

Edwin I. Hatch
Nuclear Plant - Unit 2

CORE OPERATING LIMITS REPORT
for
Operating Cycle 10

Revision 0

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Nuclear Plant - Unit 2

CORE OPERATING LIMITS REPORT

for

Operating Cycle 10

Revision 0

9106070256 910603
PDR ADOCK 05000366
P PDR

DATE: May 13, 1991

RE: Core Operating Limits Report for
Hatch 2 Cycle 10
File: Fuel Cycle Technical
Log: HL-1637

FROM: S. J. Bethay *Steve Bethay*

TO: All Unit 2 Technical Specifications Holders

By Amendment 106 to the Unit 2 Technical Specifications (TS), the NRC authorized relocation of certain fuel-related limits from the Technical Specifications to the adjunct Core Operating Limits Report (COLR). This letter transmits to all Unit 2 Technical Specifications holders a copy of Revision 0 of the Core Operating Limits Report for Hatch 2 Cycle 10. This document should be utilized in conjunction with the Unit 2 Technical Specifications as referred to in the Specifications. Normally, the shift technical advisor (STA) or reactor engineer will utilize this report. Where necessary, the fuel limits from the COLR have been included in plant procedures.

If changes to the core operating limits contained in this report are required, a complete revised COLR will be issued and the appropriate procedures revised.

If there are any questions regarding this report, please contact me at extension 8-821-7392 or telephone number (205) 877-7392.

RDB/cr
001621

Attachment

cc: NORMS

GEORGIA POWER COMPANY
EDWIN T. HATCH NUCLEAR PLANT

UNIT 2 FUEL CYCLE 10
CORE OPERATING LIMITS REPORT

EDWIN I. HATCH NUCLEAR PLANT
UNIT 2 CYCLE 10
CORE OPERATING LIMITS REPORT

1.0 INTRODUCTION

This CORE OPERATING LIMITS REPORT for Hatch Unit 2 Cycle 10 is prepared in accordance with the requirements of Hatch Technical Specification 6.9.1.11. The core operating limits presented here were developed using NRC-approved methods (References 1 and 2). Results from the reload analyses for the General Electric fuel in Hatch Unit 2 Cycle 10 are documented in Reference 3.

The following cycle-specific core operating limits are included in this report:

- a. Control Rod Program Controls - Rod Block Monitor
(Technical Specification 3/4.1.4.3)
- b. Average Planar Linear Heat Generation Rate (APLHGR) Limit
(Technical Specification 3/4.2.1)
- c. Minimum Critical Power Ratio (MCPR) Operating Limit
(Technical Specification 3/4.2.3)
- d. Linear Heat Generation Rate (LHGR) Limit
(Technical Specification 3/4.2.4)

2.0 ROD BLOCK MONITOR (TECHNICAL SPECIFICATION 3/4.1.4.3)

Both Rod Block Monitor (RBM) channels shall be operable as specified in Technical Specification 3/4.1.4.3 and when:

- a. THERMAL POWER is < 90% of RATED THERMAL POWER and the MCPR is less than 1.70, or

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- b. THERMAL POWER is \geq 90% of RATED THERMAL POWER and the MCPR is less than 1.40.

3.0 APLHGR LIMIT (TECHNICAL SPECIFICATION 3/4.2.1)

The APLHGR limit is given by the applicable rated-power, rated-flow limit taken from Figures 3-3 through 3-7, multiplied by the smaller of either:

- a. The factor given by Figure 3-1, or
- b. The factor given by Figure 3-2.

For the fuel types whose APLHGR limits are shown in Figures 3-3 through 3-7, the APLHGR limit shown shall be applied to each axial location in the fuel assembly.

4.0 MCPR LIMIT (TECHNICAL SPECIFICATION 3/4.2.3)

The MCPR operating limit (OLMCPR) is a function of fuel design, average scram time, core flow, number of operating recirculation loops, and core power. Note the rated-power and rated-flow OLMCPR is fuel-type dependent in Figure 4-3. For example, option B limits are 1.25, 1.27, and 1.31 for GE7 BP8DRB284H, BP8DRB299, BP8DRB301L; GE9 BP8DWB314; and GE11 P9HUB293 fuel, respectively. The ANF lead assemblies will be monitored as GE7 BP8DRB284H bundles.

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4.1 Two Recirculation Loop Operation

For $25\% \leq \text{Power} < 30\%$, the OLMCPR is given in Figure 4-1. For $\text{Power} \geq 30\%$, the OLMCPR is the greater of either:

- a. The applicable limit determined from Figure 4-2, or
- b. The appropriate K_p given by Figure 4-1, multiplied by the appropriate limit from Figure 4-3, where the scram time dependence is given in the Bases for Technical Specification 3/4.2.3.

4.2 Single Recirculation Loop Operation

For single-loop operation, the MCPR operating limit shall be 0.01 greater than the two-loop value which is determined as specified in Section 4.1.

5.0 LHGR LIMIT (TECHNICAL SPECIFICATION 3/4.2.4)

The LHGR limit shall be 13.4 kW/ft for all GE7 8x8 fuel (BP8DRB284H, BP8DRB293, and BP8DRB301L) and 14.4 kW/ft for GE9 (BP8DWB314) and GE11 (P9HUB293) fuel. The ANF lead assemblies will be monitored as GE7 BP8DRB284H bundles.

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6.0 REFERENCES

1. "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-9, September 1988.
2. Letter, L. P. Crocker (NRC) to J. P. O'Reilly (GPC), "Issuance of Amendment Nos. 151 and 89 to Facility Operating Licenses DPR-57 and NPF-5 - Edwin I. Hatch Nuclear Plant Units 1 and 2 (TACS 66524/66525)," January 22, 1988.
3. "Supplemental Reload Licensing Submittal for Edwin I. Hatch Nuclear Plant Unit 2, Reload 8, Cycle 9," GE Document 23A6470, Revision 0, April 1991.
4. "Edwin I. Hatch Nuclear Plant Units 1 and 2 SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis," NEDC-31376P, December 1986.
5. Technical Specifications Bases for Sections 3/4.1.4.3, 3/4.2.1, 3/4.2.3, and 3/4.2.4.

