Attachment 1

Draft Technical Specifications

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3.1.3 Minimum Conditions for Criticality

Specification

3.1.3.1 The reactor coolant temperature shall be above 525°F except for portions of low power physics testing when the requirements of Specification 3.1.9 shall apply.

3.1.3.2 Reactor coolant temperature shall be above the criticality limit of 3.1.2-1A (Unit 1)
3.1.2-1B (Unit 2)
3.1.2-1C (Unit 3)

3.1.3.3 When the reactor coolant temperature is below the minimum temperature specified in 3.1.3.1 above, except for portions of low power physics testing when the requirements of Specification 3.1.9 shall apply, the reactor shall be subcritical by an amount equal to or greater than the calculated reactivity insertion due to depressurization.

3.1.3.4 The reactor shall be maintained subcritical by at least 1%$\Delta k/k$ until a steam bubble is formed and a water level between 80 and 396 inches is established in the pressurizer.

3.1.3.5 Except for physics tests and as limited by 3.5.2.1, safety rod groups shall be fully withdrawn prior to any other reduction in shutdown margin by deboration or regulating rod withdrawal during the approach to criticality. The regulating rods shall then be positioned within their position limits defined by ~~Specification 3.5.2.5~~ the Core Operational Limits Report of Specification 6.6.1.1 prior to deboration.

Bases

At the beginning of the initial fuel cycle, the moderator temperature coefficient is expected to be slightly positive at operating temperatures with the operating configuration of control rods.(1) Calculations show that above 525°F, the consequences are acceptable.

Since the moderator temperature coefficient at lower temperatures will be less negative or more positive than at operating temperature,(2) startup and operation of the reactor when reactor coolant temperature is less than 525°F is prohibited except where necessary for low power physics tests.

The potential reactivity insertion due to the moderator pressure coefficient(2) that could result from depressurizing the coolant from 2100 psia to saturation pressure of 900 psia is approximately 0.1$\Delta k/k$.

During physics tests, special operating precautions will be taken. In addition, the strong negative Doppler coefficient(1) and the small integrated $\Delta k/k$ would limit the magnitude of a power excursion resulting from a reduction of moderator density.

The requirement that the reactor is not to be made critical below the limits of Specification 3.1.2.1 provides increased assurance that the proper rela-

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3.1.11 Shutdown Margin

Specification

The available shutdown margin during all system conditions except refueling shall be greater than 1% $\Delta k/k$ with the highest worth control rod fully withdrawn.

Bases

A sufficient SHUTDOWN MARGIN ensures that 1) the reactor can be made subcritical from all operating conditions, 2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits, and 3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition.

During power operation and startup the SHUTDOWN MARGIN is known to be within limits if all control rods are OPERABLE and withdrawn to or beyond the insertion limits ~~specified in Specification 3.5.2.~~ provided in the Core Operational Limits Report of Specification 6.6.1.1

During refueling conditions equivalent protection is provided in the requirements of Specification 3.8.4.

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3.5.2 Control Rod Group and Power Distribution Limits

Applicability

This specification applies to power distribution and operation of control rods during power operation.

Objective

To assure an acceptable core power distribution during power operation, to set a limit on potential reactivity insertion from a hypothetical control rod ejection, and to assure core subcriticality after a reactor trip.

Specification

3.5.2.1 Shutdown Margin

a. The available shutdown margin shall be greater than 1% $\Delta k/k$ with the highest worth control rod fully withdrawn.

b. If the shutdown margin is less than 1% $\Delta k/k$, then within 1 hour initiate and continue boration until the required shutdown margin is restored. The requirements of ~~Specification 3.5.2.5.c shall be met.~~ the Core Operational Limits Report of Specification 6.6.1.1 shall be met.

3.5.2.2 Movable Control Assemblies

a. All control (safety and regulating) rods shall be operable and positioned within nine (9) inches of their group average height.

b. A control rod shall be declared inoperable if any of the following conditions exist for that rod:

1. The control rod cannot be moved due to excessive friction or mechanical interference, or cannot perform its intended trip function.

2. The control rod cannot be located by either absolute or relative position indication or by in or out limit lights.

3. The control rod is misaligned with its group average by more than nine (9) inches.

4. The control rod does not meet the exercise requirements of Specification 4.1.

5. The control rod does not meet the rod trip insertion times of Specification 4.7.1.

6. The control rod does not meet the rod program verification of Specification 4.7.2.

c. If a control rod is declared inoperable by being immovable due to excessive friction or mechanical interference or known to be untrippable then:

1. Within 1 hour verify that the shutdown margin requirement of Specification 3.5.2.1 is satisfied and,

2. Within 12 hours place the reactor in the hot standby condition.

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d. If a control rod is declared inoperable due to causes other than addressed in 3.5.2.2.c above then:

1. Within 1 hour either restore the rod to operable status or,

2. Continue power operation with the control rod declared inoperable and

   a. Within 1 hour verify the shutdown margin requirement of Specification 3.5.2.1 with an additional allowance for the withdrawn worth of the inoperable rod and,

   b. Either reactor thermal power shall be reduced to less than 60% of the allowable power for the reactor coolant pump combination within 1 hour and the Nuclear Overpower Trip Setpoints, based on flux and flux/flow/imbalance, shall be reduced within the next 4 hours to 65.5% of thermal power value allowable for the reactor coolant pump combination or,

   c. Position the remaining rods in the affected group such that the inoperable rod is maintained within allowable group average limits of Specification 3.5.2.2.a and the withdrawal limits ~~of Specification 3.5.2.5.c.~~ provided in the Core Operational Limits Report of Specification 6.6.1.1

e. If more than one control rod is inoperable or misaligned, the reactor shall be shut down to the hot standby condition within 12 hours.

