Exelon Generation Company, LLC
Dresden Nuclear Power Station
6500 North Dresden Road
Morris, IL 60450-9765

www.exeloncorp.com

Exelon Nuclear

10 CFR50.36

January 4, 2002

PSLTR: #02-0002

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

Dresden Nuclear Power Station, Unit 2
Facility Operating License No. DPR-19
NRC Docket No. 50-237

Subject: Unit 2 Cycle 18 Core Operating Limits Report

Reference: L. W. Rossbach (NRC) letter to O. D. Kingsley (Exelon), "Dresden Nuclear Power Station, Units 2 and 3 – Issuance of Amendments for Extended Power Uprate," dated December 21, 2001

The purpose of this letter is to transmit the enclosed Core Operating Limits Report (COLR) for the current operating cycle (D2C18) in accordance with Technical Specifications (TS) Section 5.6.5, "CORE OPERATING LIMITS REPORT (COLR)." The COLR was revised to reflect operation at the new core thermal power limit of 2957 megawatts, as approved by the NRC in the referenced letter. The analytical methods used to determine the operating limits were NRC approved.

Should you have any questions concerning this letter, please contact Mr. D. F. Ambler at (815) 416-2800.

Respectfully,

Preston Swafford
Site Vice President
Dresden Nuclear Power Station

Attachment: Core Operating Limits Report for Dresden Unit 2 Cycle 18, Revision 1, 2957MWth Rated Power, dated December 2001

cc: Regional Administrator – NRC Region III

A001

Rec'd 1/2/02

Core Operating Limits Report

for

Dresden Unit 2 Cycle 18
2957MW_{th} Rated Power

Revision 1

Issuance of Changes Summary

Affected Section	Affected Pages	Summary of Changes	Revision	Date
All	All	Original Issue (Cycle 18)	0	10/01
All	All	Complete reissue. Changes are increased core thermal power level (EPU – 2957 MWt), power and flow dependent limits (ARTS), exposure extended LHGR limits for SPC ATRIUM-9B fuel, support for new Equipment Out of Service options (TCV Slow Closure, PLUOOS, TCV Stuck Closed), clarification of TIP operating requirements, clarification of LPRM calibration frequency, clarification of coastdown overpower requirements.	1	12/01

Table of Contents

References

1. Exelon Generation Company, LLC Docket No. 50-237, Dresden Nuclear Power Station, Unit 2 Facility Operating License, License No. DPR-19.

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, October 3, 1988.

3. Supplemental Reload Licensing Report for DRESDEN UNIT 2 Reload 17 Cycle 18 Power Uprate to 2957 MWth, J11-03837-SRLR-2957, Revision 0, TODI NFM0100102 Sequence 0, September 2001.

4. MICROBURN Steady State LHGR Limit Curve Generation for GE-14 Fuel (D2C18), BNDD:01-008, May 30, 2001.

5. DRESDEN 2 and 3 QUAD CITIES 1 and 2 Equipment Out-Of-Service and Legacy Fuel Transient Analysis, GE-NE-J11-03912-00-01-R1, TODI NFM0100091 Sequence 01, November 2001.

6. Instrument Setpoint Calculation Nuclear Instrumentation Rod Block Monitor Dresden 2 & 3, GE DRF C51-00217-01, December 15, 1999.

7. OPL-3 Parameters for Dresden Unit 2 Cycle 18 Transient Analysis, TODI NFM0100057 Sequence 00, DG01-000355, May 10, 2001.

8. Fuel Mechanical Design Report Exposure Extension for ATRIUM-9B Fuel Assemblies at Dresden, Quad Cities, and LaSalle Units, EMF-2563(P) Revision 1, August 2001.

9. Dresden Unit 2 Cycle 17 Reload Analysis, NDIT NFM9900187, Sequence 01, EMF-2275 Revision 1, November 1999.

10. General Electric Standard Application for Reactor Fuel (GESTAR II) and US supplement, NEDE-24011-P-A-14, June 2000.

11. Letter from B. Currier to B. Henning, Determination of Middle of Cycle (MOC) Exposure Point for D2C18 EPU Core Operating Limits Report, NFM-MW:01-0390, December 13, 2001.

