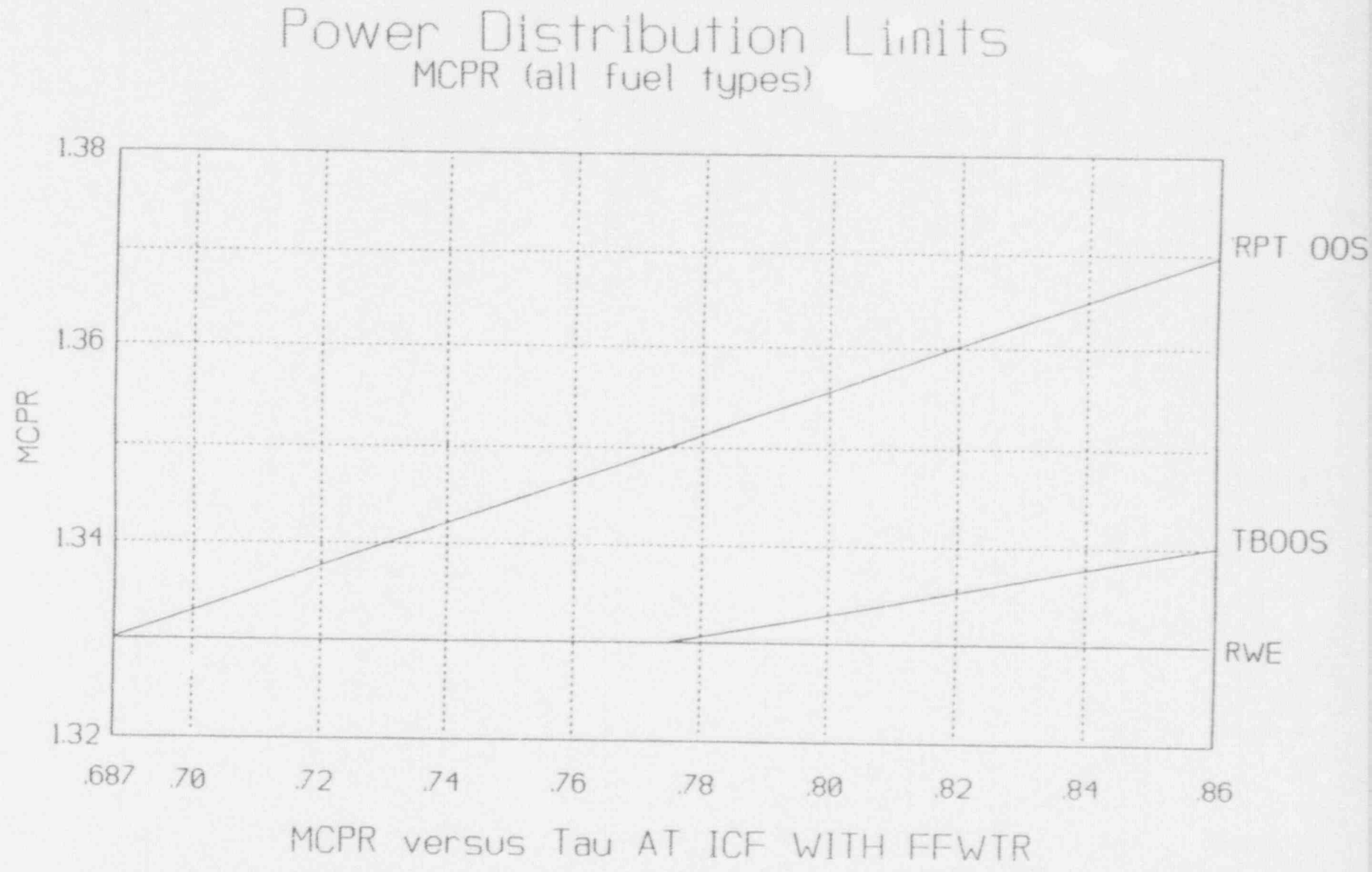