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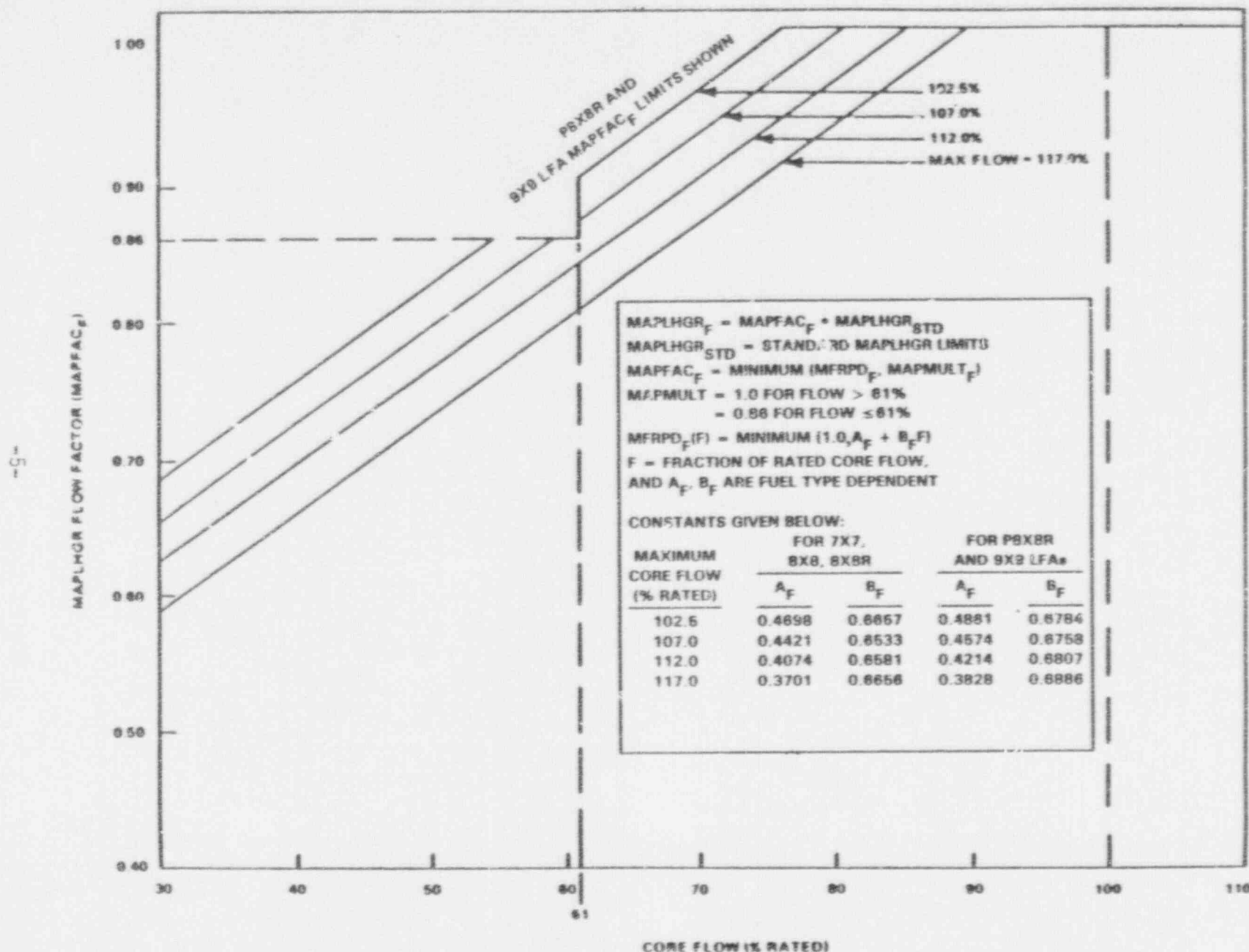