12. Dresden Unit 2 Cycle 18 FRED Form Revision 1, TODI NFM0100025 Sequence 01, DG01-000317, April 27, 2001.

1. Average Planar Linear Heat Generation Rate (3.2.1 and 3.4.1)

1.1 Technical Specification Reference:

Sections 3.2.1 and 3.4.1.

1.2 Description:

Tables 1-1, 1-2, and 1-3 are used to determine the maximum average planar linear heat generation rate (MAPLHGR) limit for each fuel type. Limits listed in Tables 1-1, 1-2, and 1-3 are for Dual Reactor Recirculation Loop Operation.

For Single Reactor Recirculation Loop Operation (SLO), the MAPLHGR limits given in Tables 1-1, 1-2, and 1-3 must be multiplied by a SLO MAPLHGR multiplier. The SLO MAPLHGR multiplier for SPC fuel is 0.84 (Reference 3 Section 16). The SLO MAPLHGR multiplier for GE14 fuel is 0.77 (Reference 3 Section 16).

Table 1-1
Maximum Average Planar Linear Heat
Generation Rate (MAPLHGR) for SPC ATRIUM-9B Fuel
ATRM9-P9DATB330-11GZ-SPC80M-9WR-144-T6-3915
ATRM9-P9DATB348-11GZ-SPC80M-9WR-144-T6-3913
ATRM9-P9HATB371-13GZ-SPC100T-9WR-144-T6-3914
ATRM9-P9HATB371-13GZ-SPC100T-9WR-144-T6-3912
(Bundles 3915,3913,3914,3912, bundle types 4,5,6,7,35,36,37)
(Reference 3 Section 16)

Planar Average Exposure (GWd/MTU)	MAPLHGR (kW/ft)
0.0	13.52
17.25	13.52
40.00	10.73
70.00	7.84

Table 1-2
Maximum Average Planar Linear Heat
Generation Rate (MAPLHGR) for SPC 9x9-2 Fuel
ANF9x9-2-P9DANB314-9GZ-SPC80M-145-T6-3909
(Bundle 3909, bundle type 1)
(Reference 3 Section 16)

Planar Average Exposure (GWd/MTU)	MAPLHGR (kW/ft)
0.0	10.84
25.00	10.84
48.00	7.20
55.00	7.20

Table 1-3
Maximum Average Planar Linear Heat
Generation Rate (MAPLHGR) for GE14 Fuel
GE14-P10HNAB408-16GZ-100T-145-T6-2483
GE14-P10HNAB411-4G7.0/9G6.0-100T-145-T6-2484
(Bundles 2483 & 2484, bundle types 16, 46, 17 & 47)
(Reference 3 Section 16)

Planar Average Exposure (GWd/MTU)	**MAPLHGR (kW/ft)**
0.0	11.68
16.00	11.68
50.00	8.02
63.50	6.97
70.00	4.36

2. Minimum Critical Power Ratio (3.2.2, 3.4.1 and 3.7.7)

2.1 Technical Specification Reference:

Sections 3.2.2, 3.4.1 and 3.7.7.

2.2 Description:

The various MCPR limits are described below.

2.2.1 Manual Flow Control MCPR Limits

The Operating Limit MCPR (OLMCPR) is determined from either section 2.2.1.1 or 2.2.1.2, whichever is greater at any given power and flow condition.

2.2.1.1 Power-Dependent MCPR

For operation at less than 38.5% core thermal power, the OLMCPR as a function of core thermal power is shown in Table 2-3. For operation at greater than 38.5% core thermal power, the OLMCPR as a function of core thermal power is determined by multiplying the applicable EOOS condition limit shown in Table 2-1 or 2-2 by the applicable MCPR multiplier K_P given in Table 2-3. For operation at exactly 38.5% core thermal power, the OLMCPR as a function of core thermal power is the higher of either of the two aforementioned methods evaluated at exactly 38.5% core thermal power.

2.2.1.2 Flow-Dependent MCPR

Tables 2-4, 2-5 and 2-6 give the $MCPR_F$ limit as a function of flow. The $MCPR_F$ limit determined from these tables is the flow dependent OLMCPR.