3.5.2.3 The worths of single inserted control rods during criticality are limited by the restrictions of Specification 3.1.3.5 and the control rod position limits defined in ~~Specification 3.5.2.5.~~ the Core Operational Limits Report of Specification 6.6.1.1

3.5.2.4 Quadrant Power Tilt

a. Except for physics tests, the maximum positive quadrant power tilt shall not exceed the Steady State Limit of Table 3.5-1 during power operation above 15% full power.

b. If the maximum positive quadrant power tilt exceeds the Steady State Limit but is less than or equal to the Transient Limit of Table 3.5-1, then:

the Core Operational Limits Report of Specification 6.6.1.1

1. Either the quadrant power tilt shall be reduced within 2 hours to within its Steady State Limit or

2. The reactor thermal power shall be reduced below the power level cutoff (as specified in ~~Specification 3.5.2.5~~) and further reduced 2% thermal power for each 1% of quadrant power tilt in excess of the Steady State Limit, and the Nuclear Overpower Trip Setpoints, based on flux and flux/flow imbalance, shall be reduced within 4 hours by 2% thermal power for each 1% tilt in excess of the Steady State Limit. If less than four reactor coolant pumps are in operation, the allowable thermal power for the reactor coolant pump combination shall be reduced by 2% for each 1% excess tilt.

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c. Quadrant power tilt shall be reduced within 24 hours to within its Steady State Limit or,

1. The reactor thermal power shall be reduced within the next 2 hours to less than 60% of the allowable power for the reactor coolant pump combination and the Nuclear Overpower Trip Setpoints, based on flux and flux/flow imbalance, shall be reduced within the next 4 hours to 65.5% of the thermal power value allowable for the reactor coolant pump combination.

d. If the quadrant power tilt exceeds the Transient Limit but is less than the Maximum Limit of Table 3.5-1 and if there is a simultaneous indication of a misaligned control rod then:

1. Reactor thermal power shall be reduced within 30 minutes at least 2% for each 1% of the quadrant power tilt in excess of the Steady State Limit.

2. Either quadrant power tilt shall be reduced within 2 hours to within its Transient Limit or,

3. The reactor thermal power shall be reduced within the next 2 hours to less than 60% of the allowable power for the reactor coolant pump combination and the Nuclear Overpower Trip Setpoints, based on flux and flux/flow imbalance, shall be reduced within the next 4 hours to 65.5% of the thermal power value allowable for the reactor coolant pump combination.

e. If the quadrant power tilt exceeds the Transient Limit but is less than the Maximum Limit of Table 3.5-1, due to causes other than simultaneous indication of a misaligned control rod then:

1. Reactor thermal power shall be reduced within 2 hours to less than 60% of the allowable power for the reactor coolant pump combination and the Nuclear Overpower Trip Setpoints, based on flux and flux/flow imbalance, shall be reduced within the next 2 hours to 65.5% of the thermal power value allowable for the reactor coolant pump combination.

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f. If the maximum positive quadrant power tilt exceeds the Maximum Limit of Table 3.5-1, the reactor shall be shut down within 4 hours. Subsequent reactor operation is permitted for the purpose of measurement, testing, and corrective action provided the thermal power and the Nuclear Overpower Trip Setpoints allowable for the reactor coolant pump combination are restricted by a reduction of 2% of thermal power for each 1% tilt for the maximum tilt observed prior to shutdown.

g. Quadrant power tilt shall be monitored on a minimum frequency of once every 2 hours during power operation above 15% full power.

3.5.2.5 Control Rod Positions

a. Technical Specification 3.1.3.5 does not prohibit the exercising of individual safety rods as required by Table 4.1-2 or apply to inoperable safety rod limits in Technical Specification 3.5.2.2.

b. Except for physics tests, operating rod group overlap shall be 25% ± 5% between two sequential groups. If this limit is exceeded, corrective measures shall be taken immediately to achieve an acceptable overlap. Acceptable overlap shall be attained within two hours or the reactor shall be placed in a hot shutdown condition within an additional 12 hours.

c. Position limits are specified for regulating and axial power shaping control rods. Except for physics tests or exercising control rods, the regulating control rod insertion/withdrawal limits are [provided in the Core Operational Limits Report of Specification 6.6.1.1] ~~specified on figures 3.5.2-1 (Unit 1) for four~~
~~3.5.2-2 (Unit 2)~~
~~3.5.2-3 (Unit 3)~~
~~pump operation, on figures 3.5.2-4 (Unit 1) for three~~
~~3.5.2-5 (Unit 2)~~
~~3.5.2-6 (Unit 3)~~
~~pump operation, and on figures 3.5.2-7 (Unit 1) for two~~
~~3.5.2-8 (Unit 2)~~
~~3.5.2-9 (Unit 3)~~

pump operation. Also, excepting physics tests or exercising control rods, the axial power shaping control rod insertion/withdrawal limits are [provided in the Core Operational Limits Report of Specification 6.6.1.1] ~~specified on figures 3.5.2-13 (Unit 1)~~
~~3.5.2-14 (Unit 2)~~
~~3.5.2-15 (Unit 3)~~

If the control rod position limits are exceeded, corrective measures shall be taken immediately to achieve an acceptable control rod position. An acceptable control rod position shall then be attained within two hours. The minimum shutdown margin required by Specification 3.5.2.1 shall be maintained at all times.

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3.5.2.6 Xenon Reactivity

Except for physics tests, reactor power shall not be increased above the power-level-cutoff ~~shown in Figures 3.5.2-1 (Unit 1) 3.5.2-2 (Unit 2) 3.5.2-3 (Unit 3)~~ [handwritten insertion: provided in the Core Operational Limits Report of Specification 6.6.1.1] unless one of the following conditions is satisfied:

1. Xenon reactivity did not deviate more than 10 percent from the equilibrium value for operation at steady state power.

2. Xenon reactivity deviated more than 10 percent but is now within 10 percent of the equilibrium value for operation at steady state rated power and has passed its final maximum or minimum peak during its approach to its equilibrium value for operation at the power level cutoff.

3. Except for xenon free startup (when 2. applies), the reactor has operated within a range of 87 to 92 percent of rated thermal power for a period exceeding 2 hours.

3.5.2.7 Reactor power imbalance shall be monitored on a frequency not to exceed two hours during power operation above 40 percent rated power. Except for physics tests, imbalance shall be maintained within the envelope defined ~~by Figures 3.5.2-10 (Unit 1). 3.5.2-11 (Unit 2). 3.5.2-12 (Unit 3).~~ [handwritten insertion: in the Core Operational Limits Report of Specification 6.6.1.1]. If the imbalance is not within the envelope defined by these figures, corrective measures shall be taken to achieve an acceptable imbalance. If an acceptable imbalance is not achieved within two hours, reactor power shall be reduced until imbalance limits are met.