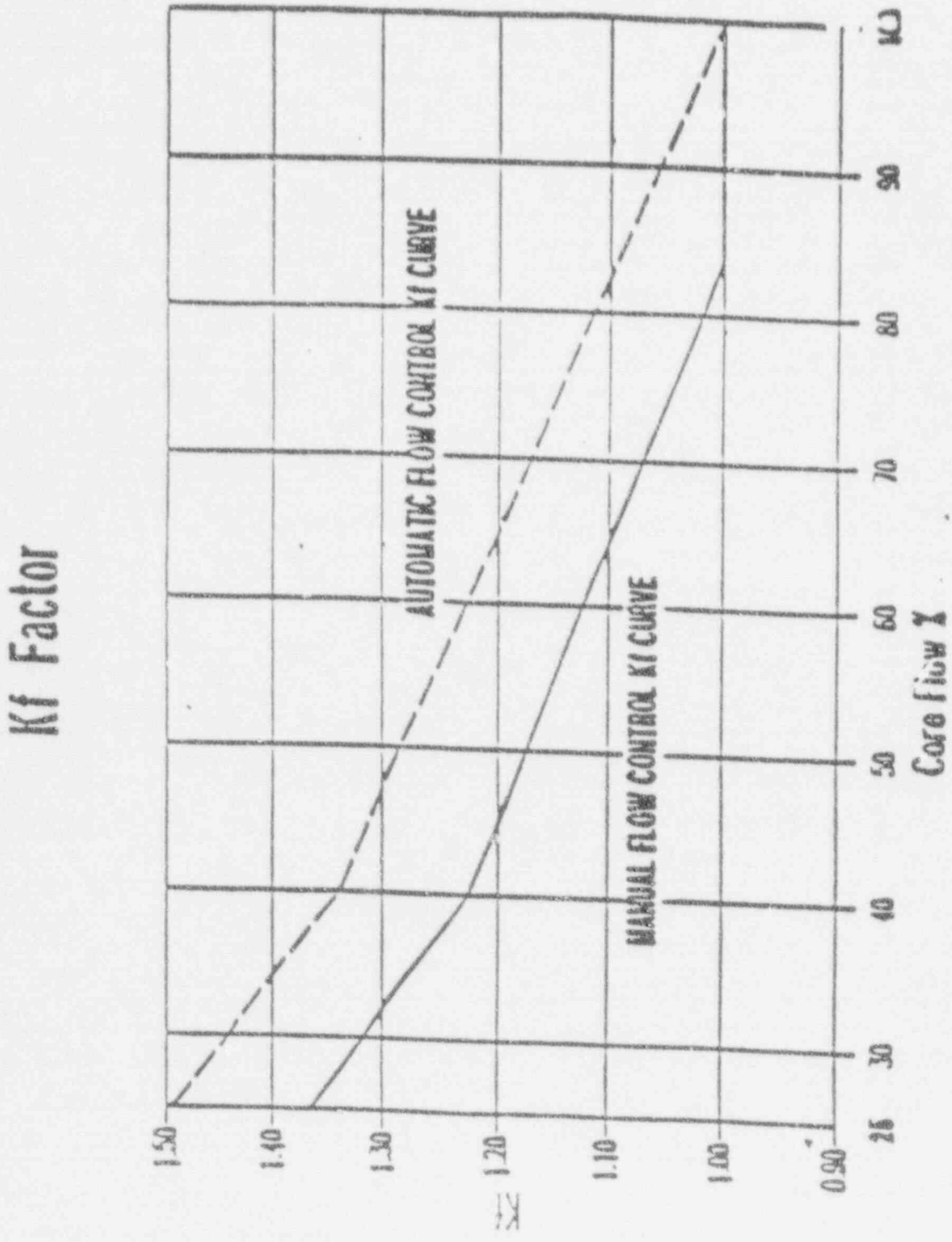