FIGURE 3-1 MAPFAC_F

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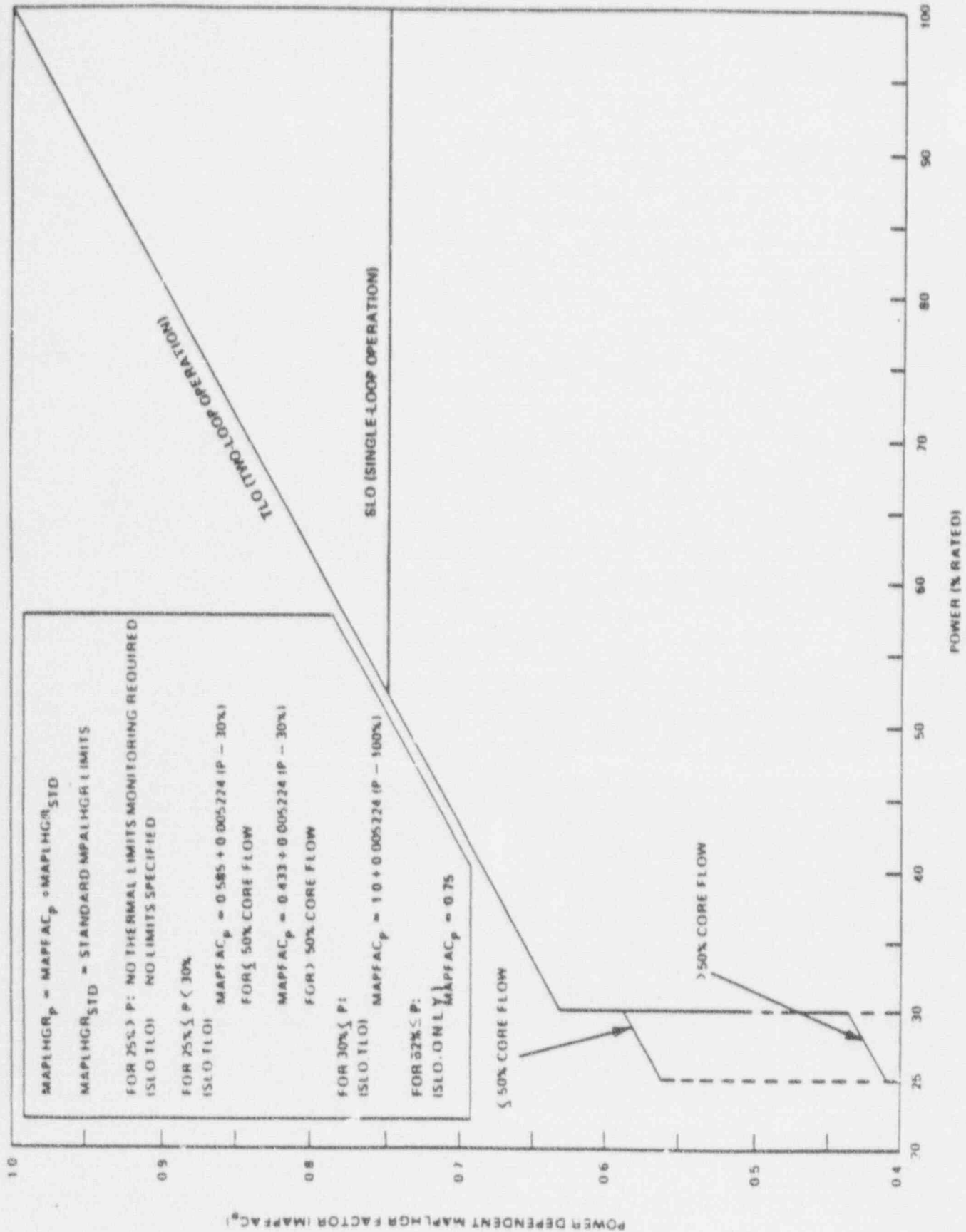
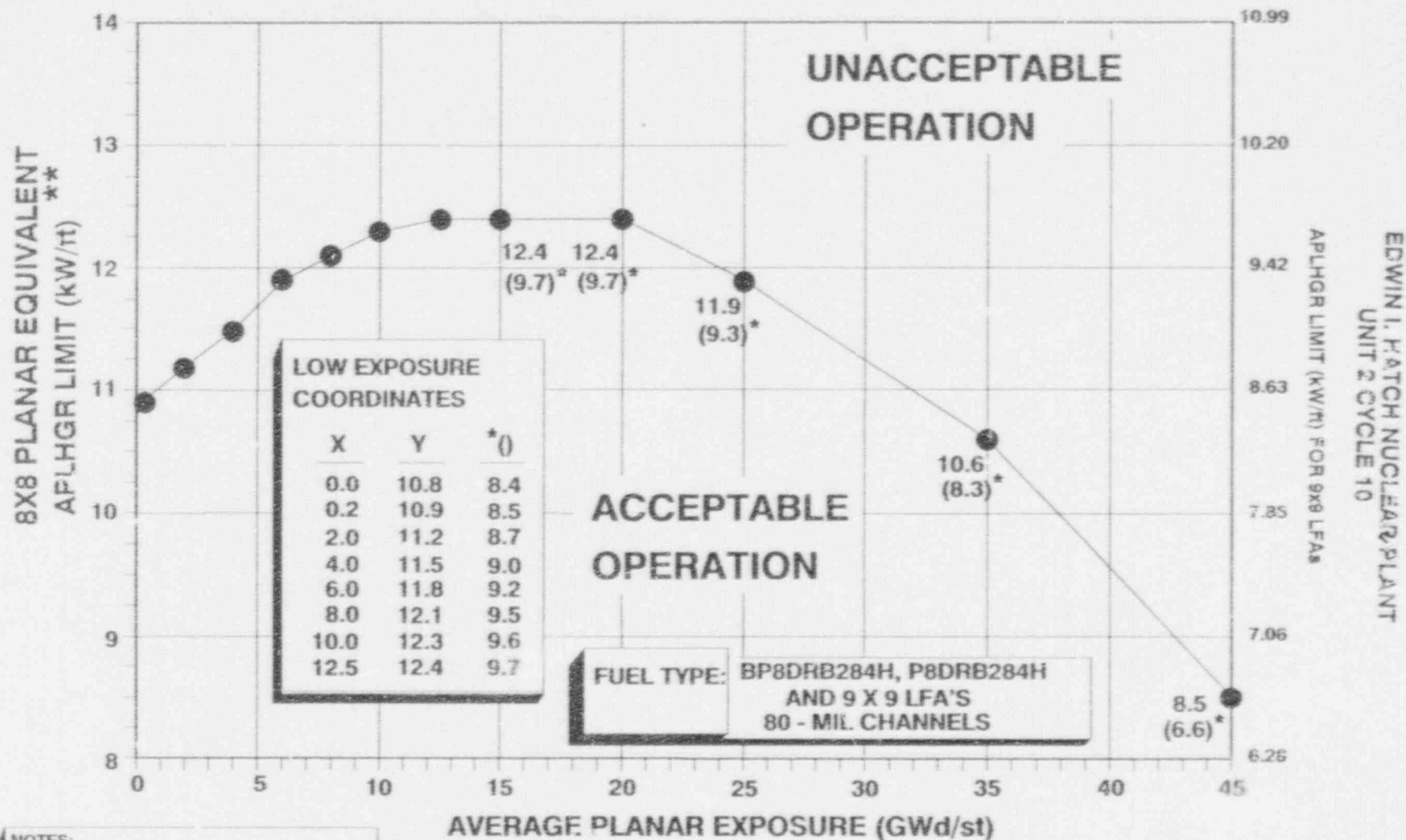


FIGURE 3-2 MAPFAC_p

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NOTES:

*() - APLHGR LIMITS FOR 9 X 9 LFAs.

