Attachment 1

Duke Power Company
Oconee Nuclear Station

Proposed Technical Specification Revision
Oconee 1 Cycle 8

Remove pages	Insert Pages
2.1-2	2.1-2
2.1-3	2.1-3
2.1-7	2.1-7
2.3-8	2.3-8
3.5-15	3.5-15
3.5-15a	3.5-15a
3.5-15b	3.5-15b
3.5-18	3.5-18
3.5-18a	3.5-18a
3.5-18b	3.5-18b
3.5-18c	3.5-18c
3.5-18d	3.5-18d
3.5-18e	3.5-18e
3.5-21	3.5-21
3.5-21a	3.5-21a
3.5-21b	3.5-21b
3.5-24	3.5-24
3.5-24a	3.5-24a
3.5-24b	3.5-24b

can be related to DNB through the use of the BAW-2 correlation (1). The BAW-2 correlation has been developed to predict DNB and the location of DNB for axially uniform and non-uniform heat flux distributions. The local DNB ratio (DNBR), defined as the ratio of the heat flux that would cause DNB at a particular core location to the actual heat flux, is indicative of the margin to DNB. The minimum value of the DNBR, during steady-state operation, normal operational transients, and anticipated transients is limited to 1.30. A DNBR of 1.30 corresponds to a 95 percent probability at a 95 percent confidence level that DNB will not occur; this is considered a conservative margin to DNB for all operating conditions. The difference between the actual core outlet pressure and the indicated reactor coolant system pressure has been considered in determining the core protection safety limits. The difference in these two pressures is nominally 45 psi; however, only a 30 psi drop was assumed in reducing the pressure trip setpoints to correspond to the elevated location where the pressure is actually measured.

The curve presented in Figure 2.1-1A represents the conditions at which a minimum DNBR of 1.30 is predicted for the maximum possible thermal power (112 percent) when four reactor coolant pumps are operating (minimum reactor coolant flow is 106.5 percent of 131.3 x 10^6 lbs/hr). This curve is based on the combination of nuclear power peaking factors, with potential effects of fuel densification and rod bowing, which result in a more conservative DNBR than any other shape that exists during normal operation.

The curves of Figure 2.1-2A are based on the more restrictive of two thermal limits and include the effects of potential fuel densification and rod bowing:

1. The 1.30 DNBR limit produced by the combination of the radial peak, axial peak and position of the axial peak that yields no less than a 1.30 DNBR.

2. The combination of radial and axial peak that causes central fuel melting at the hot spot. The limit is 20.5 kw/ft for 8C, 9 and 10C Batches of fuel and 17.6 kw/ft for the 10A, 10B gadolinia fuel Batch for Unit 1.

Power peaking is not a directly observable quantity and therefore limits have been established on the bases of the reactor power imbalance produced by the power peaking.

The specified flow rates of Figure 2.1-3A correspond to the expected minimum flow rates with four pumps, three pumps, and one pump in each loop, respectively.

The curve of Figure 2.1-1A is the most restrictive of all possible reactor coolant pump-maximum thermal power combinations shown in Figure 2.1-3A.

The magnitude of the rod bow penalty applied to each fuel cycle is equal to or greater than the necessary burnup dependent DNBR rod bow penalty for the applicable cycle minus a credit of 1% for the flow area reduction factor used in the hot channel analysis. All plant operating limits are based on a minimum DNBR criteria of 1.30 plus the amount necessary to offset the reduction in DNBR due to fuel rod bow. (3)

The maximum thermal power for three-pump opertion is 89.899 percent due to a power level trip produced by the flux-flow ratio 74.7 percent flow x 1.07 = 79.929 percent power plus the maximum calibration and instrument error. The maximum thermal power for other coolant pump conditions is produced in a similar manner.

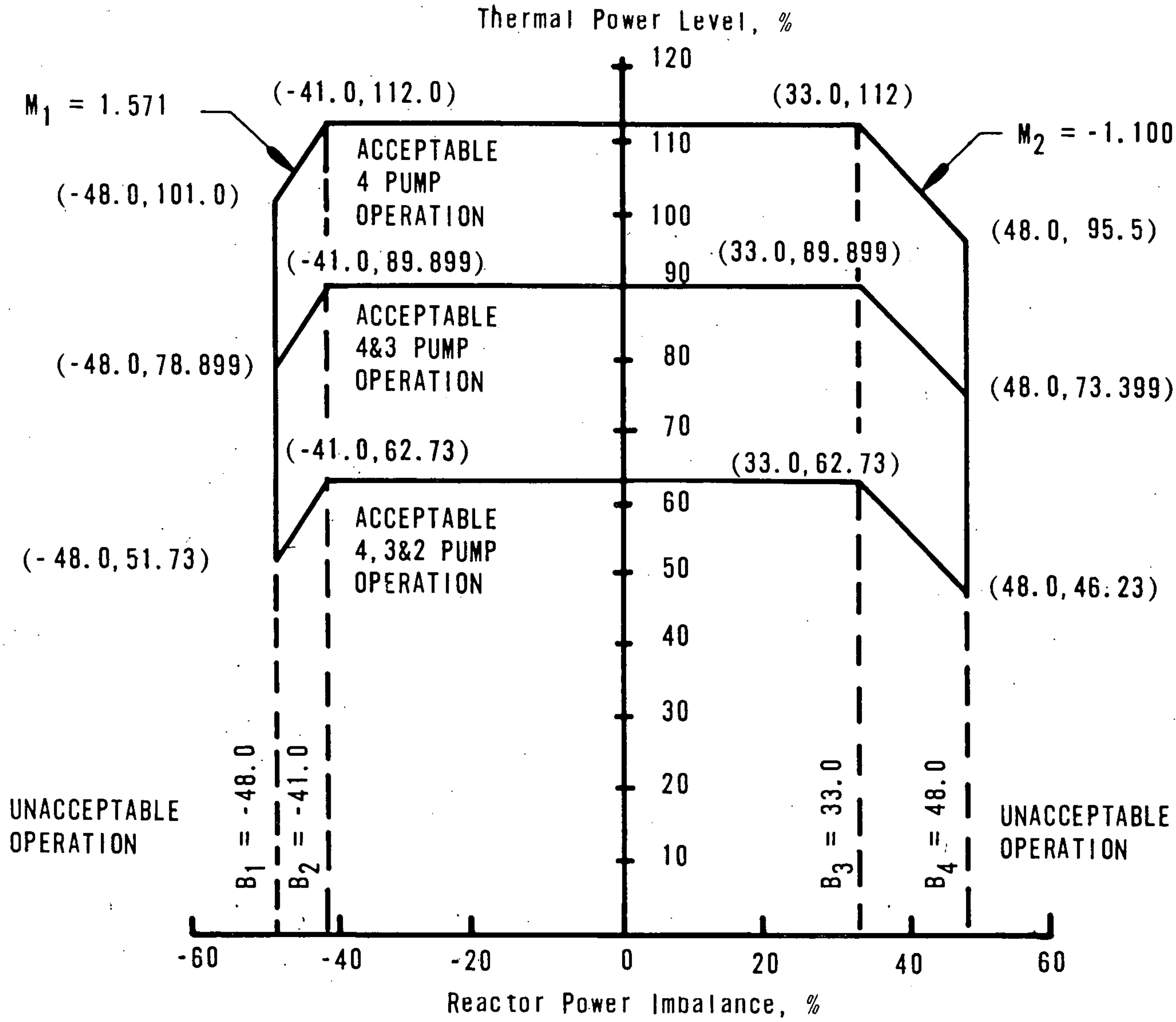
For each curve of Figure 2.1-3A a pressure-temperature point above and to the left of the curve would result in a DNBR greater than 1.30 or a local quality at the point of minimum DNBR less than 22 percent for that particular reactor coolant pump situation. The curve of Figure 2.1-1A is the most restrictive of all possible reactor coolant pump-maximum thermal power combinations shown in Figure 2.1-3A.

References

(1) Correlation of Critical Heat Flux in a Bundle Cooled by Pressurized Water, BAW-10000, March, 1970.