2.2.2 Automatic Flow Control MCPR Limits

Automatic Flow Control MCPR Limits are not provided.

2.2.3 Option A and Option B

Option A and Option B refer to scram speeds.

Option A scram speed is the Improved Technical Specification scram speed. The core average scram speed insertion time for 20% insertion must be less than or equal to the Technical Specification Scram Speed to utilize Option A MCPR limits. Reload analyses performed by Global Nuclear Fuel (GNF) for cycle 18 Option A MCPR limits utilized a 20% core average insertion time of 0.900 seconds.

To utilize the MCPR limits for the Option B scram speed, the core average scram insertion time for 20% insertion must be less than or equal to 0.694 seconds (Reference 7 Page 6). If the core average scram insertion time does not meet the Option B criteria, but is within the

Option A criteria, the appropriate MCPR value may be determined from a linear interpolation between the Option A and B limits with standard mathematical rounding to two decimal places. When performing a linear interpolation to determine MCPR limits, ensure that the time used for Option A is 0.900 seconds, which is the 20% insertion time utilized by GNF in the reload analysis.

2.2.4 Recirculation Pump Motor Generator Settings

Cycle 18 was analyzed with a maximum core flow runout of 110%; therefore the Recirculation Pump Motor Generator scoop tube mechanical and electrical stops must be set to maintain core flow less than 110% (107.8 Mlb/hr) for all runout events (Reference 12 Section 15). This value is consistent with the analyses of Reference 5.

Table 2-1
MCPR Option A Based Operating Limits
(Reference 3 Section 11, Reference 5 Section 2.3.9)

EOOS Combination	Fuel Type*	Cycle Exposure	
		<14,600 MWd/MT	14,600 MWd/MT
Base Case	GE14	1.53	1.66
	ATRIUM-9B	1.52	1.62
Base Case SLO	GE14	1.54	1.67
	ATRIUM-9B	1.53	1.63
TBPOOS	GE14	1.72	1.74
	ATRIUM-9B	1.65	1.67
TBPOOS SLO	GE14	1.73	1.75
	ATRIUM-9B	1.66	1.68
TCV Slow Closure	GE14	1.61	1.66
	ATRIUM-9B	1.56	1.62
TCV Slow Closure SLO	GE14	1.62	1.67
	ATRIUM-9B	1.57	1.63
PLUOOS	GE14	1.66	1.66
	ATRIUM-9B	1.60	1.62
PLUOOS SLO	GE14	1.67	1.67
	ATRIUM-9B	1.61	1.63
TCV Stuck Closed	GE14	1.53	1.66
	ATRIUM-9B	1.52	1.62
TCV Stuck Closed SLO	GE14	1.54	1.67
	ATRIUM-9B	1.53	1.63

* SPC 9x9-2 fuel is bound for all conditions of Table 2-1 by SPC ATRIUM-9B fuel.

Table 2-2
MCPR Option B Based Operating Limits
(Reference 3 Section 11, Reference 5 Section 2.3.9)

EOOS Combination	Fuel Type*	Cycle Exposure	
		<14,600 MWd/MT	14,600 MWd/MT
Base Case	GE14	1.42	1.49
	ATRIUM-9B	1.41	1.45
Base Case SLO	GE14	1.43	1.50
	ATRIUM-9B	1.42	1.46
TBPOOS	GE14	1.55	1.57
	ATRIUM-9B	1.48	1.50
TBPOOS SLO	GE14	1.56	1.58
	ATRIUM-9B	1.49	1.51
TCV Slow Closure	GE14	1.44	1.49
	ATRIUM-9B	1.41	1.45
TCV Slow Closure SLO	GE14	1.45	1.50
	ATRIUM-9B	1.42	1.46
PLUOOS	GE14	1.49	1.49
	ATRIUM-9B	1.43	1.45
PLUOOS SLO	GE14	1.50	1.50
	ATRIUM-9B	1.44	1.46
TCV Stuck Closed	GE14	1.42	1.49
	ATRIUM-9B	1.41	1.45
TCV Stuck Closed SLO	GE14	1.43	1.50
	ATRIUM-9B	1.42	1.46

* SPC 9x9-2 fuel is bound for all conditions of Table 2-2 by SPC ATRIUM-9B fuel.