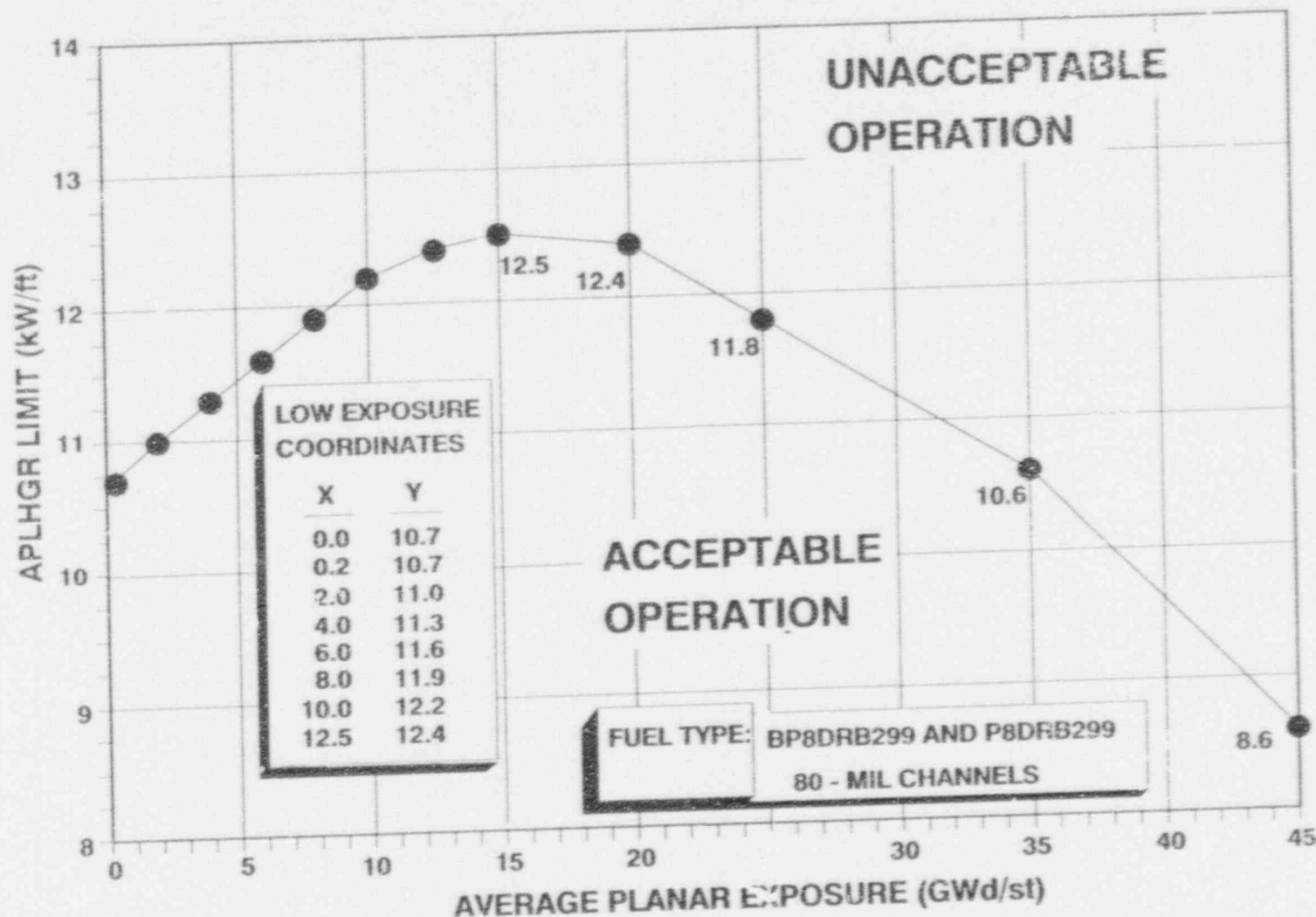
** 8 X 8 VALUES CORRESPOND
TO B/P8DRB284H FUEL.

