Oyster Creek Cycle 16

Core Operating Limits Report

Topical Report - 066
Rev. 7

BA Number 335400

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INTRODUCTION

Generic Letter 88-16 provides guidance for Technical Specification Changes concerning cycle-specific limits. The generic letter provides a vehicle for the removal of cycle specific parameters from the Technical Specification and the maintenance of these values within a Core Operating Limits Report (COLR). The Technical Specification modification also establishes reporting requirements and includes definitions supporting the proposed changes. The COLR, including mid-cycle revisions, will be provided for each reload cycle.

This Core operating limits Report (COLR) has been prepared in accordance with the requirements of OC Technical Specification 6.9.1.f. The information in this report was reviewed and approved for use at Oyster Creek by means of the Cycle 16 Reload Information and Safety Analysis Report (TR-109 Rev. 0) dated September 1996. The Cycle 16 fuel/core operating limits were generated using the NRC approved codes and methodologies identified in References 1 through 8.

For each GE fuel design the APLHGR limits provided in the COLR for four-loop operation are calculated to be the same as the five-loop limits at all exposure levels provided the idle loop is unisolated. If the idle loop have both its suction and discharge valves closed the loop is isolated as defined in reference 6 and a 0.98 MAPHLGR multiplier must be applied at all exposure levels. Requirements for operation with an idle loop are provided in Technical Specification 3.3.F.

During power operation thermal margins should be maintained with the specified limits. If at any time during power operation it is determined by normal surveillance that the limiting value for APLHGR (Figures 1-4), LLHGR (Figure 7) or CPR (Figures 5 and 6) is being exceeded, action shall be initiated to restore operation to within the proscribed limits as specified in Technical Specification Section 3.10.

REFERENCES

1. Letter from J. N. Donahew, Jr. (NRC) to P.B. Fiedler (GPUN) dated November 14, 1986, ``Reload Topical Report TR 020, Rev 0 (TAC6039).''

2. Letter from A. W. Dromerick (NRC) to P.B. Fiedler (GPUN) dated September 27, 1987, GPU Nuclear Corp. (GPUN) Topical Report TR 021, Revision 0, ``Methods for the analysis of Boiling Water Reactors Steady State Physics.''

3. Letter from A. W. Dromerick (NRC) to P.B. Fiedler (GPUN) dated March 21, 1988, GPU Nuclear Corp. (GPUN) Topical Report TR 033, Revision 0, ``Meth[illegible] for the Generation of Core Kinetics Data for RETRAN-02 (TAC No. 65138).''

4. Letter from A. W. Dromerick (NRC) to P.B. Fiedler (GPUN) dated March 21, 1988, GPU Nuclear Corp. (GPUN) Topical Report TR 040, Revision 0, ``Steady State and Quasi-Steady State Methods for Analyzing Accidents and Transients (TAC No. 65139).''

5. Letter from A. W. Dromerick (NRC) to E.E. Fitzpatrick (GPUN) dated October 12, 1988, GPU Nuclear Corp. (GPUN) Topical Report TR 040, Revision 0, ``BWR-2 Transient Analysis Model using the RETRAN Code (TAC No. 66358).''

6. ``Oyster Creek NGS SAFER/CORECOOL/GETR LOCA Loss-of-Coolant Accident Analysis,'' NEDE-31462P August 1987

7. ``Reload Information and Safety Analysis Report for Oyster Creek Cycle 16 Reload, GPUN TR-109 Revision 0, dated September 1996

8. Letter form A. W. Dromerick (NRC) to E. E. Fitzpatrick (GPUN) dated October 31, 1988 ``Issuance of Amendment No. 129 (TAC No. 67743).''