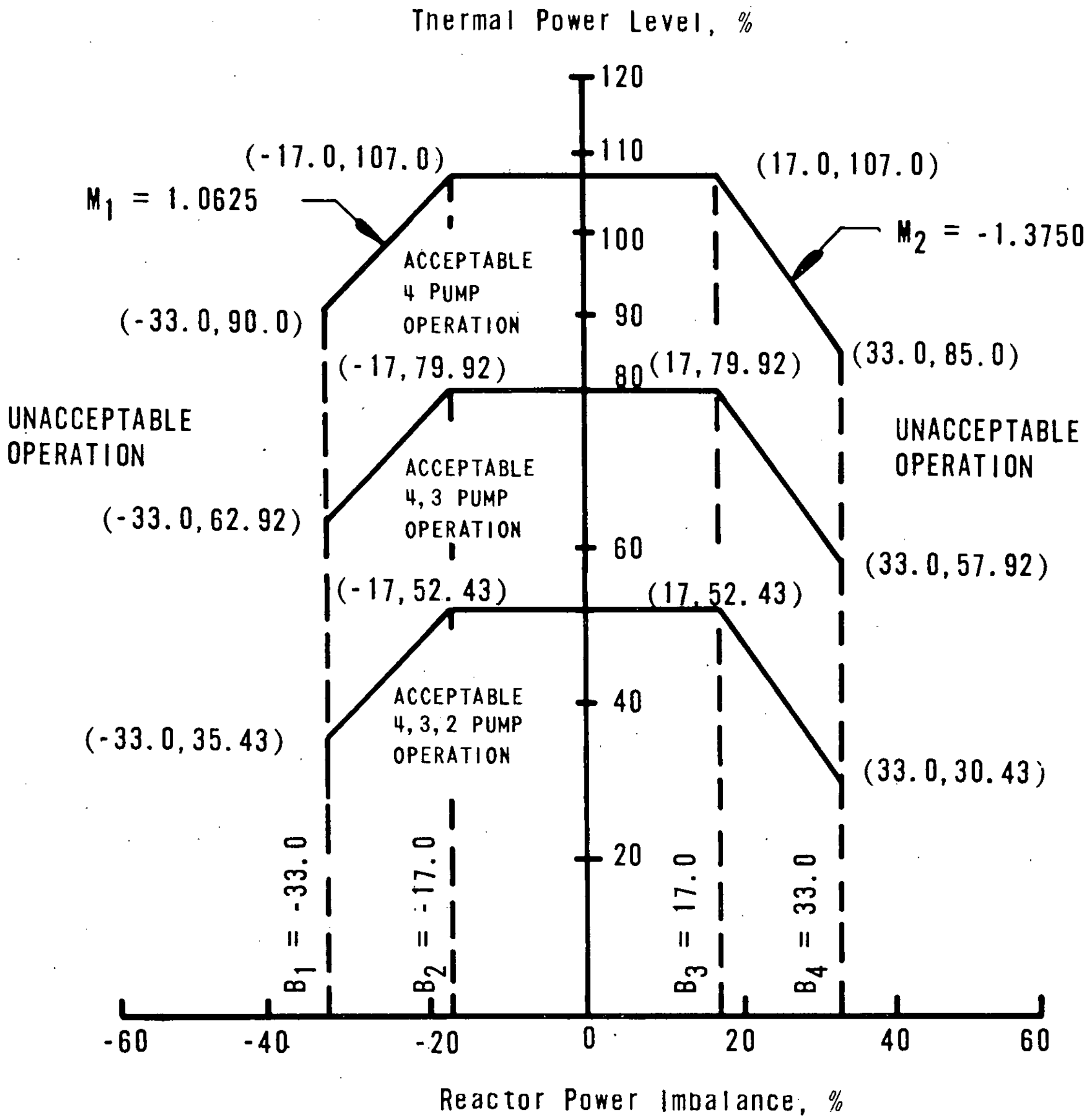
(2) Oconee 1, Cycle 4 - Reload Report - BAW-1447, March, 1977.

(3) Oconee 1, Cycle 8 - Reload Report - BAW-1774, February, 1983.



CURVE	RC FLOW (GPM)
1	374,880
2	280,035
3	183,690

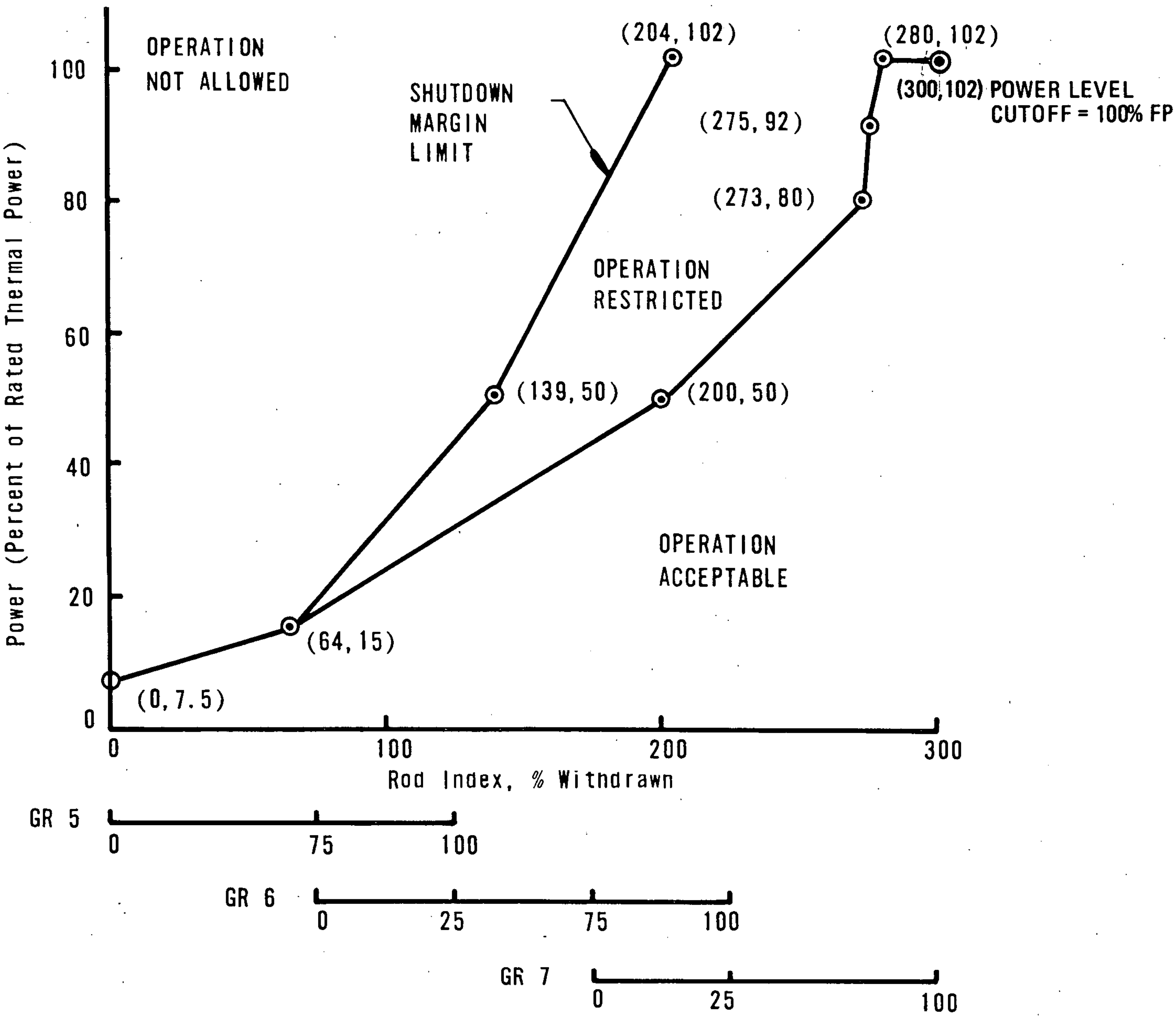
CORE PROTECTION SAFETY LIMITS
UNIT 1
OCONEE NUCLEAR STATION
Figure 2.1-2A



