

POWER DISTRIBUTION LIMITS

3/4.2.3 MINIMUM CRITICAL POWER RATIO

LIMITING CONDITION FOR OPERATION

3.2.3 The MINIMUM CRITICAL POWER RATIO (MCPR) shall be equal to or greater than the MCPR limit determined from Figure 3.2.3-1 times the K_x shown in Figure 3.2.3-2, provided that the end-of-cycle recirculation pump trip (EOC-RPT) system is OPERABLE per Specification 3.3.4.2, with:

a or Figure 3.2.3-1b, as applicable,

$$\tau = \frac{(\tau_{ave} - \tau_B)}{\tau_A - \tau_B}$$

$\tau_A = 0.86$ seconds, control rod average scram insertion time limit to notch 39 per Specification 3.1.3.3,

$$\tau_B = 0.688 + 1.65 \left[\frac{N_1}{n \sum_{i=1}^n N_i} \right]^{1/2} (0.052),$$

$$\tau_{ave} = \frac{\sum_{i=1}^n N_i \tau_i}{\sum_{i=1}^n N_i}$$

where:

n = number of surveillance tests performed to date in cycle,

N_i = number of active control rods measured in the i^{th} surveillance tests,

τ_i = average scram time to notch 39 of all rods measured in the i^{th} surveillance test, and

N_1 = total number of active rods measured in Specification 4.1.3.2.a.

APPLICABILITY:

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

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POWER DISTRIBUTION LIMITS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION:

- a. With the end-of-cycle recirculation pump trip system inoperable per Specification 3.3.4.2, operation may continue and the provisions of Specification 3.0.4 are not applicable provided that, within one hour, MCPR is determined to be greater than or equal to the MCPR limit as a function of average scram time as shown in Figure 3.2.3-1, EOC-RPT inoperable curve, times the K_f shown in Figure 3.2.3-2.
- * c. With MCPR less than the applicable MCPR limit determined from Figure 3.2.3-1 and 3.2.3-2, initiate corrective action within 15 minutes and restore MCPR to within the required limit within 2 hours or reduce THERMAL POWER to less than 25% of RATED THERMAL POWER within the next 4 hours.

SURVEILLANCE REQUIREMENTS

4.2.3 MCPR, with

- a. $\tau = 1.0$ prior to performance of the initial scram time measurements for the cycle in accordance with Specification 4.1.3.2, or
- b. τ as defined in Specification 3.2.3 used to determine the limit within 72 hours of the conclusion of each scram time surveillance test required by Specification 4.1.3.2,
- c. *The provisions of Specification 4.0.4 are not applicable,* shall be determined to be equal to or greater than the applicable MCPR limit determined from Figures 3.2.3-1 and 3.2.3-2:
 - 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 MCPR.
 - d. *The provisions of Specification 4.0.4 are not applicable.*

- b. With the turbine bypass system inoperable per Specification 3.7.8, operation may continue and the provisions of Specification 3.0.4 are not applicable provided that within 1 hour, MCPR is determined to be greater than or equal to the MCPR limit as a function of average scram time as shown in Figure 3.2.3-1, turbine bypass inoperable curve, times the K_f shown in Figure 3.2.3-2.

a or figure 3.2.3-1b, as applicable,

POWER DISTRIBUTION LIMITS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION:

- a. With the end-of-cycle recirculation pump trip system inoperable per Specification 3.3.4.2, operation may continue and the provisions of Specification 3.0.4 are not applicable provided that, within one hour, MCPR is determined to be greater than or equal to the MCPR limit as a function of average scram time as shown in Figure 3.2.3-1, EOC-RPT inoperable curve, times the K_f shown in Figure 3.2.3-2. *a or Figure 3.2.3-1b, as applicable,*
- b. With MCPR less than the applicable MCPR limit determined from Figure 3.2.3-1 and 3.2.3-2, initiate corrective action within 15 minutes and restore MCPR to within the required limit within 2 hours or reduce THERMAL POWER to less than 25% of RATED THERMAL POWER within the next 4 hours.