3.5.2.8 The control rod drive patch panels shall be locked at all times with limited access to be authorized by the manager or his designated alternate.

3.5.2.9 The [handwritten: Core Operational Limits Report of Specification 6.6.1.1 is] ~~operational limit curves of Technical Specifications 3.5.2.5.c and 3.5.2.7 are~~ valid for a nominal design cycle length, as defined ~~in the Safety Evaluation Report~~ for the appropriate unit and cycle. Operation beyond the nominal design cycle length is permitted provided that an evaluation is performed to verify that the operational limit curves are valid for extended operation. If the operational limit curves are not valid for the extended period of the operation, appropriate limits will be established and the ~~Technical Specification curves will be modified as required.~~ [handwritten: Core Operational Limits Report will be revised per Specification 6.6.1.1]

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Operation at power with an inoperable control rod is permitted within the limits provided. These limits assure that an acceptable power distribution is maintained and that the potential effects of rod misalignment on associated accident analyses are minimized. For a rod declared inoperable due to misalignment, the rod with the greatest misalignment shall be evaluated first. Additionally, the position of the rod declared inoperable due to misalignment shall not be included in computing the average position of the group for determining the operability of rods with lesser misalignments. When a control rod is declared inoperable, boration may be initiated to achieve the existence of 1% Δk/k hot shutdown margin.

The power-imbalance envelope defined in ~~Figures 3.5.2-10 (Unit 1) 3.5.2-11 (Unit 2) 3.5.2-12 (Unit 3)~~ the Core Operational Limits Report of Specification 6.6.1.1 is based on LOCA analyses which have defined the maximum linear heat rate (see Figure 3.5.2-16) such that the maximum clad temperature will not exceed the Final Acceptance Criteria. Corrective measures will be taken immediately should the indicated quadrant tilt, rod position, or imbalance be outside their specified boundary. Operation in a situation that would cause the Final Acceptance Criteria to be approached should a LOCA occur is highly improbable because all of the power distribution parameters (quadrant tilt, rod position, and imbalance) must be at their limits while simultaneously all other engineering and uncertainty factors are also at their limits.** Conservatism is introduced by application of:

a. Nuclear uncertainty factors
b. Thermal calibration
c. Fuel densification power spike factors ~~(Units 1 and 2 only)~~
d. Hot rod manufacturing tolerance factors
e. Fuel rod bowing power spike factors

The 25% ± 5% overlap between successive control rod groups is allowed since the worth of a rod is lower at the upper and lower part of the stroke. Control rods are arranged in groups or banks defined as follows:

Group	Function
1	Safety
2	Safety
3	Safety
4	Safety
5	Regulating
6	Regulating
7	~~Xenon transient override~~ Regulating
8	APSR (axial power shaping bank)

** Actual operating limits depend on whether or not incore or excore detectors are used and their respective instrument calibration errors. The method used to define the operating limits is defined in plant operating procedures.

provided in the Core Operational Lim[illegible] Report of Specification 6.6.

The rod position limits are based on the most limiting of the following three criteria: ECCS power peaking, shutdown margin, and potential ejected rod worth. Therefore, compliance with the ECCS power peaking criterion is ensured by the rod position limits. The minimum available rod worth, consistent with the rod position limits, provides for achieving hot shutdown by reactor trip at any time, assuming the highest worth control rod that is withdrawn remains in the full out position(1). The rod position limits also ensure that inserted rod groups will not contain single rod worths greater than 0.65% $\Delta k/k$ at rated power. These values have been shown to be safe by the safety analysis (2,3,4,5) of hypothetical rod ejection accident. A maximum single inserted control rod worth of 1.0% $\Delta k/k$ is allowed by the rod position limits at hot zero power. A single inserted control rod worth of 1.0% $\Delta k/k$ at beginning-of-life, hot zero power would result in a lower transient peak thermal power and, therefore, less severe environmental consequences than a 0.65% $\Delta k/k$ ejected rod worth at rated power.

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Control rod groups are withdrawn in sequence beginning with Group 1. Groups 5, 6, and 7 are overlapped 25 percent. ~~The normal position at power~~ is for Group~~s 6 and~~ 7 to be partially inserted.

The quadrant power tilt limits set forth in Specification 3.5.2.4 have been established to prevent the linear heat rate peaking increase associated with a positive quadrant power tilt during normal power operation from exceeding 7.50% for Unit 1. The limits shown in Specification 3.5.2.4
7.50% for Unit 2
7.50% for Unit 3
are measurement system independent. The actual operating limits, with the appropriate allowance for observability and instrumentation errors, for each measurement system are defined in the station operating procedures.

The quadrant tilt and axial imbalance monitoring in Specification 3.5.2.4 and 3.5.2.7, respectively, normally will be performed in the process computer. The two-hour frequency for monitoring these quantities will provide adequate surveillance when the computer is out of service.

Allowance is provided for withdrawal limits and reactor power imbalance limits to be exceeded for a period of two hours without specification violation. Acceptable rod positions and imbalance must be achieved within the two-hour time period or appropriate action such as a reduction of power taken.

Technical Specification 3.5.2.6 provides the ability to prevent excessive power peaking by transient xenon at rated power.

Replace with (A)

Operating restrictions resulting from transient xenon power peaking, including xenon-free startup, are inherently included in the limits of Sections 3.5.2.5 (Control Rod Positions) and 3.5.2.7 (Reactor power imbalance) for transient peaking behavior bounded by the following factors. For feed and bleed (un-rodded) operation, a 5% peaking increase is applied to calculated peaks at equilibrium conditions for powers at and above 90% FP. A 13% increase is applied below 90% FP. For rodded operation an 8% peaking increase is applied at and above 90% FP and an 18% increase is applied below 90% FP. If these values, checked every cycle, conservatively bound the peaking effects of all transient xenon, then the need for any hold at a power level cutoff below 100% FP is precluded. If not, either the power level at which the requirements of 3.5.2.6 must be satisfied or the above listed factors will be suitably adjusted to preserve the ECCS power peaking criteria. (Reference 6)

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(A) Operating restrictions resulting from xenon transients and power maneuvers are inherently included in the limits provided in the Core Operational Limits Report of Specification 6.6.1.1.