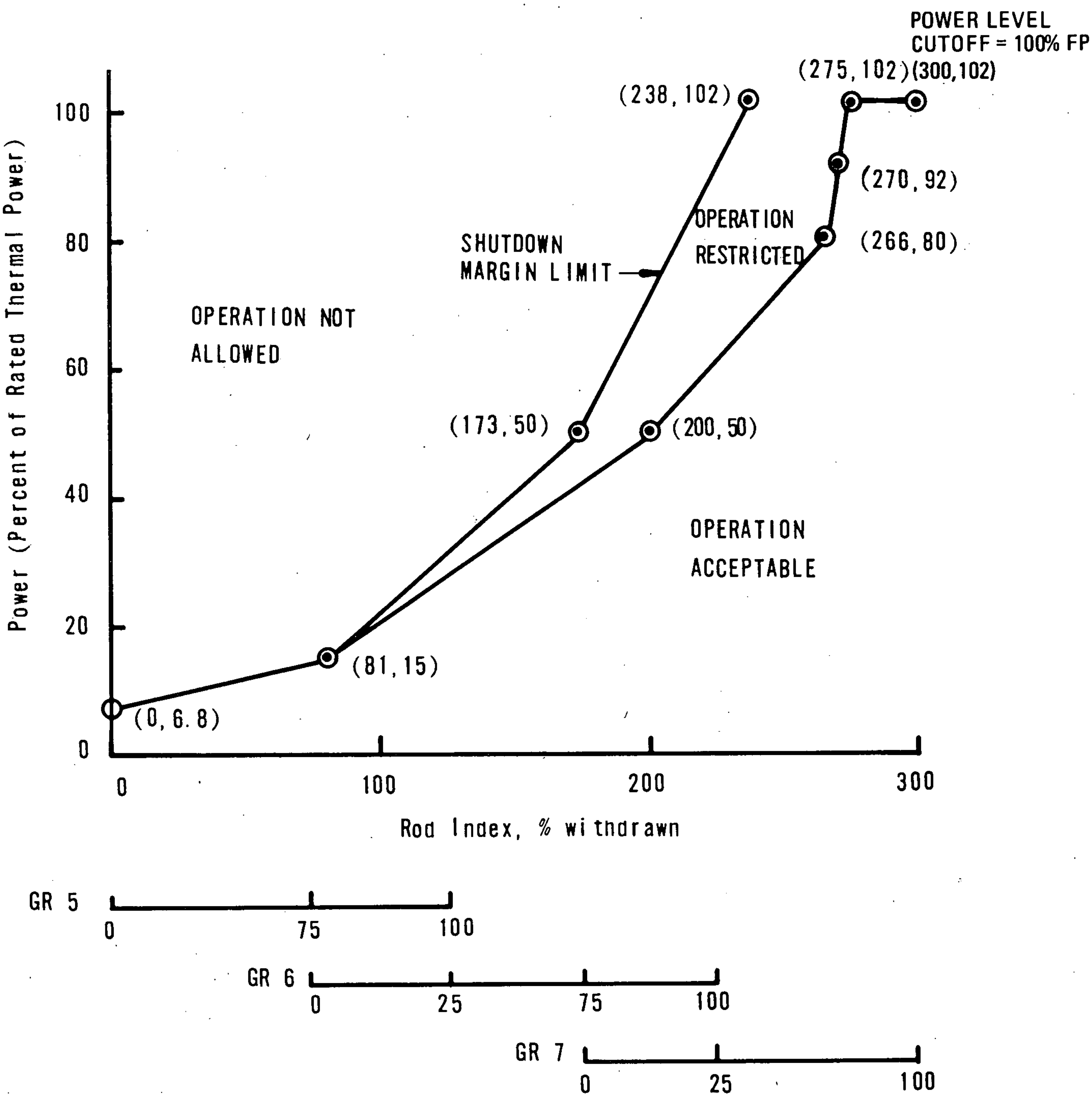
PROTECTIVE SYSTEM MAXIMUM
ALLOWABLE SETPOINTS
UNIT 1

OCONEE NUCLEAR STATION

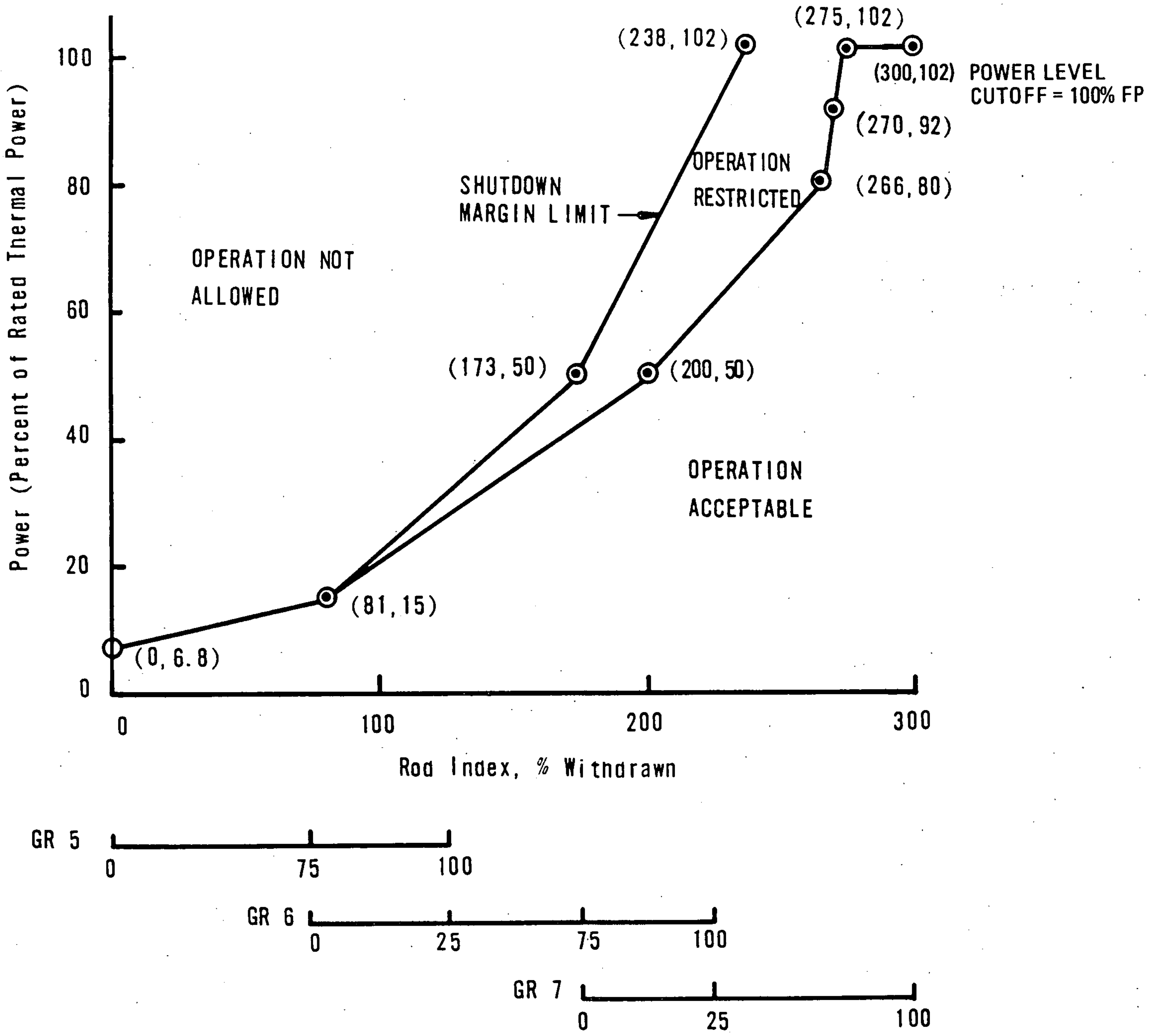
Figure 2.3-2A



ROD POSITION LIMITS
FOR FOUR-PUMP OPERATION,
0 to 26 +10/-0 EFPD,
OCONEE 1, CYCLE 8
OCONEE NUCLEAR STATION
Figure 3.5.2-1A1

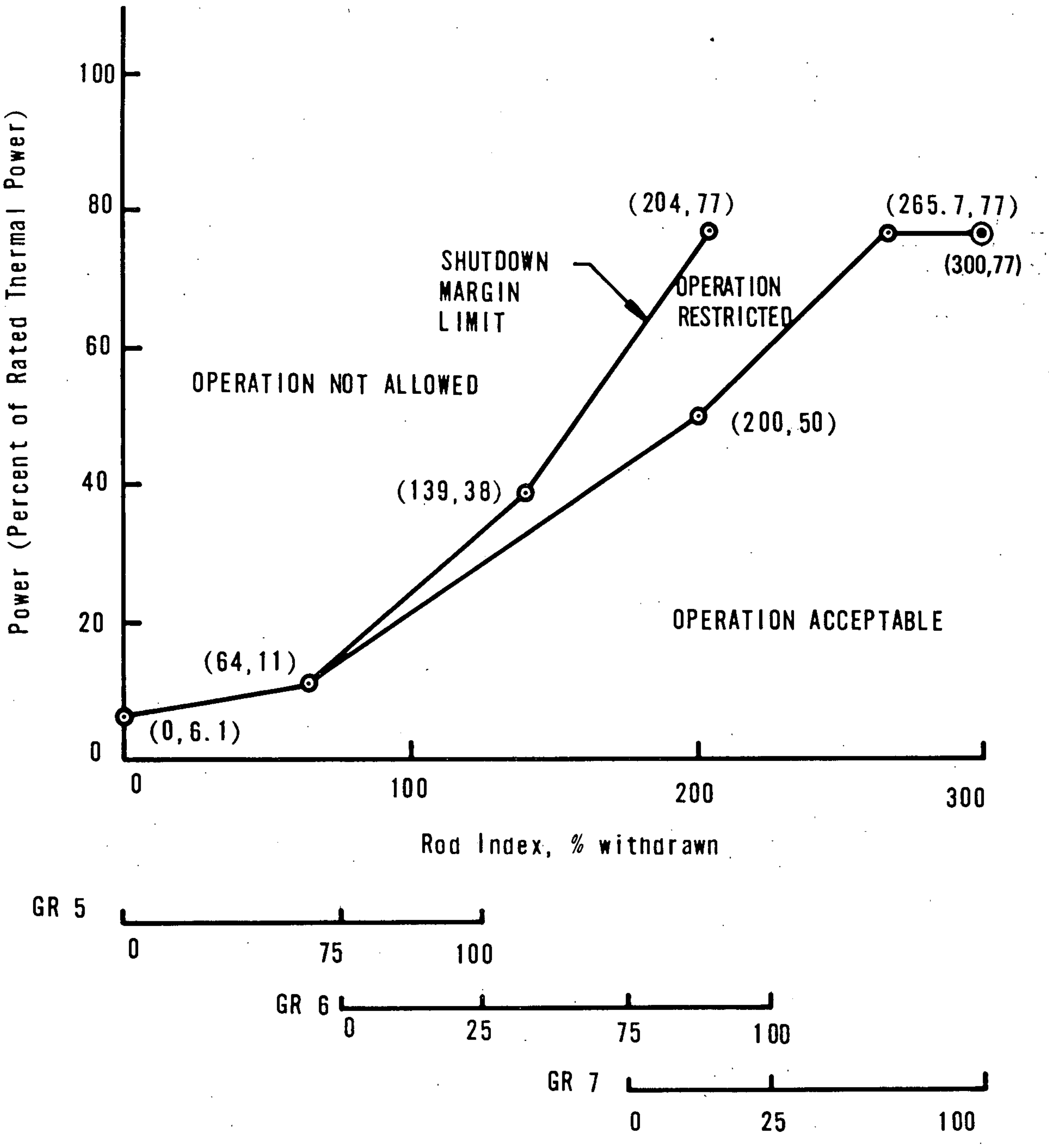


ROD POSITION LIMITS
FOR FOUR-PUMP OPERATION,
26 +10/-0 TO 200 ±10 EFPD
OCONEE 1, CYCLE 8
OCONEE NUCLEAR STATION
Figure 3.5.2-1A2