SURVEILLANCE REQUIREMENTS

4.2.3 MCPR, with

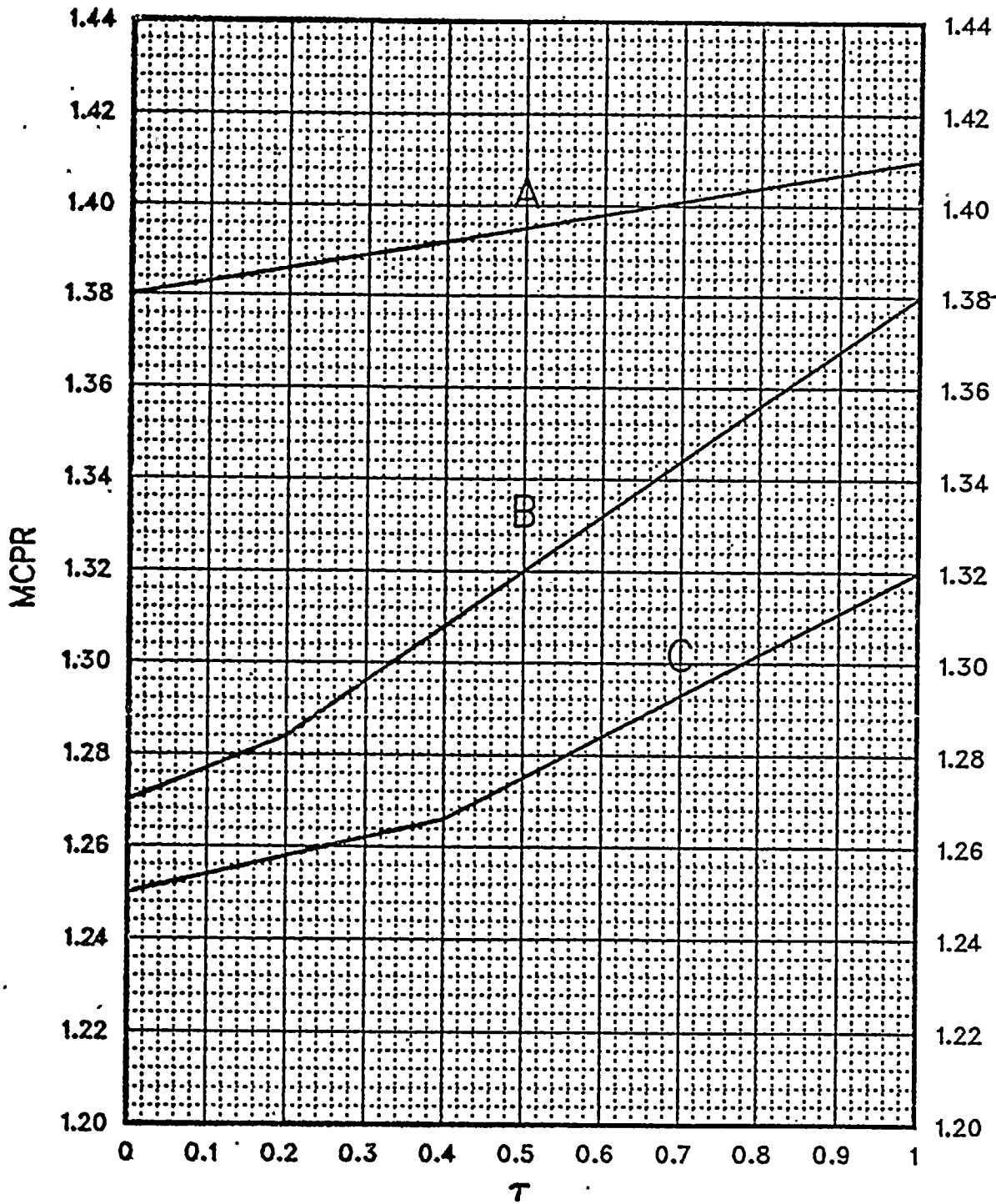
- a. $\tau = 1.0$ prior to performance of the initial scram time measurements for the cycle in accordance with Specification 4.1.3.2, or
- b. τ as defined in Specification 3.2.3 used to determine the limit within 72 hours of the conclusion of each scram time surveillance test required by Specification 4.1.3.2,

shall be determined to be equal to or greater than the applicable MCPR limit determined from Figures 3.2.3-1 and 3.2.3-2:

a or Figure 3.2.3-1b, as applicable, Figure

- 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 MCPR.

