Exelon Generation Company, LLC
Quad Cities Nuclear Power Station
22710 206th Avenue North
Cordova, IL 61242-9740

www.exeloncorp.com

Exelon Nuclear

SVP-02-101

November 22, 2002

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

Quad Cities Nuclear Power Station, Unit 1
Facility Operating License No. DPR-29
NRC Docket Number 50-254

Subject: Core Operating Limits Report for Quad Cities Unit 1 Cycle 18

On November 5, 2002, Quad Cities Nuclear Power Station Unit 1 was shutdown for Refuel Outage 17 (Q1R17). In accordance with Technical Specifications Section 5.6.5.d, the Core Operating Limits Report (COLR) for Quad Cities Unit 1 Cycle 18 is provided in Attachment A.

Should you have any questions concerning this letter, please contact Mr. W. J. Beck at (309) 227-2800.

Respectfully,

Timothy J. Tulon
Site Vice President
Quad Cities Nuclear Power Station

Attachment A: Core Operating Limits Report for Quad Cities Unit 1 Cycle 18

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station

A001

Attachment A

Core Operating Limits Report

for

Quad Cities Unit 1 Cycle 18

Core Operating Limits Report

for

Quad Cities Unit 1 Cycle 18

Revision 0

Issuance of Changes Summary

Affected Section	Affected Pages	Summary of Changes	Revision	Date
All	All	Original Issue (Cycle 18)	0	11/02

Table of Contents

References

1. Exelon Generation Company, LLC and MidAmerican Energy Company, Docket No. 50-254, Quad Cities Nuclear Power Station, Unit 1 Facility Operating License, License No. DPR-29.

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 Quad Cities Unit 1 Reload 17 Cycle 18", 0000-0009-5864-SRLR, Revision 2, October 2002 (TODI NF0200133 Rev. 1).

4. "Determination of Q1C18 MICROBURN GE14 LHGR Limits", BNDQ:02-026, Revision 0, July 10, 2002.

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, Commonwealth Edison Company, Quad Cities 1 & 2," GE DRF C51-00217-01, December 14, 1999.

7. "OPL-3 for Quad Cities Unit 1 Cycle 18", TODI QDC-02-018, dated April 25, 2002.

8. "Fuel Mechanical Design Report Exposure Extension for ATRIUM-9B Fuel Assemblies at Dresden, Quad Cities, and LaSalle Units", EMF-2563(P) Revision 1, TODI NFM0100107 Sequence 0, August 2001.

9. "Determination of Generic $MCPR_F$ Limits", BNDG:02-001, Revision 0, May 17, 2002.

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

11. Letter from Carlos de la Hoz to Doug Wise and Alex Misak, "Approval of GE Evaluation of MSIV out of Service for Dresden and Quad Cities", NFM-MW:02-0274, dated August 2, 2002.

12. "Quad Cities 1 Cycle 18 FRED Form", TODI NFM0200071 Revision 0, dated April 5, 2002.

13. Letter from Carlos de la Hoz to Doug Wise and Alex Misak, "Approval of GE Evaluation of Dresden and Quad Cities Pressure Regulator Out of Service Analysis," NF-MW:02-0413, October 22, 2002.

14. "Determination of Q1C18 Thermal Limits for Powerplex," BNDQ:02-042, Revision 0, November 2002.

15. GIM 02-13, "Quad Cities Unit 1 Cycle 18 Revised DBLP Core Loading Licensing Applicability Review," November 11, 2002.

1. Average Planar Linear Heat Generation Rate

1.1 Technical Specification Reference:

Sections 3.2.1 and 3.4.1.

