

Oyster Creek Cycle 12
Core Operating Limits Report

Topical Report 066
Rev 1

BA Number 335400

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Prepared: John Dougherty 7/11/90
Engineer Date
OC Fuel Projects

Approvals: Ronald V. Juria 7/12/90
Manager, Date
OC Fuel Projects

Peter S. Wohl 7/12/90
Nuclear Analysis & Date
Fuels Director

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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 any 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 6.9.4f. The information in this report was reviewed and approved for use at Oyster Creek by means of the Cycle 12 Reload Information and Safety Analysis Report (TR-049 - rev 1) dated August 1988. The Cycle 12 fuel/core operating limits were generated using the NRC approved codes and methodologies identified in References 1 through 11.

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 has both its suction and discharge valves closed the loop is isolated as defined in Reference 7 and a 0.98 MAPLHGR multiplier must be applied at all exposure levels. Requirements for operation with an idle loop are provided in Specification 3.3.F.

The ENC VB fuel five-loop APLHGR limits have been removed and replaced with the more conservative four-loop values for both four and five loop operation.

During power operation thermal margins should be maintained within the specified limits. If at any time during power operation it is determined by normal surveillance that the limiting value for APLHGR, LLHGR or CPR is being exceeded action shall be initiated to restore operation to within the prescribed limits as specified in Technical Specification Section 3.10.

REFERENCES

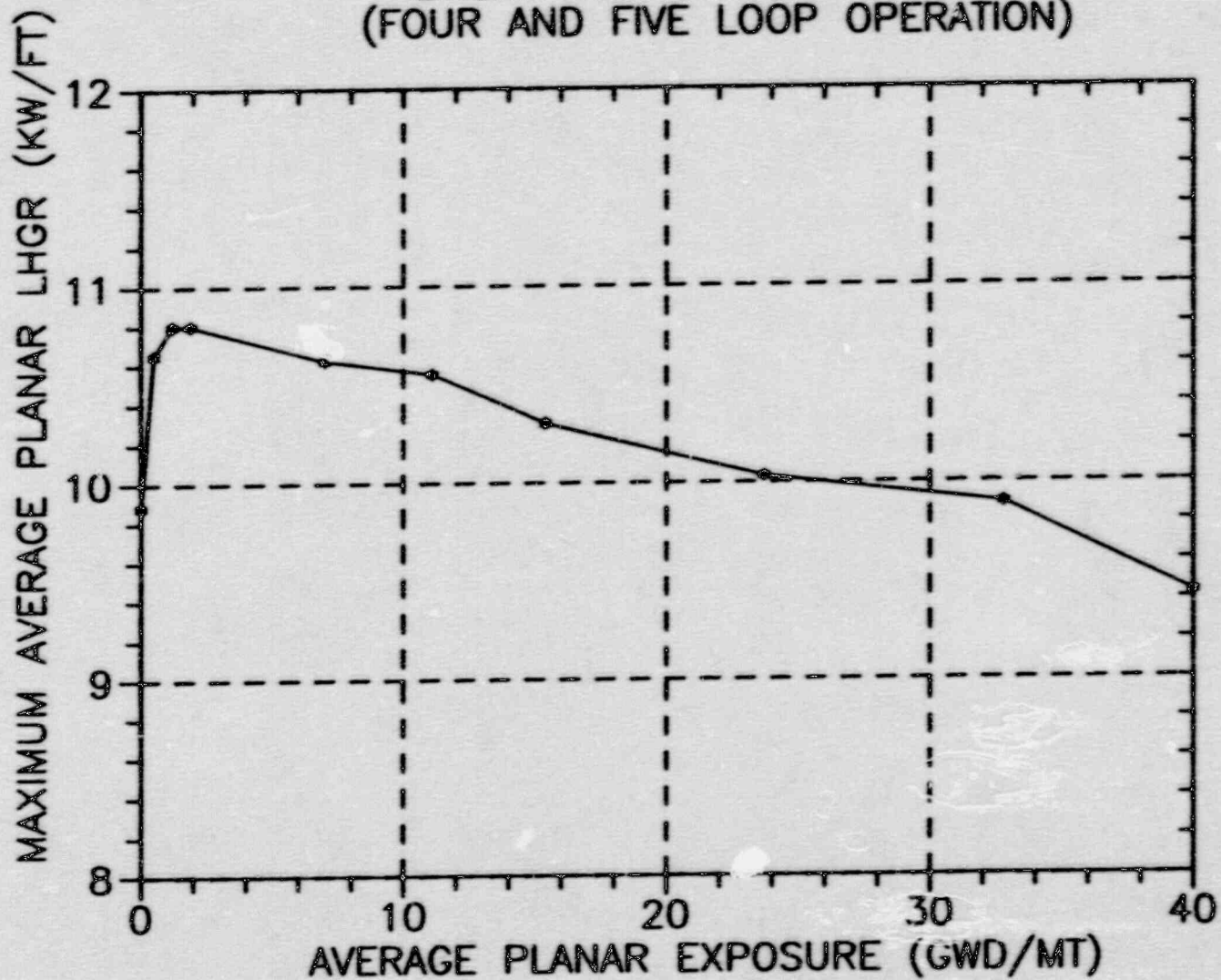
1. Letter from J. N. Donahew, Jr. (NRC) to P. B. Fiedler (GPUN) dated November 14, 1986, "Reload Topical Report TR 020 (TAC 60339)."
2. Letter from A. W. Dromerick (NRC) to P. B. Fiedler (GPUN) dated September 27, 1987, GPU Nuclear Corp. (GPUN) Topical Report TR 021, Revision 0, "Methods for the Analysis 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, "Methods 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, "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-045, "BWF-2 Transient Analysis Model using the RETRAN Code" (TAC No. 66358).
6. NEDE-24195; General Electric Reload Fuel application for Oyster Creek.
7. NEDE-31462P; "Oyster Creek NGS SAFETY/CORECOOL/GESTR-LOCA LOSS of coolant Accident Analysis", August 1987.
8. GPUN TR-049 Rev.1, "Reload Information and Safety Analysis Report for Oyster Creek Cycle 12 Reload", dated August 19, 1988.
9. Letter from A. W., Dromerick (NRC) to E. E. Fitzpatrick (GPUN), dated October 31, 1988, "Issuance of Amendment" (TAC No. 67743).
10. XN-75-55-(A), XN-75-55, Supplement 1-(A), XN-75-55. Supplement 2-(A), Revision 2, "Exxon Nuclear Company WREB-Based NJP-BWR ECCS Evaluation Model and Application to the Oyster Creek plant," April 1977.
11. XN-75-36 (NP)-(A), XN-75-36 (NP) Supplement 1-(A), "Spray Cooling Heat Transfer phase Test Results, ENC - 8 x 8 BWR Fuel 60 and 63 Active Rods, Interim Report," October 1975.