MINIMUM CRITICAL POWER RATIO (MCPR) VERSUS τ AT RATED FLOW*

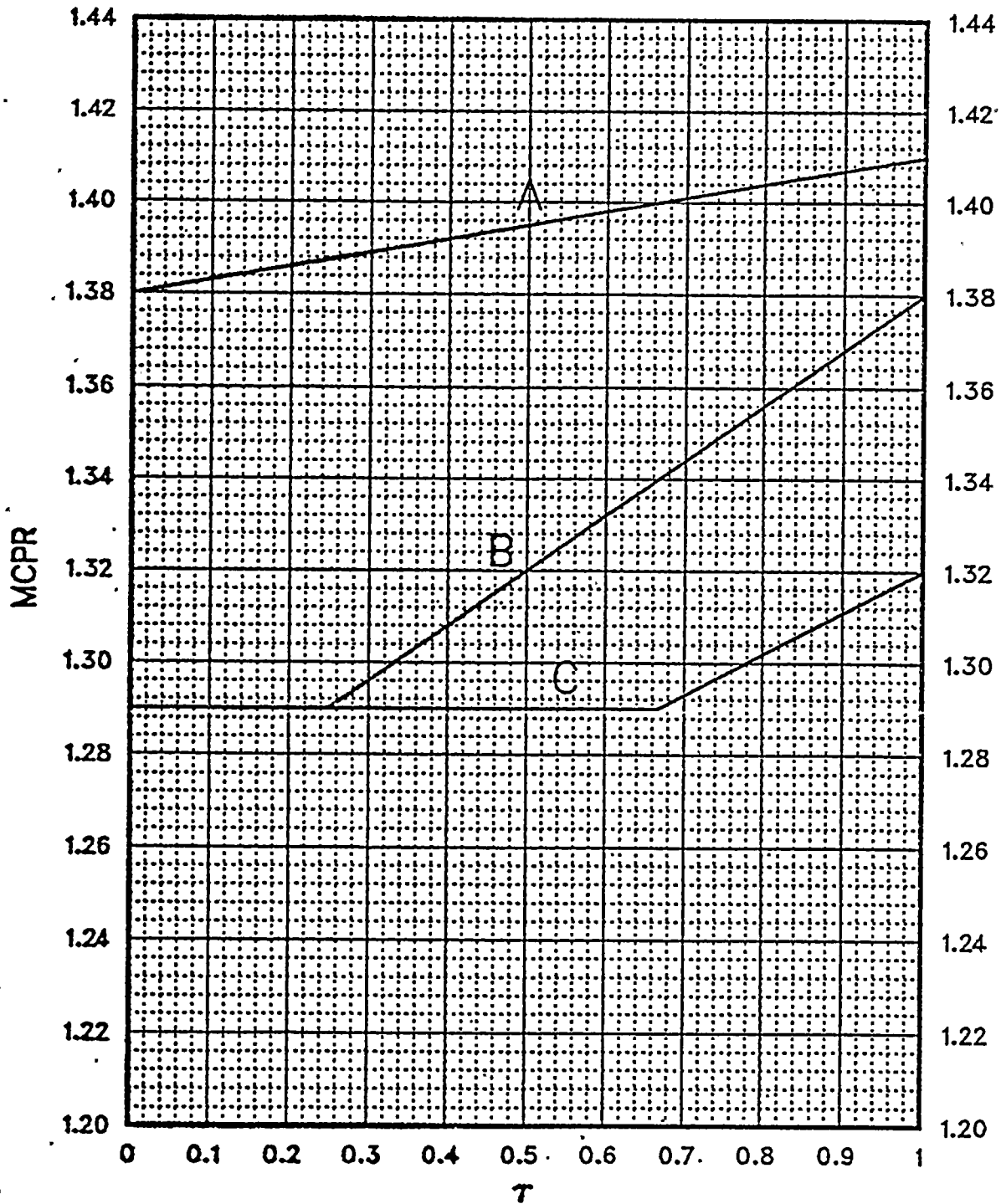


- Curve A: Main Turbine Bypass Inoperable; EOC - RPT Operable
- Curve B: EOC - RPT Inoperable; Main Turbine Bypass Operable
- Curve C: EOC-RPT and Main Turbine Bypass Operable

* RBM AT 106% PER
TABLE 3.3.6-2

FIGURE 3.2.3-1a

MINIMUM CRITICAL POWER RATIO (MCPR) VERSUS τ AT RATED FLOW*



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

* RBM AT 108% PER
TABLE 3.3.6-2

FIGURE 3.2.3-1b

TABLE 3.3.6-2

CONTROL ROD BLOCK INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
1. <u>ROD BLOCK MONITOR</u>		
a. Upscale <i>1) 106% #</i>	$\leq 0.66 W + 42\%$	$\leq 0.66 W + 45\%$
b. Inoperative <i>2) 108% #</i>	$< 0.66 W + 40\%$	$< 0.66 W + 43\%$
c. Downscale	NA	NA
	$\geq 5/125$ divisions of full scale	$\geq 3/125$ of divisions full scale
2. <u>APRM</u>		
a. Flow Biased Neutron Flux - Upscale	$< 0.58 W + 50\%*$	$< 0.58 W + 53\%*$
b. Inoperative	NA	NA
c. Downscale	$\geq 5\%$ of RATED THERMAL POWER	$\geq 3\%$ of RATED THERMAL POWER
d. Neutron Flux - Upscale Startup	$\leq 12\%$ of RATED THERMAL POWER	$\leq 14\%$ of RATED THERMAL POWER
3. <u>SOURCE RANGE MONITORS</u>		
a. Detector not full in	NA	NA
b. Upscale	$< 2 \times 10^5$ cps	$< 4 \times 10^5$ cps
c. Inoperative	NA	NA
d. Downscale	≥ 3 cps**	≥ 2 cps**
4. <u>INTERMEDIATE RANGE MONITORS</u>		
a. Detector not full in	NA	NA
b. Upscale	$< 108/125$ divisions of full scale	$< 110/125$ divisions of full scale
c. Inoperative	NA	NA
d. Downscale	$\geq 5/125$ divisions of full scale	$\geq 3/125$ divisions of full scale
5. <u>SCRAM DISCHARGE VOLUME</u>		
a. Water Level - High	≤ 44 gallons	≤ 44 gallons
6. <u>REACTOR COOLANT SYSTEM RECIRCULATION FLOW</u>		
a. Upscale	$< 108/125$ divisions of full scale	$111/125$ divisions of full scale
b. Inoperative	NA	NA
c. Comparator	$\leq 10\%$ flow deviation	11% flow deviation

*The Average Power Range Monitor rod block function is varied as a function of recirculation loop flow (W). The trip setting of this function must be maintained in accordance with Specification 3.2.2.