FIGURE 3-3 AVERAGE PLANAR LINEAR
LINEAR HEAT GENERATION RATE LIMIT
vs. AVERAGE PLANAR EXPOSURE

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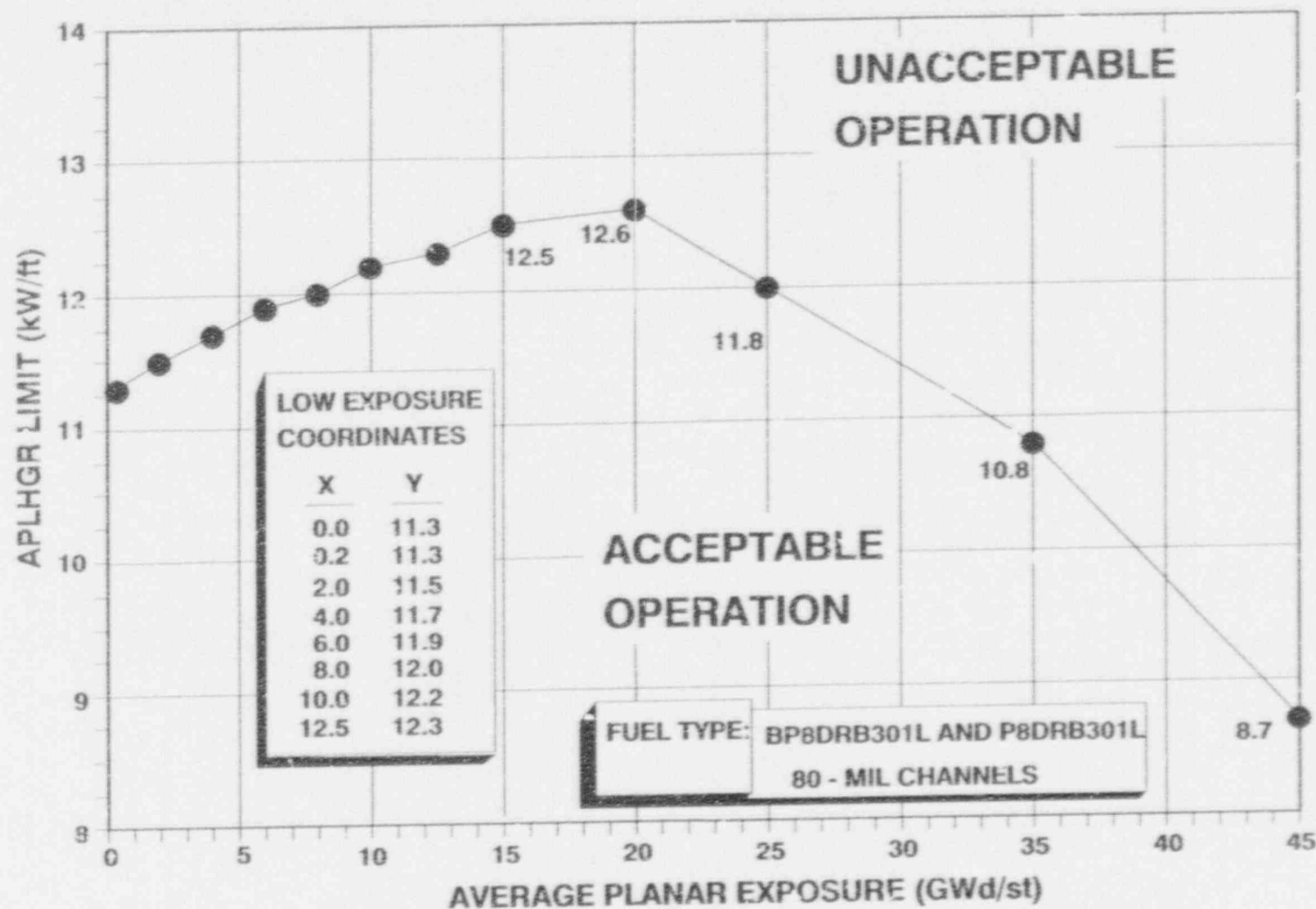
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**FIGURE 3-4 AVERAGE PLANAR LINEAR
HEAT GENERATION RATE LIMIT
vs. AVERAGE PLANAR EXPOSURE**



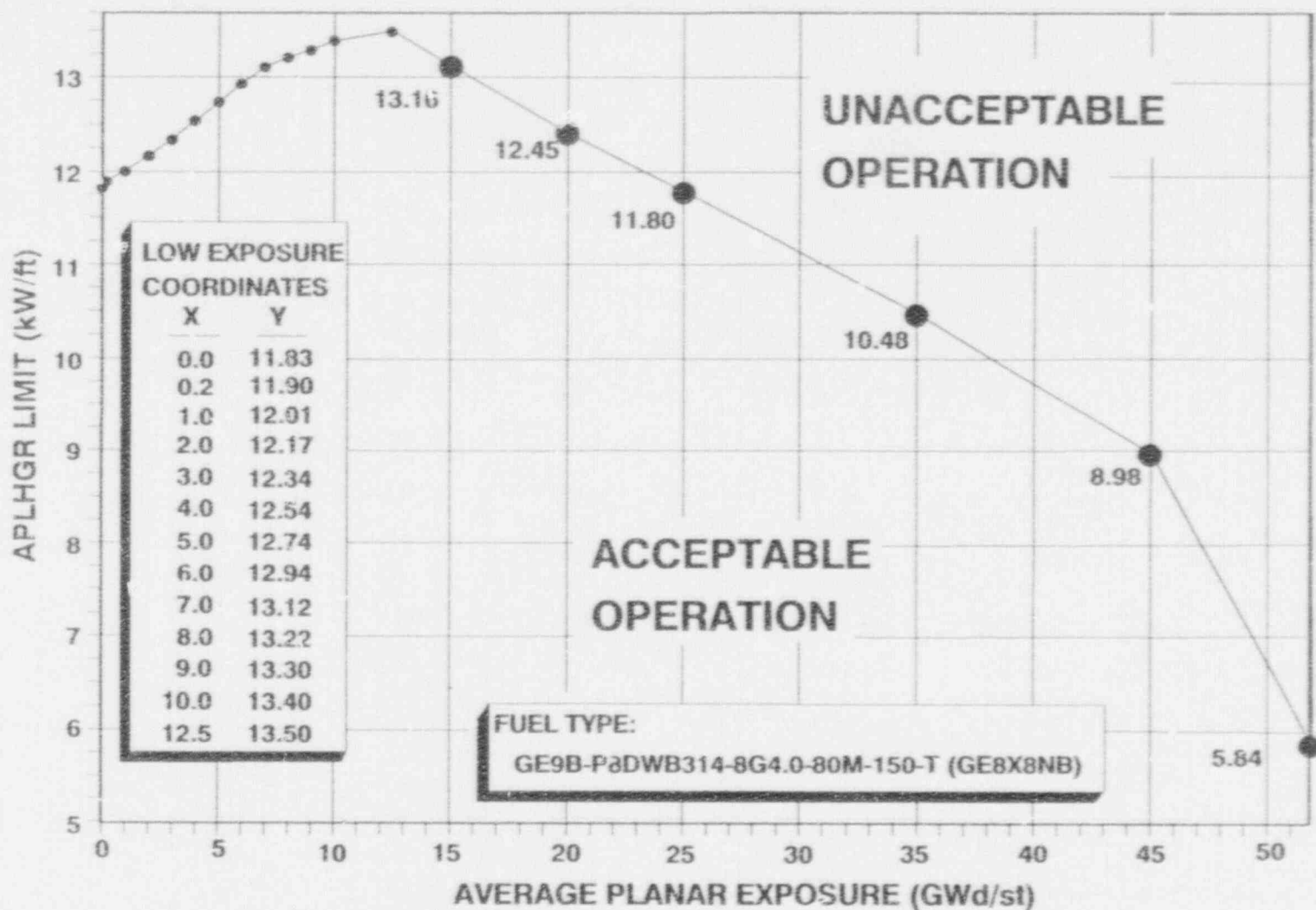
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**FIGURE 3-5 AVERAGE PLANAR LINEAR
HEAT GENERATION RATE LIMIT
vs. AVERAGE PLANAR EXPOSURE**