1.2 Description:

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

For Single Reactor Recirculation Loop Operation (SLO), the MAPLHGR limits given in Tables 1-1 and 1-2 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-P9DATB383-11GZ-SPC100T-9WR-144-T6-2446
ATRM9-P9DATB382-12GZ-SPC100T-9WR-144-T6-2438
ATRM9-P9DATB348-11G6.5-SPC100T-9WR-144-T6-2444
ATRM9-P9DATB360-11G6.5-SPC100T-9WR-144-T6-2445
(Bundles 2446, 2438, 2444, 2445,
bundle types 18, 19, 5 and 7)
(Reference 3 Section 16)

Planar Average Exposure (GWd/MTU)	MAPLHGR (kW/ft)
0.00	13.52
17.25	13.52
70.00	7.84

Table 1-2
Maximum Average Planar Linear Heat
Generation Rate (MAPLHGR) for GE14 Fuel
GE14-P10DNAB411-14GZ-100T-145-T6-2564
GE14-P10DNAB409-15GZ-100T-145-T6-2565
(Bundles 2564 and 2565, bundle types 16 and 17)
(Reference 3 Section 16)

Planar Average Exposure (GWd/MTU)	MAPLHGR (kW/ft)
0.00	11.68
16.00	11.68
44.09	9.16
55.12	8.09
63.50	6.97
70.00	4.36

2. Minimum Critical Power Ratio

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 and 2-5 provide 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

The Operating Limit MCPR (OLMCPR) is determined from either section 2.2.2.1 or 2.2.2.2, whichever is greater at any given power and flow condition.

2.2.2.1 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 2-7. 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 limit shown in Table 2-6 by the applicable MCPR multiplier K_P given in Table 2-7. 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.

2.2.2.2 Flow-Dependent MCPR

Table 2-4 provides the $MCPR_F$ limit as a function of flow. The $MCPR_F$ limit determined from this table is the flow dependent OLMCPR.

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 (Reference 7 Page 6).

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
Manual Flow Control
(Reference 3 Appendix G)

EOOS Combination	Fuel Type	Cycle Exposure	
		<EOR-2060 MWd/MT	≥EOR-2060 MWd/MT
Base Case	GE14	1.52	1.66
	ATRIUM-9B	1.51	1.63
Base Case SLO	GE14	1.53	1.67
	ATRIUM-9B	1.52	1.64
TBPOOS	GE14	1.75	1.77
	ATRIUM-9B	1.70	1.72
TBPOOS SLO	GE14	1.76	1.78
	ATRIUM-9B	1.71	1.73
TCV Slow Closure	GE14	1.65	1.66
	ATRIUM-9B	1.59	1.63
TCV Slow Closure SLO	GE14	1.66	1.67
	ATRIUM-9B	1.60	1.64
PLUOOS	GE14	1.68	1.68
	ATRIUM-9B	1.63	1.63
PLUOOS SLO	GE14	1.69	1.69
	ATRIUM-9B	1.64	1.64
TCV Stuck Closed	GE14	1.52	1.66
	ATRIUM-9B	1.51	1.63
TCV Stuck Closed SLO	GE14	1.53	1.67
	ATRIUM-9B	1.52	1.64

Notes for Table 2-1:
EOR refers to end of rated power (i.e. 100% power/100% flow operation with all rods out)

Table 2-2
MCPR Option B Based Operating Limits
Manual Flow Control
(Reference 3 Appendix G)

EOOS Combination	Fuel Type	Cycle Exposure	
		<EOR-2060 MWd/MT	≥EOR-2060 MWd/MT
Base Case	GE14	1.44	1.49
	ATRIUM-9B	1.44	1.46
Base Case SLO	GE14	1.45	1.50
	ATRIUM-9B	1.45	1.47
TBPOOS	GE14	1.58	1.60
	ATRIUM-9B	1.53	1.55
TBPOOS SLO	GE14	1.59	1.61
	ATRIUM-9B	1.54	1.56
TCV Slow Closure	GE14	1.48	1.49
	ATRIUM-9B	1.44	1.46
TCV Slow Closure SLO	GE14	1.49	1.50
	ATRIUM-9B	1.45	1.47
PLUOOS	GE14	1.51	1.51
	ATRIUM-9B	1.46	1.46
PLUOOS SLO	GE14	1.52	1.52
	ATRIUM-9B	1.47	1.47
TCV Stuck Closed	GE14	1.44	1.49
	ATRIUM-9B	1.44	1.46
TCV Stuck Closed SLO	GE14	1.45	1.50
	ATRIUM-9B	1.45	1.47