Table 2-3
$MCPR_P$ for GE and SPC Fuel

(References 5 Figures 2-1, 2-3, 2-5, Sect 2.3.9)

EOOS Combination	Core Flow (% of rated)	Core Thermal Power (% of rated)								
		0	25	38.5	38.5	45	60	70	70	100
		Operating Limit MCPR			Operating Limit MCPR Multiplier, K_P					
Base Case (Option A or Option B)	≤ 60	3.11	2.54	2.23	1.32	1.28	1.15			1.00
	> 60	3.70	2.93	2.52						
Base Case SLO (Option A or Option B)	≤ 60	3.14	2.56	2.25	1.32	1.28	1.15			1.00
	> 60	3.74	2.96	2.54						
TBPOOS (Option A or Option B)	≤ 60	5.45	3.71	2.76	1.37	1.28	1.15			1.00
	> 60	6.67	4.54	3.39						
TBPOOS SLO (Option A or Option B)	≤ 60	5.50	3.74	2.79	1.37	1.28	1.15			1.00
	> 60	6.73	4.58	3.42						
TCV Slow Closure (Option A or Option B)	≤ 60	5.45	3.71	2.76	1.64		1.45	1.26	1.11	1.00
	> 60	6.67	4.54	3.39						
TCV Slow Closure SLO (Option A or Option B)	≤ 60	5.50	3.74	2.79	1.64		1.45	1.26	1.11	1.00
	> 60	6.73	4.58	3.42						
PLUOOS (Option A or Option B)	≤ 60	5.45	3.71	2.76	1.64		1.45	1.26	1.11	1.00
	> 60	6.67	4.54	3.39						
PLUOOS SLO (Option A or Option B)	≤ 60	5.50	3.74	2.79	1.64		1.45	1.26	1.11	1.00
	> 60	6.73	4.58	3.42						
TCV Stuck Closed (Option A or Option B)	≤ 60	3.11	2.54	2.23	1.32	1.28	1.15			1.00
	> 60	3.70	2.93	2.52						
TCV Stuck Closed SLO (Option A or Option B)	≤ 60	3.14	2.56	2.25	1.32	1.28	1.15			1.00
	> 60	3.74	2.96	2.54						

Notes for Table 2-3:

- Values are interpolated between relevant power levels.
- For thermal limit monitoring at greater than 100% core thermal power, the 100% core thermal power multiplier K_P should be applied.
- Allowable EOOS conditions are listed in Section 5.

Table 2-4
$MCPR_F$ limits for GE and SPC Fuel
Dual Reactor Recirculation Loop Operation
(Reference 5 Figure 3-2)

Flow (% rated)	$MCPR_F$
0	1.74
30	1.56
40	1.50
90.28	1.20
110	1.20

Table 2-5
$MCPR_F$ for GE and SPC Fuel
Single Reactor Recirculation Loop Operation
(Reference 5 Figure 3-2)

Flow (% rated)	$MCPR_F$
0	1.76
30	1.58
40	1.52
92.14	1.20
110	1.20

Table 2-6
$MCPR_F$ limits for GE and SPC Fuel
Dual and Single Reactor Recirculation Loop Operation
with TCV Stuck Closed
(Reference 5 Table 2-16)

Flow (% rated)	$MCPR_F$
0	1.86
30	1.68
40	1.62
101	1.25
108.9	1.20
110	1.20

Notes for Tables 2-4, 2-5 and 2-6:
- Values are interpolated between relevant flow values.
- Rated flow is 98 Mlb/hr.

3. Linear Heat Generation Rate (3.2.3)

3.1 Technical Specification Reference:

Section 3.2.3.

3.2 Description:

The LHGR Limit is the product of the LHGR Limit from Tables 3-1, 3-2, 3-3 or 3-4 and the minimum of either the power dependent LHGR Factor, $LHGRFAC_P$, or the flow dependent LHGR Factor, $LHGRFAC_F$. The applicable power dependent LHGR Factor ($LHGRFAC_P$) is determined from Table 3-5. The applicable flow dependent LHGR Factor ($LHGRFAC_F$) is determined from Tables 3-6 and 3-7.