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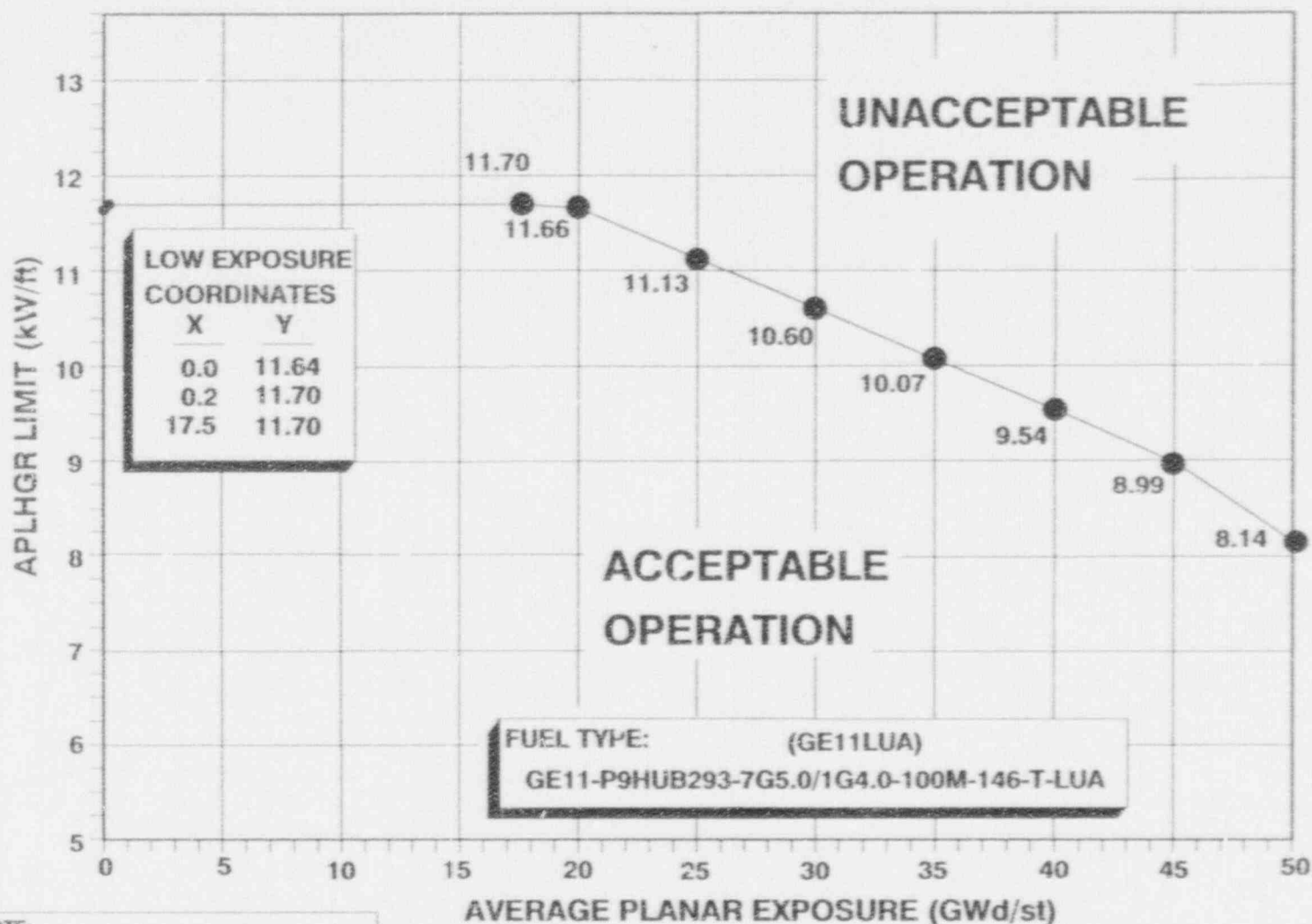
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**FIGURE 3-6 AVERAGE PLANAR LINEAR
HEAT GENERATION RATE LIMIT
vs. AVERAGE PLANAR EXPOSURE**

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NOTE:
APLHGR LIMIT FOR MOST LIMITING
LATTICE AS FUNCTION OF AVERAGE
PLANAR EXPOSURE