Notes for Table 2-2:
EOR refers to end of rated power (i.e. 100% power/100% flow operation with all rods out)

Table 2-3
$MCPR_P$ for all fuel types
Manual Flow Control

(Reference 3 Appendix G)

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	≤ 60	3.16	2.58	2.27	1.32	1.28	1.15			1.00
	> 60	3.77	2.99	2.56						
Base Case SLO	≤ 60	3.17	2.59	2.28	1.32	1.28	1.15			1.00
	> 60	3.78	3.00	2.57						
TBPOOS	≤ 60	5.55	3.77	2.82	1.37	1.28	1.15			1.00
	> 60	6.79	4.62	3.45						
TBPOOS SLO	≤ 60	5.56	3.78	2.83	1.37	1.28	1.15			1.00
	> 60	6.80	4.63	3.46						
TCV Slow Closure	≤ 60	5.55	3.77	2.82	1.64		1.45	1.26	1.11	1.00
	> 60	6.79	4.62	3.45						
TCV Slow Closure SLO	≤ 60	5.56	3.78	2.83	1.64		1.45	1.26	1.11	1.00
	> 60	6.80	4.63	3.46						
PLUOOS	≤ 60	5.55	3.77	2.82	1.64		1.45	1.26	1.11	1.00
	> 60	6.79	4.62	3.45						
PLUOOS SLO	≤ 60	5.56	3.78	2.83	1.64		1.45	1.26	1.11	1.00
	> 60	6.80	4.63	3.46						
TCV Stuck Closed	≤ 60	3.16	2.58	2.27	1.32	1.28	1.15			1.00
	> 60	3.77	2.99	2.56						
TCV Stuck Closed SLO	≤ 60	3.17	2.59	2.28	1.32	1.28	1.15			1.00
	> 60	3.78	3.00	2.57						

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.
- $MCRP_P$ limits are independent of scram speed.

Table 2-4
$MCPR_F$ limits for all fuel types and all operating conditions except TCV Stuck Closed

(Reference 9 Page 8)

Flow (% rated)	$MCPR_F$
110.0	1.22
100.0	1.22
0.0	1.86

Notes for Tables 2-4:

- Values are interpolated between relevant flow values.
- Rated flow is 98 Mlb/hr.
- $MCRP_F$ limit is independent of scram speed.
- This table is not applicable to TCV Stuck Closed operating conditions.
- This table is applicable to Automatic and Manual Flow Control operation.

Table 2-5
$MCPR_F$ limits for all fuel types with a TCV Stuck Closed

(Reference 9 Page 8)

Flow (% rated)	$MCPR_F$
110.0	1.27
108.9	1.27
0.0	1.97

Notes for Tables 2-5:

- Values are interpolated between relevant flow values.
- Rated flow is 98 Mlb/hr.
- $MCRP_F$ limit is independent of scram speed.
- This table is only applicable to TCV Stuck Closed operating conditions.

Table 2-6
Automatic Flow Control MCPR Option A Based Operating Limits

(Reference 3 Appendix C and Appendix G)

EOOS Combination	Fuel Type	Cycle Exposure	
		<EOR-2060 MWd/MT	≥EOR-2060 MWd/MT
Base Case	GE14	1.72	1.86
	ATRIUM-9B	1.71	1.83

Notes for Table 2-6:
EOR refers to end of rated power (i.e. 100% power/100% flow operation with all rods out)

Table 2-7
$MCPR_P$ for all fuel types
Automatic Flow Control
(Reference 3 Appendix C and Appendix G)

EOOS Combination	Core Flow (% of rated)	Core Thermal Power (% of rated)						
		0	25	38.5	38.5	45	60	100
		Operating Limit MCPR			Operating Limit MCPR Multiplier, K_P			
Base Case	≤ 60	3.16	2.58	2.27	1.32	1.28	1.15	1.00
	> 60	3.77	2.99	2.56				

3. Linear Heat Generation Rate

3.1 Technical Specification Reference:

Section 3.2.3.

