

3/4.2 POWER DISTRIBUTION LIMITS

3/4.2.1 AVERAGE PLANAR LINEAR HEAT GENERATION RATE

LIMITING CONDITION FOR OPERATION

3.2.1 All AVERAGE PLANAR LINEAR HEAT GENERATION RATES (APLHGRs) for each type of fuel ~~as a function of AVERAGE BUNDLE EXPOSURE for ANF fuel~~ shall not exceed the limits shown in Figures 3.2.1-1 and 3.2.1-2.

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

ACTION:

With an APLHGR exceeding the limits of Figure 3.2.1-1 or 3.2.1-2, initiate corrective action within 15 minutes and restore APLHGR to within the required limits within 2 hours or reduce THERMAL POWER to less than 25% of RATED THERMAL POWER within the next 4 hours.

SURVEILLANCE REQUIREMENTS

4.2.1 All APLHGRs shall be verified to be equal to or less than the limits determined from Figures 3.2.1-1, and 3.2.1-2.

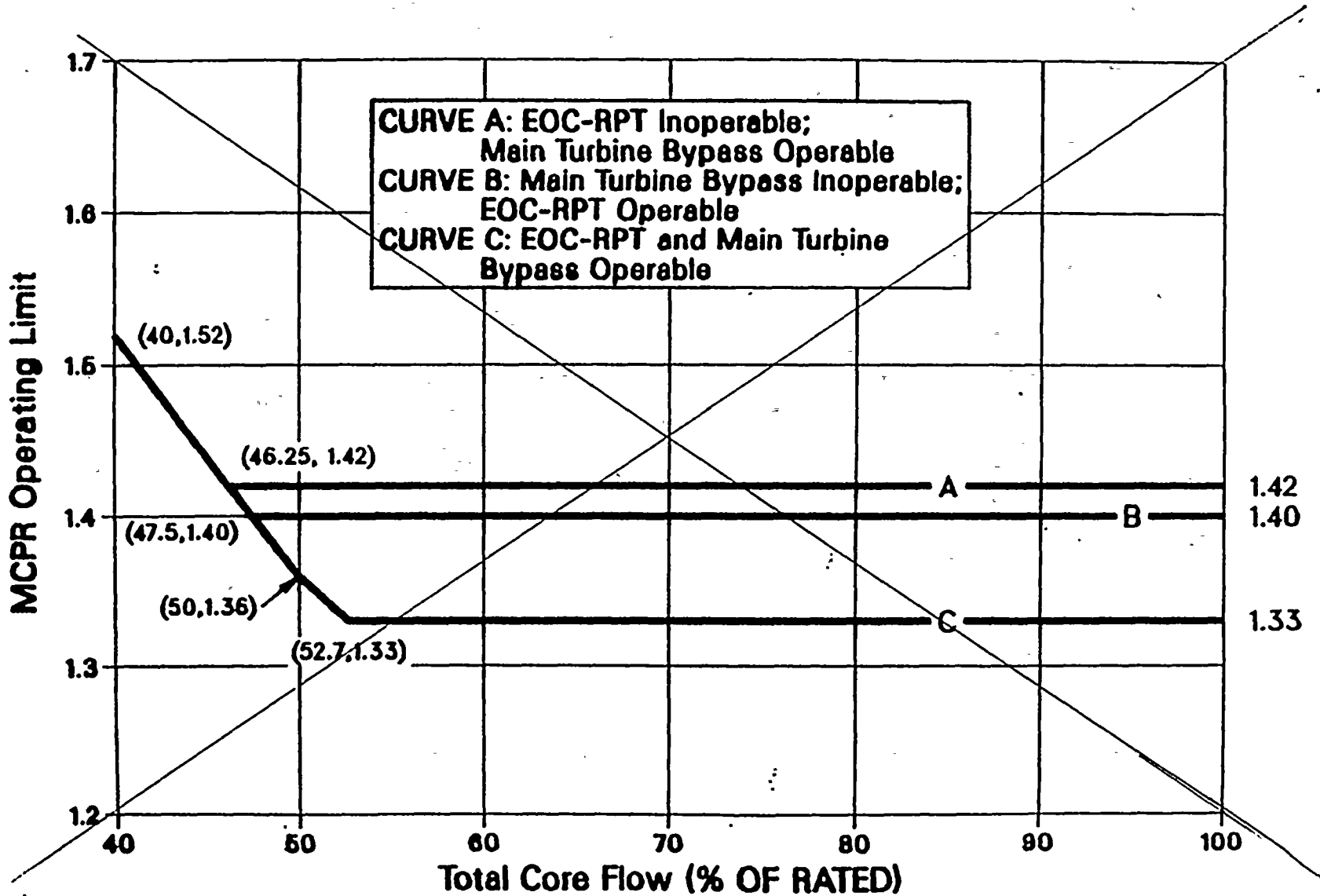
- a. At least once per 24 hours,
- b. Within 12 hours after completion of a THERMAL POWER increase of at least 15% of RATED THERMAL POWER, and
- c. Initially and at least once per 12 hours when the reactor is operating with a LIMITING CONTROL ROD PATTERN for APLHGR.
- d. The provisions of Specification 4.0.4 are not applicable.