**At initial loading and startup the count rate may > 0.5 cps.

May be used when the associated MCPR requirements in Specification 3.2.3 are satisfied.

POWER DISTRIBUTION LIMITS

BASES

3/4.2.3 MINIMUM CRITICAL POWER RATIO

The required operating limit MCPRs at steady state operating conditions as specified in Specification 3.2.3 are derived from the established fuel cladding integrity Safety Limit MCPR of 1.06, and an analysis of abnormal operational transients. 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 given in Specification 2.2.

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 limiting transient yields the largest delta MCPR. When added to the Safety Limit MCPR of 1.06, the required minimum operating limit MCPR of Specification 3.2.3 is obtained and presented in Figures 3.2.3-1a and 3.2.3-1b.

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(A) →

The evaluation of a given transient begins with the system initial parameters shown in FSAR Table 15.0-2 that are input to a GE-core dynamic behavior transient computer program. The code used to evaluate pressurization events is described in NEDO-24154⁽³⁾ and the program used in nonpressurization events is described in NEDO-10802⁽²⁾. The outputs of this program along with the initial MCPR form the input for further analyses of the thermally limiting bundle with the single channel transient thermal hydraulic TASC code described in NEDE-25149⁽⁴⁾. The principal result of this evaluation is the reduction in MCPR caused by the transient.

The purpose of the K_f factor of Figure 3.2.3-~~1~~² is to define operating limits at other than rated core flow conditions. At less than 100% of rated flow the required MCPR is the product of the MCPR and the K_f factor. The K_f factors assure that the Safety Limit MCPR will not be violated during a flow increase transient resulting from a motor-generator speed control failure. The K_f factors may be applied to both manual and automatic flow control modes.

The K_f factor values shown in Figure 3.2.3-~~1~~² were developed generically and are applicable to all BWR/2, BWR/3 and BWR/4 reactors. The K_f factors were derived using the flow control line corresponding to RATED THERMAL POWER at rated core flow.

For the manual flow control mode, the K_f factors were calculated such that for the maximum flow rate, as limited by the pump scoop tube set point and the corresponding THERMAL POWER along the rated flow control line, the limiting bundle's relative power was adjusted until the MCPR changes with different core flows. The ratio of the MCPR calculated at a given point of core flow, divided by the operating limit MCPR, determines the K_f .

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When the less operationally limiting Rod Block Monitoring trip setpoint ($.66W + 42\%$ from Table 3.3.6-2) is used, the more limiting MCPR curve Figure 3.2.3-1b is applicable due to a larger delta MCPR from the limiting Rod Withdrawal Error (RWE) transient. Figure 3.2.3-1a is applicable when the Rod Block Monitor trip setpoint ($.66W + 40\%$ from Table 3.3.6-2) is used.

POWER DISTRIBUTION LIMITS

BASES

MINIMUM CRITICAL POWER RATIO (Continued)

For operation in the automatic flow control mode, the same procedure was employed except the initial power distribution was established such that the MCPR was equal to the operating limit MCPR at RATED THERMAL POWER and rated flow.

The K_f factors shown in Figure 3.2.3-² are conservative for the General Electric Plant operation because the operating limit MCPRs of Specification 3.2.3 are greater than the original 1.20 operating limit MCPR used for the generic derivation of K_f .

At THERMAL POWER levels less than or equal to 25% of RATED THERMAL POWER, the reactor will be operating at minimum recirculation pump speed and the moderator void content will be very small. For all designated control rod patterns which may be employed at this point, operating plant experience indicates that the resulting MCPR value is in excess of requirements by a considerable margin. During initial start-up testing of the plant, a MCPR evaluation will be made at 25% of RATED THERMAL POWER level with minimum recirculation pump speed. The MCPR margin will thus be demonstrated such that future MCPR evaluation below this power level will be shown to be unnecessary. The daily requirement for calculating MCPR when THERMAL POWER is greater than or equal to 25% of RATED THERMAL POWER is sufficient since power distribution shifts are very slow when there have not been significant power or control rod changes. The requirement for calculating MCPR when a limiting control rod pattern is approached ensures that MCPR will be known following a change in THERMAL POWER or power shape, regardless of magnitude, that could place operation at a thermal limit.

3/4.2.4 LINEAR HEAT GENERATION RATE

This specification assures that the Linear Heat Generation Rate (LHGR) in any rod is less than the design linear heat generation even if fuel pellet densification is postulated.