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The following Technical Specification Figures will be deleted from the Techncial Specification Chapter 3 and will be provided via the Core Operational Limits Report of Specification 6.6.1.1:

Figure 3.5.2-1 Rod Position Limits (Unit 1)
Figure 3.5.2-2 Rod Position Limits (Unit 2)
Figure 3.5.2-3 Rod Position Limits (Unit 3)
Figure 3.5.2-4 Rod Position Limits (Unit 1)
Figure 3.5.2-5 Rod Position Limits (Unit 2)
Figure 3.5.2-6 Rod Position Limits (Unit 3)
Figure 3.5.2-7 Rod Position Limits (Unit 1)
Figure 3.5.2-8 Rod Position Limits (Unit 2)
Figure 3.5.2-9 Rod Position Limits (Unit 3)
Figure 3.5.2-10 Operation Power Imbalance Envelope (Unit 1)
Figure 3.5.2-11 Operation Power Imbalance Envelope (Unit 2)
Figure 3.5.2.12 Operation Power Imbalance Envelope (Unit 3)
Figure 3.5.2-13 APSR Position Limits (Unit 1)
Figure 3.5.2-14 APSR Position Limits (Unit 2)
Figure 3.5.2-15 APSR Position Limits (Unit 3)

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6.6 STATION REPORTING REQUIREMENTS

6.6.1 Routine Reports

INSERT (B) →

In addition to the applicable reporting requirements of Title 10, Code of Federal Regulations, the following reports shall be submitted to the Regional Administrator Region II unless otherwise noted.

6.6.1.~~1~~ 2 Startup Report

A summary report of unit startup and power escalation testing shall be submitted following (1) receipt of an operating license, (2) amendment to the facility license involving a planned increase in power level, (3) installation of fuel that has a different design or has been manufactured by a different fuel supplier, and (4) modifications that may have significantly alered the nuclear, thermal, or hydraulic performance of the unit. Startup reports shall be submitted (1) within 90 days following completion of the startup test program, (2) 90 days following resumption or commencement of commercial power operation, or (3) nine months following initial criticality, whichever occurs first. If a startup report does not cover all three events, i.e., initial criticality, completion of the startup test program and resumption or commencement of commercial power operation supplementary reports shall be submitted at least every three months until all three events are completed.

6.6.1.~~2~~ 3 Monthly Operating Report

Routine reports of operating statistics and shutdown experience shall be submitted on a monthly basis to the Director, Office of Management Information and Program Control, U.S. Nuclear Regulatory Commission, Washington, D.C., 20555, with a copy to the appropriate Regional Office, to be submitted by the fifteenth of each month following the calendar month covered by the report.

6.6.1.~~3~~ 4 Personnel Exposure and Monitoring Report

Prior to March 1 of each year, a tabulation shall be submitted to the NRC of the number of station, utility and other personnel (including contractors) receiving exposures greater than 100 mrem/yr and their associated man-rem exposure according to work and job functions, e.g., reactor operations and surveillance, inservice inspection, routine maintenance, special maintenance (describe maintenance), waste processing, and refueling. The dose assignment to various duty functions may be estimates based on pocket dosimeter, TLD, or film badge measurements. Small exposures totalling less than 20% of the individual total dose need not be accounted for. In the aggregate, at least 80% of the total body dose received from external sources shall be assigned to specific major work functions.

6.6.1.~~4~~ 5 Radioactive Effluent Release Report

Routine Radioactive Effluent Release Reports covering the operating of the unit during the previous 6 months of operation shall be submitted within 60 days after January 1 and July 1 of each year.

(B) 6.6.1.1 Core Operational Limits Report

A report providing the following core operational limits shall be provided to the Regional Administrator of the Regional Office of the NRC with a copy to the Director, NRR, Attention: Chief, Core Performance Branch, USNRC at least 60 days prior to each cycle initial criticality unless otherwise approved by the Commission by letter:

1. Regulating Control Rod Insertion/Withdrawal Limits
2. Axial Power Shaping Control Rod Insertion/Withdrawal Limits
3. Power Level Cutoff
4. Power/Power Imbalance Operational Limits

In addition, in the event that the limits should change requiring a new submittal or amended submittal of the Core Operational Limits Report, it shall be submitted at least 60 days prior to the date the limit would become effective unless otherwise approved by the Commisssion by letter. Any information needed to support the Core Operational Limits Report will be requested from the NRC and need not be included in the report.

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The Radioactive Effluent Release Reports shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the station.

The Radioactive Effluent Release Reports shall include a summary of the meteorological conditions concurrent with the release of gaseous effluents during each quarter.

The Radioactive Effluent Release Reports shall include an assessment of the radiation doses from radioactive effluents to individuals due to their activities inside the unrestricted area boundary during the report period. All assumptions used in making these assessments (e.g., specific activity, exposure time and location) shall be included in these reports.

The Radioactive Effluent Release Reports shall include the following information for all unplanned releases to unrestricted areas of radioactive materials in gaseous and liquid effluents:

a. A description of the event and equipment involved.

b. Cause(s) for the unplanned release.

c. Actions taken to prevent recurrence.

d. Consequences of the unplanned release.

The Radioactive Effluent Release Reports shall include an assessment of radiation doses from the radioactive liquid and gaseous effluents released from the station during each calendar quarter. In addition, the unrestricted area boundary maximum noble gas gamma air and beta air doses shall be evaluated. The annual average meteorological conditions shall be used for determining the gaseous pathway doses. Approximate and conservative approximate methods are acceptable. The assessment of radiation doses shall be performed in accordance with the Offsite Dose Calculation Manual.

The Radioactive Effluent Release Reports shall include the following information for each type of solid waste shipped offsite during the report period:

a. container volume,

b. total curie quantity (determined by measurement or estimate),

c. principal radionuclides (determined by measurement or estimate),

d. type of waste, (e.g., spent resin, compacted dry waste evaporator bottoms),

e. type of container (e.g., LSA, Type A, Type B, Large Quantity), and

f. solidification agent (e.g., cement, or other approved agents (media)).

The Radioactive Effluent Release Reports shall include a list and description of unplanned releases from the site to Unrestricted Areas of radioactive materials in gaseous and liquid effluents made during the reporting period.

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The Radioactive Effluent Release Reports shall include any changes made during the reporting period to the Offsite Dose Calculation Manual (ODCM), as well as a listing of new locations for dose calculations and/or environmental monitoring identified by the land use census pursuant to Specification 4.11.2.