FIGURE 1

Tech Spec 3.10.A |

ENC VB FUEL

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

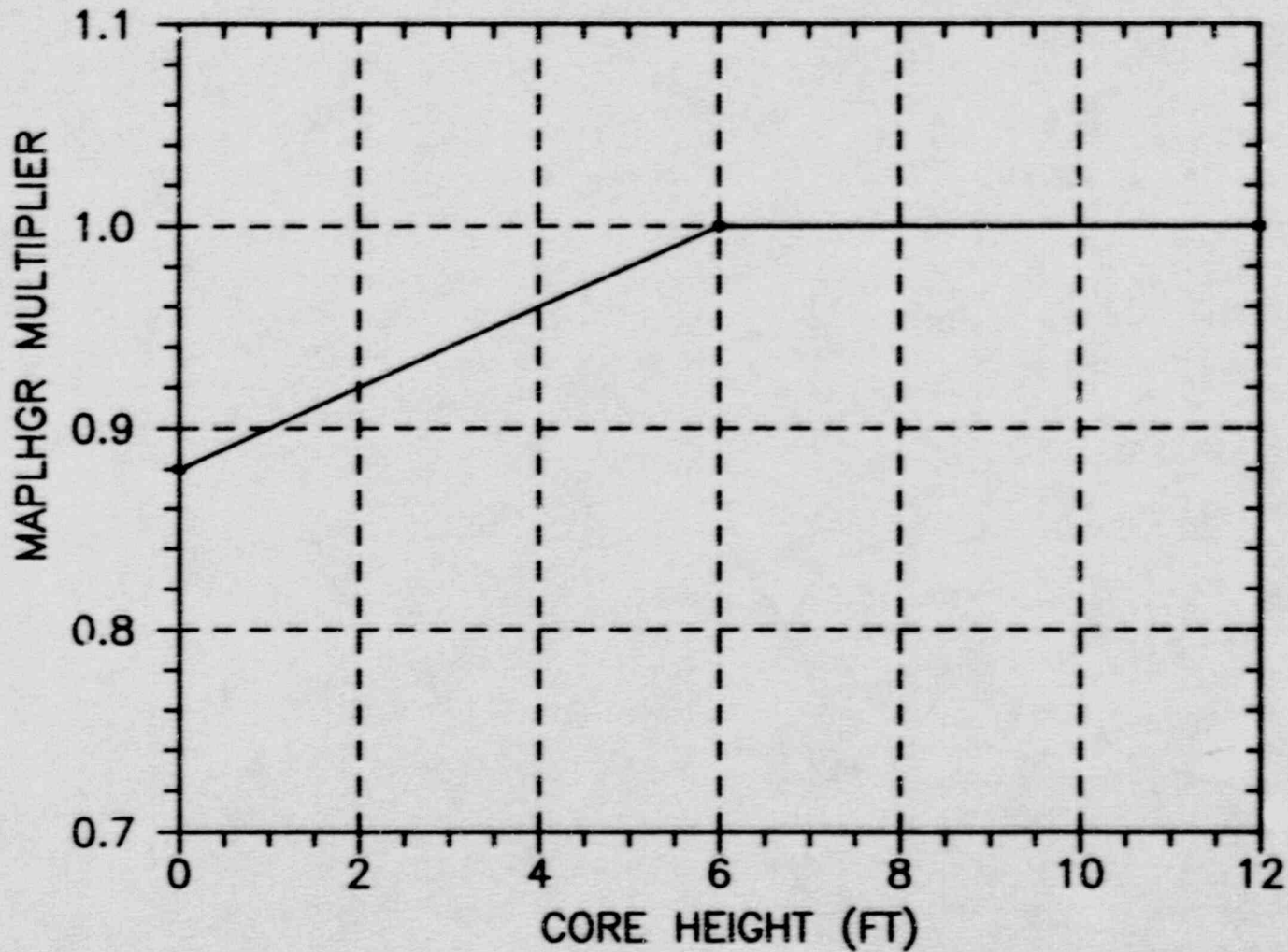


DATA POINTS

EXPOSURE (GWD/MT)	MAPLHGR (KW/FT)
0.00	9.88
0.50	10.65
1.20	10.80
1.90	10.80
7.00	10.62
11.10	10.55
15.40	10.30
23.70	10.03
32.80	9.80
40.00	9.43

FIGURE 2

AXIAL MAPLHGR MULTIPLIER
(ENC VB FUEL ONLY)