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~~*See Specification 3.4.1.1.2.a for single loop operation requirements.~~



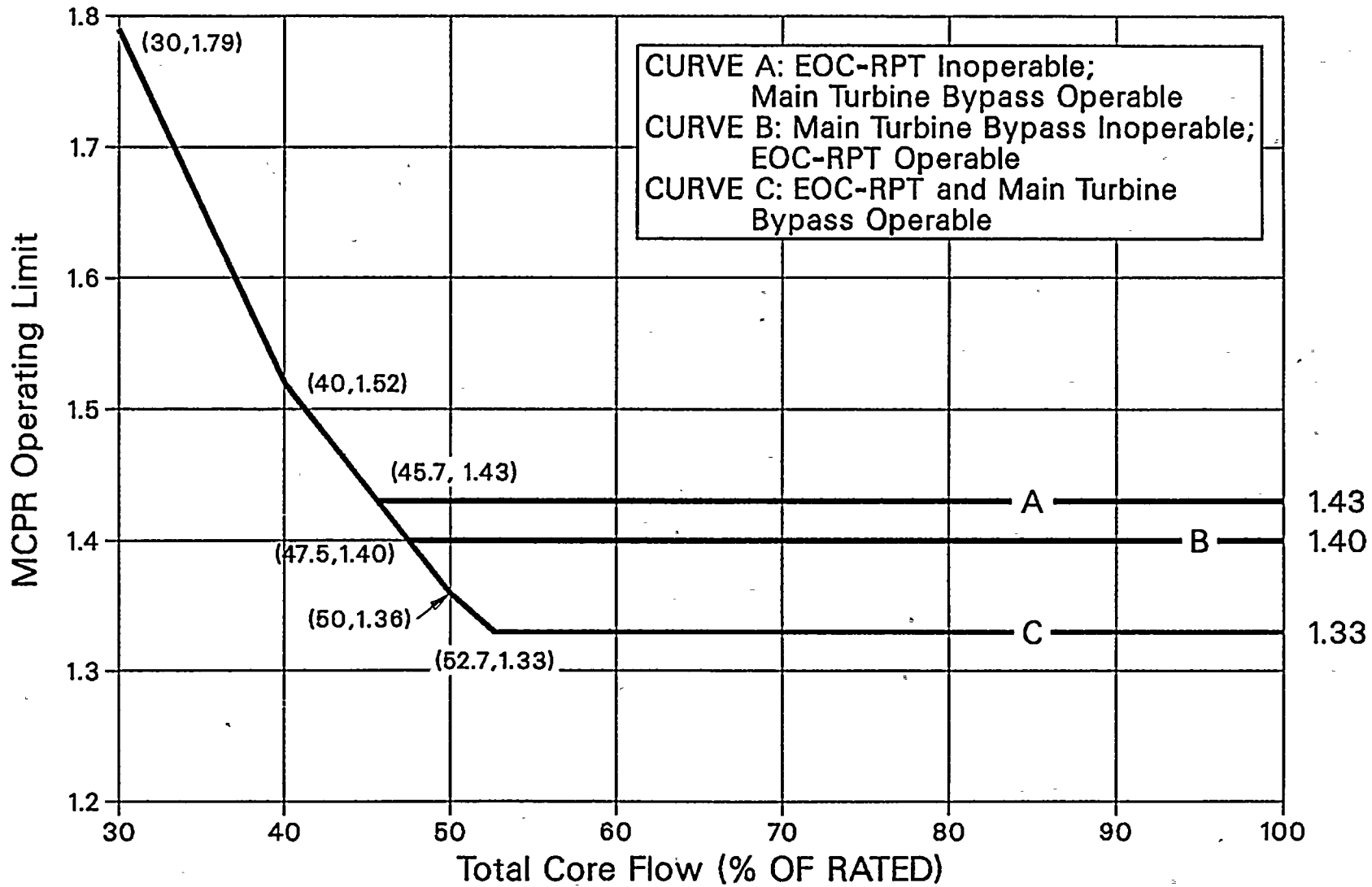
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**FLOW DEPENDENT MCPR OPERATING LIMIT
FIGURE 3.2.3-1**