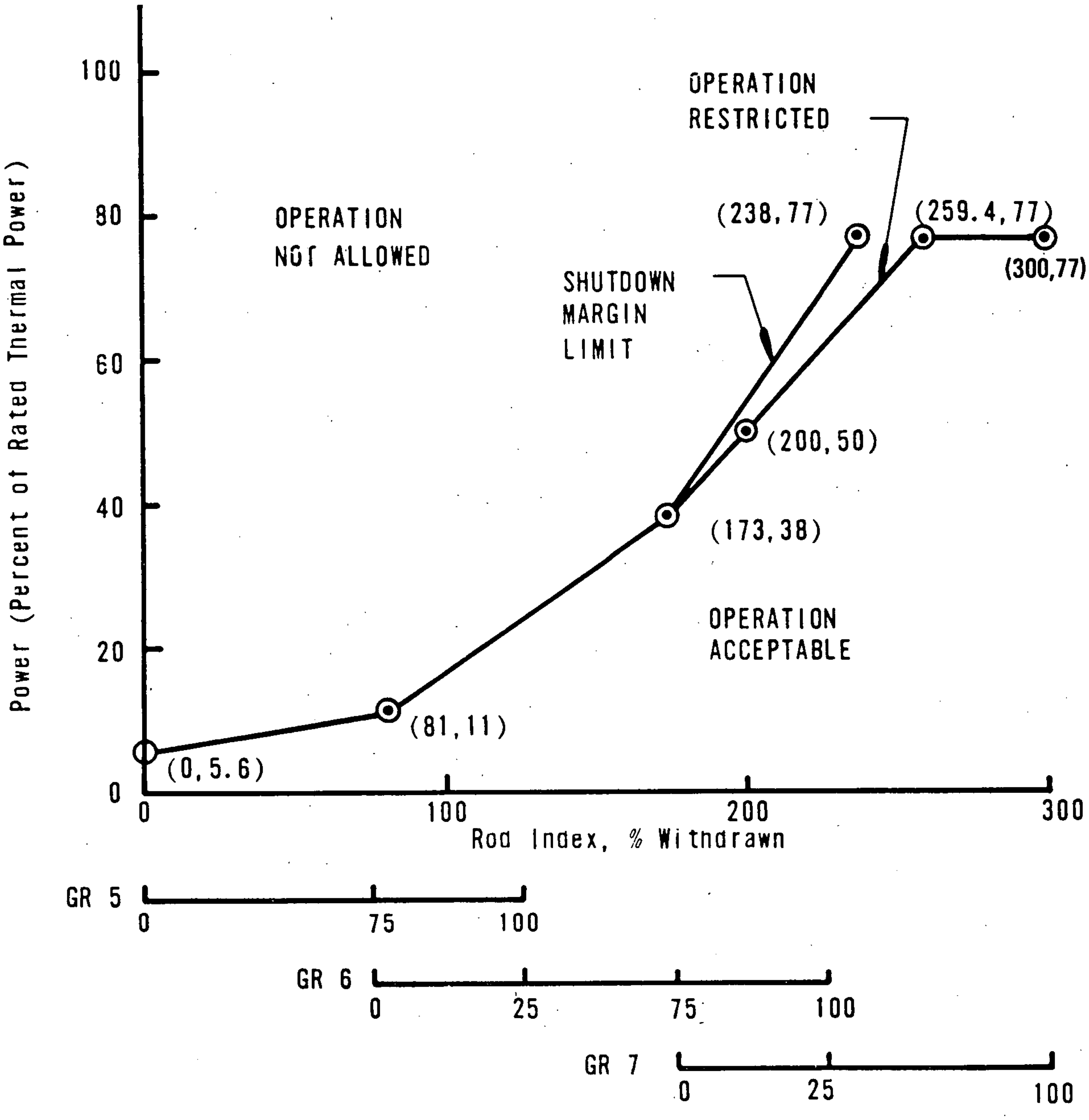
ROD POSITION LIMITS
FOR FOUR-PUMP OPERATION,
AFTER 200 ±10 EFPD,
OCONEE 1, CYCLE 8

OCONEE NUCLEAR STATION
Figure 3.5.2-1A3



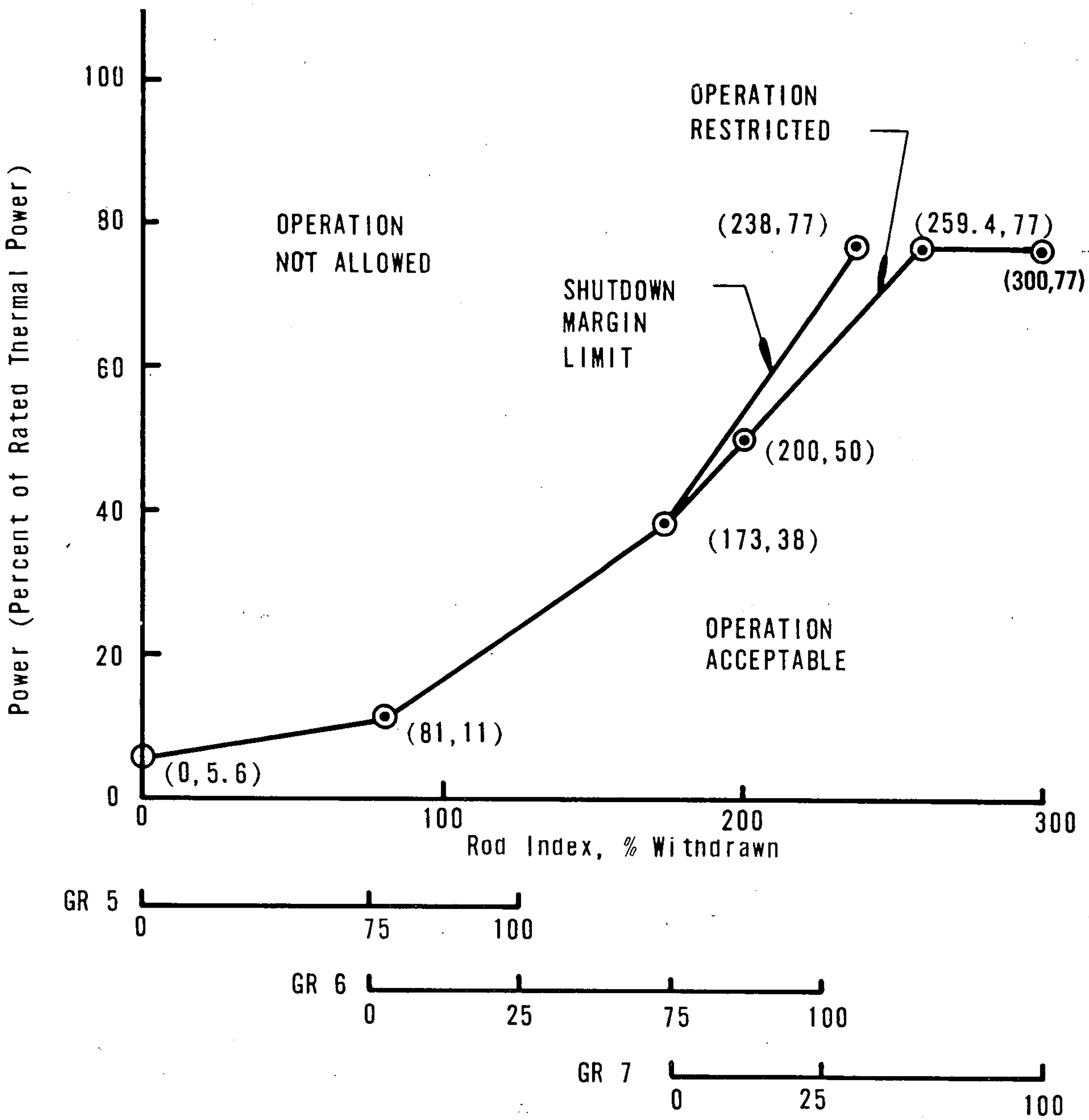
ROD POSITION LIMITS
FOR THREE-PUMP OPERATION,
0 to 26 +10/-0 EFPD,
OCONEE 1, CYCLE 8