**FIGURE 3-7 AVERAGE PLANAR LINEAR
HEAT GENERATION RATE LIMIT
vs. AVERAGE PLANAR EXPOSURE**

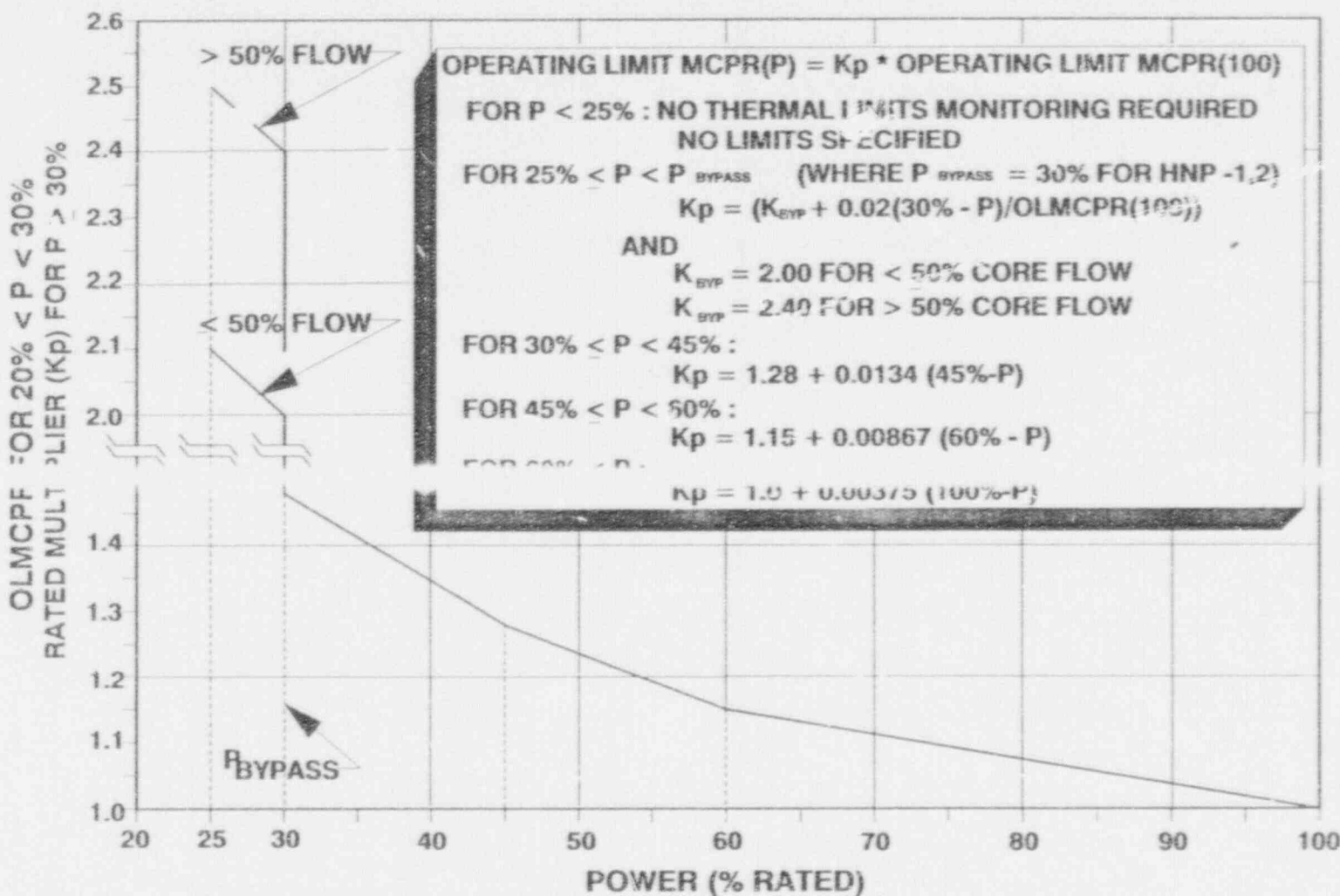


FIGURE 4-1
POWER-DEPENDENT MCPR MULTIPLIER (K_p)

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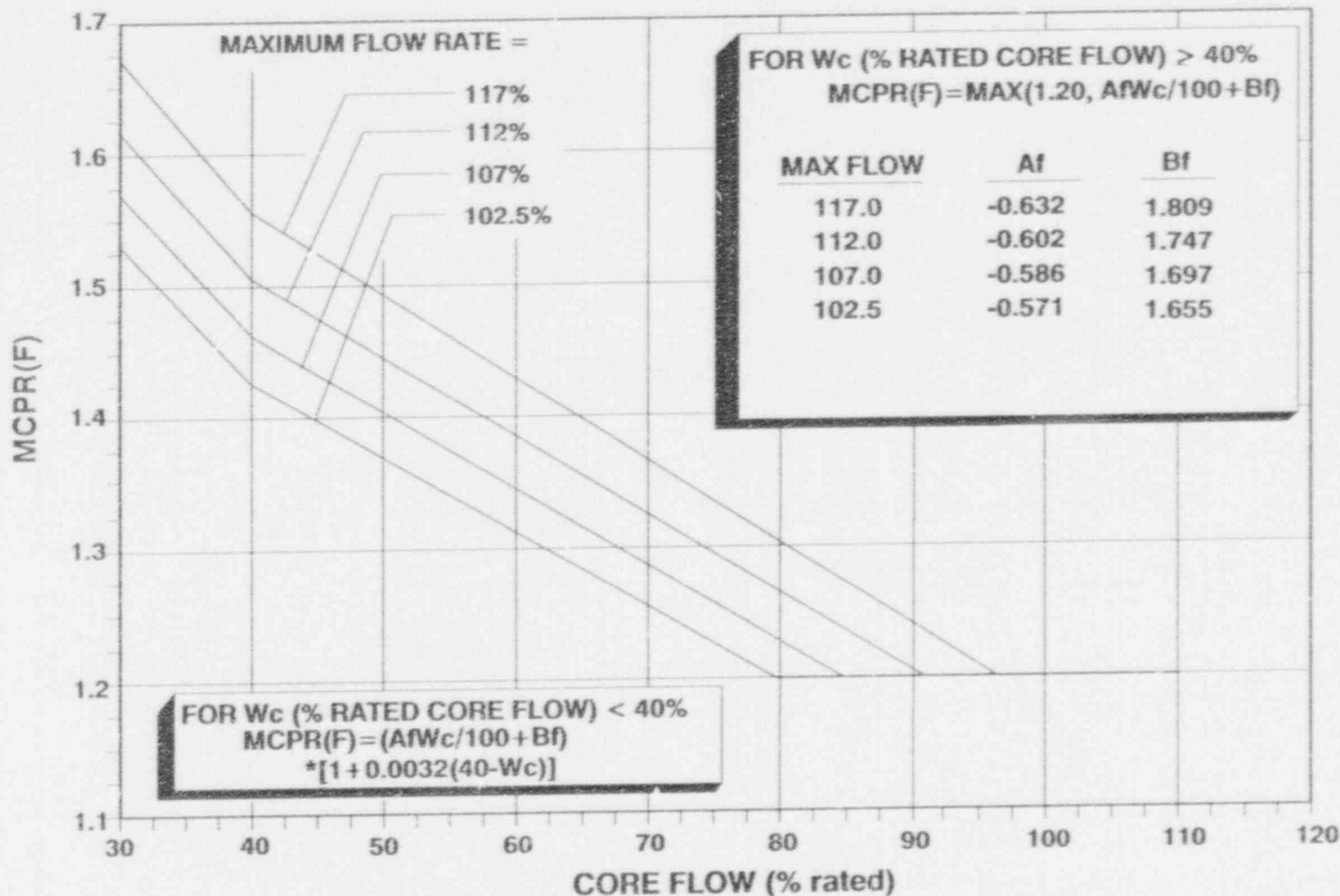