Table 3-1
LHGR Limits for Bundle Types 17 & 47
GE14-P10HNAB408-16GZ-100T-145-T6-2483
(Bundle 2483, bundle types 17 & 47)
(Reference 4 Page A5)

Nodal Exposure (GWd/MT)	LHGR Limit (kW/ft)
0	13.34
2.20	13.35
3.31	13.28
4.41	13.27
7.72	13.27
8.82	13.29
13.07	13.29
13.23	12.96
14.33	12.56
15.43	12.36
16.53	12.20
18.74	11.82
22.05	11.32
27.56	10.52
33.07	9.77
38.58	9.26
44.09	8.77
49.60	8.28
55.12	7.77
58.30	7.77
59.85	7.00
60.63	5.89
63.61	4.49
65.87	4.49

Table 3-2
LHGR Limits for Bundle Types 16 & 46
GE14-P10HNAB411-4G7.0/9G6.0-100T-145-T6-2484
(Bundle 2484, bundle types 16 & 46)
(Reference 4 Page A9)

Nodal Exposure (GWd/MT)	LHGR Limit (kW/ft)
0.00	13.40
12.58	13.40
13.23	13.23
14.33	12.94
15.43	12.81
16.53	12.69
18.74	12.32
22.05	11.81
27.56	11.08
33.07	10.40
38.58	9.75
44.09	9.13
49.60	8.54
55.12	7.97
56.63	7.97
63.03	5.00
64.58	4.90

Table 3-3
LHGR Limits for SPC ATRIUM-9B Fuel
ATRM9-P9DATB330-11GZ-SPC80M-9WR-144-T6-3915
ATRM9-P9DATB348-11GZ-SPC80M-9WR-144-T6-3913
ATRM9-P9HATB371-13GZ-SPC100T-9WR-144-T6-3914
ATRM9-P9HATB371-13GZ-SPC100T-9WR-144-T6-3912
(Bundles 3915,3913,3914,3912, bundle types 4,5,6,7,35,36,37)
(Reference 8 Figure 2.1)

Nodal Exposure (GWd/MT)	LHGR Limit (kW/ft)
0.00	14.40
15.00	14.40
64.30	7.90

- Table 3-3 is applicable to all ATRIUM-9B fuel types

Table 3-4
LHGR Limits for SPC 9x9-2 Fuel
ANF9X9-2-P9DANB314-9GZ-SPC80M-145-T6-3909
(Bundle 3909, bundle type 1)
(Reference 9 Section 7.2.3)

Nodal Exposure (GWd/MT)	LHGR Limit (kW/ft)
0.0	14.50
5.0	14.50
25.2	10.80
48.0	7.20
55.0	7.20

Table 3-5
LHGRFAC$_P$ for GE and SPC Fuel

(References 5 Figures 2-2, 2-4, 2-6)

EOOS Combination	Core Flow (% of rated)	Core Thermal Power (% of rated)							
		0	25	38.5	38.5	70	70	80	100
		LHGRFAC$_P$ multiplier							
Base Case (Option A or Option B)	≤ 60	0.50	0.56	0.59	0.68			0.86	1.00
	> 60								
Base Case SLO (Option A or Option B)	≤ 60	0.50	0.56	0.59	0.68			0.86	1.00
	> 60								
TBP OOS (Option A or Option B)	≤ 60	0.22	0.39	0.48	0.54				1.00
	> 60	0.33		0.42					
TBP OOS SLO (Option A or Option B)	≤ 60	0.22	0.39	0.48	0.54				1.00
	> 60	0.33		0.42					
TCV Slow Closure (Option A or Option B)	≤ 60	0.22	0.39	0.48	0.54	0.73	0.78		1.00
	> 60	0.33		0.42					
TCV Slow Closure SLO (Option A or Option B)	≤ 60	0.22	0.39	0.48	0.54	0.73	0.78		1.00
	> 60	0.33		0.42					
PLUOOS (Option A or Option B)	≤ 60	0.22	0.39	0.48	0.54	0.73	0.78		1.00
	> 60	0.33		0.42					
PLUOOS SLO (Option A or Option B)	≤ 60	0.22	0.39	0.48	0.54	0.73	0.78		1.00
	> 60	0.33		0.42					
TCV Stuck Closed (Option A or Option B)	≤ 60	0.50	0.56	0.59	0.68			0.86	1.00
	> 60								
TCV Stuck Closed SLO (Option A or Option B)	≤ 60	0.50	0.56	0.59	0.68			0.86	1.00
	> 60								

