ENCLOSURE 1

TO SERIAL NLS-85-129

PROPOSED TECHNICAL SPECIFICATION PAGES

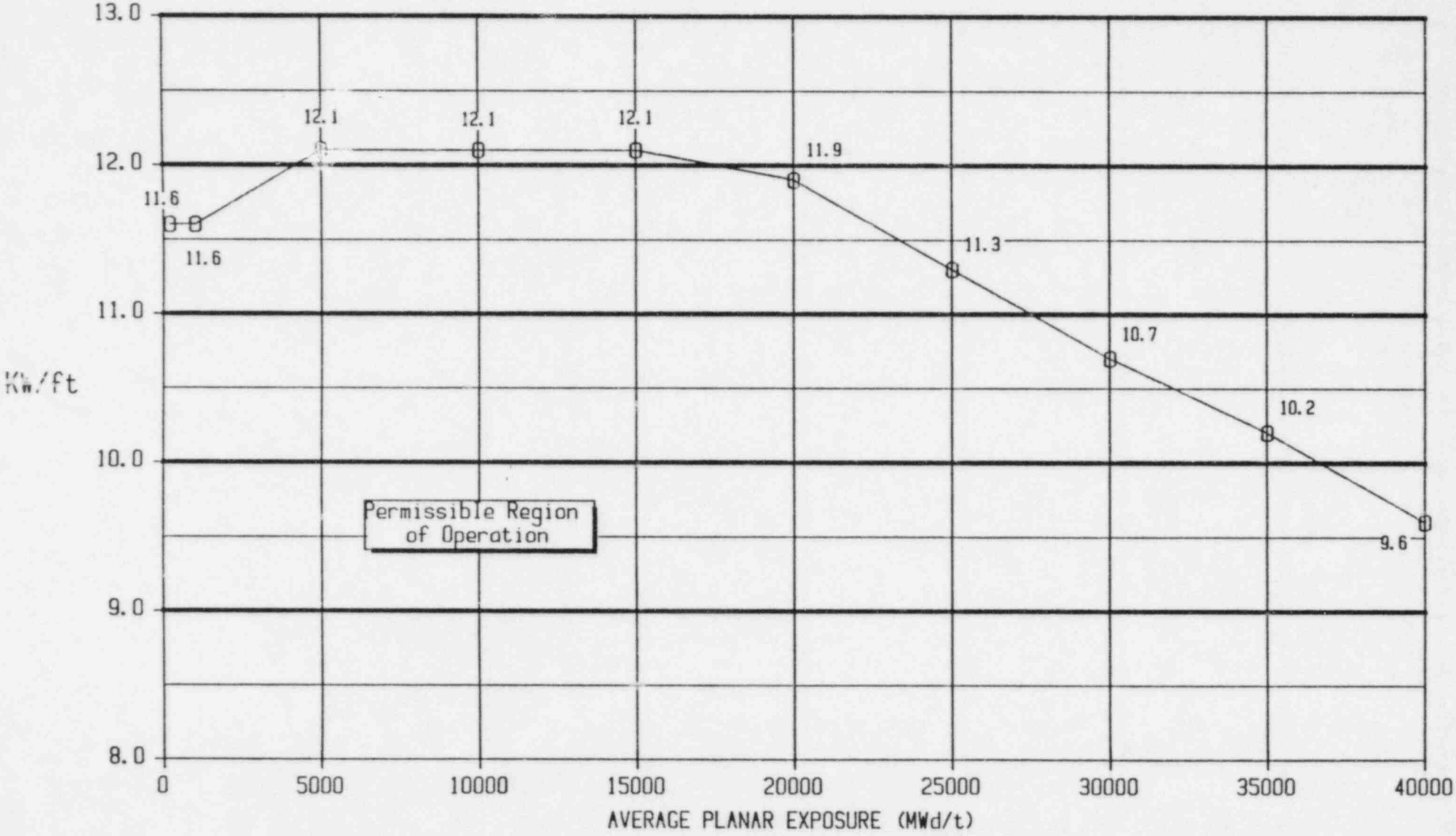
BRUNSWICK-1

SUMMARY LIST OF REVISIONS

PAGE NUMBER	DESCRIPTION OF CHANGE
3/4 2-2	Graph of MAPLHGR vs. Average Planar Exposure for Fuel Type 2 (8 x 8) has been deleted. Proposed page is repaginated and Figure N/ revised.
3/4 2-3	Repaginated.
	Figure Number revised.
3/4 2-4	MAPLHGR values corresponding to Planar Average Exposures of 35000 and 40000 MWd/t added.
	Repaginated.
	Figure No. revised.
3/4 2-5	MAPLHGR values corresponding to Planar Average Exposures of 35000 and 40000 MWd/t added.
	Repaginated.
	Figure No. revised.
3/4 2-6	Repaginated.
	Figure No. revised.
3/4 2-7	MAPLHGR value corresponding to Planar Average Exposure of 45000 MWd/t added.
	Repaginated.
	Figure No. revised.
3/4 2-8	New graph of MAPLHGR vs. Average Planar Exposure for the new BP8 x 8R fuel added.
3/4 2-9	Reference to 8 x 8 fuel deleted and BP8 x 8R fuel added.
3/4 2-10	MCPRs revised.
	Reference to 8 x 8 fuel deleted and BP8 x 8R fuel added.
3/4 2-14	MCPRs revised.
	Reference to 8 x 8 fuel deleted and BP8 x 8R fuel added.