The Radioactive Effluent Release Report to be submitted 60 days after January 1 of each year shall also include an assessment of radiation doses to the likely most exposed Member Of The Public from reactor releases and other nearby uranium fuel cycle sources (including doses from primary effluent pathways and direct radiation) for the previous calendar year to show conformance with 40 CFR 190, Environmental Radiation Protection Standards for Nuclear Power Operation. Methods for calculating the dose contribution from liquid and gaseous effluents are given in the ODCM.

6.6.1.6 Radiological Environmental Monitoring

Routine radiological environmental operating reports covering the operation of the unit during the previous calendar year shall be submitted prior to May 1 of each year.

The Annual Radiological Environmental Operating Report shall include summaries, interpretations, and statistical evaluation of the results of the radiological environmental surveillance activities for the report period, including a comparison with preoperational studies, operational controls (as appropriate), and previous environmental surveillance reports and an assessment of the observed impacts of the plant operation on the environment. The reports shall also include the results of the land use censuses required by Specification 4.11. If harmful effects are detected by the monitoring, the report shall provide an analysis of the problem and a planned course of action to alleviate the problem.

The Annual Radiological Environment Operating Report shall include a summary of the results obtained as part of the required Interlaboratory Comparison Program and in accordance with the ODCM. Alternatively, participants in the EPA cross-check program shall provide the EPA program code designation for the unit.

The Annual Radiological Environmental Operating Report shall include summarized and tabulated results of the radiological environmental samples required by Specification 4.11 taken during the report period. In the event that some results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted as soon as practical in a supplementary report.

The initial report shall also include the following: a summary description of the radiological environmental monitoring program including sampling methods for each sample type, size and physical characteristics of each sample type, sample preparation methods, analytical methods, and measuring equipment used; a map of all sampling locations keyed to a table giving distances and directions from one reactor; and the result of land use censuses required by Specification 4.11. Subsequent reports shall describe all substantial changes in these aspects.

Attachment 2

Draft Core Operational
Limits Reports

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DUKE POWER COMPANY

OCONEE NUCLEAR STATION

OCONEE UNIT 1, CYCLE 9

CORE OPERATIONAL LIMITS REPORT

DPC - COLR - 1003

FEBRUARY 1985

Oconee Nuclear Station

Core Operational Limits Report

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Oconee Unit: 1

Reload Cycle: 9

Nominal Cycle Length: 410 EFPD

Prepared by: J. M. Luniewski Date: 6 Feb 85

Approved by: ____________ Date: ____________

Title: ____________

Approved by: ____________ Date: ____________

Title: ____________

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Oconee Unit 1, Cycle 9

Core Operational Limits Report

Per the requirements of Technical Specification 6.6.1.1, this Core Operational Limits Report, DPC - COLR - 1003, has been prepared to provide the necessary limitations on reactor power, imbalance, and control rod position for operation of Oconee 1, Cycle 9. Curves presented in this report are based upon a cycle length of 410 EFPD. If the cycle length is expected to exdeed 420 EFPD, an evaluation shall be performed in accordance with Technical Specification 3.5.2.9 in order to verify the continued validity of the curves presented in this report. Any required changes to the operational limit curves due to extended operation or other causes shall be implemented in accordance with Technical Specification 6.6.1.1.

Figures 1 thru 3 provide the operational limits upon power and power imbalance. The power-imbalance envelope is determined by the most limiting power distribution criteria of either the loss of coolant accident (LOCA) analyses or the loss of flow accident (LOFA) analyses. Requirements on surveillance and actions required to respond to plant conditions outside of the acceptable power-imbalance envelope are provided in Technical Specification 3.5.2.

Figures 4 thru 12 provide the control rod position limits for operation with 4, 3, and 2 reactor coolant pumps in operation. The rod insertion limits ensure the shutdown margin requirements of Technical Specification 3.1.11 are satisfied and therefore provides for achieving hot shutdown by reactor trip at any time (assuming the highest worth control rod remains in the full out position). Rod position limits also ensure that power peaking criteria associated with LOCA and LOFA analyses are not exceeded. In addition, the limits preclude the insertion of rod groups which could result in any single rod worth greater than the safety analysis assumption for the rod ejection transient. Requirements on surveillance and actions required to respond to plant conditions outside the acceptable restricted operation regions are provided in Technical Specification 3.5.2.

The power-level-cutoff values associated with the Technical Specification 3.5.2.6, Xenon Reactivity, are provided by the rod position limit curves of Figures 4 thru 12.

Due to the low worth of the axial power shaping rods (APSR'S) due to the use of a gray absorber, Inconel-600, no position limits on the APSR's are required for Oconee Unit 1, Cycle 9.

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Figure 1 (Sheet 1 of 3)