9. ``General Electric Standard Application for Reload Fuel,'' NEDE-240011-P-A-13 dated August 1996

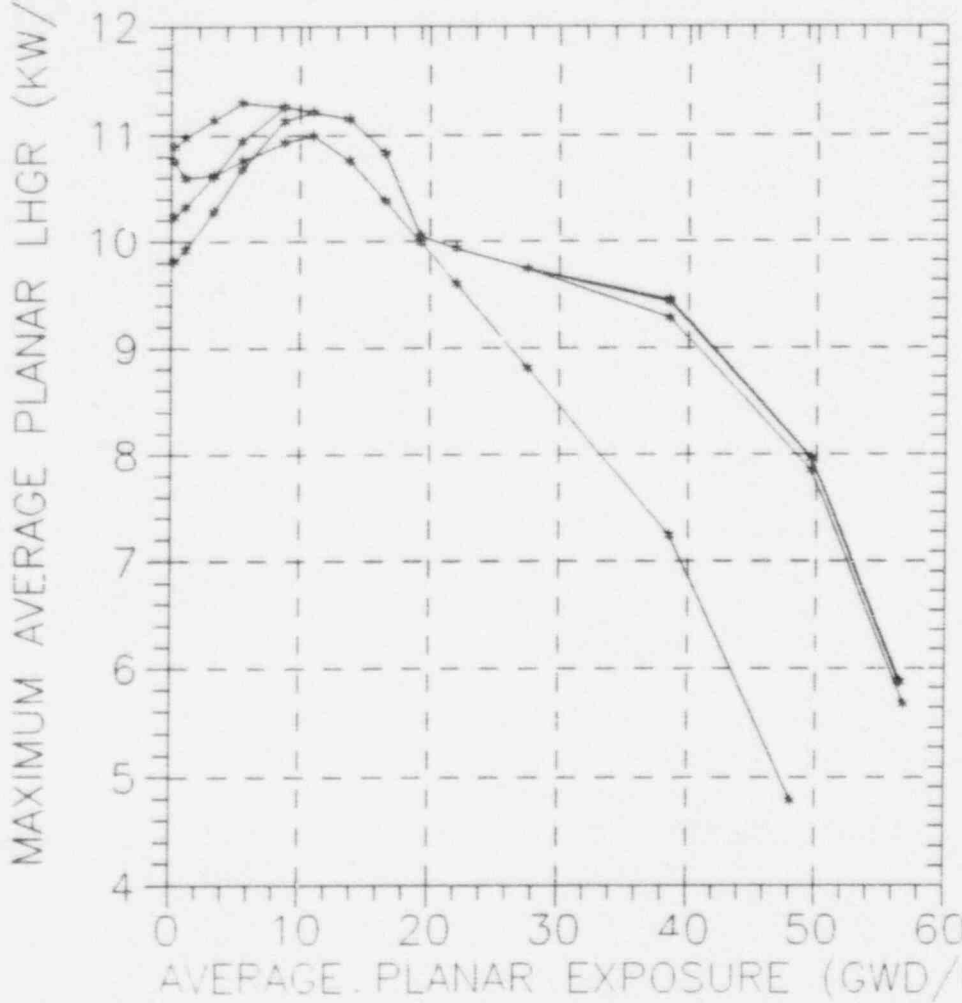
10. Letter WHO: 91-002, W.H. Hetzel (GE) to R.V. Furia (GPUN) dated January 14, 1991, ``Oyster Creek Reload 12 MAPLHGR Calculation.''

11. Letter WHO: 94-036, W.H. Hetzel (GE) to R.V. Furia (GPUN) dated July 29, 1994, ``MAPLHGR Report for Oyster Creek Reload Fuel Bundles.''