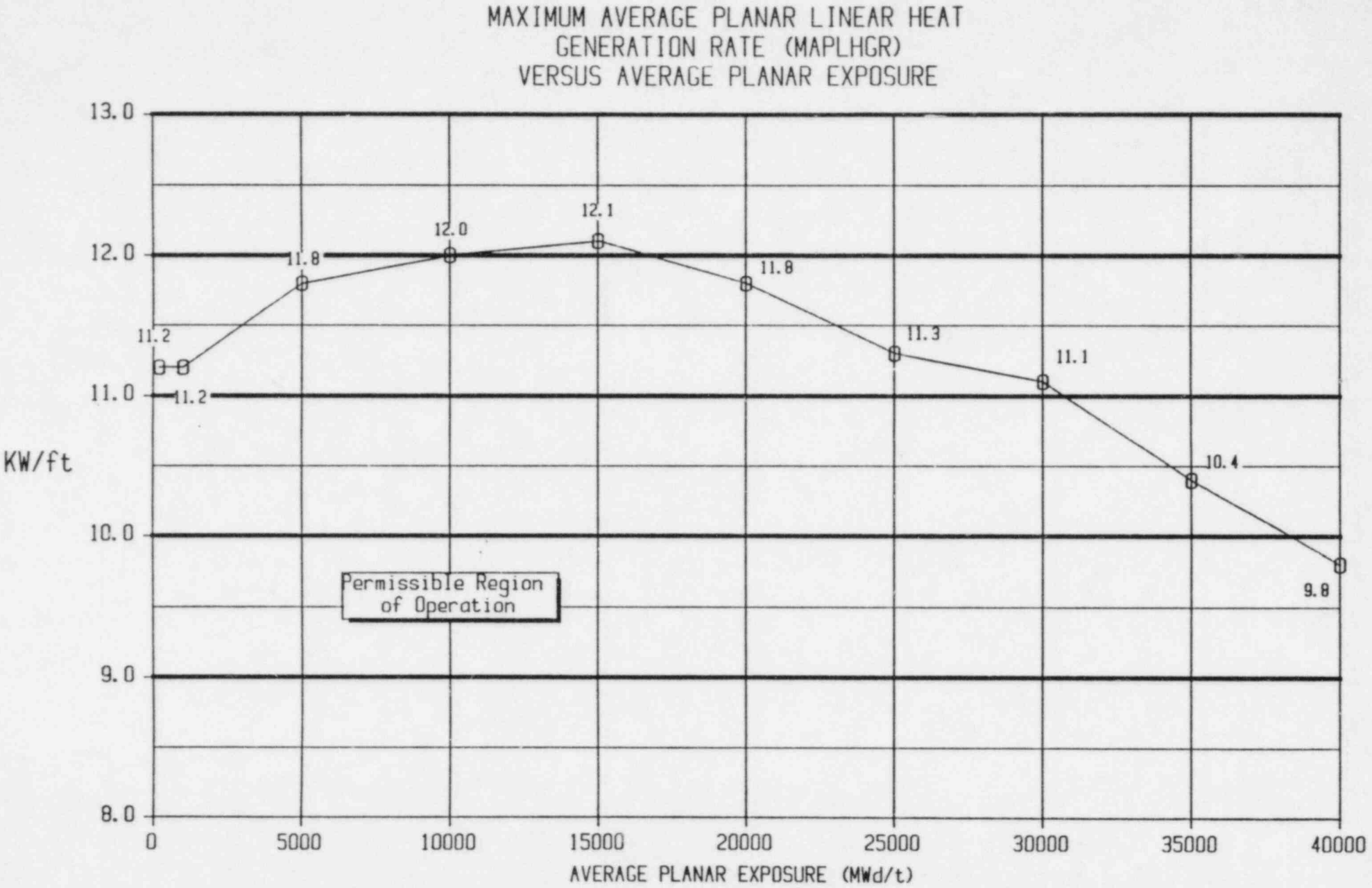
PAGE NUMBER	DESCRIPTION OF CHANGE
3/4 2-16	Reference to 8 x 8 fuel deleted and BP8 x 8R fuel added.
3/4 3-42	Reference to 8 x 8 fuel deleted and BP8 x 8R fuel added.
B 3/4 2-3	Reference to 8 x 8 fuel deleted and BP8 x 8R fuel added.
5-1	Reference to 8 x 8 fuel deleted and BP8 x 8R fuel added.