3.2 Description:

The linear heat generation rate (LHGR) limit is the product of the LHGR Limit from Tables 3-1, 3-2, or 3-3 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 3-4 or Table 3-7. The applicable flow dependent LHGR Factor ($LHGRFAC_F$) is determined from Tables 3-5 and 3-6.

Table 3-1
LHGR Limits for Bundle Type
GE14-P10DNAB411-14GZ-100T-145-T6-2564
(Bundle 2564, bundle type 16)
(Reference 4 Page 6)

Nodal Exposure (GWd/MT)	LHGR Limit (kW/ft)
0.00	13.40
12.50	13.40
15.20	13.05
24.00	11.95
47.00	9.10
56.25	8.00
62.85	5.00

Table 3-2
LHGR Limits for Bundle Type
GE14-P10DNAB409-15GZ-100T-145-T6-2565
(Bundle 2565, bundle type 17)
(Reference 4 Page 6)

Nodal Exposure (GWd/MT)	LHGR Limit (kW/ft)
0.00	13.40
12.50	13.40
15.00	13.05
18.70	12.60
27.50	11.50
56.00	8.00
62.50	5.00

Table 3-3
LHGR Limits for SPC ATRIUM-9B Fuel
ATRM9-P9DATB383-11GZ-SPC100T-9WR-144-T6-2446
ATRM9-P9DATB382-12GZ-SPC100T-9WR-144-T6-2438
ATRM9-P9DATB348-11G6.5-SPC100T-9WR-144-T6-2444
ATRM9-P9DATB360-11G6.5-SPC100T-9WR-144-T6-2445
(Bundles 2446, 2438, 2444, 2445,
bundle types 18, 19, 5 and 7)
(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 3-4
$LHGRFAC_P$ for all fuel types
Manual Flow Control

(Reference 3 Appendix G)

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	≤ 60 > 60	0.50	0.56	0.59	0.68			0.86	1.00
Base Case SLO	≤ 60 > 60	0.50	0.56	0.59	0.68			0.86	1.00
TBPOOS	≤ 60 > 60	0.22 0.33	0.39	0 48 0.42	0.54				1.00
TBPOOS SLO	≤ 60 > 60	0.22 0.33	0.39	0.48 0.42	0.54				1.00
TCV Slow Closure	≤ 60 > 60	0.22 0.33	0.39	0.48 0.42	0.54	0.73	0.78		1.00
TCV Slow Closure SLO	≤ 60 > 60	0.22 0.33	0.39	0.48 0.42	0.54	0.73	0.78		1.00
PLUOOS	≤ 60 > 60	0.22 0.33	0.39	0 48 0.42	0.54	0.73	0.78		1.00
PLUOOS SLO	≤ 60 > 60	0.22 0.33	0.39	0.48 0.42	0.54	0.73	0.78		1.00
TCV Stuck Closed	≤ 60 > 60	0.50	0.56	0.59	0 68			0.86	1.00
TCV Stuck Closed SLO	≤ 60 > 60	0.50	0.56	0.59	0.68			0.86	1.00

Notes for Table 3-4:

- 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.
- $LHGRFAC_P$ multiplier is independent of scram speed.