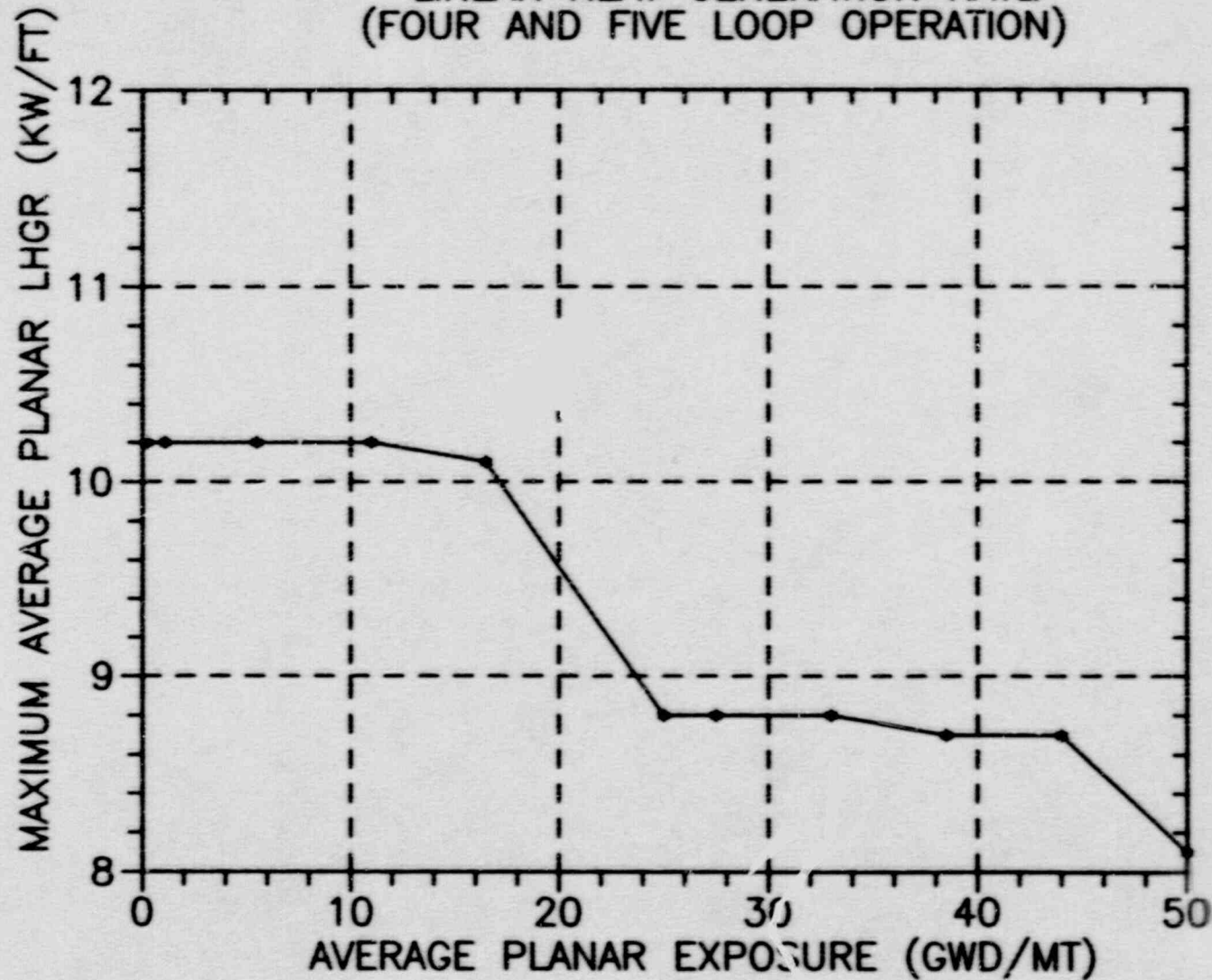
DATA POINTS

HEIGHT	MULTIPLIER
0	0.88
2	0.92
4	0.96
6	1.00
8	1.00
10	1.00
12	1.00

FIGURE 3

GE-P8DRB239 FUEL

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