FIGURE 4-2
 FLOW-DEPENDENT MCPR LIMITS, MCPR(F)

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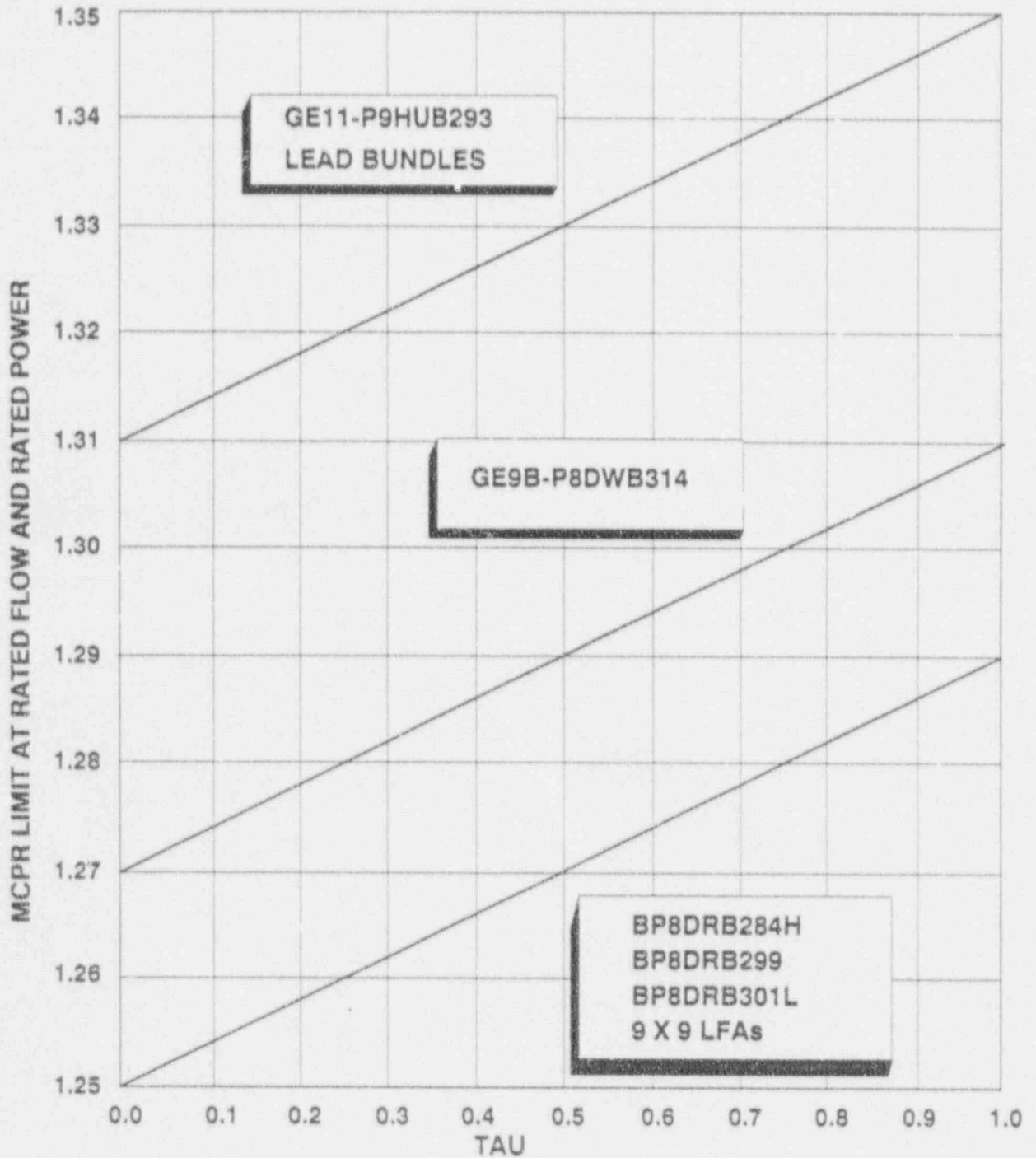


FIGURE 4-3
MCPR LIMIT AS FUNCTION OF AVERAGE SCRAM TIME