FIGURE 1

GE9B-P8DWB348-12GZ-80M-145-T FUEL

MAXIMUM ALLOWABLE AVERAGE PLANAR LINEAR HEAT GENERATION RATE (FOUR AND FIVE LOOP OPERATION)

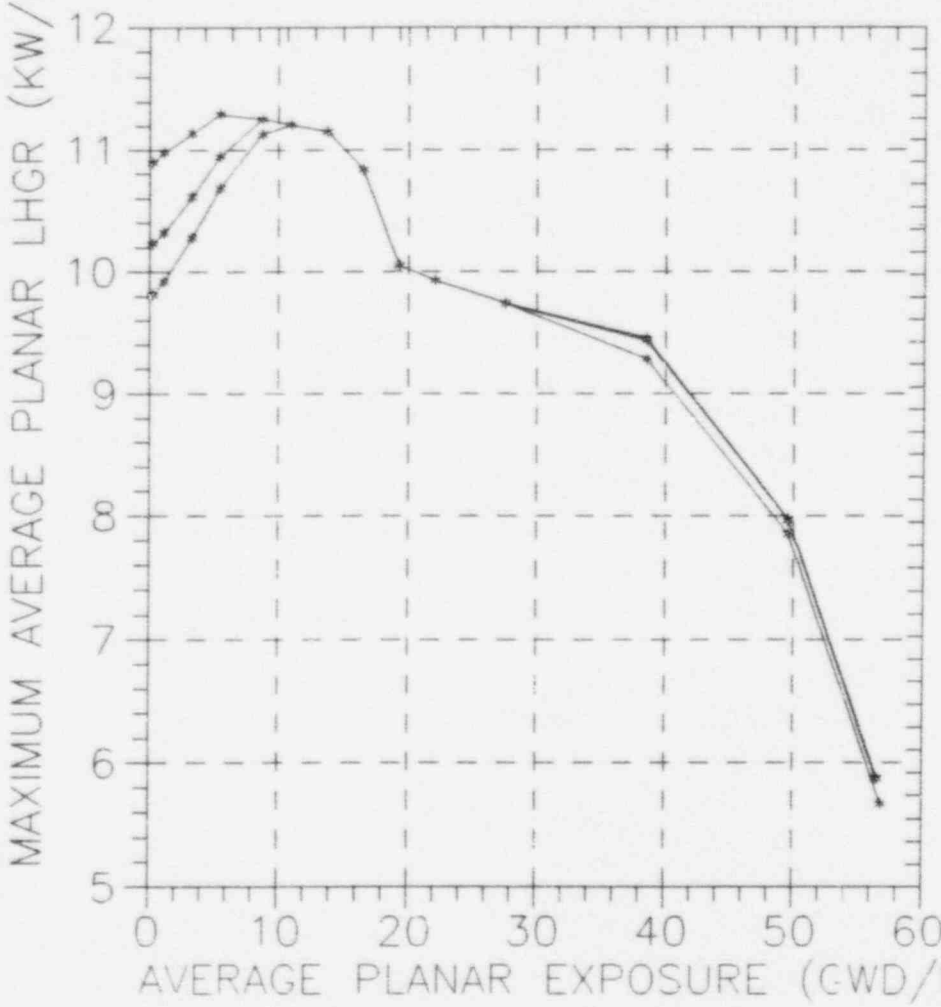


EXPOSURE (GWD/MT)	Lattice (PSZ)	Lattice (DOM)	Lattice (SDZ)	Lattice NAT-U
0.22	10.89	10.23	9.81	10.76
1.10	10.97	10.32	9.92	10.59
3.31	11.14	10.61	10.28	10.62
5.51	11.30	10.94	10.68	10.76
8.82	11.26	11.26	11.13	10.93
11.02	11.21	11.21	11.21	10.99
13.78	11.15	11.15	11.15	10.76
16.53	10.83	10.83	10.83	10.38
19.29	10.05	10.05	10.05	9.99
22.05	9.93	9.93	9.93	9.60
27.56	9.74	9.74	9.74	8.81
38.58	9.28	9.45	9.43	7.24
48.12				4.78
49.60	7.85	7.97	7.96	
56.49			5.88	
56.62		5.87		
56.87	5.67			