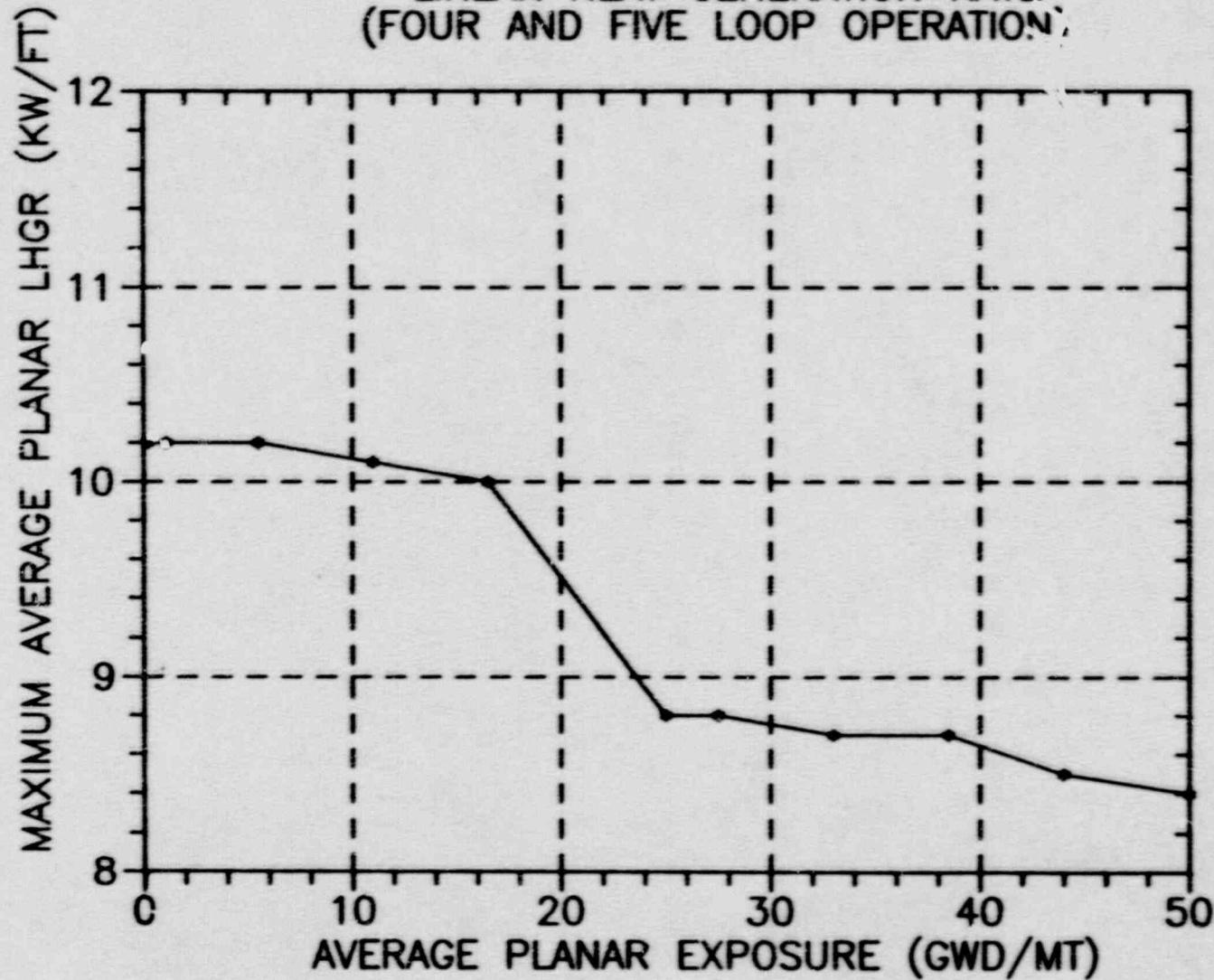
DATA POINTS

EXPOSURE (GWD/MT)	MAPLHGR (KW/FT)
0.22	10.2
1.10	10.2
5.50	10.2
11.00	10.2
16.50	10.1
25.00	8.8
27.50	8.8
33.00	8.8
38.50	8.7
44.00	8.7
50.00	8.1