OCONEE NUCLEAR STATION
Figure 3.5.2-2A1

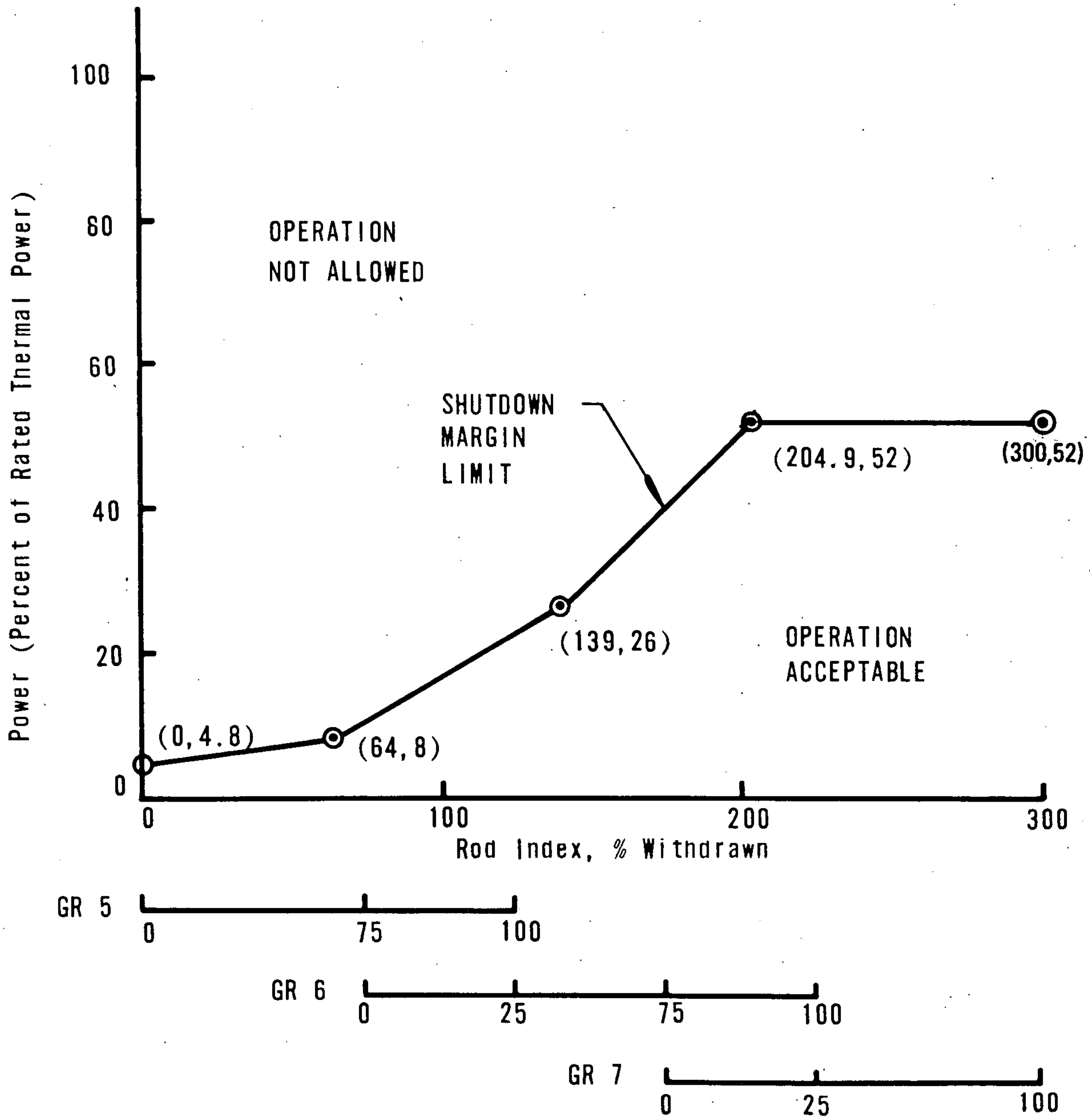


ROD POSITION LIMITS
FOR THREE-PUMP OPERATION,
26 +10/-0 TO 200 ±10 EFPD,
OCONEE 1, CYCLE 8

OCONEE NUCLEAR STATION
Figure 3.5.2-2A2



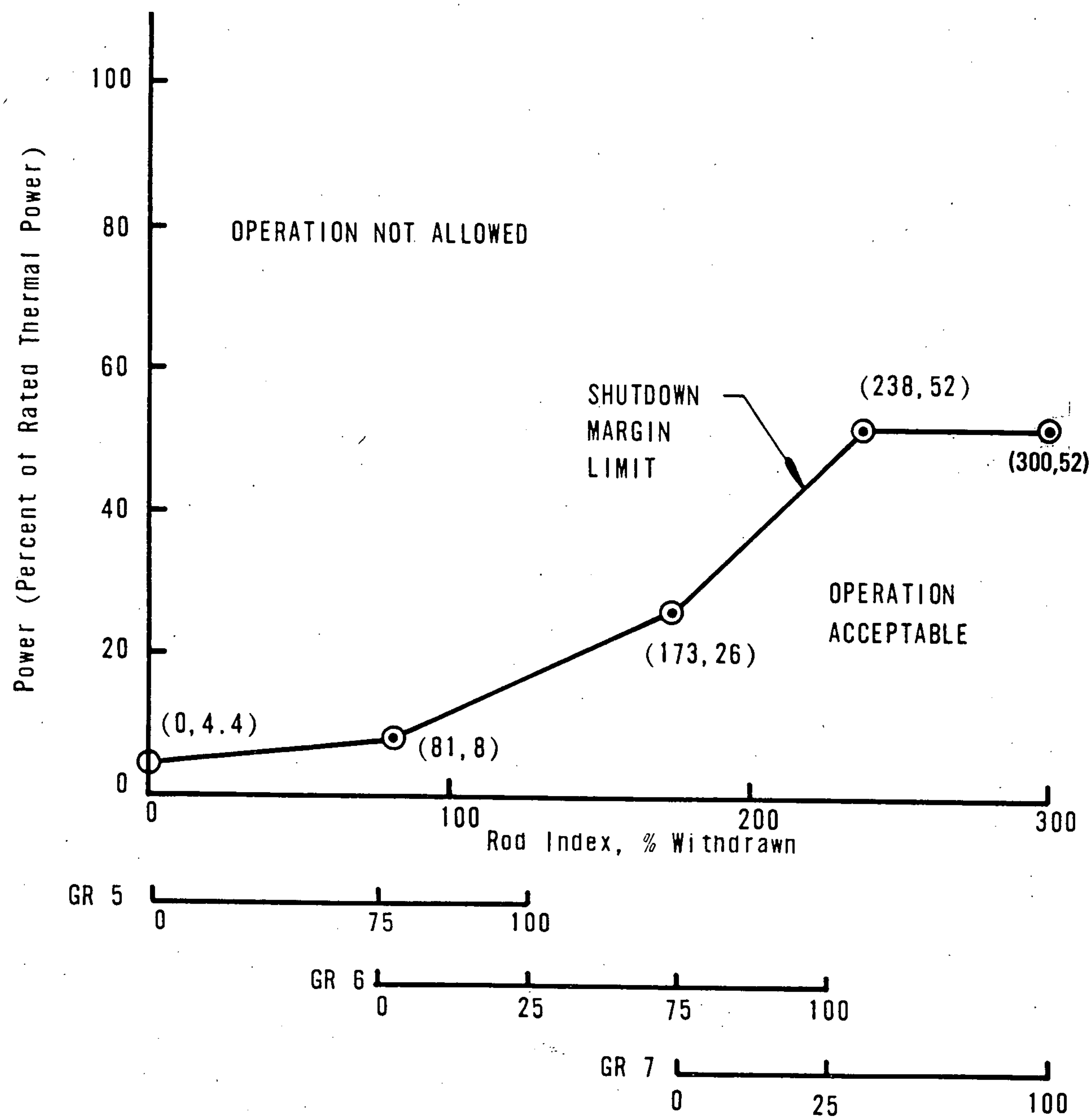
ROD POSITION LIMITS
FOR THREE-PUMP OPERATION,
AFTER 200 ±10 EFPD,
OCONEE 1, CYCLE 8
OCONEE NUCLEAR STATION
Figure 3.5.2-2A3