FIGURE 2

GE9B-P8DWB338-11GZ-80M-145-T FUEL

MAXIMUM ALLOWABLE AVERAGE PLANAR LINEAR HEAT GENERATION RATE (FOUR AND FIVE LOOP OPERATION)



EXPOSURE (GWD/MT)	Lattice (PSZ)	Lattice (DOM)	Lattice (SDZ)	Lattice (TWZ)
0.22	10.87	10.30	9.95	10.87
1.10	10.96	10.40	10.05	10.96
3.31	11.19	10.77	10.45	11.19
5.51	11.41	11.23	10.94	11.41
6.61	11.38	11.38	11.18	11.38
7.72			11.34	
8.82	11.31	11.31		11.31
11.02	11.25	11.25	11.25	11.25
16.53	10.65	10.65	10.65	10.65
19.29	10.04	10.04	10.04	10.04
22.05	9.94	9.94	9.94	9.94
27.56	9.77	9.77	9.77	9.77
38.58	9.08	9.27	9.26	9.09
49.60	7.77	7.93	7.92	7.77
56.17				5.80
56.20	5.79			
57.01			5.74	
57.06		5.77		

FIGURE 3

GE-P8DQB338-12GZ FUEL

MAXIMUM ALLOWABLE AVERAGE PLANAR LINEAR HEAT GENERATION RATE (FOUR AND FIVE LOOP OPERATION)

Tech Spec 3.10.A

DATA POINTS

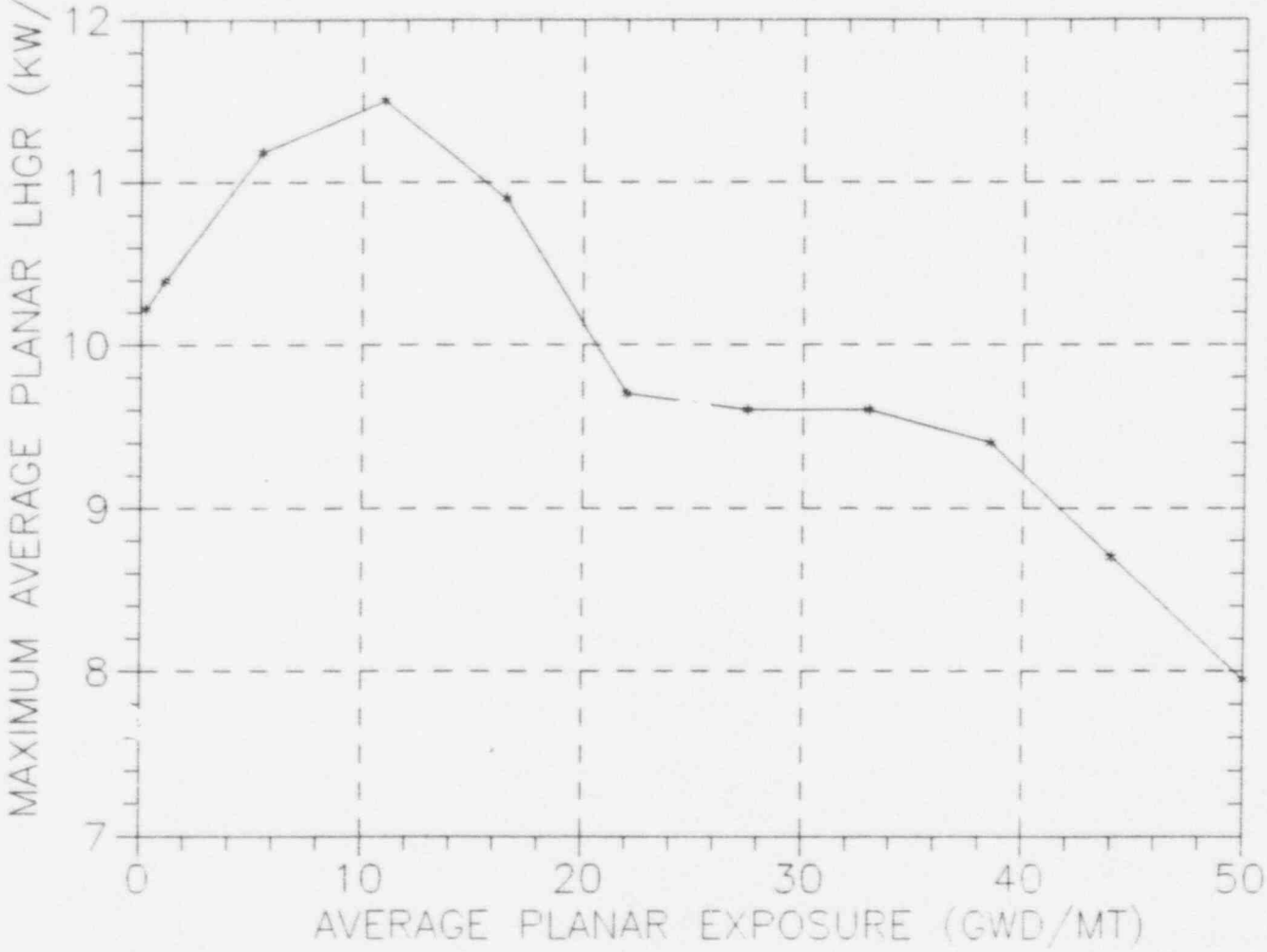
EXPOSURE (GWD/MT)	MAPLHGR (KW/FT)
0.22	9.93
1.10	10.07
5.50	10.97
11.00	11.50
16.50	10.90
22.00	9.70
27.50	9.60
33.00	9.60
38.50	9.40
44.00	8.63
50.00	7.85