References:

1. General Electric Company Analytical Model for Loss-of-Coolant Analysis in Accordance with 10 CFR 50, Appendix K, NEDE-20566, November 1975.
2. R. B. Linford, Analytical Methods of Plant Transient Evaluations for the GE BWR, February 1973 (NEDO-10802).
3. Qualification of the One Dimensional Core Transient Model For Boiling Water Reactor, NEDO-24154, October 1978.
4. TASC 01-A Computer Program For the Transient Analysis of a Single Channel, Technical Description, NEDE-25149, January 1980.

POWER DISTRIBUTION LIMITS

3/4.2.3 MINIMUM CRITICAL POWER RATIO

LIMITING CONDITION FOR OPERATION

3.2.3 The MINIMUM CRITICAL POWER RATIO (MCPR) shall be equal to or greater than the MCPR limit determined from Figure 3.2.3-1, times the K_f shown in Figure 3.2.3-2, provided that the end-of-cycle recirculation pump trip (EOC-RPT) system is OPERABLE per Specification 3.3.4.2 and the turbine bypass system is OPERABLE per Specification 3.7.8, with:

a or Figure 3.2.3-1 b, as applicable,

$$\tau = \frac{(\tau_{ave} - \tau_B)}{\tau_A - \tau_B}$$

$\tau_A = 0.86$ seconds, control rod average scram insertion time limit to notch 39 per Specification 3.1.3.3,

$$\tau_B = 0.688 + 1.65 \left[\frac{N_1}{\sum_{i=1}^n N_i} \right]^{1/2} (0.052),$$

$$\tau_{ave} = \frac{\sum_{i=1}^n N_i \tau_i}{\sum_{i=1}^n N_i},$$

where:

n = number of surveillance tests performed to date in cycle,

N_i = number of active control rods measured in the i^{th} surveillance tests,

τ_i = average scram time to notch 39 of all rods measured in the i^{th} surveillance test, and

N_1 = total number of active rods measured in Specification 4.1.3.2.a.

APPLICABILITY:

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

POWER DISTRIBUTION LIMITS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION:

- a. With the end-of-cycle recirculation pump trip system inoperable per Specification 3.3.4.2, operation may continue and the provisions of Specification 3.0.4 are not applicable provided that, within 1 hour, MCPR is determined to be greater than or equal to the MCPR limit as a function of average scram time as shown in Figure 3.2.3-1, EOC-RPT inoperable curve, times the K_f shown in Figure 3.2.3-2. *a or Figure 3.2.3-1 b, as applicable,*
- b. With the turbine bypass system inoperable per Specification 3.7.8, operation may continue and the provisions of Specification 3.0.4 are not applicable provided that within 1 hour, MCPR is determined to be greater than or equal to the MCPR limit as a function of average scram time as shown in Figure 3.2.3-1, turbine bypass inoperable curve, times the K_f shown in Figure 3.2.3-2. *a or Figure 3.2.3-1 b, as applicable,*
- c. With MCPR less than the applicable MCPR limit determined from Figures 3.2.3-1 and 3.2.3-2, initiate corrective action within 15 minutes and restore MCPR to within the required limit within 2 hours or reduce THERMAL POWER to less than 25% of RATED THERMAL POWER within the next 4 hours. *Figure*