MAXIMUM AVERAGE PLANAR LINEAR HEAT
GENERATION RATE (MAPLHGR)
VERSUS AVERAGE PLANAR EXPOSURE



Fuel Type 8DRB265L (8X8R)

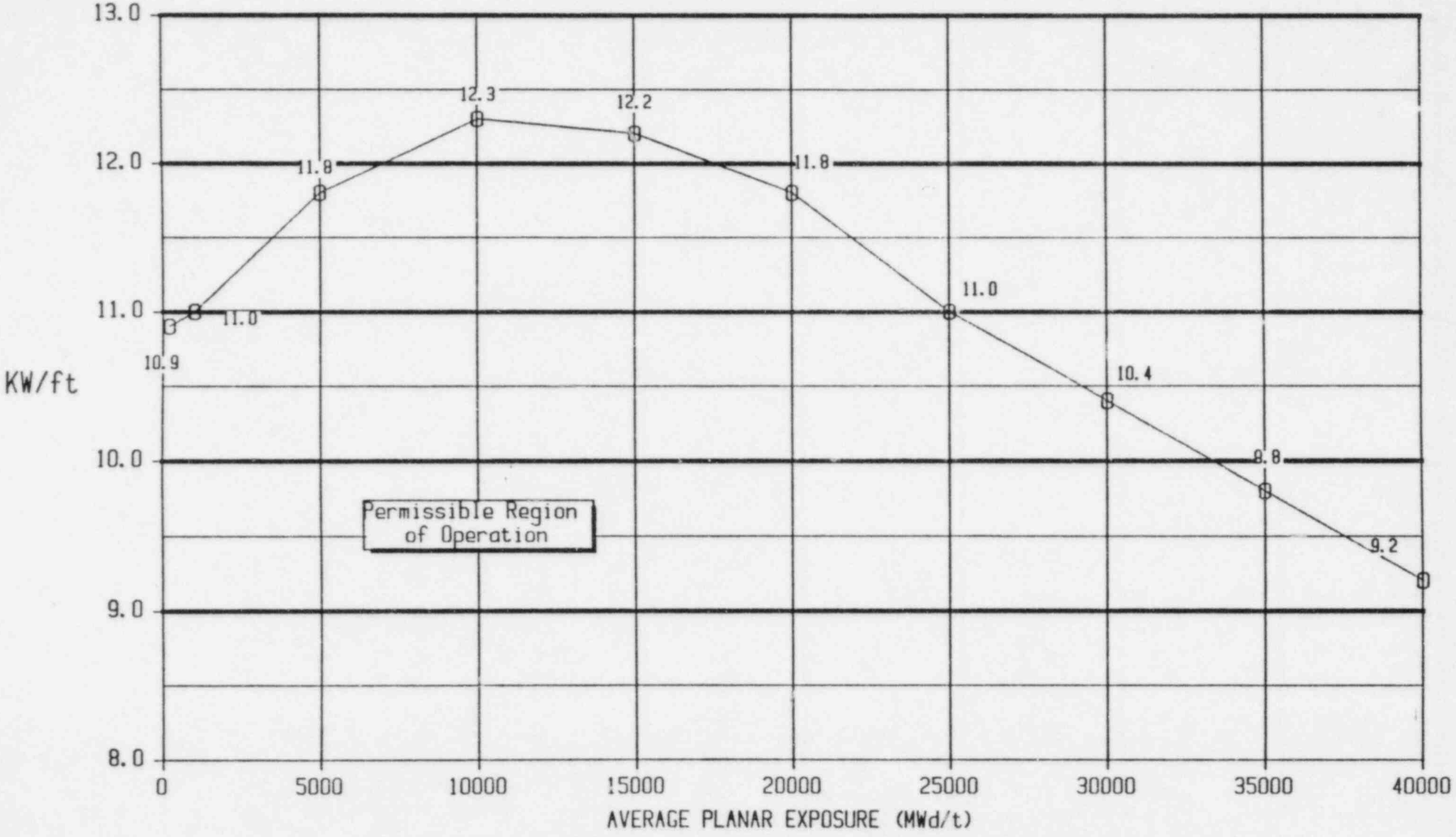
FIGURE 3.2.1-1



Fuel Type 8DRB283 (8X8R)