Notes for Table 3-5:

- Values are interpolated between relevant power levels.
- For thermal limit monitoring at greater than 100% core thermal power, the 100% core thermal power LHGRFAC$_P$ multiplier should be applied.
- Allowable EOOS conditions are listed in Section 5.

Table 3-6
$LHGRFAC_F$ multipliers

(Reference 5 Figure 3-3)

Flow (% rated)	$LHGRFAC_F$
0	0.28
30	0.55
40	0.64
50	0.77
80	1.00
100	1.00

Table 3-7
$LHGRFAC_F$ multipliers for Turbine Control Valve Stuck Closed

(Reference 5 Table 2-17)

Flow (% rated)	$LHGRFAC_F$
0	0.14
30	0.41
40	0.50
50	0.63
80	0.86
98.3	1.00
100	1.00

Notes for Tables 3-6 and 3-7:

- Values are interpolated between relevant flow values.
- 98 Mlb/hr is rated flow.
- For thermal limit monitoring at > 100% rated flow, the 100% rated flow multiplier should be used.
- $LHGRFAC_F$ multipliers listed are bounding for all fuel types installed in Cycle 18.
- Table 3-6 is valid for both SLO and dual loop operating conditions for all EOOS scenarios except TCV stuck closed.
- Table 3-7 is valid for both SLO and dual loop operating conditions with a TCV stuck closed.

4. Control Rod Block Instrumentation (3.3.2.1)

4.1 Technical Specification Reference:

Table 3.3.2.1-1

4.2 Description:

The Rod Block Monitor Upscale Instrumentation Setpoints are determined from the relationships shown below (Reference 6 Page 11):

ROD BLOCK MONITOR UPSCALE TRIP FUNCTION	ALLOWABLE VALUE
Two Recirculation Loop Operation	0.65 W_d + 55%
Single Recirculation Loop Operation	0.65 W_d + 51%

The setpoint may be lower/higher and will still comply with the Rod Withdrawal Event (RWE) Analysis because RWE is analyzed unblocked.

W_d – percent of drive flow required to produce a rated core flow of 98 Mlb/hr.

5. Allowed Modes of Operation (B 3.2.2, B 3.2.3)

The Allowed Modes of Operation with combinations of Equipment Out-of-Service are as described below:

	---------OPERATING REGION---------			
Equipment Out of Service Options[1]	**Standard**	**MELLLA**	**Coastdown[3]**	**POWERPLEX Thermal Limit Set Number**
Base Case[2], Option A	Yes	Yes	Yes	1
Base Case SLO[2], Option A	Yes	Yes	Yes	2
TBPOOS[2], Option A	Yes	Yes	Yes	3
TBPOOS SLO[2], Option A	Yes	Yes	Yes	4
TCV Slow Closure, Option A	Yes	Yes	Yes	5
TCV Slow Closure SLO, Option A	Yes	Yes	Yes	6
PLUOOS, Option A	Yes	Yes	Yes	7
PLUOOS SLO, Option A	Yes	Yes	Yes	8
TCV Stuck Closed, Option A	Yes	Yes	Yes	9
TCV Stuck Closed SLO, Option A	Yes	Yes	Yes	10
Base Case[2], Option B	Yes	Yes	Yes	11
Base Case SLO[2], Option B	Yes	Yes	Yes	12
TBPOOS[2], Option B	Yes	Yes	Yes	13
TBPOOS SLO[2], Option B	Yes	Yes	Yes	14
TCV Slow Closure, Option B	Yes	Yes	Yes	15
TCV Slow Closure SLO, Option B	Yes	Yes	Yes	16
PLUOOS, Option B	Yes	Yes	Yes	17
PLUOOS SLO, Option B	Yes	Yes	Yes	18
TCV Stuck Closed, Option B	Yes	Yes	Yes	19
TCV Stuck Closed SLO, Option B	Yes	Yes	Yes	20

[1] Each OOS Option may be combined with up to 18 TIP channels OOS (provided the requirements for utilizing SUBTIP methodology are met) with all TIPS available at startup from a refuel outage, a 100°F reduction in feedwater temperature throughout the cycle (Final Feedwater Temperature Reduction was analyzed for the entire cycle), and up to 50% of the LPRMs OOS with an LPRM calibration frequency of 2500 Effective Full Power Hours (EFPH) (2000 EFPH +25%).