SURVEILLANCE REQUIREMENTS

4.2.3. MCPR, with

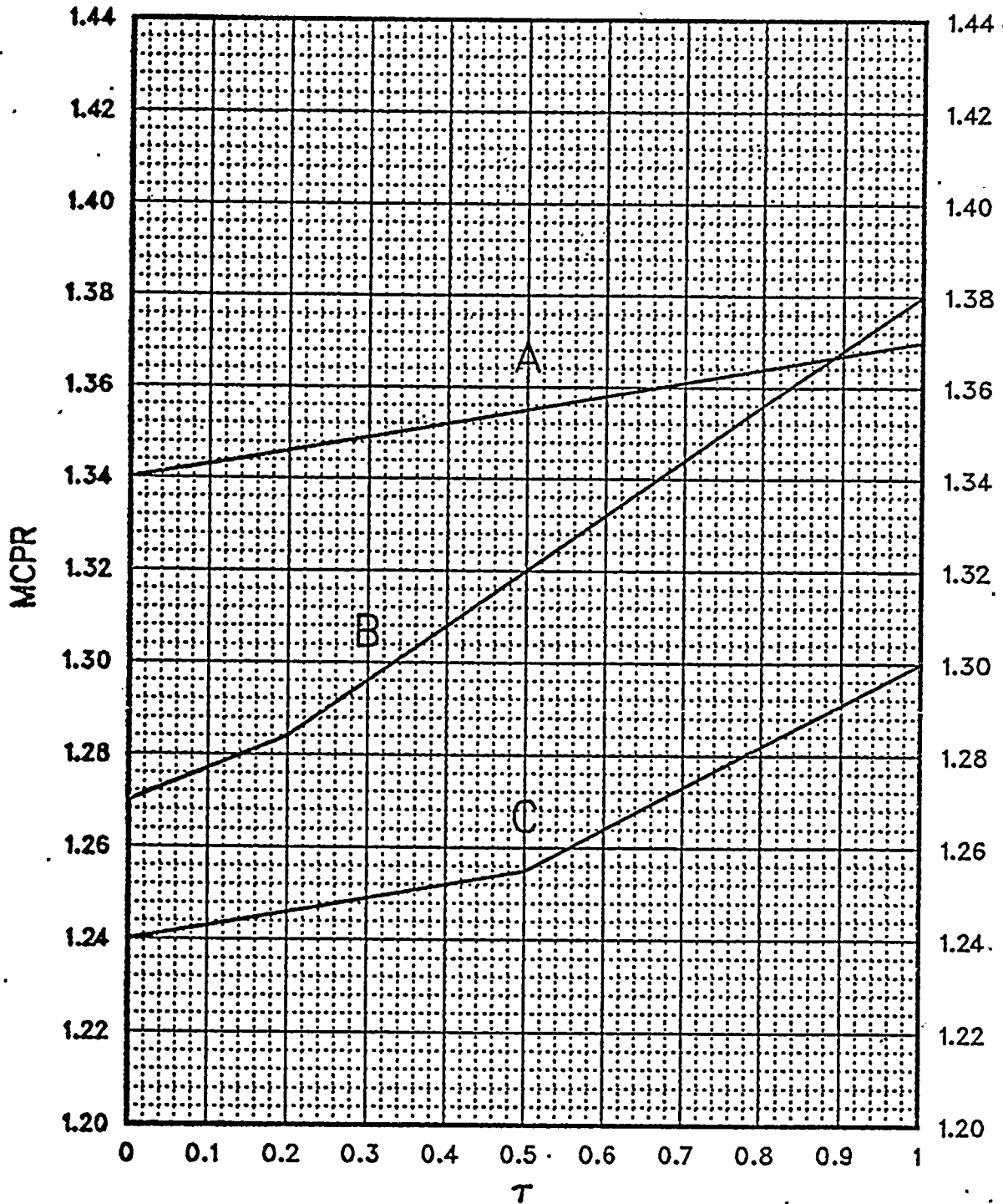
- a. $\tau = 1.0$ prior to performance of the initial scram time measurements for the cycle in accordance with Specification 4.1.3.2, or
- b. τ as defined in Specification 3.2.3 used to determine the limit within 72 hours of the conclusion of each scram time surveillance test required by Specification 4.1.3.2,
- c. The provisions of Specification 4.0.4 are not applicable.

shall be determined to be equal to or greater than the applicable MCPR limit determined from Figures 3.2.3-1 and 3.2.3-2:

a or Figure 3.2.3-1 b, as applicable, Figure

- 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 MCPR.
- d. The provisions of Specification 4.0.4 are not applicable.