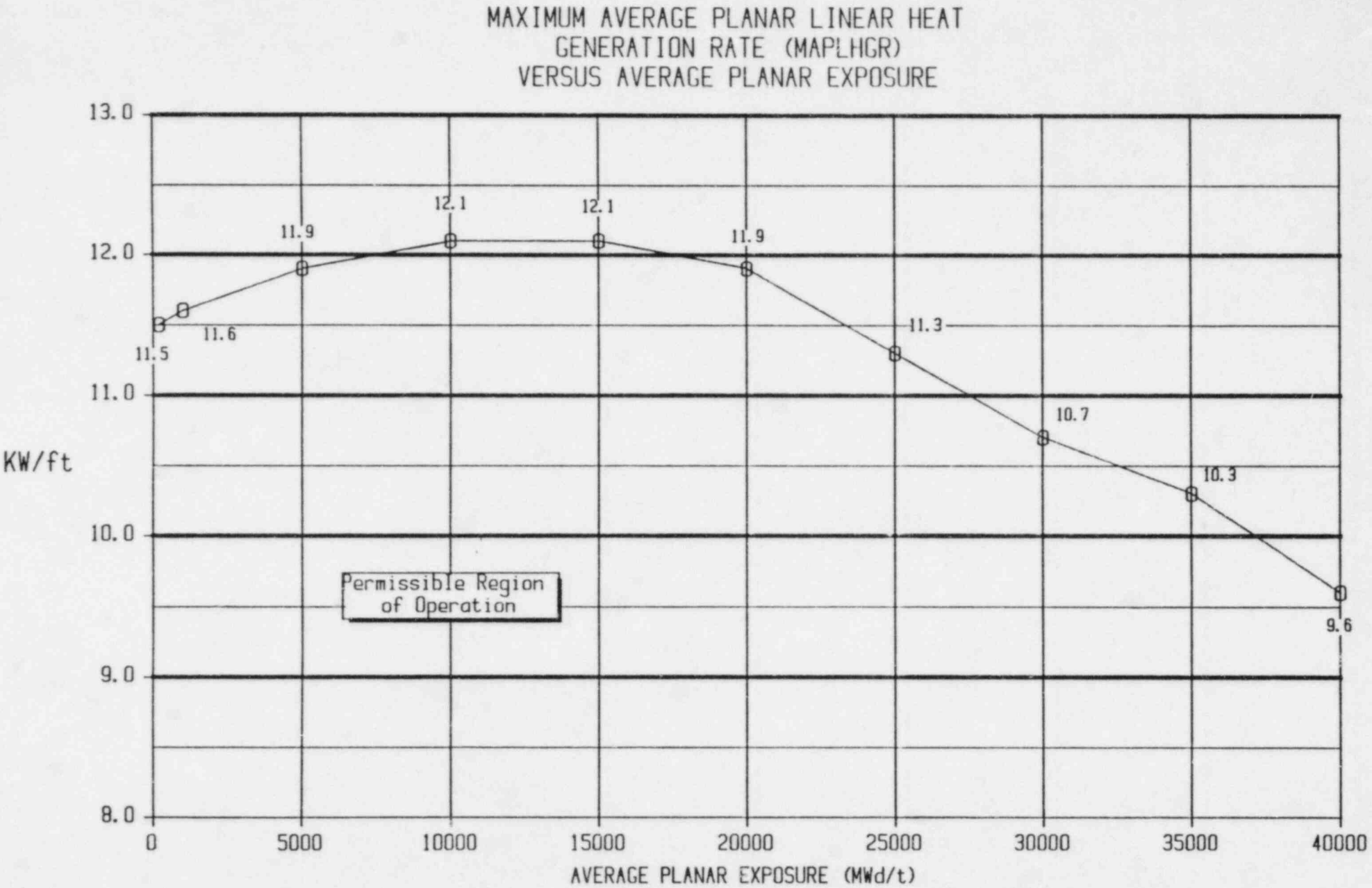
FIGURE 3.2.1-2

MAXIMUM AVERAGE PLANAR LINEAR HEAT
GENERATION RATE (MAPLHGR)
VERSUS AVERAGE PLANAR EXPOSURE



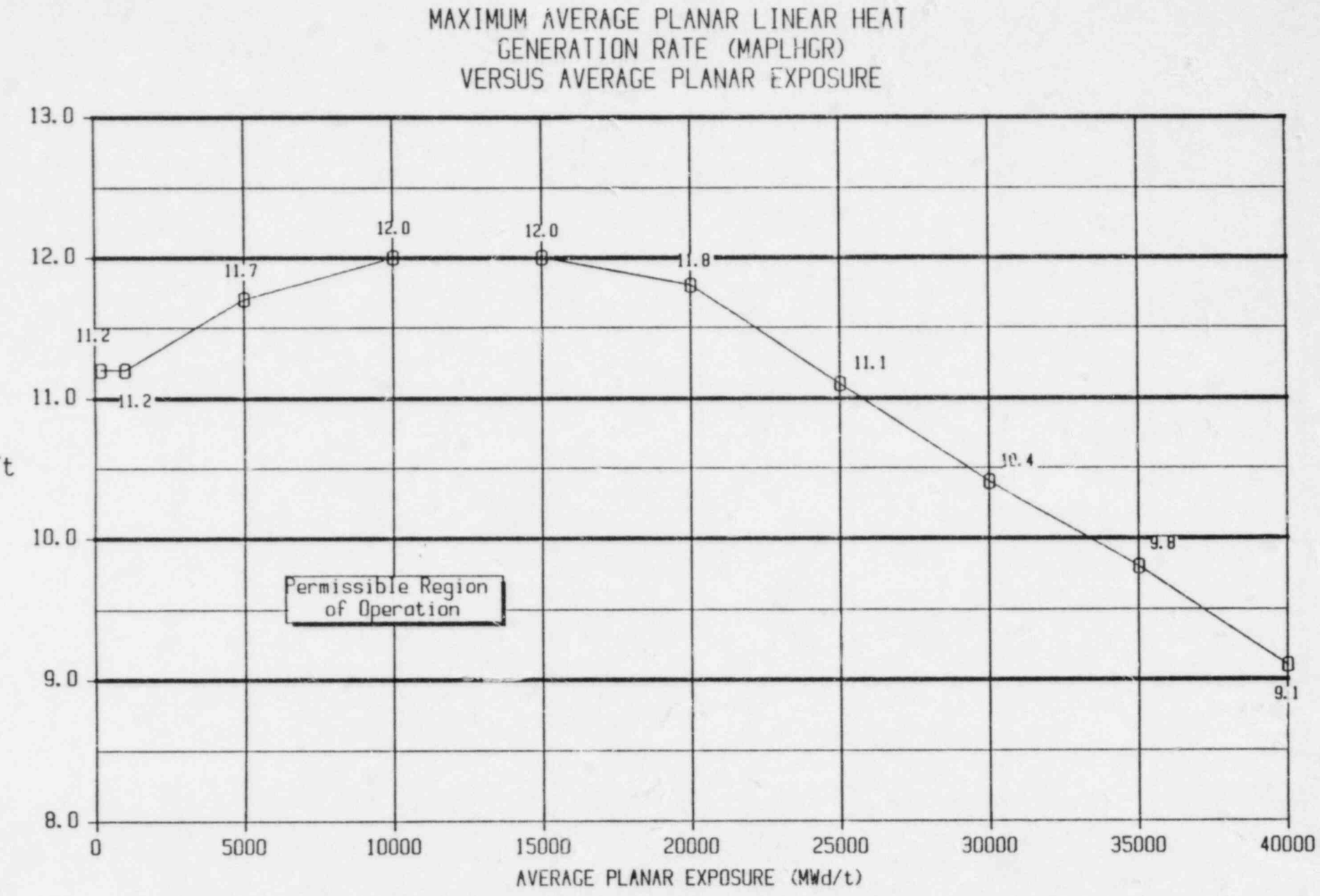
Fuel Type P8DRB285 (P8X8R)