ROD POSITION LIMITS
FOR TWO-PUMP OPERATION,
0 to 26 +10/-0 EFPD,
OCONEE 1, CYCLE 8

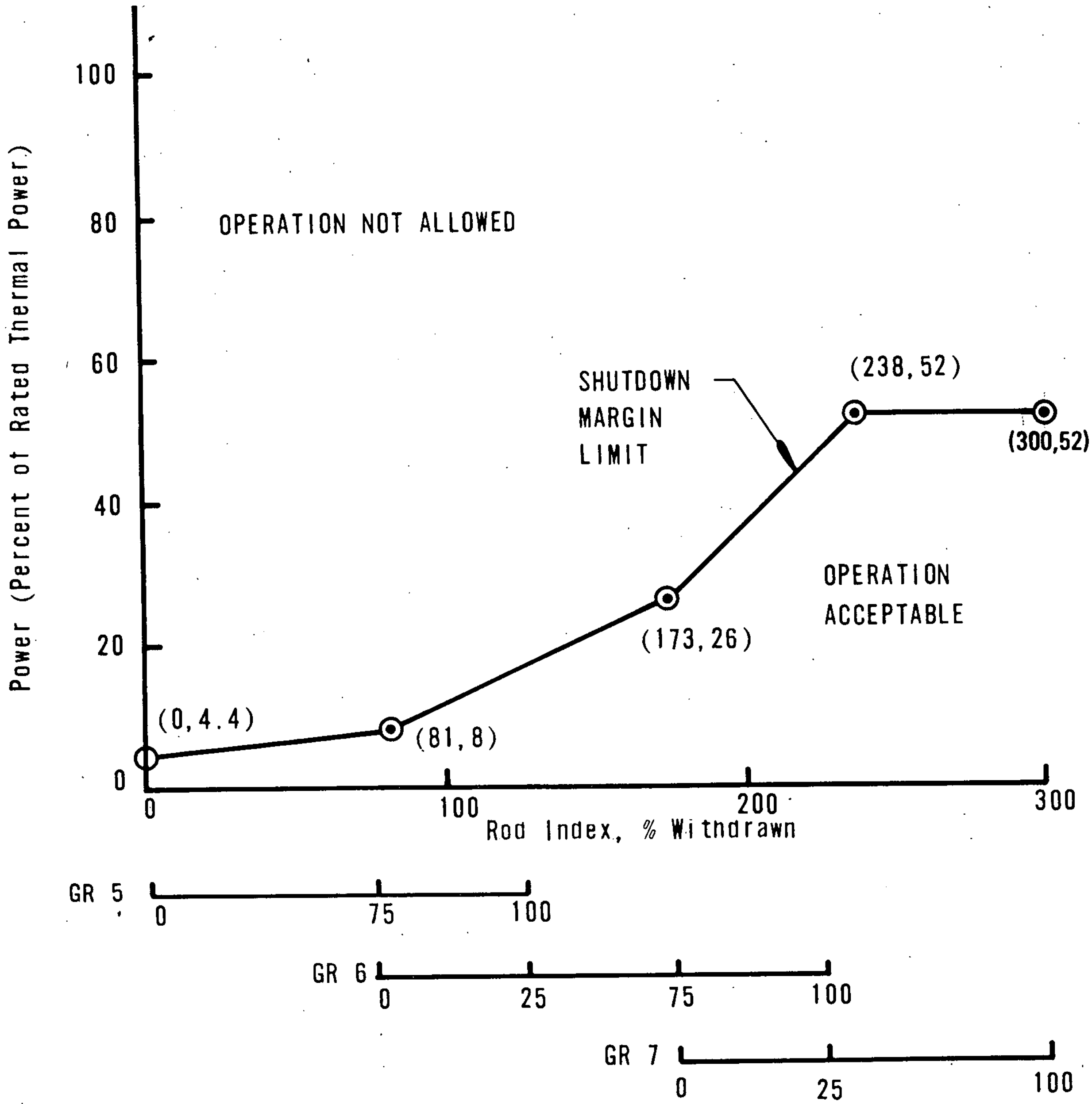
OCONEE NUCLEAR STATION

Figure 3.5.2-2A4



ROD POSITION LIMITS
FOR TWO-PUMP OPERATION,
26 +10/-0 TO 200 EFPD,
OCONEE 1, CYCLE 8

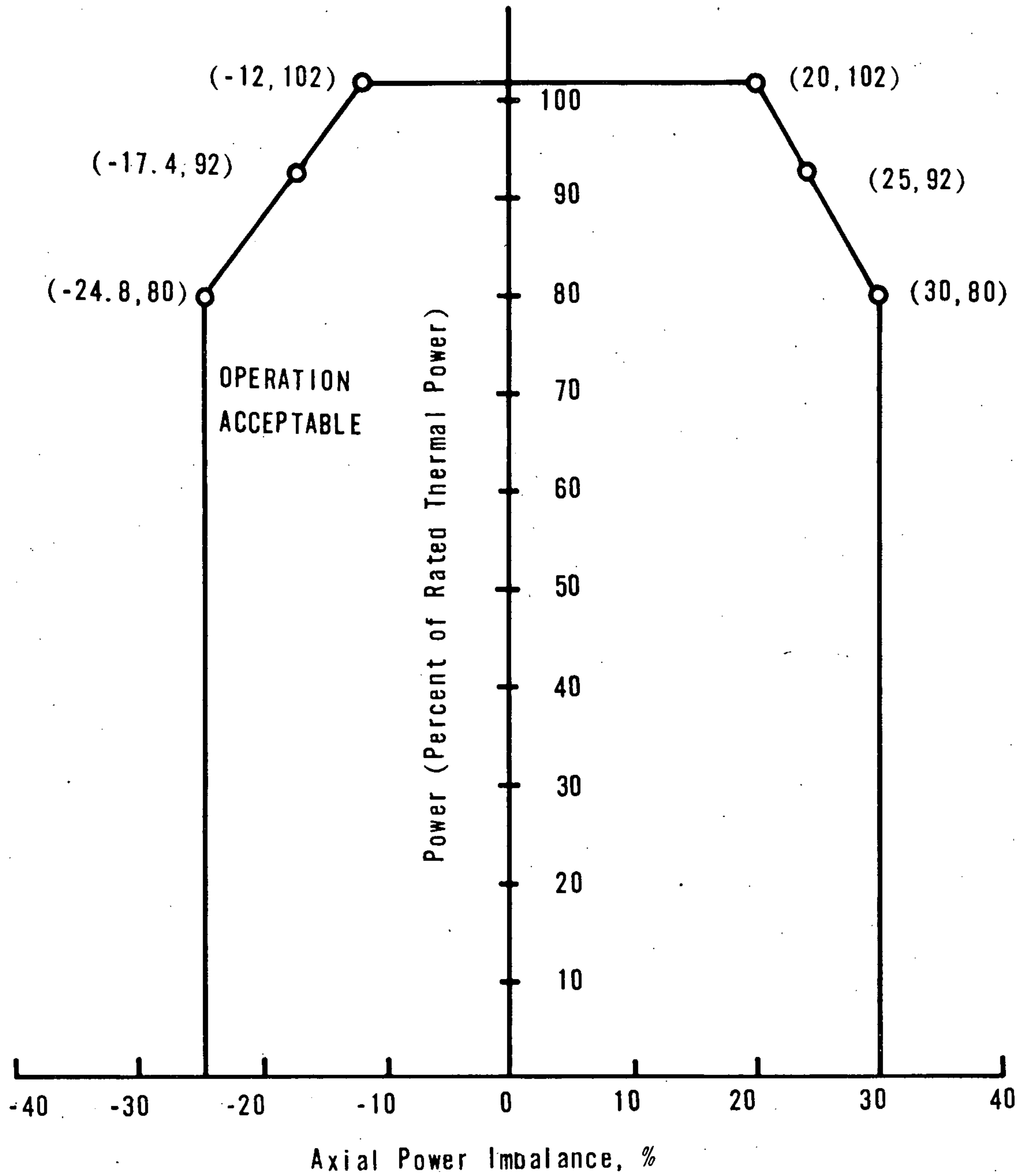
OCONEE NUCLEAR STATION
Figure 3.5.2-2A5



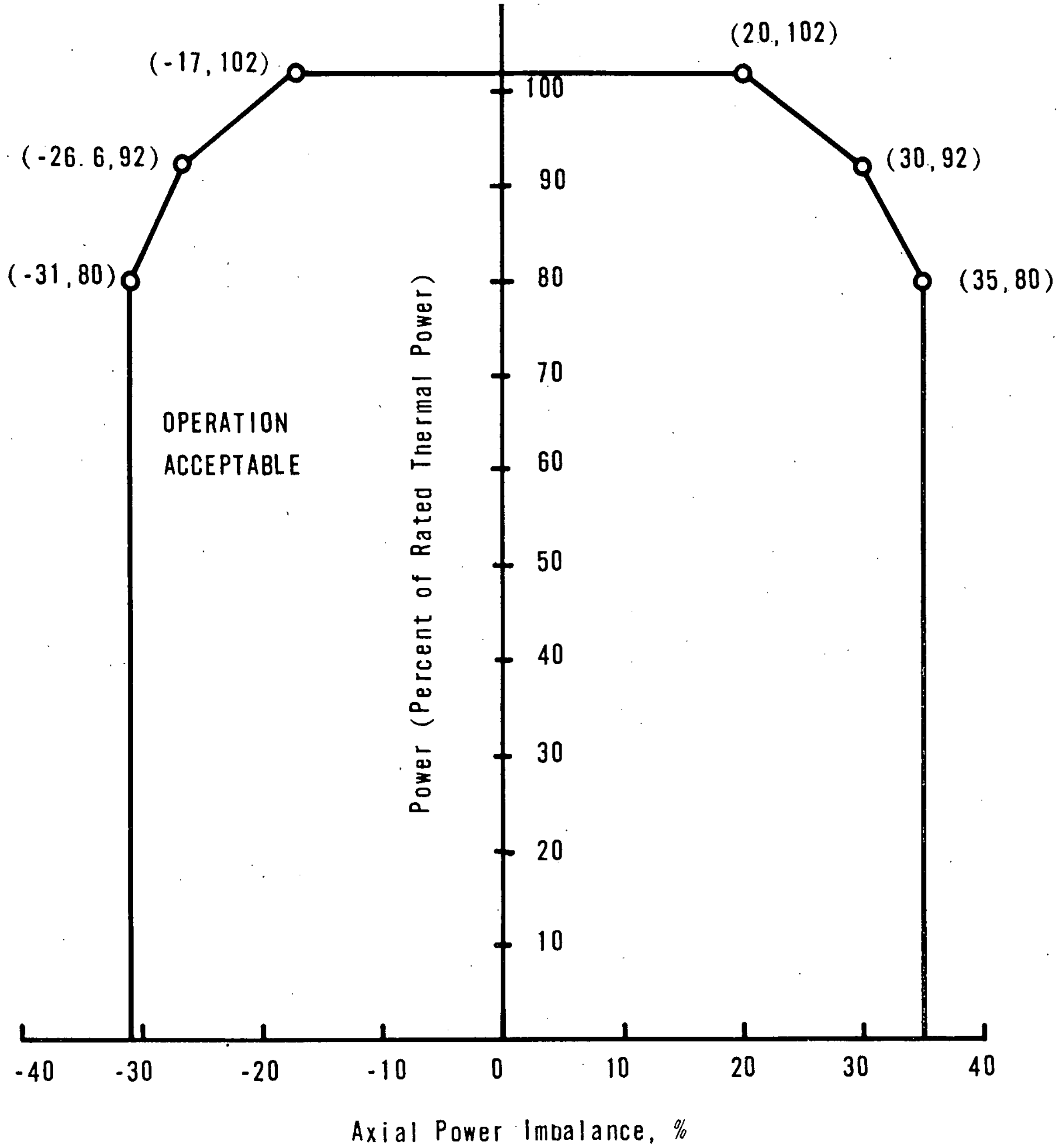
ROD POSITION LIMITS
FOR TWO-PUMP OPERATION,
AFTER 200 ±10 EFPD,
OCONEE 1, CYCLE 8