MINIMUM CRITICAL POWER RATIO (MCPR) VERSUS τ AT RATED FLOW*

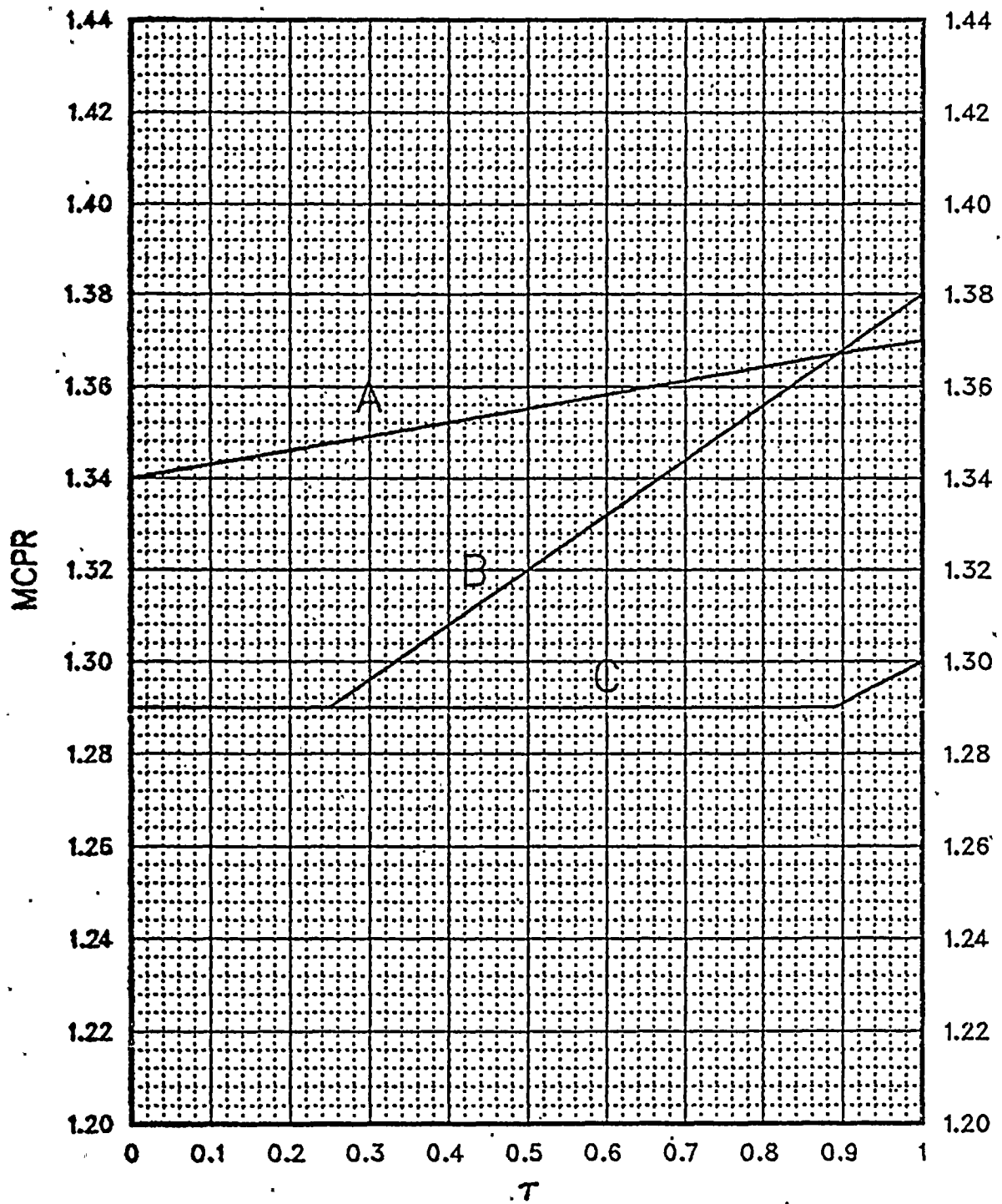


- Curve A: Main Turbine Bypass Inoperable; EOC - RPT Operable
- Curve B: EOC - RPT Inoperable; Main Turbine Bypass Operable
- Curve C: EOC - RPT And Main Turbine Bypass Operable

* RBM AT 106% PER
TABLE 3.3.6-2

FIGURE 3.2.3-1a

MINIMUM CRITICAL POWER RATIO (MCPR) VERSUS τ AT RATED FLOW*



- Curve A: Main Turbine Bypass Inoperable; EOC - RPT Operable
- Curve B: EOC - RPT Inoperable; Main Turbine Bypass Operable
- Curve C: EOC - RPT And Main Turbine Bypass Operable

* RBM AT 108% PER
TABLE 3.3.6-2

FIGURE 3.2.3-1b

TABLE 3.3.6-2

CONTROL ROD BLOCK INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
1. <u>ROD BLOCK MONITOR</u>		
a. Upscale <i>1) 106%</i>	$\leq 0.66 W + 42\%$	$\leq 0.66 W + 45\%$
b. Inoperative <i>2) 108%#</i>	$< 0.66 W + 40\%$	$< 0.66 W + 43\%$
c. Downscale	NA	NA
	$\geq 5/125$ divisions of full scale	$\geq 3/125$ of divisions full scale
2. <u>APRM</u>		
a. Flow Biased Neutron Flux - Upscale	$< 0.58 W + 50\%^*$	$< 0.58 W + 53\%^*$
b. Inoperative	NA	NA
c. Downscale	$\geq 5\%$ of RATED THERMAL POWER	$\geq 3\%$ of RATED THERMAL POWER
d. Neutron Flux - Upscale Startup	$\leq 12\%$ of RATED THERMAL POWER	$\leq 14\%$ of RATED THERMAL POWER
3. <u>SOURCE RANGE MONITORS</u>		
a. Detector not full in	NA	NA
b. Upscale	$< 2 \times 10^5$ cps	$< 4 \times 10^5$ cps
c. Inoperative	NA	NA
d. Downscale	≥ 0.7 cps**	≥ 0.5 cps**
4. <u>INTERMEDIATE RANGE MONITORS</u>		
a. Detector not full in	NA	NA
b. Upscale	$< 108/125$ divisions of full scale	$< 110/125$ divisions of full scale
c. Inoperative	NA	NA
d. Downscale	$\geq 5/125$ divisions of full scale	$\geq 3/125$ divisions of full scale
5. <u>SCRAM DISCHARGE VOLUME</u>		
a. Water Level. - High	≤ 44 gallons	≤ 44 gallons
6. <u>REACTOR COOLANT SYSTEM RECIRCULATION FLOW</u>		
a. Upscale	$< 108/125$ divisions of full scale	$< 111/125$ divisions of full scale
b. Inoperative	NA	NA
c. Comparator	$\leq 10\%$ flow deviation	$\leq 11\%$ flow deviation

*The Average Power Range Monitor rod block function is varied as a function of recirculation loop flow (W). The trip setting of this function must be maintained in accordance with Specification 3.2.2.

**Provided signal-to-noise ratio is ≥ 2 . Otherwise, 3 cps as trip setpoint and 2.8 cps for allowable value.

May be used when the associated MCPR requirements in Specification 3.2.3 are satisfied.