FIGURE 3.2.1-3



Fuel Type P8DRB265H (P8X8R)

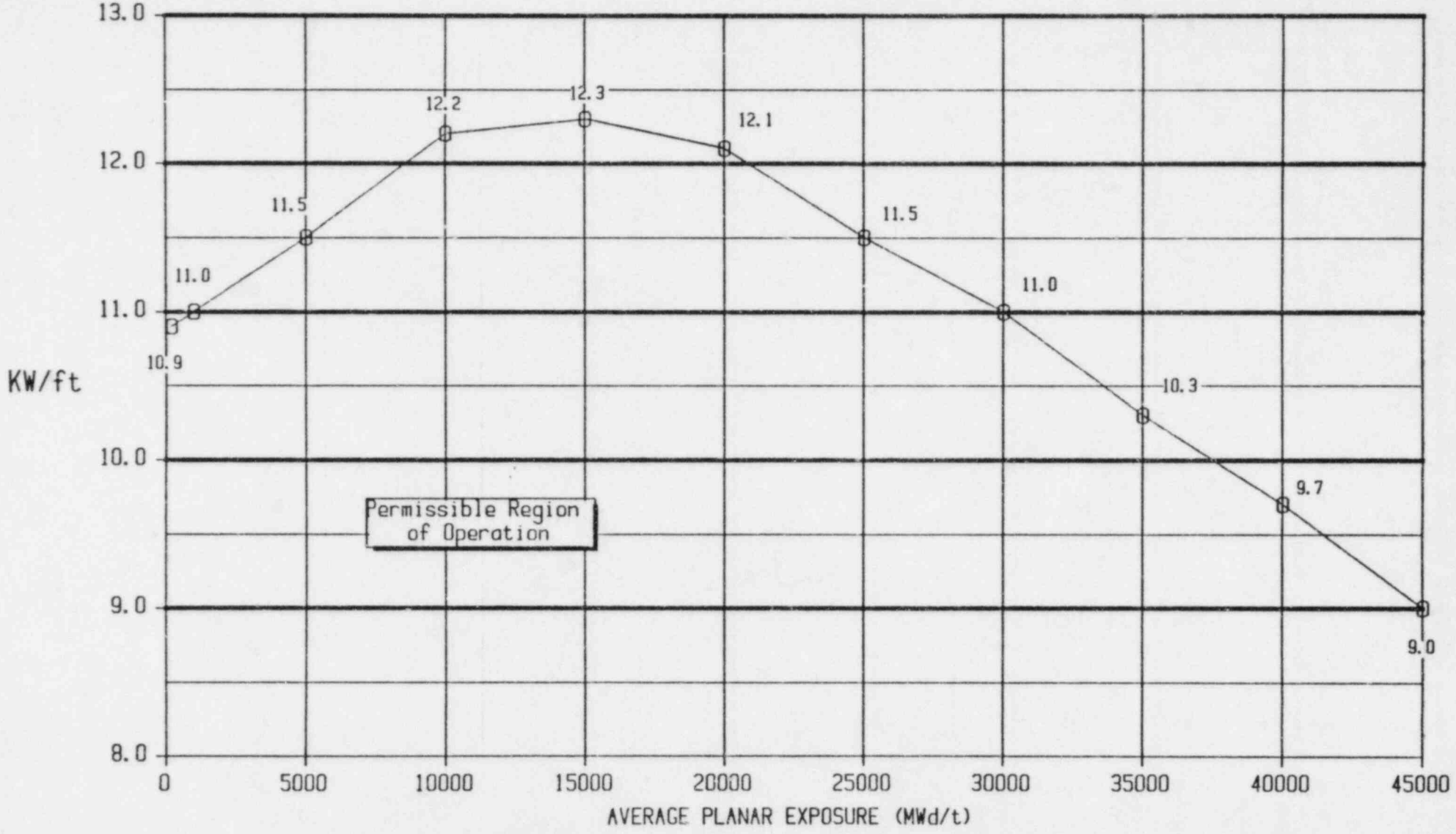
FIGURE 3.2.1-4



Fuel Type P8DRB284H (P8X8R)