FIGURE 4

GE-P8DRB265H FUEL

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



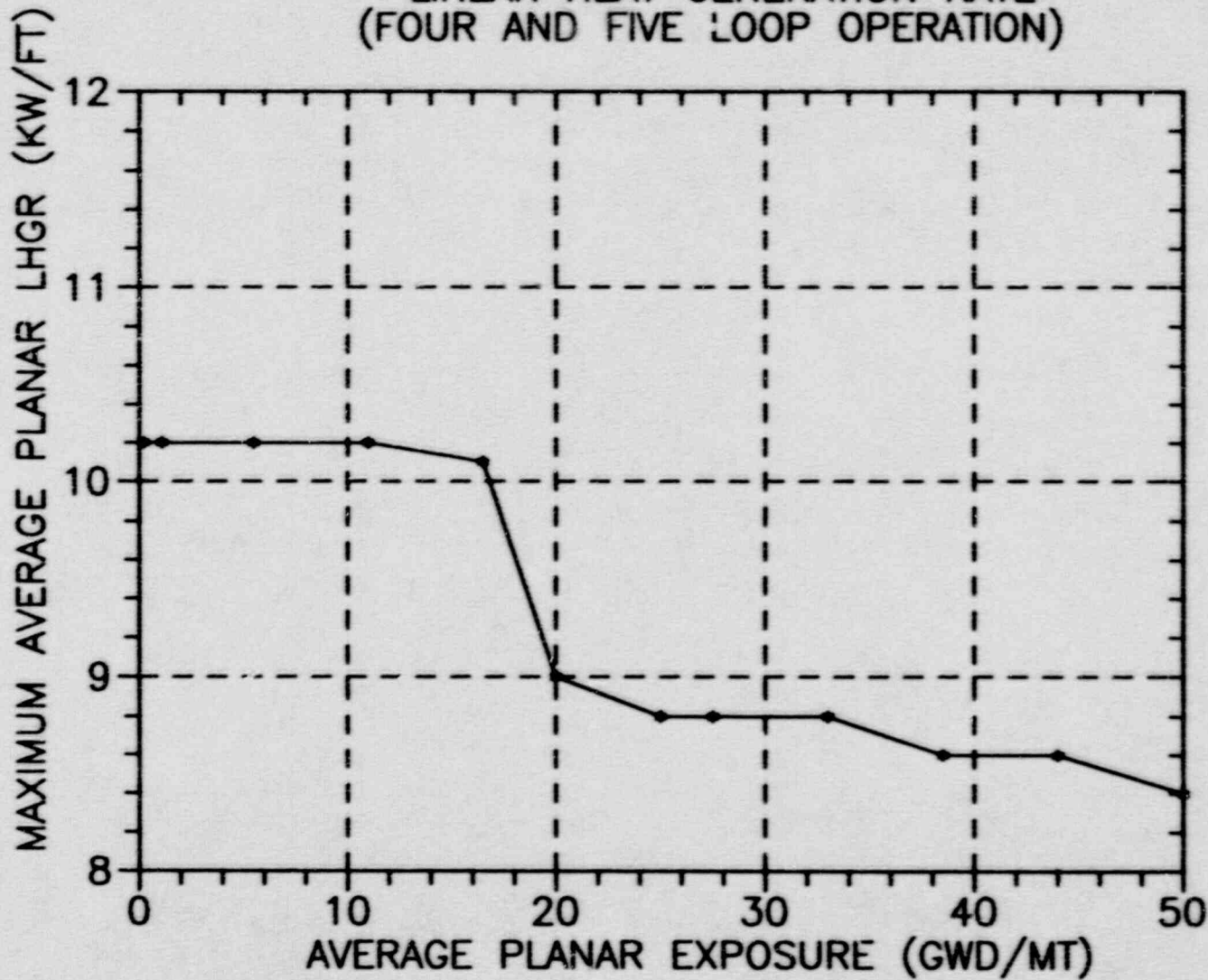
DATA POINTS

EXPOSURE (GWD/MT)	MAPLHGR (KW/FT)
0.22	10.2
1.10	10.2
5.50	10.2
11.00	10.1
16.50	10.0
25.00	8.8
27.50	8.8
33.00	8.7
38.50	8.7
44.00	8.5
50.00	8.4