Table 3-5
$LHGRFAC_F$ 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
110	1.00

Table 3-6
$LHGRFAC_F$ 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
110	1.00

Notes for Tables 3-5 and 3-6:

- Values are interpolated between relevant flow values.
- 98 Mlb/hr is rated flow.
- $LHGRFAC_F$ multipliers are applicable to all fuel types used in cycle 18.
- Table 3-5 is valid for manual and automatic flow control under all operating conditions and EOOS scenarios except TCV stuck closed.
- Table 3-6 is valid for all operating conditions with a TCV stuck closed.
- $LHGRFAC_F$ multipliers are independent of scram speed.

Table 3-7
$LHGRFAC_P$ multipliers for all fuel types
Automatic Flow Control

(Reference 3 Appendix C)

Power (% rated)	$LHGRFAC_P$
100	1.00
50	0.50
0	0.00

Notes for Table 3-7

- 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.
- $LHGRFAC_P$ multiplier is independent of scram speed.

4. Control Rod Withdrawal Block Instrumentation

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	$0.65\ W_d + 56.1\%$
Single Recirculation Loop Operation	$0.65\ W_d + 51.4\%$

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

The allowable value is clamped with a maximum value not to exceed to allowable value for a recirculation loop drive flow of 100%

W_d – percent of recirculation loop 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, B 3.7.7)

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

	---------OPERATING REGION--------			
Equipment Out of Service Options[1,2,3]	**Standard**	**ICF[5]**	**MELLLA**	**Coastdown[4]**
Base Case, Option A or B	Yes	Yes	Yes	Yes
Base Case SLO, Option A or B	Yes	Yes	Yes	Yes
TBPOOS, Option A or B	Yes	Yes	Yes	Yes
TBPOOS SLO, Option A or B	Yes	Yes	Yes	Yes
TCV Slow Closure[6], Option A or B	Yes	Yes	Yes	Yes
TCV Slow Closure SLO[6], Option A or B	Yes	Yes	Yes	Yes
PLUOOS[7], Option A or B	Yes	Yes	Yes	Yes
PLUOOS SLO, Option A or B	Yes	Yes	Yes	Yes
TCV Stuck Closed, Option A or B	Yes	Yes	Yes	Yes
TCV Stuck Closed SLO, Option A or B	Yes	Yes	Yes	Yes
Automatic Flow Control, Option A	Yes	Yes	Yes	Yes

[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 120°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] Additionally, a single MSIV may be taken OOS (shut) under any and all OOS Options <u>except</u> Automatic Flow Control, so long as core thermal power is maintained ≤75% of 2957 MWt (Reference 11).

[3] All OOS Options support 1 Turbine Bypass Valve OOS, if the OPL-3 assumed opening profile for the Turbine Bypass system is met. If the OPL-3 (Reference 7) opening profile is not met, or if more than one Turbine Bypass Valve is OOS, utilize the TBPOOS condition.

[4] 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.

[5] Increased Core Flow (ICF) is supported to 108% of rated core flow.

[6] For operation with a pressure regulator out-of-service (PROOS), the TCV Slow Closure limits should be applied (Reference 13) and the operational notes from Reference 13 reviewed. PROOS <u>and</u> TCV Slow Closure is <u>not</u> an analyzed out-of-service combination.

[7] If the Base Case limit set is being used and the PLU is taken OOS for a surveillance and the reactor is maintained at ≥80% rated reactor power and ≥80% rated reactor flow during the PLUOOS period, an administrative limit on FDLRX/MFLPD and MFLCPR can be used instead of the PLUOOS thermal limit set. The FDLRX/MFLPD administrative limit is 0.98 for all scram speeds. The MFLCPR administrative limit is 0.90 for Option A scram speed, 0.95 for Option B scram speed, and 0.94 for an Option AB scram speed of 0.731s.(Reference 14).

6. Methodology (5.6.5)

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) Revision 2 and Supplements 1 and 2, "ANF Critical Power Methodology for Boiling Water Reactors," 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 Supplements 1 and 2, "Exxon Nuclear Methodology for Boiling Water Reactors – Neutronic Methods for Design and Analysis," March 1993.
5. 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.
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