Power Imbalance Limits for 0 to 30 +10/-0 EFPD, Oconee 1, Cycle 9

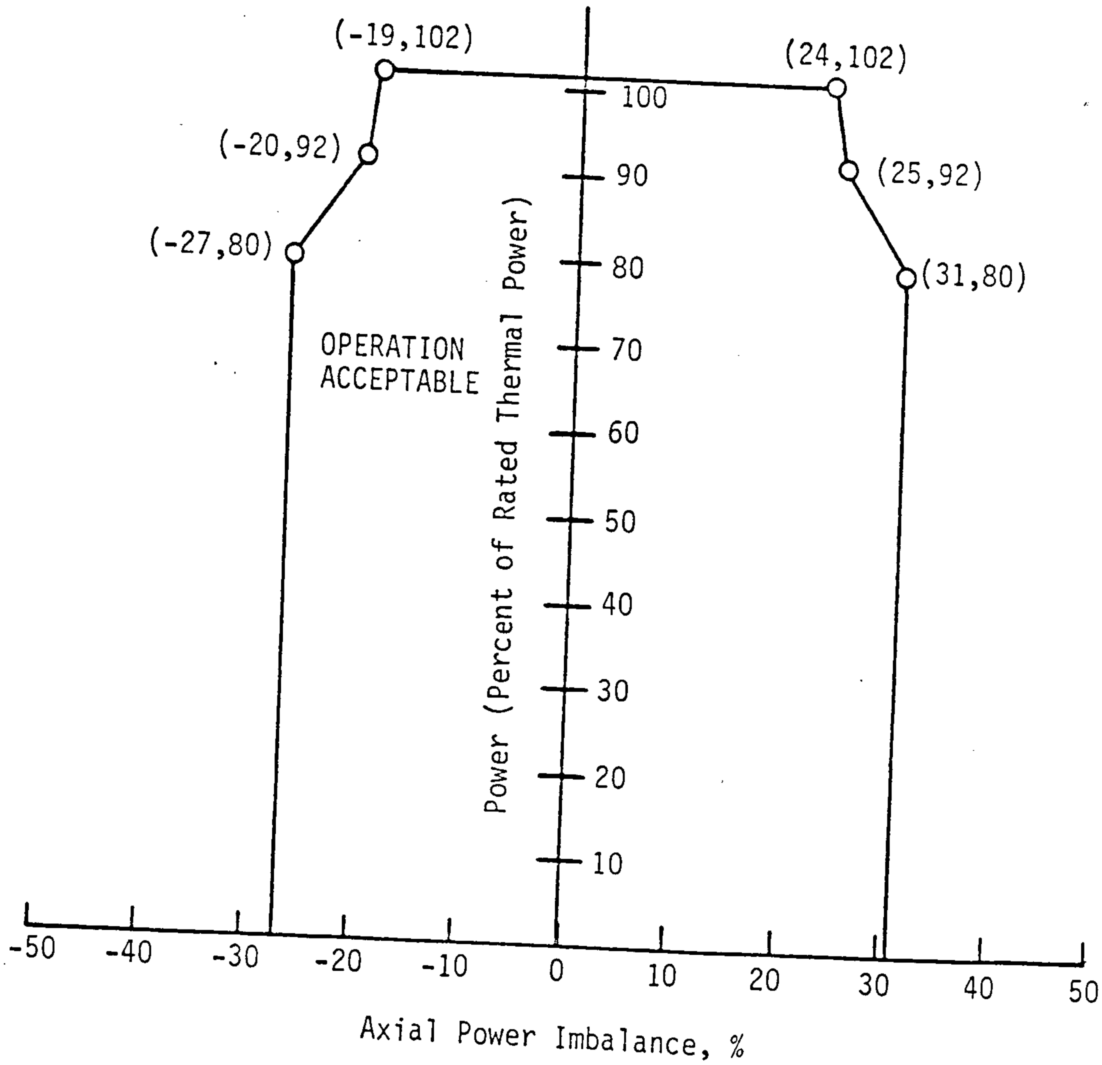

Figure 1 (Sheet 2 of 3)

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Power Imbalance Limits, 30 +10/-0 to 250 ±10 EFPD, Oconee 1, Cycle 9

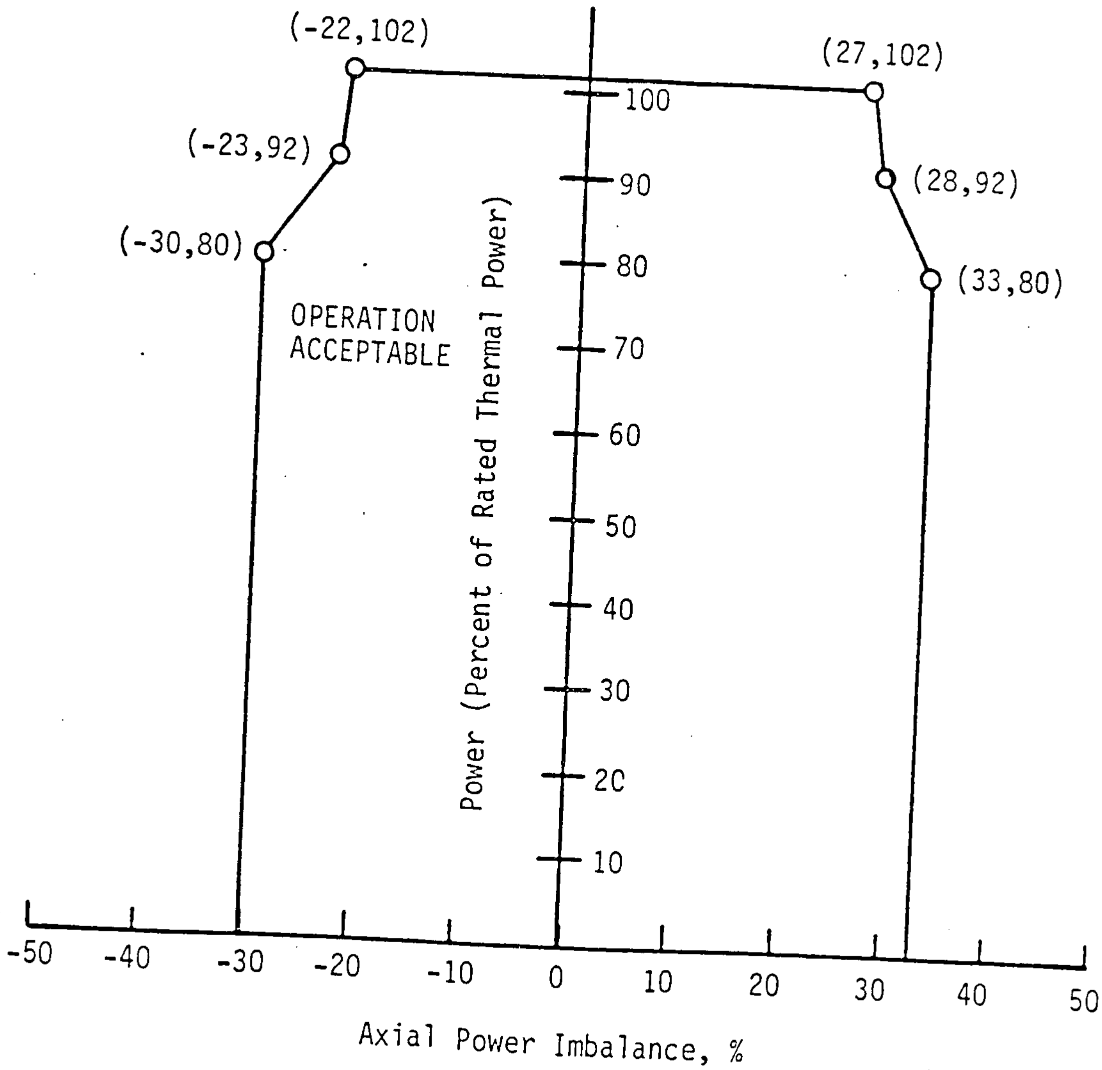

Figure 1 (Sheet 3 of 3)