Power Distribution Limits
MCPR (all fuel types)
1.38
1.36
1.34
1.32
MCPR
RPT OOS
TBOOS
RWE
.687
.70
.72
.74
.76
.78
.80
.82
.84
.86
MCPR versus Tau AT ICF WITH FFWTR

Figure 2.2-1

Kf FACTOR

FIGURE 2.2-2



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 type:

1. BP8CRB299L

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

1. BC301A
2. BC320B
3. NBC301G
4. NBC325A
5. P8CWB303-9GZ

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

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
1.0 ROD BLOCK MONITOR		
A. UPSCALE		
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%.

GE Nuclear Energy

EBO-91-649

December 30, 1991

Mr. J. W. Gieseker
Commonwealth Edison Company
La Salle County Station
RR #1, Box 220
Marseilles, IL 61341

SUBJECT: EQUIPMENT OOS IN ICF DOMAIN
FINAL REPORT AND 10CFR50.59 SAFETY EVALUATION
LA SALLE COUNTY STATION

Enclosures: 1. GE Nuclear Energy Report No. GE-NE-187-62-1191, dated December 1991.
2. 10CFR50.59 Safety Evaluation.

Reference: CECo Purchase Order No. 341144, "EOC-RPT and Turbine Bypass Out of Service Evaluations", dated September 6, 1991.

Dear Mr. Gieseker:

Enclosed is GE Nuclear Engineering Report No. GE-NE-187-62-1191 supporting La Salle County Station operation with EOC Recirculation Pump Trip (RPT) and Turbine Bypass Out-of-Service (OOS) in the Increased Core Flow (ICF) domain. Also enclosed with the report is the 10CFR50.59 safety evaluation justifying these equipment OOS options. This transmittal fulfills GE's responsibilities as stated in the Reference CECo Purchase Order.

GE thanks you for the opportunity to perform this service and looks forward to serving CECo's needs in the future.

Sincerely,

W. D. Arndt
Senior Customer Service Engineer
(708) 573-3798

cc: CECo
J. M. Dolter
E. A. McVey
R. H. Mirochna
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J. D. Williams
Chron System

GE
J. C. Elliott
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J. E. Kusky
File: 4.Z44.0

10 CFR 50.59 SAFETY EVALUATION

Subject: Equipment Out-of-Service in the Increased Core Flow Domain for LaSalle County Station Units 1 and 2.

Description of Change

The proposed change is to provide specific cycle-independent values for the Operating Limit Minimum Critical Power Ratio (OLMCPR), when the plant is operating in the Increased Core Flow (ICF) domain with either the Turbine Bypass (TBP) or end-of-cycle Recirculation Pump Trip (RPT) out of service. Further OLMCPR adjustments are defined for simultaneous operation with final feedwater temperature reduction.

The referenced report, GE-NE-187-62-1191, provides results of an analysis in support of the change. The established values for OLMCPR will be fully documented in the Core Operating Limits Report (COLR) for LaSalle 1 and 2.

Reason for Change

The proposed change was developed to offer increased operational flexibility by allowing continued plant operation in the ICF domain with either the TBP or RPT out of service. The change represents an extension of existing practice relating to the TBP and RPT systems.

Initial SAR and Technical Specification Review

Does the procedure, design change, modification, test or experiment, to which this review is applicable, represent any of the following:

1. A change to the plant as described in the SAR? Yes ( ), No (X)

   The proposed change does not involve any modification or design change to the plant.

2. A change to a procedure or an analytical model as described in the SAR? Yes ( ), No (X)

   The proposed change provides new values of OLMCPR which have been shown to be commensurate with safe plant operation in the ICF domain while allowing either the TBP or RPT system to be out of service. The safety analysis supporting this mode of operation used the analytical models and methods described in the SAR for establishing all similar existing OLMCPR values. The proposed change requires no modification of procedures or analytical methods as described in the SAR.

3. A change to a test or experiment as described in the SAR? Yes ( ), No (X)

   The proposed change does not involve any test or experiment.

4. A new system, major component, structure, test, experiment or procedure which could affect a safety-related function or result in a new plant operating condition? Yes (X), No ( )

   No new system, major component, structure, test or experiment which could affect a safety-related function or result in a new plant operating condition is involved in the proposed change. However, procedures associated with the change, while not affecting any safety-related function, could be considered to result in a new operating condition. This situation arises when allowing the existing practice of TBP and RPT out of service to be extended to the ICF domain and could be regarded as a new plant operating condition.

5. A change to the existing plant, but not covered by questions 1 through 4 above, which could affect a safety-related function or result in a new plant operating condition? Yes ( ), No (X)

   As stated earlier, the proposed change does not involve any change to the plant.

6. A change to the Technical Specifications? Yes ( ), No (X)

   The new values of OLMCPR required by the proposed change are identified in the COLR for each unit. The related Tech Spec, 3/4.2.3, Minimum Critical Power Ratio, references the COLR and hence no change to the Tech Specs is required.

Unreviewed Safety Question Determination

As a result of the affirmative response to question 4 of the Initial SAR and Technical Specification Review, it is necessary to make an Unreviewed Safety Question Determination (USQD). This requires a response to the following questions:

1. Will the probability of an accident previously evaluated in the SAR be increased? Yes ( ), No (X)

   The evaluation of the design basis accidents in the SAR is unrelated to the operational behavior of the transient events associated with the proposed change. Consequently the change will not impact the probability of any design basis accident.