FIGURE 4

Tech Spec 3.10.A

GE-P8DQB338-11GZ FUEL

MAXIMUM ALLOWABLE AVERAGE PLANAR LINEAR HEAT GENERATION RATE (FOUR AND FIVE LOOP OPERATION)



DATA POINTS

EXPOSURE (GWD/MT)	MAPLHGR (KW/FT)
0.22	10.22
1.10	10.39
5.50	11.18
11.00	11.50
16.50	10.90
22.00	9.70
27.50	9.60
33.00	9.60
38.50	9.40
44.00	8.70
50.00	7.95

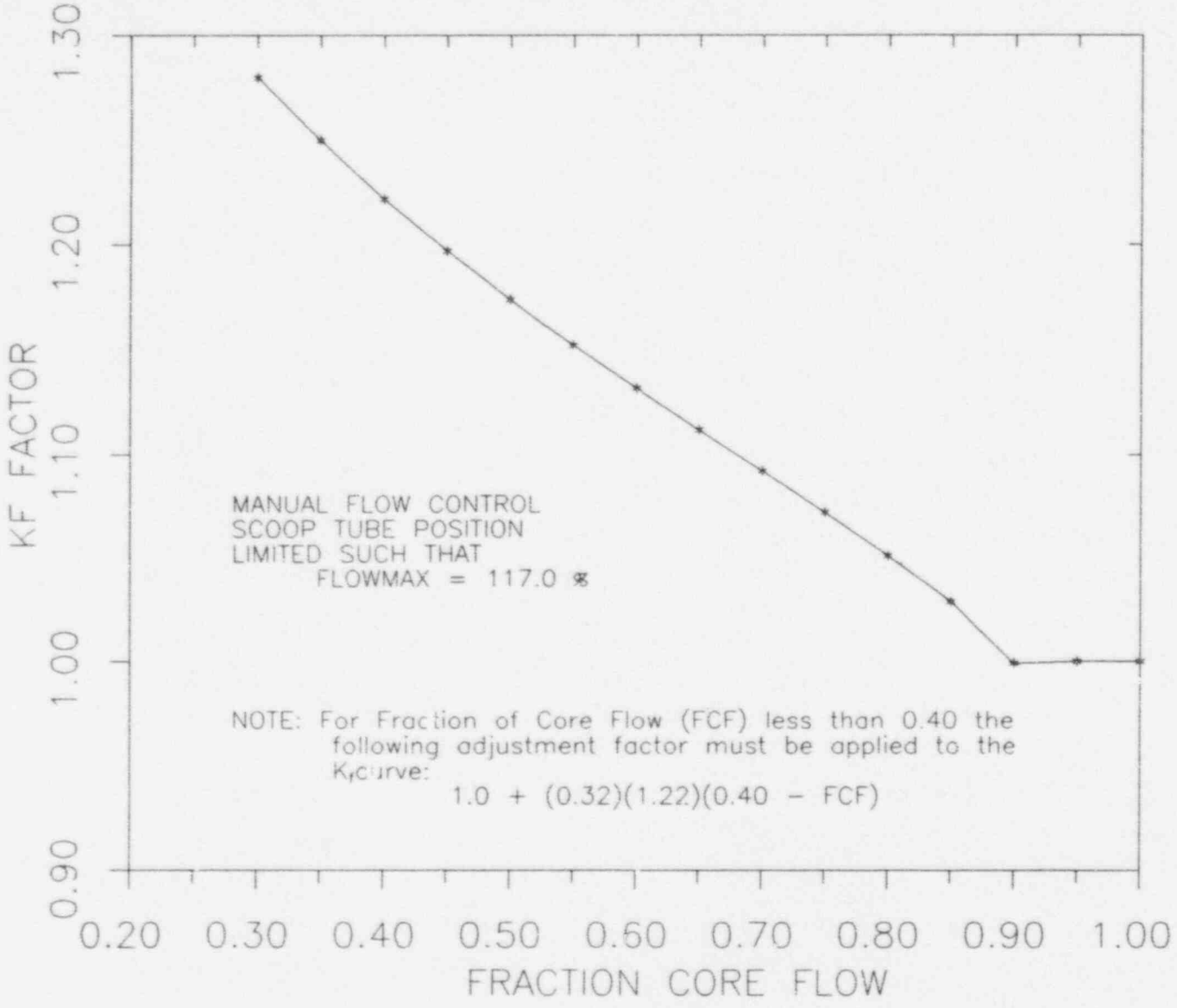
Figure 5

MINIMUM CRITICAL POWER RATIO (MCPR) - Tech Spec 3.10.C

	APRM STATUS	MCPR LIMIT
1.	If any two (2) LPRM assemblies which are input to the APRM system and are separated in distance by less than three (3) times the control rod pitch contain a combination of three (3) out of four (4) detector located in either the A and B or C and D levels which are failed or bypassed (i.e., APRM channel or LPRM input bypassed or inoperable)	1.53
2.	If any LPRM input to the APRM system at the B, C, or D level is failed or bypassed or any APRM channel is inoperable (or bypassed).	1.53
3.	All B, C, and D LPRM inputs to the APRM system are operating and no APRM channels are inoperable or bypassed.	1.53

FIGURE 7

LOW FACTOR, K_f



NOTE: For Fraction of Core Flow (FCF) less than 0.40 the following adjustment factor must be applied to the K_f curve:

$$1.0 + (0.32)(1.22)(0.40 - FCF)$$

DATA POINTS

FLOW	FLOWMAX (%) 117
0.3	1.28
0.4	1.22
0.5	1.17
0.6	1.13
0.7	1.09
0.8	1.05
0.9	1.00
1.0	1.00

Figure 7

LOCAL LINEAR HEAT GENERATION RATE (LLHGR) - Tech Spec 3.10.B

	FUEL TYPE	LHGR Limit
1.	GE8x8NB GE8x8EB	≤ 13.4 kw/ft