OCONEE NUCLEAR STATION

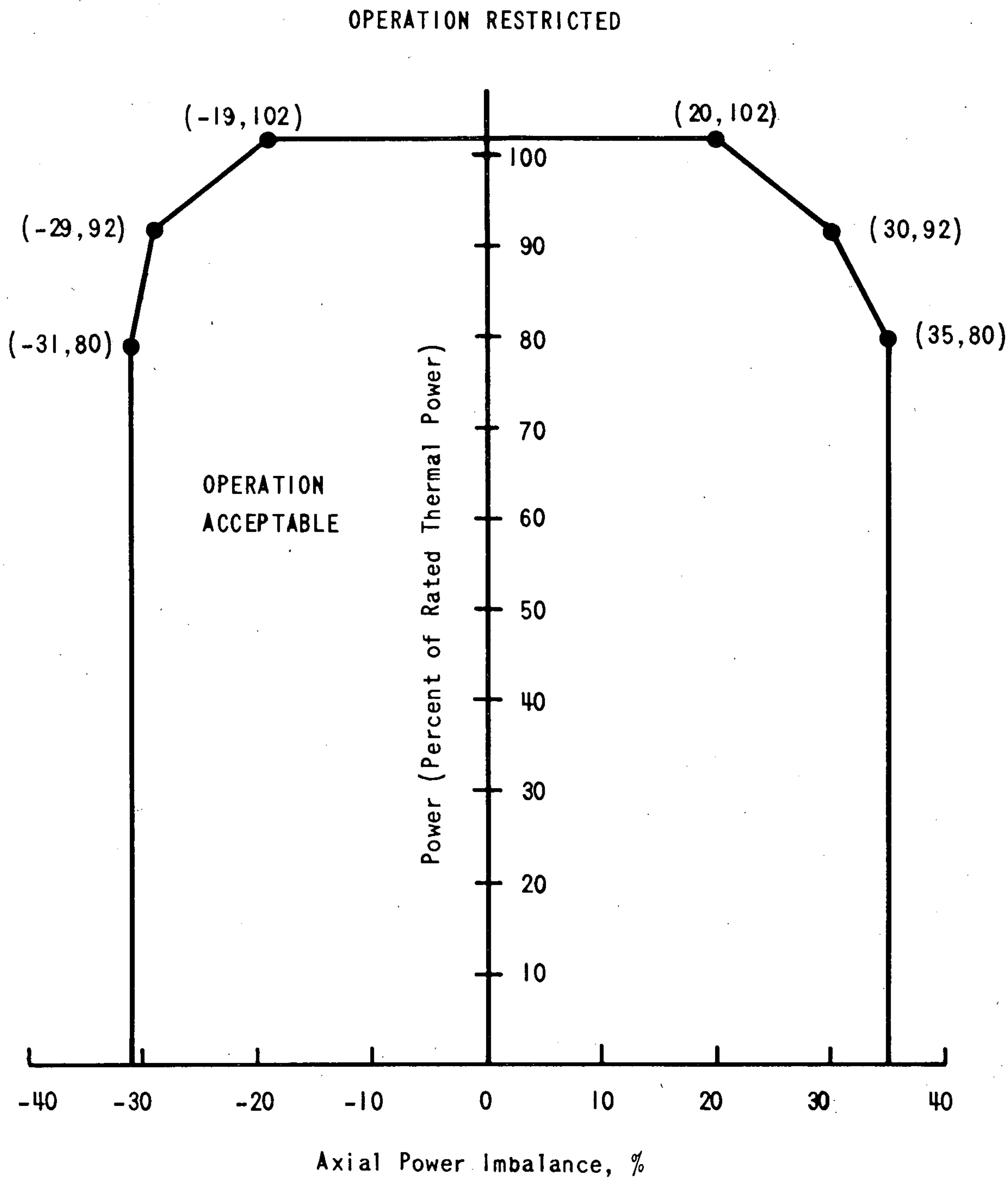
Figure 3.5.2-2A6



POWER IMBALANCE LIMITS
FOR 0 to 26 +10/-0 EFPD,
OCONEE 1, CYCLE 8
OCONEE NUCLEAR STATION
Figure 3.5.2-3A1

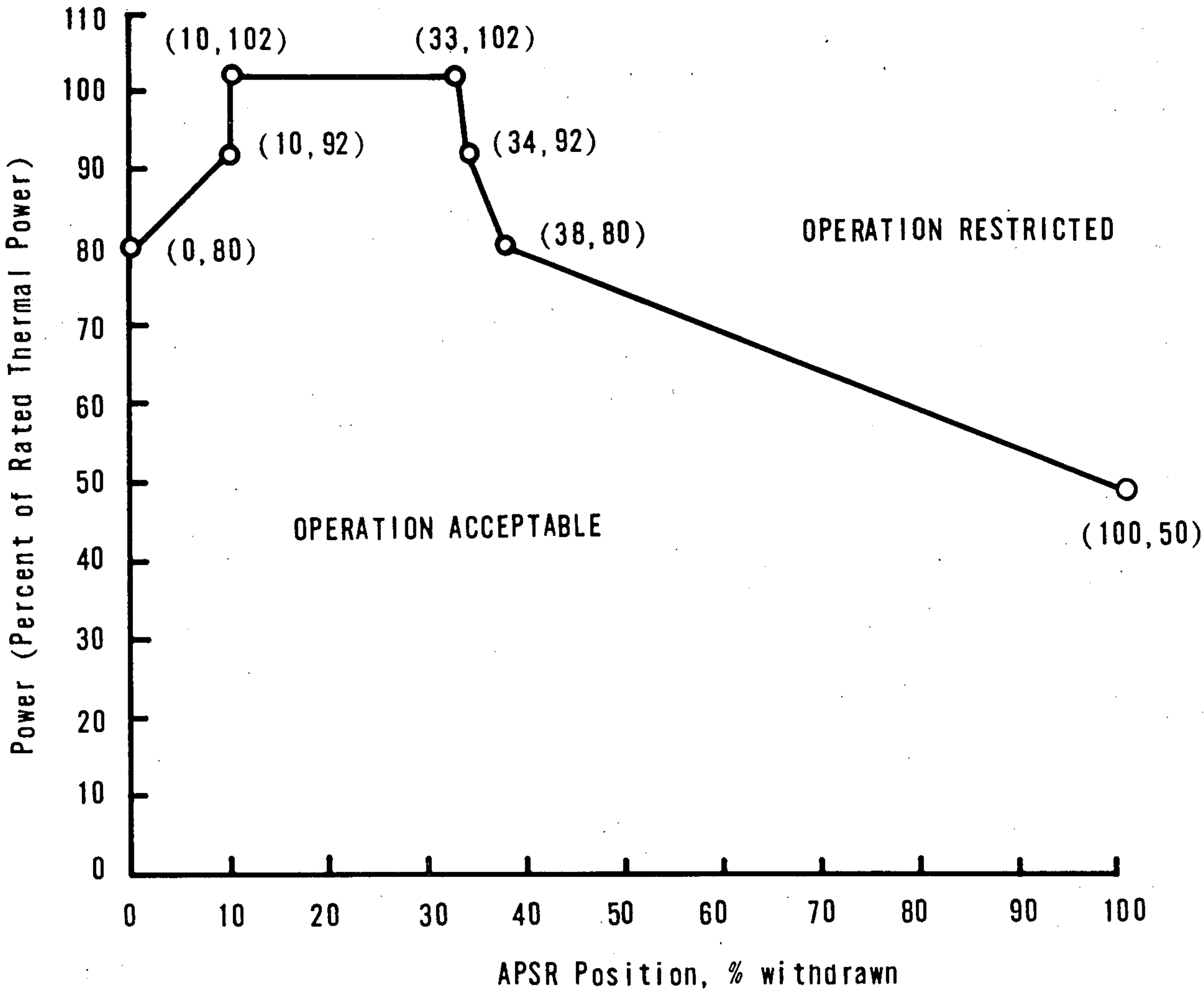


POWER IMBALANCE LIMITS,
26 +10/-0 to 200 ±10 EFPD
OCONEE 1, CYCLE 8
OCONEE NUCLEAR STATION
Figure 3.5.2-3A2

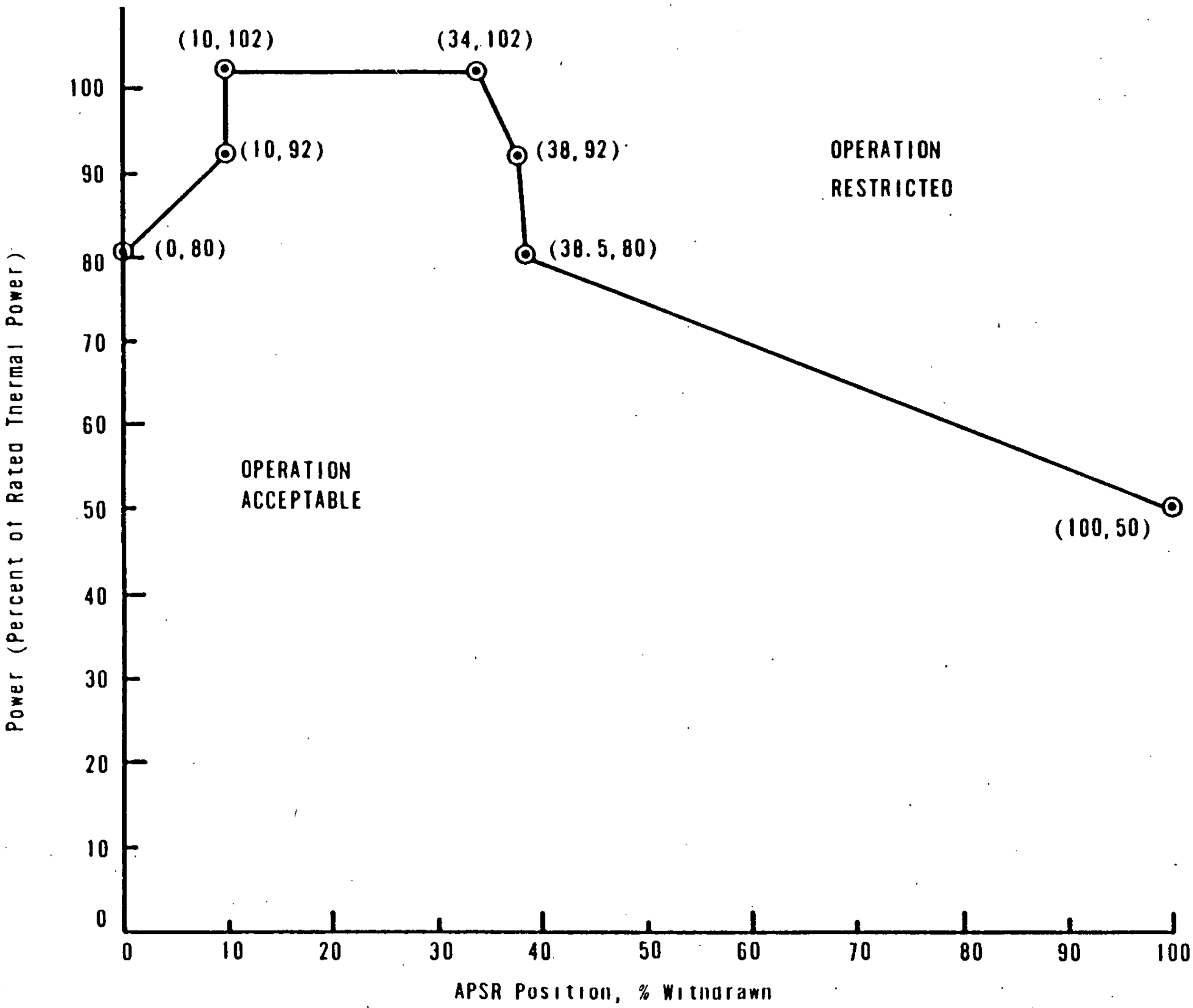


POWER IMBALANCE LIMITS
AFTER 200 ±10 EFPD