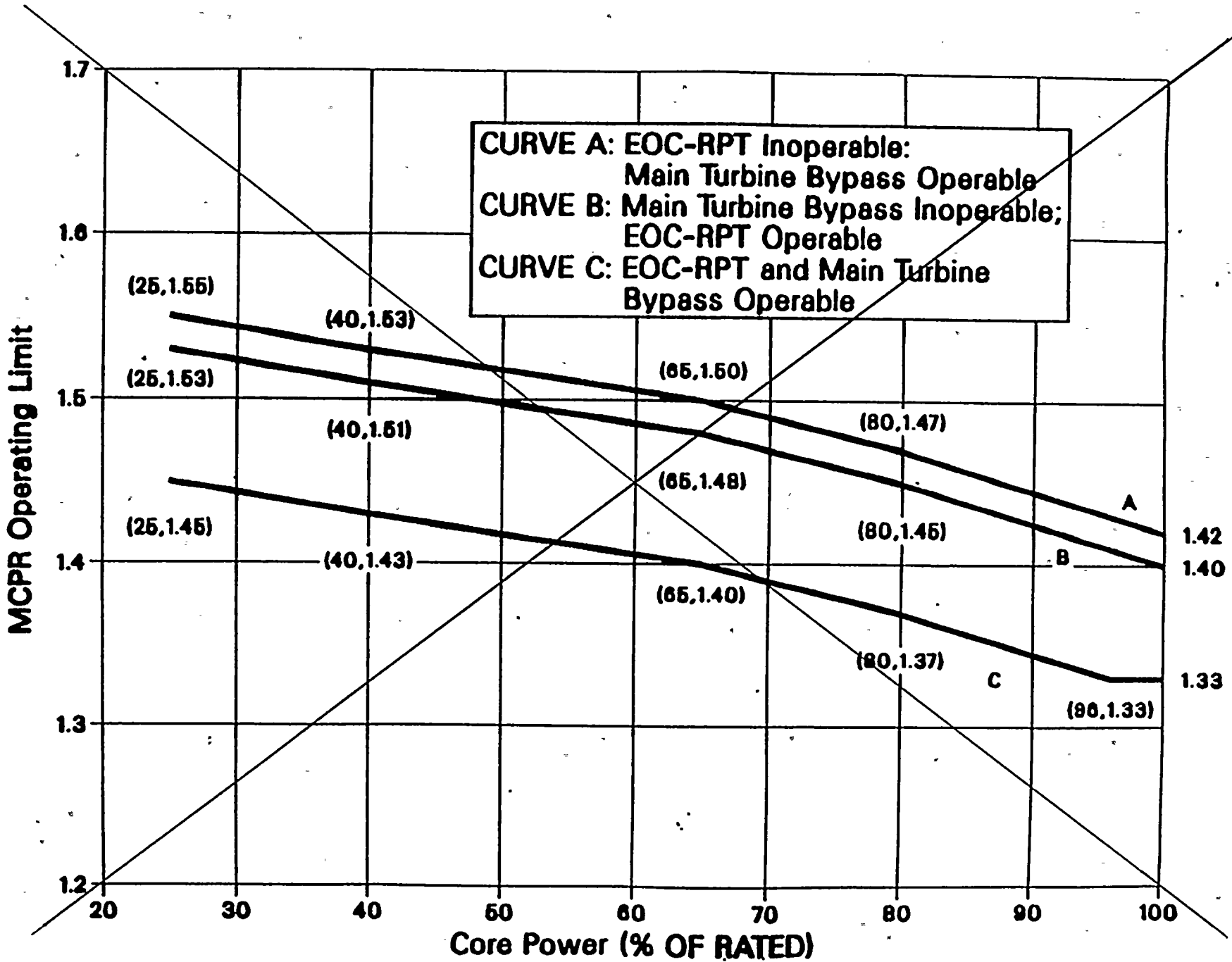
REPLACE WITH NEW FIGURE 3.2.3-1, ATTACHED