FIGURE 5

GE-P8DRB299Z FUEL

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



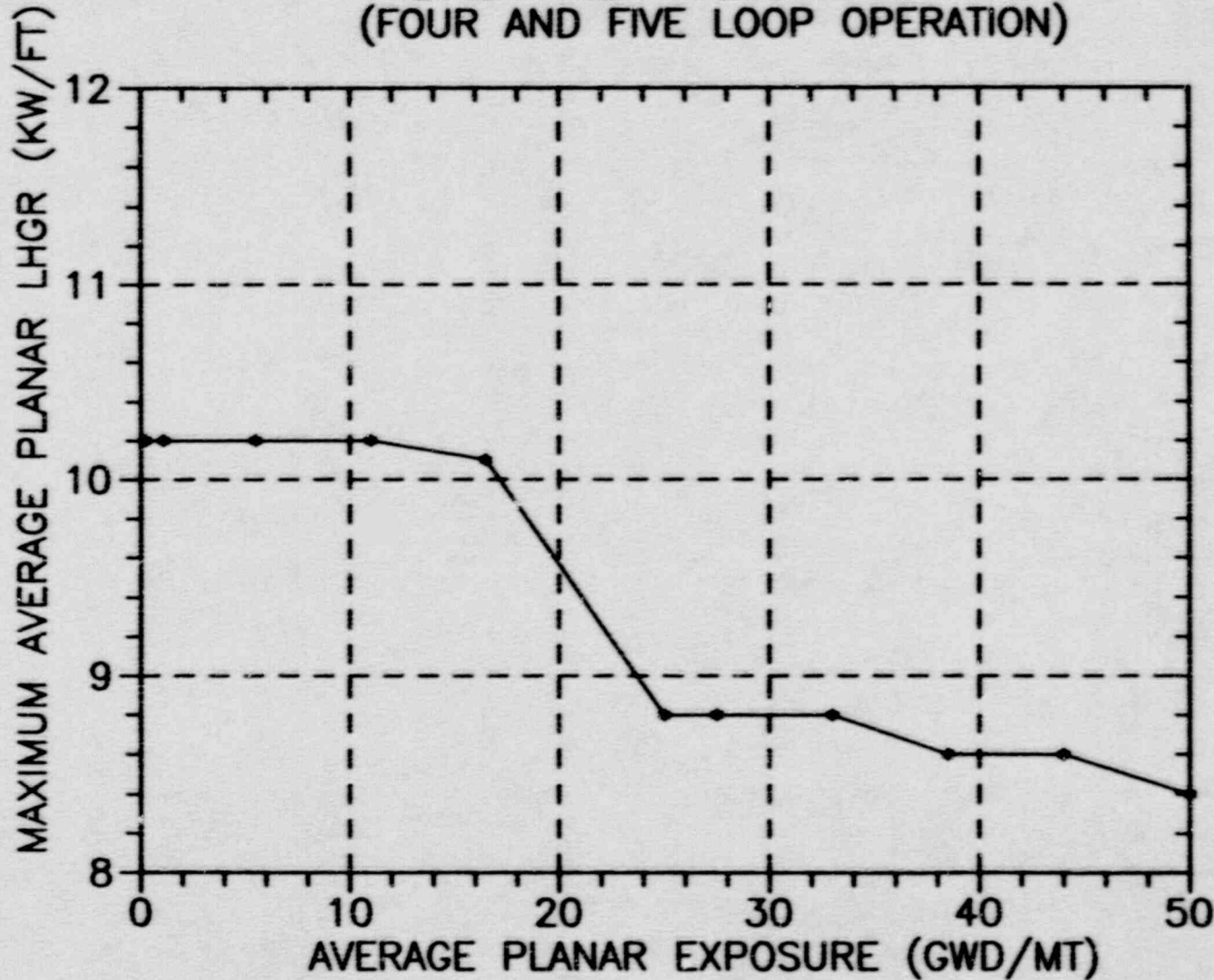
DATA POINTS

EXPOSURE (GWD/MT)	MAPLHGR (KW/FT)
0.22	10.2
1.10	10.2
5.50	10.2
11.00	10.2
16.50	10.1
20.00	9.0
25.00	8.8
27.50	8.8
33.00	8.8
38.50	8.6
44.00	8.6
50.00	8.4