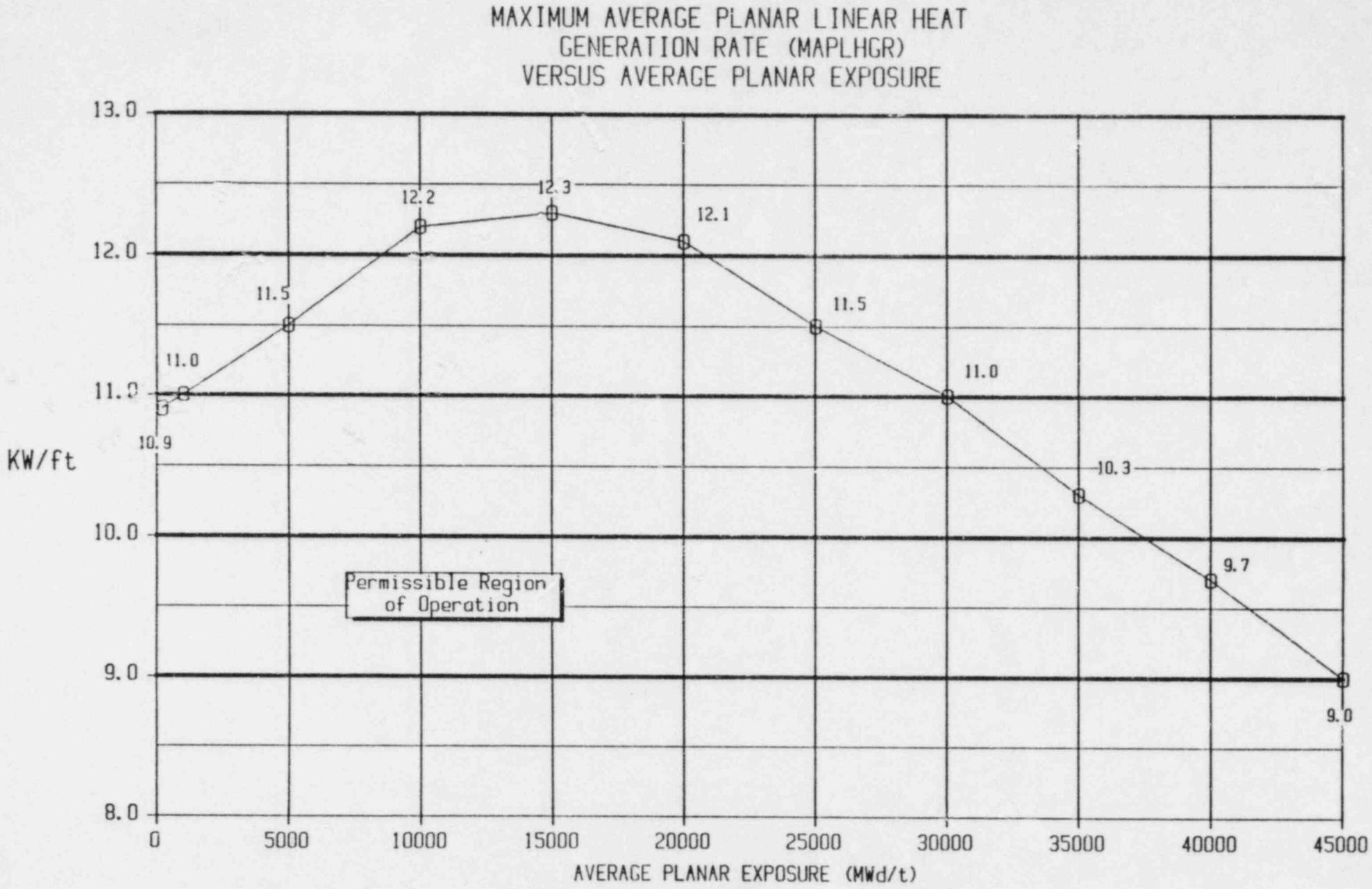
FIGURE 3.2.1-5

MAXIMUM AVERAGE PLANAR LINEAR HEAT
GENERATION RATE (MAPLHGR)
VERSUS AVERAGE PLANAR EXPOSURE



Fuel Type P8DRB299 (P8X8R)

FIGURE 3.2.1-6



Fuel Type BP8DRB299 (BP8X8R)

FIGURE 3.2.1-7

POWER DISTRIBUTION LIMITS

3/4.2.2 APRM SETPOINTS

LIMITING CONDITION FOR OPERATION

3.2.2 The flow-biased APRM scram trip setpoint (S) and rod block trip set point (S_{RB}) shall be established according to the following relationship:

$$S \leq (0.66W + 54\%)\ T$$

$$S_{RB} \leq (0.66W + 42\%)\ T$$

where: S and S_{RB} are in percent of RATED THERMAL POWER.
W = Loop recirculation flow in percent of rated flow,
T = Lowest value of the ratio of design TPF divided by the MTPF obtained for any class of fuel in the core ($T \leq 1.0$), and

Design TPF for: 8 x 8R fuel = 2.39
P8 x 8R fuel = 2.39
BP8 x 8R fuel = 2.39

APPLICABILITY: OPERATIONAL CONDITION 1, when THERMAL POWER is greater than or equal to 25% of RATED THERMAL POWER.

ACTION:

With S or S_{RB} exceeding the allowable value, initiate corrective action within 15 minutes and continue corrective action so that S and S_{RB} are within the required limits within 4 hours or reduce THERMAL POWER to less than 25% of RATED THERMAL POWER within the next 4 hours.