POWER DISTRIBUTION LIMITS

BASES

3/4.2.3 MINIMUM CRITICAL POWER RATIO

The required operating limit MCPRs at steady state operating conditions as specified in Specification 3.2.3 are derived from the established fuel cladding integrity Safety Limit MCPR of 1.06, and an analysis of abnormal operational transients. 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 given in Specification 2.2.

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 limiting transient yields the largest delta MCPR. When added to the Safety Limit MCPR of 1.06, the required minimum operating limit MCPR of Specification 3.2.3 is obtained and presented in Figures 3.2.3-1.

INSERT
(A)

→ The evaluation of a given transient begins with the system initial parameters shown in FSAR Table 15.0-2 that are input to a GE-core dynamic behavior transient computer program. The code used to evaluate pressurization events is described in NEDO-24154⁽³⁾ and the program used in nonpressurization events is described in NEDO-10802⁽²⁾. The outputs of this program along with the initial MCPR form the input for further analyses of the thermally limiting bundle with the single channel transient thermal hydraulic TASC code described in NEDE-25149⁽⁴⁾. The principal result of this evaluation is the reduction in MCPR caused by the transient.

↑ a and
3.2.3-1b.

The purpose of the K_f factor of Figure 3.2.3-²7 is to define operating limits at other than rated core flow conditions. At less than 100% of rated flow the required MCPR is the product of the MCPR and the K_f factor. The K_f factors assure that the Safety Limit MCPR will not be violated during a flow increase transient resulting from a motor-generator speed control failure. The K_f factors may be applied to both manual and automatic flow control modes.

The K_f factor values shown in Figure 3.2.3-²7 were developed generically and are applicable to all BWR/2, BWR/3 and BWR/4 reactors. The K_f factors were derived using the flow control line corresponding to RATED THERMAL POWER at rated core flow.

For the manual flow control mode, the K_f factors were calculated such that for the maximum flow rate, as limited by the pump scoop tube set point and the corresponding THERMAL POWER along the rated flow control line, the limiting bundle's relative power was adjusted until the MCPR changes with different core flows. The ratio of the MCPR calculated at a given point of core flow, divided by the operating limit MCPR, determines the K_f .

(A)

Insert onto page B 3/4 2-4

When the less operationally limiting Rod Block Monitoring trip setpoint ($.66W + 42\%$ from Table 3.3.6-2) is used, the more limiting MCPR curve Figure 3.2.3-1b is applicable due to a larger delta MCPR from the limiting Rod Withdrawal Error (RWE) transient. Figure 3.2.3-1a is applicable when the Rod Block Monitor trip setpoint ($.66W + 40\%$ from Table 3.3.6-2) is used.

POWER DISTRIBUTION LIMITS

BASES

MINIMUM CRITICAL POWER RATIO (Continued)

For operation in the automatic flow control mode, the same procedure was employed except the initial power distribution was established such that the MCPR was equal to the operating limit MCPR at RATED THERMAL POWER and rated flow.

The K_f factors shown in Figure 3.2.3-² are conservative for the General Electric Plant operation because the operating limit MCPRs of Specification 3.2.3 are greater than the original 1.20 operating limit MCPR used for the generic derivation of K_f .

At THERMAL POWER levels less than or equal to 25% of RATED THERMAL POWER, the reactor will be operating at minimum recirculation pump speed and the moderator void content will be very small. For all designated control rod patterns which may be employed at this point, operating plant experience indicates that the resulting MCPR value is in excess of requirements by a considerable margin. During initial start-up testing of the plant, a MCPR evaluation will be made at 25% of RATED THERMAL POWER level with minimum recirculation pump speed. The MCPR margin will thus be demonstrated such that future MCPR evaluation below this power level will be shown to be unnecessary. The daily requirement for calculating MCPR when THERMAL POWER is greater than or equal to 25% of RATED THERMAL POWER is sufficient since power distribution shifts are very slow when there have not been significant power or control rod changes. The requirement for calculating MCPR when a limiting control rod pattern is approached ensures that MCPR will be known following a change in THERMAL POWER or power shape, regardless of magnitude, that could place operation at a thermal limit.

3/4.2.4 LINEAR HEAT GENERATION RATE

This specification assures that the Linear Heat Generation Rate (LHGR) in any rod is less than the design linear heat generation even if fuel pellet densification is postulated.

References:

1. General Electric Company Analytical Model for Loss-of-Coolant Analysis in Accordance with 10 CFR 50, Appendix K, NEDE-20566, November 1975.
2. R. B. Linford, Analytical Methods of Plant Transient Evaluations for the GE BWR, February 1973 (NEDO-10802).
3. Qualification of the One Dimensional Core Transient Model For Boiling Water Reactor, NEDO-24154, October 1978.
4. TASC 01-A Computer Program For the Transient Analysis of a Single Channel, Technical Description, NEDE-25149, January 1980.