CURVE A: EOC-RPT Inoperable;
Main Turbine Bypass Operable
CURVE B: Main Turbine Bypass Inoperable;
EOC-RPT Operable
CURVE C: EOC-RPT and Main Turbine
Bypass Operable

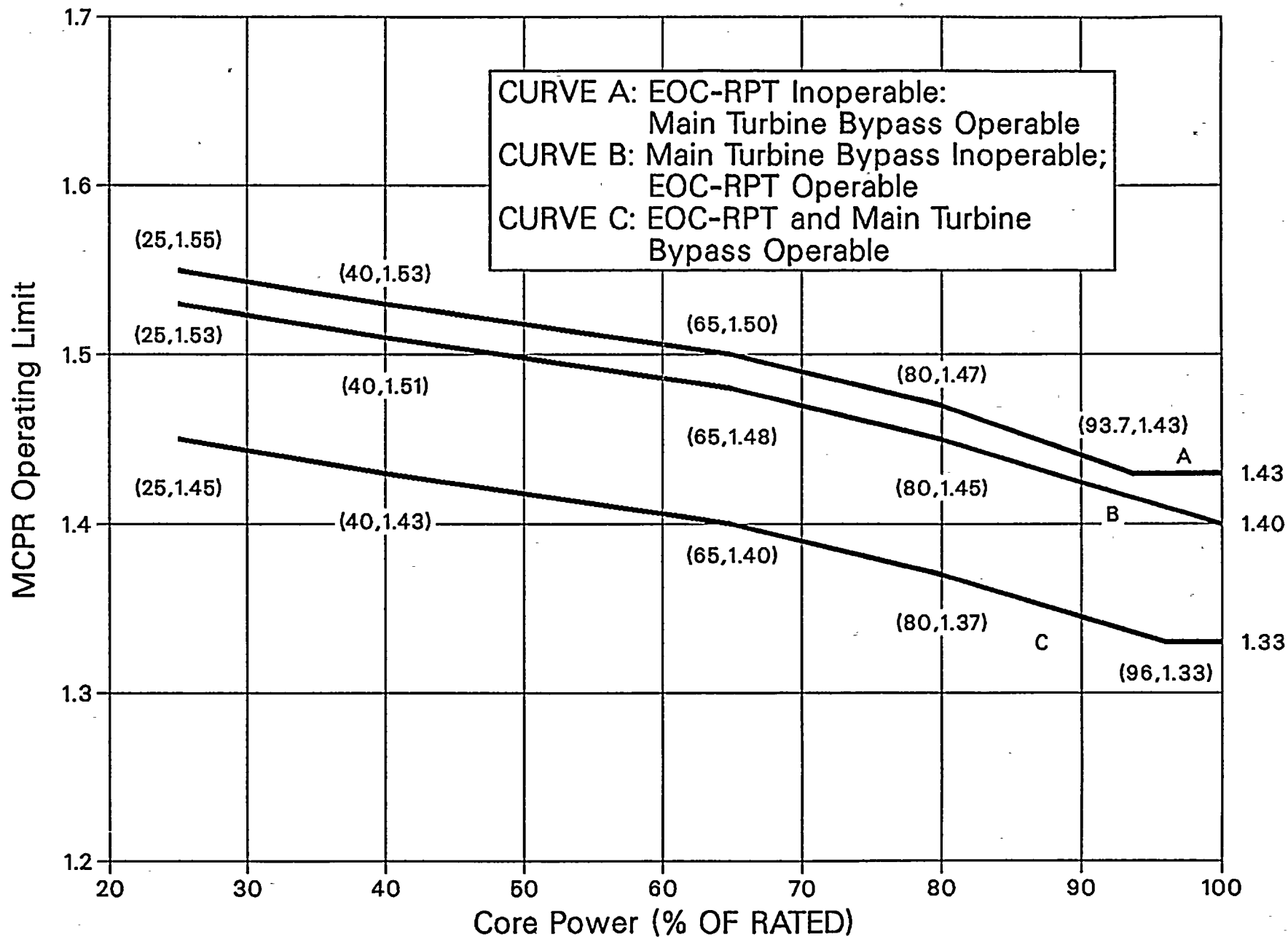
FLOW DEPENDENT MCPR OPERATING LIMIT
FIGURE 3.2.3-1