SURVEILLANCE REQUIREMENTS

4.2.2 The MTPF for each class of fuel shall be determined, the value of T calculated, and the flow biased APRM trip setpoint adjusted, as required:

a. At least once per 24 hours,

b. Within 12 hours after completion of a THERMAL POWER increase of at least 15% of RATED THERMAL POWER, and

c. Initially and at least once per 12 hours when the reactor is operating with a LIMITING CONTROL ROD PATTERN for MTPF.

POWER DISTRIBUTION LIMITS

3/4.2.3 MINIMUM CRITICAL POWER RATIO

LIMITING CONDITION FOR OPERATION

3.2.3.1 The MINIMUM CRITICAL POWER RATIO (MCPR), as a function of core flow, shall be equal to or greater than the MCPR limit times the K_f shown in Figure 3.2.3-1 with the following MCPR limit adjustments:

a. Beginning-of-cycle (BOC) to end-of-cycle (EOC) minus 2000 MWD/t with ODYN OPTION A analyses in effect, the MCPR limits are listed below:

1. MCPR for 8 x 8R fuel = 1.25
2. MCPR for P8 x 8R fuel = 1.27
3. MCPR for BP8 x 8R fuel = 1.27

b. EOC minus 2000 MWD/t to EOC with ODYN OPTION A analyses in effect, the MCPR limits are listed below:

1. MCPR for 8 x 8R fuel = 1.36
2. MCPR for P8 x 8R fuel = 1.39
3. MCPR for BP8 x 8R fuel = 1.39

c. BOC to EOC minus 2000 MWD/t with ODYN OPTION B analyses in effect, the MCPR limits are listed below:

1. MCPR for 8 x 8R fuel = 1.24
2. MCPR for P8 x 8R fuel = 1.24
3. MCPR for BP8 x 8R fuel = 1.24

d. EOC minus 2000 MWD/t to EOC with ODYN OPTION B analyses in effect, the MCPR limits are listed below:

1. MCPR for 8 x 8R fuel = 1.25
2. MCPR for P8 x 8R fuel = 1.27
3. MCPR for BP8 x 8R fuel = 1.27

APPLICABILITY: OPERATIONAL CONDITION 1 when THERMAL POWER is greater than or equal to 25% RATED THERMAL POWER

ACTION:

With MCPR, as a function of core flow, less than the applicable limit determined from Figure 3.2.3-1 initiate corrective action within 15 minutes and restore MCPR to within the applicable limit within 4 hours or reduce THERMAL POWER to less than 25% of RATED THERMAL POWER within the next 4 hours.

TABLE 3.2.3.2-1 (BSEP-1-60)

TRANSIENT OPERATING LIMIT MCPR VALUES

TRANSIENT	FUEL TYPE 8x8R		P8x8R		BP8x8R	
NONPRESSURIZATION TRANSIENTS						
BOC → EOC	1.24		1.24		1.24	
TURBINE TRIP/LOAD REJECT WITHOUT BYPASS						
	$MCPR_A$	$MCPR_B$	$MCPR_A$	$MCPR_B$	$MCPR_A$	$MCPR_B$
BOC → EOC - 2000	1.25	1.08	1.27	1.08	1.27	1.08
EOC - 2000 → EOC	1.36	1.24	1.39	1.27	1.39	1.27
FEEDWATER CONTROL FAILURE						
	$MCPR_A$	$MCPR_B$	$MCPR_A$	$MCPR_B$	$MCPR_A$	$MCPR_B$
BOC → EOC - 2000	1.21	1.15	1.21	1.15	1.21	1.15
EOC - 2000 → EOC	1.32	1.25	1.34	1.27	1.34	1.27

POWER DISTRIBUTION LIMITS

3/4.2.4 LINEAR HEAT GENERATION RATE

LIMITING CONDITION FOR OPERATION

3.2.4 The LINEAR HEAT GENERATION RATE (LHGR) shall not exceed 13.4 kw/ft for 8 X 8R, P8 X 8R, and BP8 x 8R fuel assemblies.

APPLICABILITY: OPERATIONAL CONDITION 1, when THERMAL POWER is greater than or equal to 25% of RATED THERMAL POWER.

ACTION:

With the LHGR of any fuel rod exceeding the above limit, initiate corrective action within 15 minutes and continue corrective action so that the LHGR is within the limit within 4 hours, or reduce THERMAL POWER to less than 25% of RATED THERMAL POWER within the next 4 hours.

SURVEILLANCE REQUIREMENTS

4.2.4 LHGR shall be determined to be equal to or less than the limit:

a. At least once per 24 hours,

b. Within 12 hours after completion of a THERMAL POWER increase of at least 15% of RATED THERMAL POWER, and

c. Initially and at least once per 12 hours when the reactor is operating on a LIMITING CONTROL ROD PATTERN for LHGR.