FIGURE 6

GE-P8DRB299ZA FUEL

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



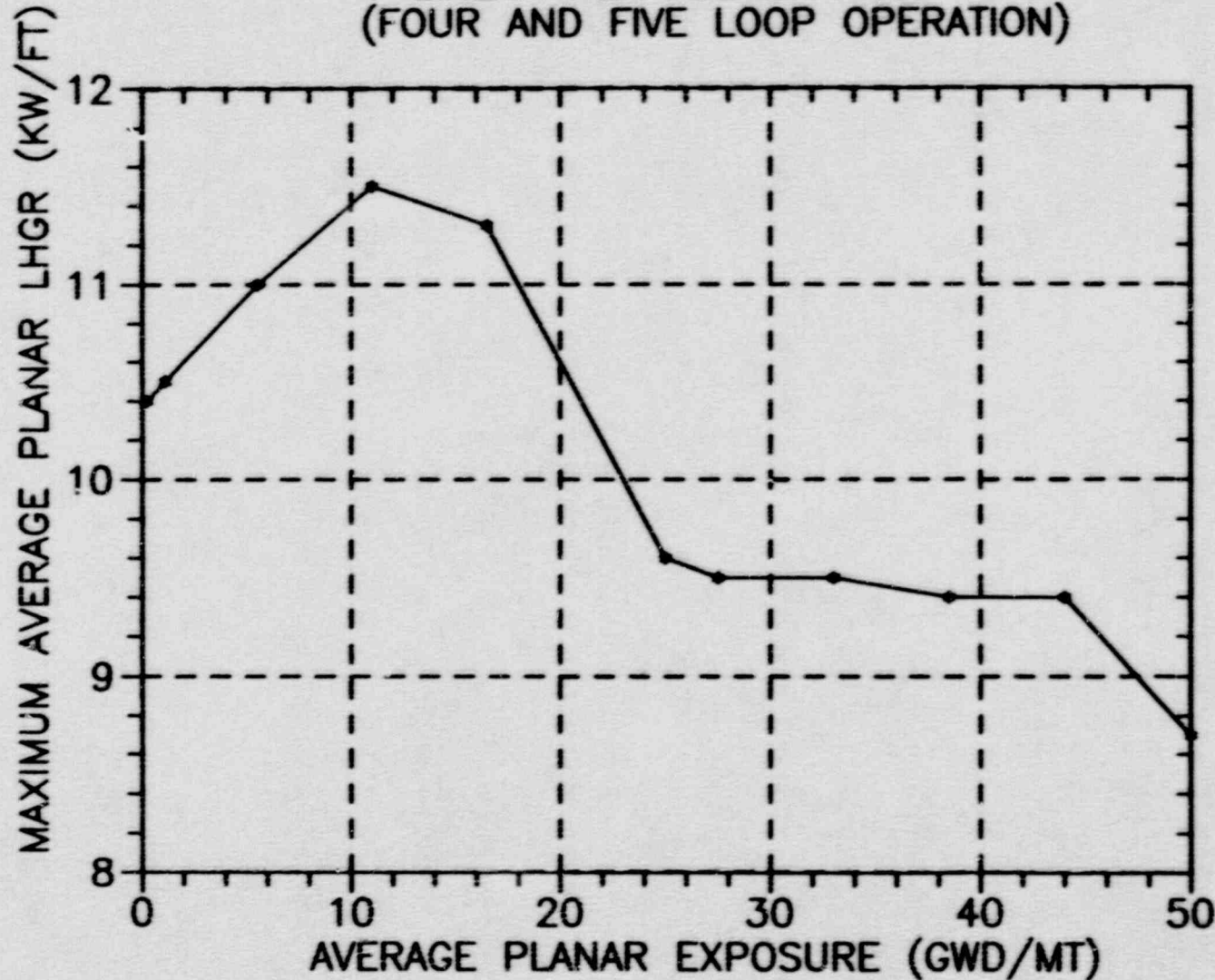
DATA POINTS

EXPOSURE (GWD/MT)	MAPLHGR (KW/FT)
0.22	10.2
1.10	10.2
5.50	10.2
11.00	10.2
16.50	10.1
25.00	8.8
27.50	8.8
33.00	8.8
38.50	8.6
44.00	8.6
50.00	8.4

FIGURE 7

GE-P8DQB321 FUEL

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



DATA POINTS

EXPOSURE (GWD/MT)	MAPLHGR (KW/FT)
0.22	10.4
1.10	10.5
5.50	11.0
11.00	11.5
16.50	11.3
25.00	9.6
27.50	9.5
33.00	9.5
38.50	9.4
44.00	9.4
50.00	8.7