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Power Imbalance Limits After 250 ±10 EFPD,
Oconee 1, Cycle 9

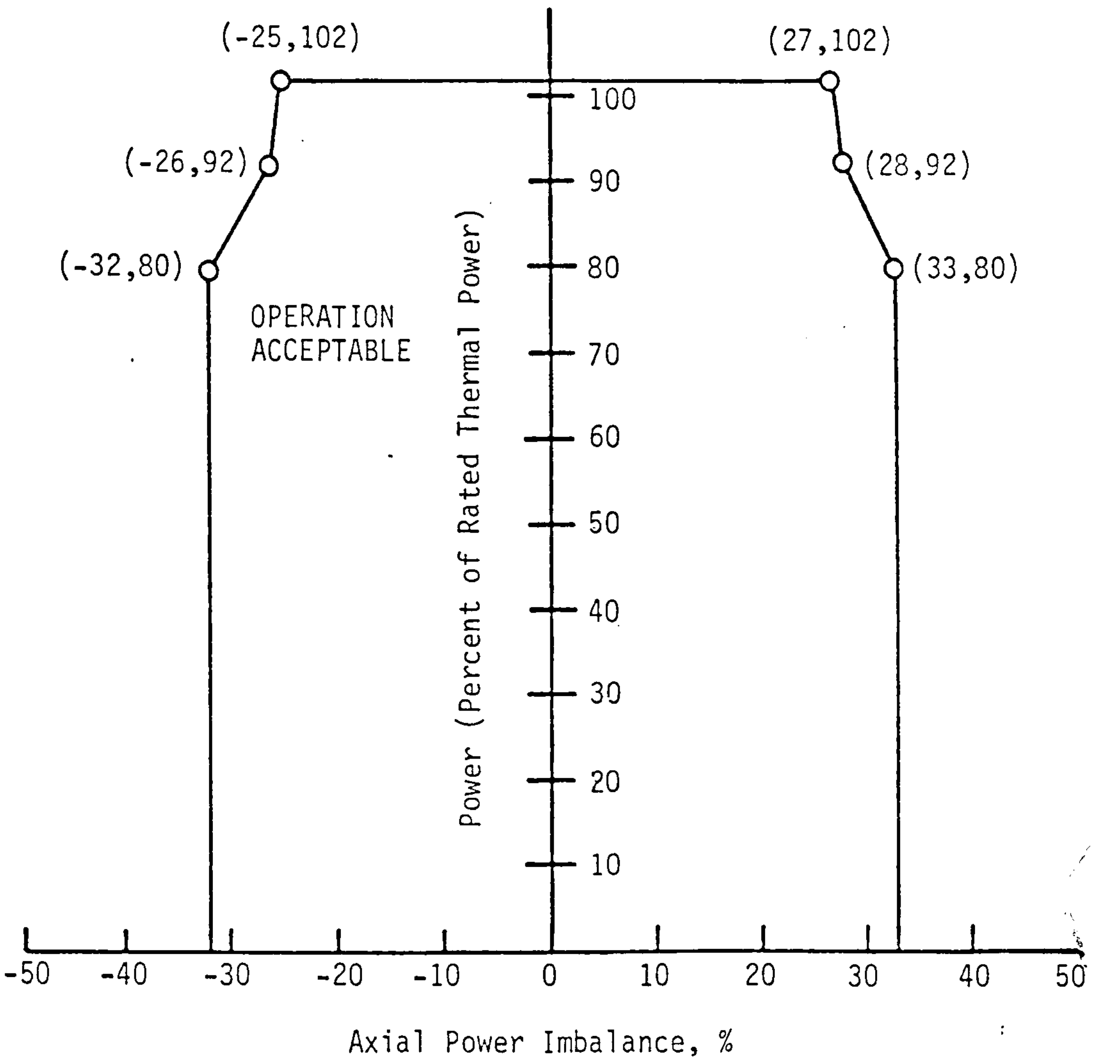

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Figure 2 (Sheet 1 of 3)

Rod Position Limits for Four-Pump Operation,
0 to 30 +10/-0 EFPD, Oconee 1, Cycle 9