TABLE 3.3.4-2

CONTROL ROD WITHDRAWAL BLOCK INSTRUMENTATION SETPOINTS

TRIP FUNCTION AND INSTRUMENT NUMBER	TRIP SETPOINT	ALLOWABLE VALUE
1. APRM (C51-APRM-CH. A,B,C,D,E,F)		
a. Upscale (Flow Biased)	$\leq (0.66W + 42\%)\frac{T^*}{MTPF}$	$\leq (0.66W + 42\%)\frac{T^*}{MTPF}$
b. Inoperative	NA	NA
c. Downscale	$\geq$ 3/125 of full scale	$\geq$ 3/125 of full scale
d. Upscale (Fixed)	$\leq$ 12% of RATED THERMAL POWER	$\leq$ 12% of RATED THERMAL POWER
2. ROD BLOCK MONITOR (C51-RBM-CH.A,B)		
a. Upscale	$\leq (0.66W + 41\%)\frac{T^*}{MTPF}$	$\leq (0.66W + 41\%)\frac{T^*}{MTPF}$
b. Inoperative	NA	NA
c. Downscale	$\geq$ 3/125 of full scale	$\geq$ 3/125 of full scale
3. SOURCE RANGE MONITORS (C51-SRM-K600A,B,C,D)		
a. Detector not full in	NA	NA
b. Upscale	$\leq 1 \times 10^5$ cps	$\leq 1 \times 10^5$ cps
c. Inoperative	NA	NA
d. Downscale	$\geq$ 3 cps	$\geq$ 3 cps
4. INTERMEDIATE RANGE MONITORS (C51-IRM-K601A,B,C,D,E,F,G,H)		
a. Detector not full in	NA	NA
b. Upscale	$\leq$ 108/125 of full scale	$\leq$ 108/125 of full scale
c. Inoperative	NA	NA
d. Downscale	$\geq$ 3/125 of full scale	$\geq$ 3/125 of full scale
5. SCRAM DISCHARGE VOLUME (C11-LSH-N013E)		
a. Water Level - High	$\leq$ 73 gallons	$\leq$ 73 gallons

*T=2.39 for 8x8R fuel
T=2.39 for P8x8R fuel
T=2.39 for BP8x8R fuel

POWER DISTRIBUTION LIMITS

BASES

3/4.2.2 APRM SETPOINTS

The fuel cladding integrity Safety Limits of Specification 2.1 were based on a TOTAL PEAKING FACTOR of 2.39 for 8 x 8R, P8 x 8R, and BP8 x 8R fuel. The scram setting and rod block functions of the APRM instruments must be adjusted to ensure that the MCPR does not become less than 1.0 in the degraded situation. The scram settings and rod block settings are adjusted in accordance with the formula in this specification when the combination of THERMAL POWER and peak flux indicates a TOTAL PEAKING FACTOR greater than 2.39 for 8 x 8R, P8 x 8R, and BP8 x 8R fuel. This adjustment may be accomplished by increasing the APRM gain and thus reducing the slope and intercept point of the flow referenced APRM high flux scram curve by the reciprocal of the APRM gain change. The method used to determine the design TPF shall be consistent with the method used to determine the MTPF.

3/4.2.3 MINIMUM CRITICAL POWER RATIO

The required operating limit MCPR's at steady state operating conditions as specified in Specification 3.2.3 are derived from the established fuel cladding integrity Safety Limit MCPR of 1.07, and an analysis of abnormal operational transients[1]. For any abnormal operating transient analysis evaluation with the initial condition of the reactor being at the steady state operating limit, it is required that the resulting MCPR does not decrease below the Safety Limit MCPR at any time during the transient, assuming instrument trip setting as given in Specification 2.2.1.

To assure that the fuel cladding integrity Safety Limit is not exceeded during any anticipated abnormal operational transient, the most limiting transients have been analyzed to determine which result in the largest reduction in CRITICAL POWER RATIO (CPR). The type of transients evaluated were loss of flow, increase in pressure and power, positive reactivity insertion, and coolant temperature decrease.

The required minimum operating limit MCPR of Specification 3.2.3 is obtained when the transient which yields the largest ΔCPR is added to the Safety Limit MCPR of 1.07. Prior to analysis of abnormal operational transients, an initial fuel bundle MCPR was determined. This parameter is based on the bundle flow calculated by a GE multichannel steady state flow distribution model as described in Section 4.4 of NEDO-20360[4] and on core parameters shown in Reference 3, response to Items 2 and 9.

5.0 DESIGN FEATURES

5.1 SITE

EXCLUSION AREA

5.1.1 The exclusion area shall be as shown in Figure 5.1.1-1.

LOW POPULATION ZONE

5.1.2 The low population zone shall be as shown in Figure 5.1.2-1, based on the information given in Section 2.2 of the FSAR.

5.2 CONTAINMENT

CONFIGURATION

5.2.1 The PRIMARY CONTAINMENT is a steel-lined reinforced concrete structure composed of a series of vertical right cylinders and truncated cones which form a drywell. This drywell is attached to a suppression chamber through a series of vents. The suppression chamber is a concrete steel-lined pressure vessel in the shape of a torus. The primary containment has a minimum free air volume of (288,000) cubic feet.

DESIGN TEMPERATURE AND PRESSURE

5.2.2 The primary containment is designed and shall be maintained for:

a. Maximum internal pressure 62 psig.

b. Maximum internal temperature: drywell 300°F.
suppression chamber 200°F.

c. Maximum external pressure 2 psig.

5.3 REACTOR CORE

FUEL ASSEMBLIES

5.3.1 The reactor core shall contain 560 fuel assemblies of 8 x 8R, P8 x 8R, and BP8 x 8R fuel types. Each fuel assembly contains 62 fuel rods. All fuel rods shall be cladded with Zircaloy 2. Each fuel rod shall have a nominal active fuel length of 150 inches.