OCONEE 1, CYCLE 8

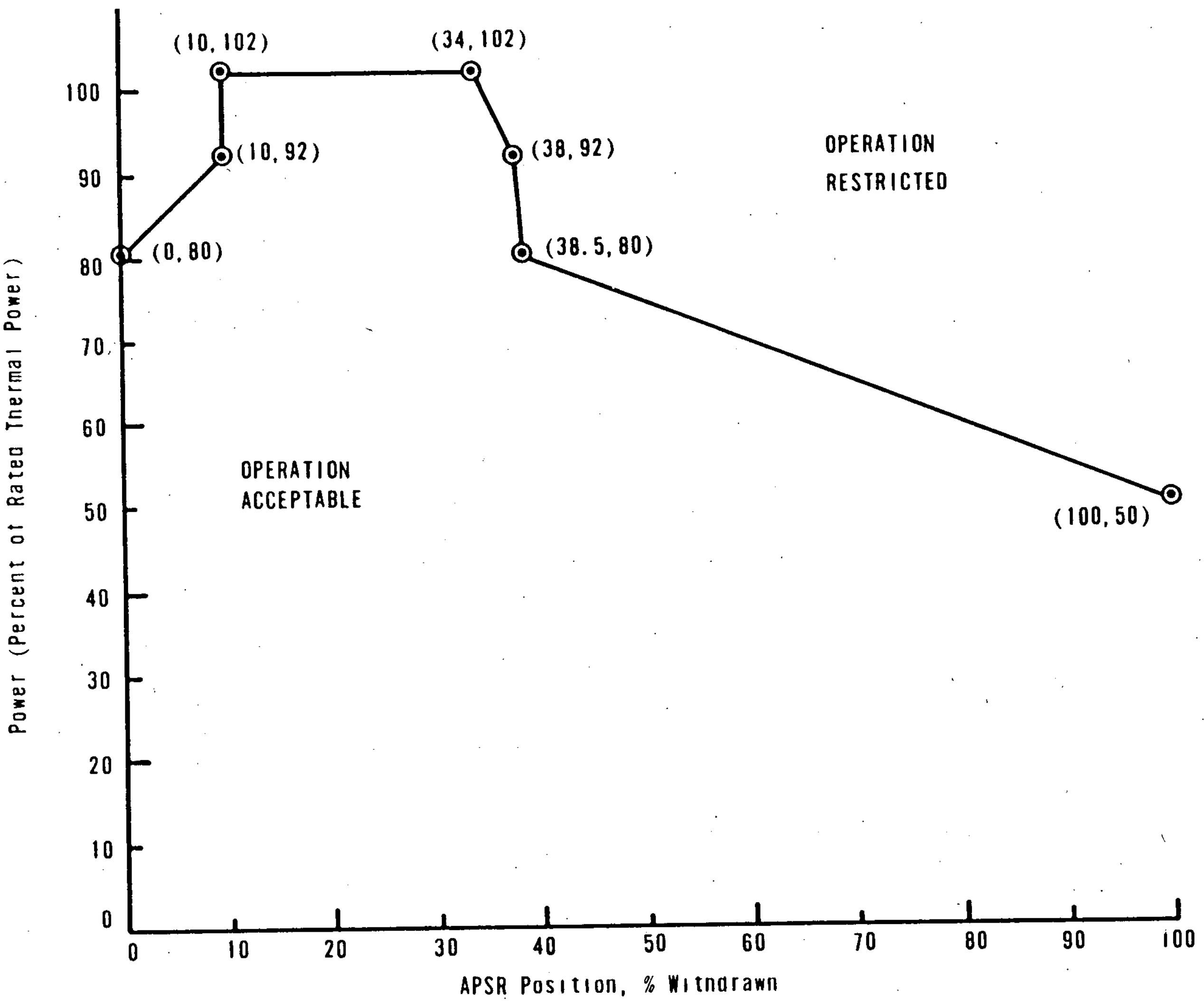
OCONEE NUCLEAR STATION
Figure 3.5.2-3A3



APSR POSITION LIMITS
FOR 0 to 26 +10/-0 EFPD,
OCONEE 1, CYCLE 8
OCONEE NUCLEAR STATION
Figure 3.5.2-4A1



APSR POSITION LIMITS,
26 +10/-0 TO 200 ±10 EFPD
OCONEE 1, CYCLE 8
OCONEE NUCLEAR STATION
Figure 3.5.2-4A2



APSR POSITION LIMITS
AFTER 200 ±10 EFPD
OCONEE 1, CYCLE 8
OCONEE NUCLEAR STATION
Figure 3.5.2-4A3