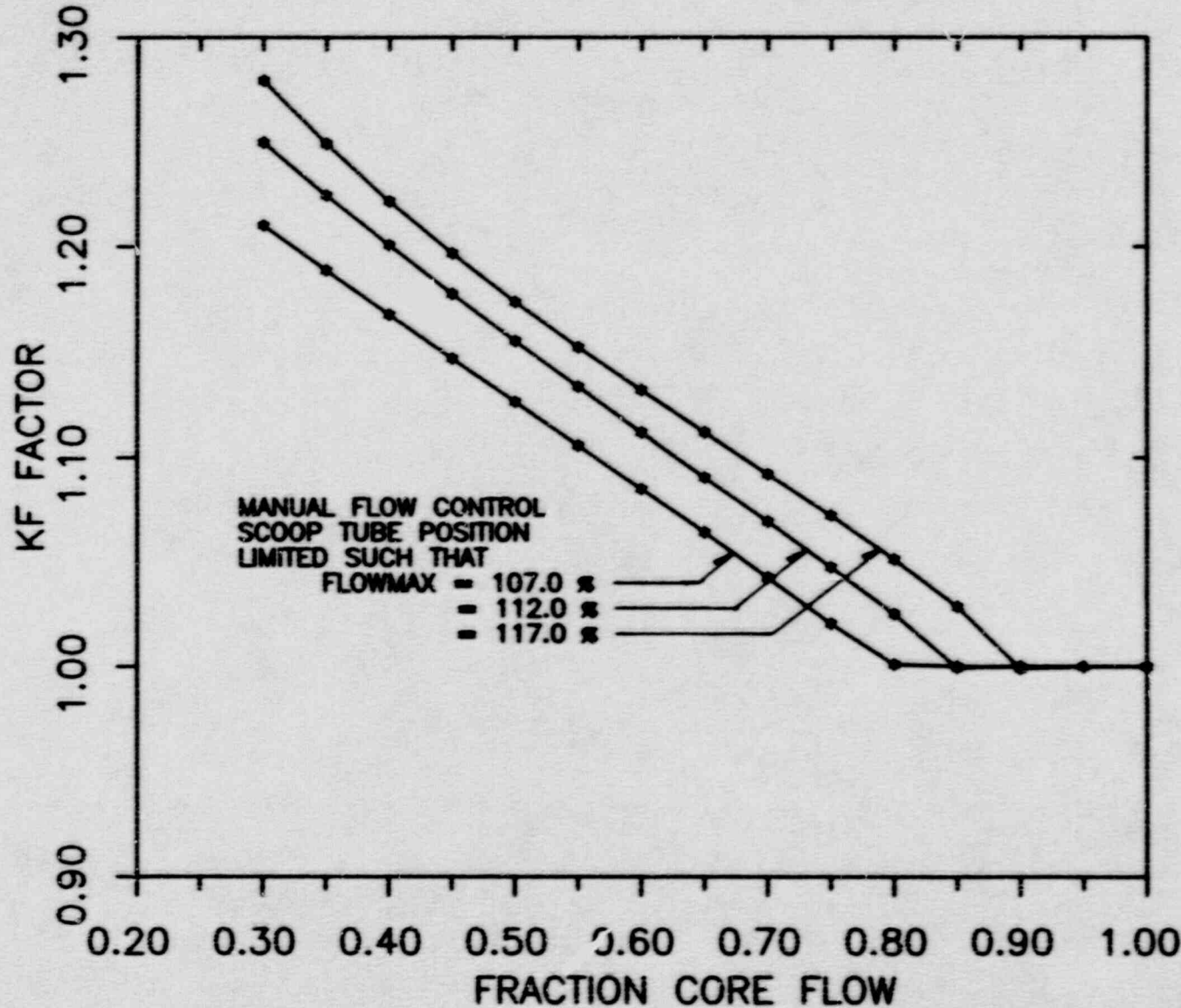
FIGURE 8

MINIMUM CRITICAL POWER RATIO (MCPR)

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) detectors 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.)	1.51
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).	1.51
3. All B, C, and D LPRM inputs to the APRM system are operating and no APRM channels are inoperable or by passed.	1.51

FIGURE 9

FLOW FACTOR, K_f



DATA POINTS

FLOW	FLOWMAX (g)		
	107	112	117
0.3	1.21	1.25	1.28
0.4	1.17	1.20	1.22
0.5	1.13	1.16	1.17
0.6	1.08	1.11	1.13
0.7	1.04	1.07	1.09
0.8	1.00	1.03	1.05
0.9	1.00	1.00	1.00
1.0	1.00	1.00	1.00

LOCAL LINEAR HEAT GENERATION RATE (LLHGR)

FUEL TYPE	LHGR Limit
1. ENC VB	$\text{LHGR} \leq \text{LHGR}_d \left[1 - \left(\frac{\Delta P}{P} \right)_{\text{max}} \left(\frac{L}{\text{LT}} \right) \right]$ <p> $\text{LHGR}_d = 14.5 \text{ kw/ft}$ $\Delta P/P = 0.039$ (Max power spiking penalty) $\text{LT} = 144$ inches (Total fuel length) $L =$ Axial position above bottom of core </p>
2. GE8x8R GE8x8EB	$\text{LHGR} \leq 13.4 \text{ kw/ft}$