[2] The base case condition supports 1 Turbine Bypass Valve OOS if the assumed opening profile for the remaining group of Turbine Bypass Valves is met. If the opening profile is not met, or if more than one Turbine Bypass Valve is OOS, utilize the TBPOOS condition. Ensure unit's license supports operation with 1 Turbine Bypass Valve out of service prior to crediting this flexibility.

[3] Coastdown operation is defined as any cycle exposure beyond the full power, all rods out condition with plant power slowly lowering to a lesser value while core flow is held constant (Reference 10 Section 4.3.1.2.8). Up to a 15% overpower is analyzed per Reference 5.

6. Methodology

The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

1. ANF-1125 (P)(A) and Supplements 1 and 2, "Critical Power Correlation – ANFB," April 1990.

2. ANF-524 (P)(A) and Supplements 1 and 2, "ANF Critical Power Methodology for Boiling Water Reactors," Revision 2, November 1990.

3. XN-NF-79-71 (P)(A) Revision 2 and Supplements 1, 2 & 3, "Exxon Nuclear Plant Transient Methodology for Boiling Water Reactors," March 1986.

4. XN-NF-80-19 (P)(A) Volume 1 Supplement 3, Supplement 3 Appendix F, and Supplement 4, "Exxon Nuclear Methodology for Boiling Water Reactors," November 1990.

5. XN-NF-85-67 (P)(A) Revision 1, "Generic Mechanical Design for Exxon Nuclear Jet Pump BWR Reload Fuel," September 1986.

6. ANF-913 (P)(A) Volume 1 Revision 1, and Volume 1 Supplements 2, 3, 4, "COTRANSA2: A Computer Program for Boiling Water Reactor Transients Analysis," August 1990.

7. XN-NF-82-06- (P)(A) Supplement 1 Revision 2, "Qualification of Exxon Nuclear Fuel for Extended Burnup Supplement 1 Extended Burnup Qualification of ENC 9x9 BWR Fuel Grand Gulf Reactors," May1988.

8. ANF-89-14(P)(A) Revision 1 and Supplements 1 & 2, "Advanced Nuclear Fuels Corporation Generic Mechanical Design for Advanced Nuclear Fuels Corporation 9X9 – IX and 9x9 – 9X BWR Reload Fuel," October 1991.

9. ANF-89-14(P), "Advanced Nuclear Fuels Corporation Generic Mechanical Design for Advanced Nuclear Fuels Corporation 9X9 – IX and 9x9 – 9X BWR Reload Fuel," May 1989.

10. ANF-89-98 (P)(A), Generic Mechanical Design Criteria for BWR Fuel Designs, Revision 1 and Revision 1 Supplement 1, May 1995.

11. ANF-91-048 (P)(A), "Advanced Nuclear Fuels Corporation Methodology for Boiling Water Reactors EXEM BWR ECCS Evaluation Model," January 1993.

12. Commonwealth Edison Company Topical Report NFSR-0091, "Benchmark of CASMO/MICROBURN BWR Nuclear Design Methods," Revision 0 and Supplements on Neutronics Licensing Analysis (Supplement 1) and La Salle County Unit 2 benchmarking (Supplement 2), December 1991, March 1992, and May 1992, respectively.

13. EMF-85-74 (P) Revision 0 and Supplement 1(P)(A) and Supplement 2(P)(A), "RODEX2A (BWR) Fuel Rod Thermal-Mechanical Evaluation Model," February 1998.

14. NEDE-24011-P-A-14 Revision 14, "General Electric Standard Application for Reactor Fuel (GESTAR)," June 2000.