2. Will the consequences of an accident previously evaluated in the SAR be increased? Yes ( ), No (X)

   For the reason given in the response to question 1 above the consequences of any design basis accident evaluated in the SAR will not be increased.

3. May the possibility of an accident which is different than any already evaluated in the SAR be created? Yes ( ), No (X)

The basis for the proposed change was established by the use of proven calculational methods applied to an unchanged plant design. The change itself represents a minor extension of existing practice to the ICF domain. There is clearly no evidence to suggest the possibility of an accident other than those already evaluated in the SAR being created.

4. Will the probalility of a malfunction of a safety-related structure, system or component previously evaluated in the SAR be increased? Yes ( ), No (X)

   By the same reasoning given in the response to question 3 above, there is no evidence to suggest that the probability of a malfunction of any safety-related structure, system or component previously evaluated in the SAR will be increased.

5. Will the consequences of a malfunction of a safety-related structure, system or component previously evaluated in the SAR be increased? Yes ( ), No (X)

   The evaluation made to support the proposed change is essentially the same as that made previously in the SAR regarding the consequences of a malfunction of safety-related structures, systems or components. For example, inoperability of one safety/relief valve (lowest opening setpoint) is assumed in evaluating the transients covered under the proposed change. There is no evidence to indicate that the consequences of a malfunction of any other safety-related structure, system or component previously evaluated in the SAR would be increased as a result of the proposed change.

6. May the possibility of a malfunction of a safety-related structure, system or component different than any already evaluated in the SAR be created? Yes ( ), No (X)

   The proposed change represents only a relatively minor departure from existing operating practice, namely an extension of that practice into the ICF domain. In view of this it is inconceivable that the malfunction of any safety-related structure, system or component not already evaluated in the SAR could be created.

7. Will the margin of safety as defined in the basis to any Technical Specification be reduced? Yes ( ), No (X)

   For all anticipated operational occurrences evaluated for the proposed change, the OLMCPR is established such that the MCPR Safety Limit of 1.07 is not exceeded. Consequently, the margin of safety defined in the associated Technical Specification basis is preserved.

Conclusions

References 1 and 2 contain all the essential data and information required to support the proposed change. If the practice of including the appropriate information from these reference documents in a composite Appendix to the SAR is consistently followed, there would be no further requirement to update the SAR.

The proposed change represents only a minor departure from normal, established operating practice. Effectively, it extends existing procedures and controls into the ICF domain and provides the appropriate OLMCPR limits. While no new system, major component, structure, test or experiment which could affect a safety-related function is involved, a new plant operating condition is identified. Consequently, it was necessary to conduct an USQD. The results of this USQD indicate that no USQ remains when the proposed change is implemented.

References

1. Supplemental Reload Licensing Report for LaSalle County Station Unit 2, Reload 4, Cycle 5. 23A7135, Rev. 0

2. Equipment Out-of-Service in the Increased Core Flow Domain for LaSalle County Station Units 1 and 2. GE-NE-187-62-1191

Documents Reviewed

1. LaSalle County Station UFSAR, Chapter 15.

2. LaSalle County Station Technical Specifications.

3. 10 CFR 50.59.

Prepared by: J FRAY * Date: 12-5-91

Engineering Review by: * Date: 12/11/91

Licensing Review by: * Date: 12/10/91

Approved by: * Date: 12/11/91

*Print and sign

REGULATORY AND ANALYSIS SERVICES
San Jose, CA

PLANT IMPROVEMENT ENGINEERING

28 January 1992

TO: J. KUSKY - GE LASALLE STATION

FROM: H. X. HOANG

SUBJECT: REVISION 1 TO LASALLE EQUIPMENT OOS IN ICF DOMAIN REPORT - GE-NE-187-62-1191

Attached are two copies of the revised subject report (GE-NE-187-62-1191, Revision 1) supporting LaSalle County Station operation with EOC Recirculation Pump Trip and Turbine Bypass Out-of-Service in the Increased Core Flow domain. This revised version includes comments from CECo following their review of the original report and has been accepted by CECo as final.

One copy is for your file and please forward the other copy to Ed McVey (CECo) as soon as possible. I promised to Ed that a copy will be FedEx out to him a the site in parallel to the normal distribution process through Oak Brook.

Please call me if you have any questions and thanks for your help.

Hoa T Hoang

H. X. Hoang
MC 763, Ext. 51346