REDUCED POWER M CPR OPERATING LIMIT
Figure 3.2.3-2

REPLACE WITH NEW FIGURE, ATTACHED





REDUCED POWER MCPR OPERATING LIMIT

Figure 3.2.3-2



POWER DISTRIBUTION LIMITS

3/4.2.4 LINEAR HEAT GENERATION RATE

ANF FUEL

LIMITING CONDITION FOR OPERATION

3.2.4 The LINEAR HEAT GENERATION RATE (LHGR) ~~for ANF fuel~~ shall not exceed the LHGR limits determined from Figures 3.2.4-1 and 3.2.4-2.

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 its applicable limit from Figure 3.2.4-1 or 3.2.4-2, initiate corrective action within 15 minutes and restore the LHGR to within the limit within 2 hours or reduce THERMAL POWER to less than 25% of RATED THERMAL POWER within the next 4 hours.

SURVEILLANCE REQUIREMENTS

4.2.4 LHGRs ~~for ANF fuel~~ 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.
- d. The provisions of Specification 4.0.4 are not applicable.



REACTOR COOLANT SYSTEM

RECIRCULATION LOOPS - SINGLE LOOP OPERATION

LIMITING CONDITION FOR OPERATION

3.4.1.1.2 One reactor coolant recirculation loop shall be in operation with the pump speed \leq 80% of the rated pump speed, and

a. the following revised specification limits shall be followed:

1. Specification 2.1.2: the MCPR Safety Limit shall be increased to 1.07.
2. Table 2.2.1-1: the APRM Flow-Biased Scram Trip Setpoints shall be as follows:

| <u>Trip Setpoint</u> | <u>Allowable Value</u> |
|----------------------|------------------------|
| $\leq 0.58W + 54\%$ | $\leq 0.58W + 57\%$ |

~~3. Specification 3.2.1: The MAPLHGR limits shall be as specified in Figures 3.2.1-2 and 3.2.1-3.~~

3 A. Specification 3.2.2: the APRM Setpoints shall be as follows:

| <u>Trip Setpoint</u> | <u>Allowable Value</u> |
|-------------------------------|-------------------------------|
| $S \leq (0.58W + 54\%)T$ | $S \leq (0.58W + 57\%)T$ |
| $S_{RB} \leq (0.58W + 45\%)T$ | $S_{RB} \leq (0.58W + 48\%)T$ |

4 ~~3~~. Specification 3.2.3: The MINIMUM CRITICAL POWER RATIO (MCPR) shall be greater than or equal to the largest of the following values:

- a. 1.42,
- b. the MCPR determined from Figure 3.2.3-1 plus 0.01, and
- c. the MCPR determined from Figure 3.2.3-2 plus 0.01.

5 ~~4~~. Table 3.3.6-2: the RBM/APRM Control Rod Block Setpoints shall be as follows:

| | | |
|---------------------|---|---|
| a. RBM - Upscale | <u>Trip Setpoint</u> $\leq 0.66W + 36\%$ | <u>Allowable Value</u> $\leq 0.66W + 39\%$ |
| b. APRM-Flow Biased | <u>Trip Setpoint</u> $\leq 0.58 + 45\%$ | <u>Allowable Value</u> $\leq 0.58W + 48\%$ |

- b. APRM and LPRM*** neutron flux noise levels shall be less than three times their established baseline levels when THERMAL POWER is greater than the limit specified in Figure 3/4.1.1.1-1.
- c. Total core flow shall be greater than or equal to 42 million lbs/hr when THERMAL POWER is greater than the limit specified in Figure 3.4.1.1.1-1.

APPLICABILITY: OPERATIONAL CONDITIONS 1* and 2*, except during two loop operation.#

3/4.4 REACTOR COOLANT SYSTEM

BASES

3/4.4.1 RECIRCULATION SYSTEM

Operation with one reactor recirculation loop inoperable has been evaluated and found acceptable, provided that the unit is operated in accordance with Specification 3.4.1.1.2.

INSERT → (A) For single loop operation, the MAPLHGR limits are multiplied by a factor of 1.0 for ANF fuel. This multiplication factor is derived from LOCA analyses initiated from single loop operation conditions. The resulting MAPLHGR limits for single loop operation assure the peak cladding temperature during a LOCA event remains below 2200°F.

The MINIMUM CRITICAL POWER RATIO (MCPR) limits for single loop operation assure that the Safety Limit MCPR is not exceeded for any Anticipated Operational Occurrence (AOO) and for the Recirculation Pump Seizure Accident.

For single loop operation, the RBM and APRM setpoints are adjusted by a 8.5% decrease in recirculation drive flow to account for the active loop drive flow that bypasses the core and goes up through the inactive loop jet pumps.

Surveillance on the pump speed of the operating recirculation loop is imposed to exclude the possibility of excessive reactor vessel internals vibration. Surveillance on differential temperatures below the threshold limits on THERMAL POWER or recirculation loop flow mitigates undue thermal stress on vessel nozzles, recirculation pumps and the vessel bottom head during extended operation in the single loop mode. The threshold limits are those values which will sweep up the cold water from the vessel bottom head.

THERMAL POWER, core flow, and neutron flux noise level limitations are prescribed in accordance with the recommendations of General Electric Service Information Letter No. 380, Revision 1, "BWR Core Thermal Hydraulic Stability," dated February 10, 1984.

An inoperable jet pump is not, in itself, a sufficient reason to declare a recirculation loop inoperable, but it does, in case of a design-basis-accident, increase the blowdown area and reduce the capability of reflooding the core; thus, the requirement for shutdown of the facility with a jet pump inoperable. Jet pump failure can be detected by monitoring jet pump performance on a prescribed schedule for significant degradation.

Recirculation pump speed mismatch limits are in compliance with the ECCS LOCA analysis design criteria for two loop operation. The limits will ensure an adequate core flow coastdown from either recirculation loop following a LOCA. In the case where the mismatch limits cannot be maintained during the loop operation, continued operation is permitted in the single loop mode.

In order to prevent undue stress on the vessel nozzles and bottom head region, the recirculation loop temperatures shall be within 50°F of each other prior to startup of an idle loop. The loop temperature must also be within 50°F of the reactor pressure vessel coolant temperature to prevent thermal shock to the recirculation pump and recirculation nozzles. Since the coolant in the bottom of the vessel is at a lower temperature than the coolant in the upper regions of the core, undue stress on the vessel would result if the temperature difference was greater than 145°F.

A

LOCA analyses for two loop operating conditions, which result in Peak Cladding Temperatures (PCTs) below 2200°F, bound single loop operating conditions.

Single loop operation LOCA analyses using two-loop MAPLHGR limits result in lower PCTs. Therefore, the use of two-loop MAPLHGR limits during single loop operation assures that the PCT during a LOCA event remains below 2200°F.