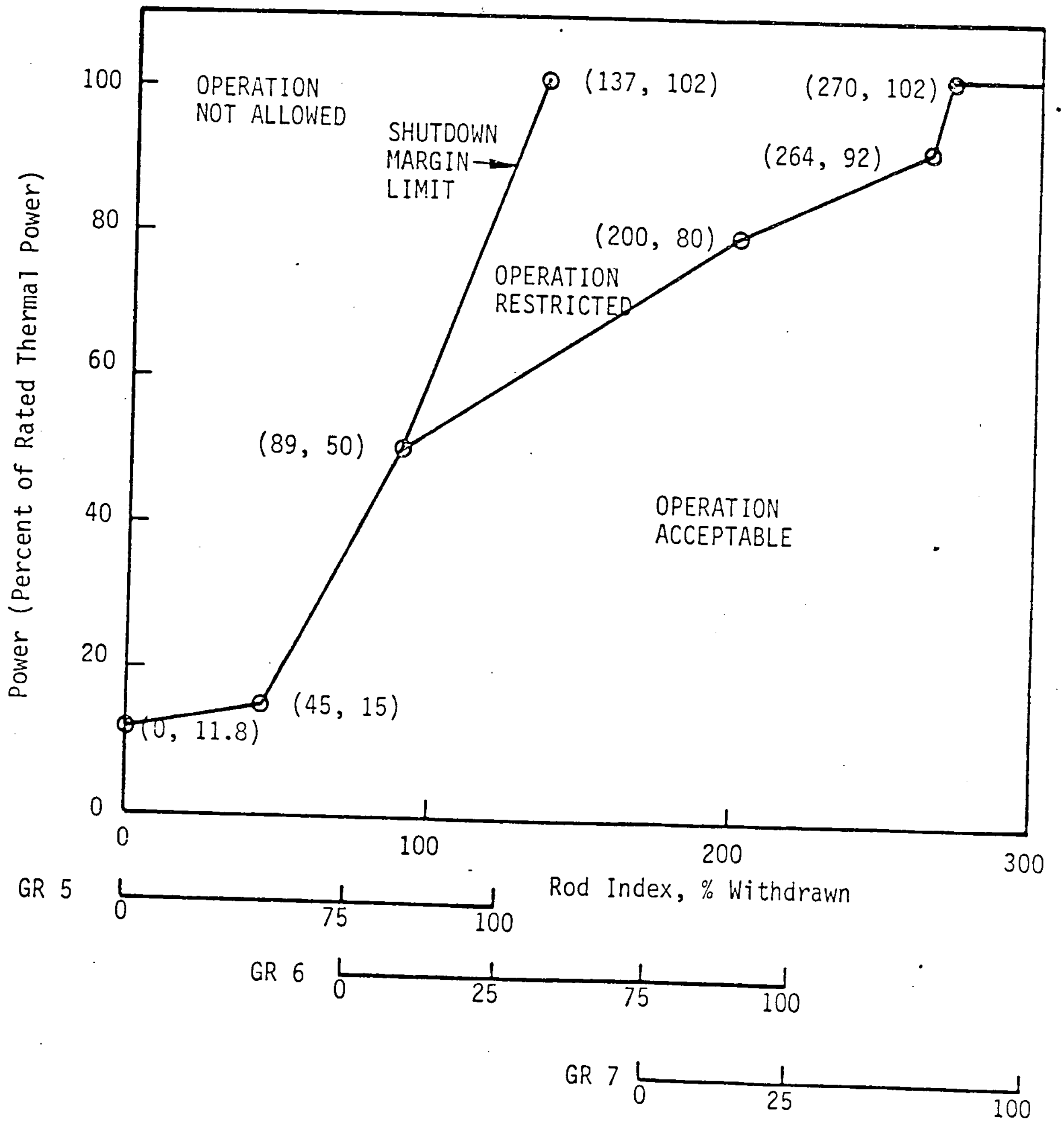

Figure 2 (Sheet 2 of 3)

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Rod Position Limits for Four-Pump Operation, 30 +10/-0 to 250 ±10 EFPD, Oconee 1, Cycle 9

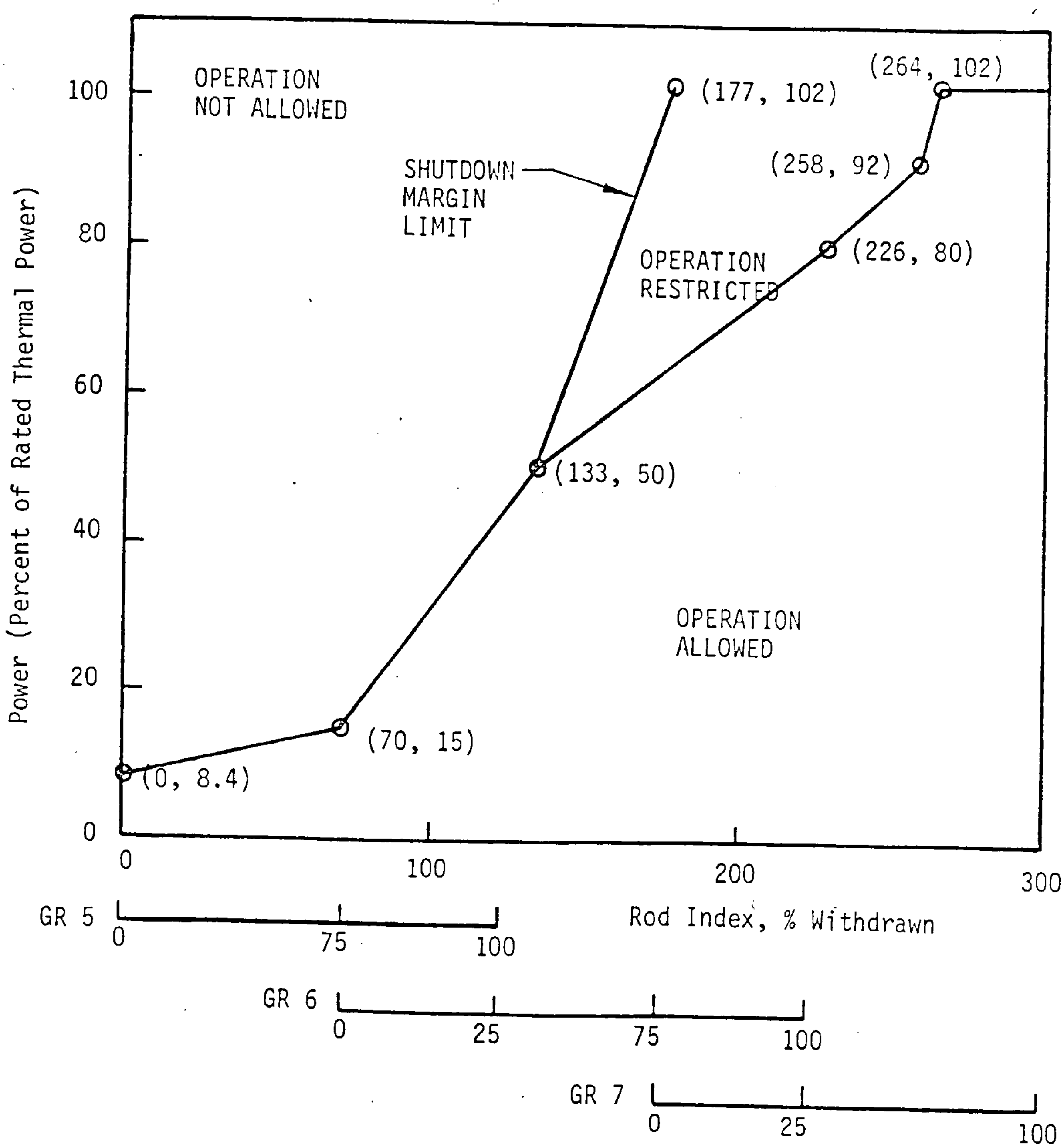

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Figure 2 (Sheet 3 of 3)

Rod Position Limits for Four-Pump Operation
After 250 ±10 EFPD, Oconee 1, Cycle 9

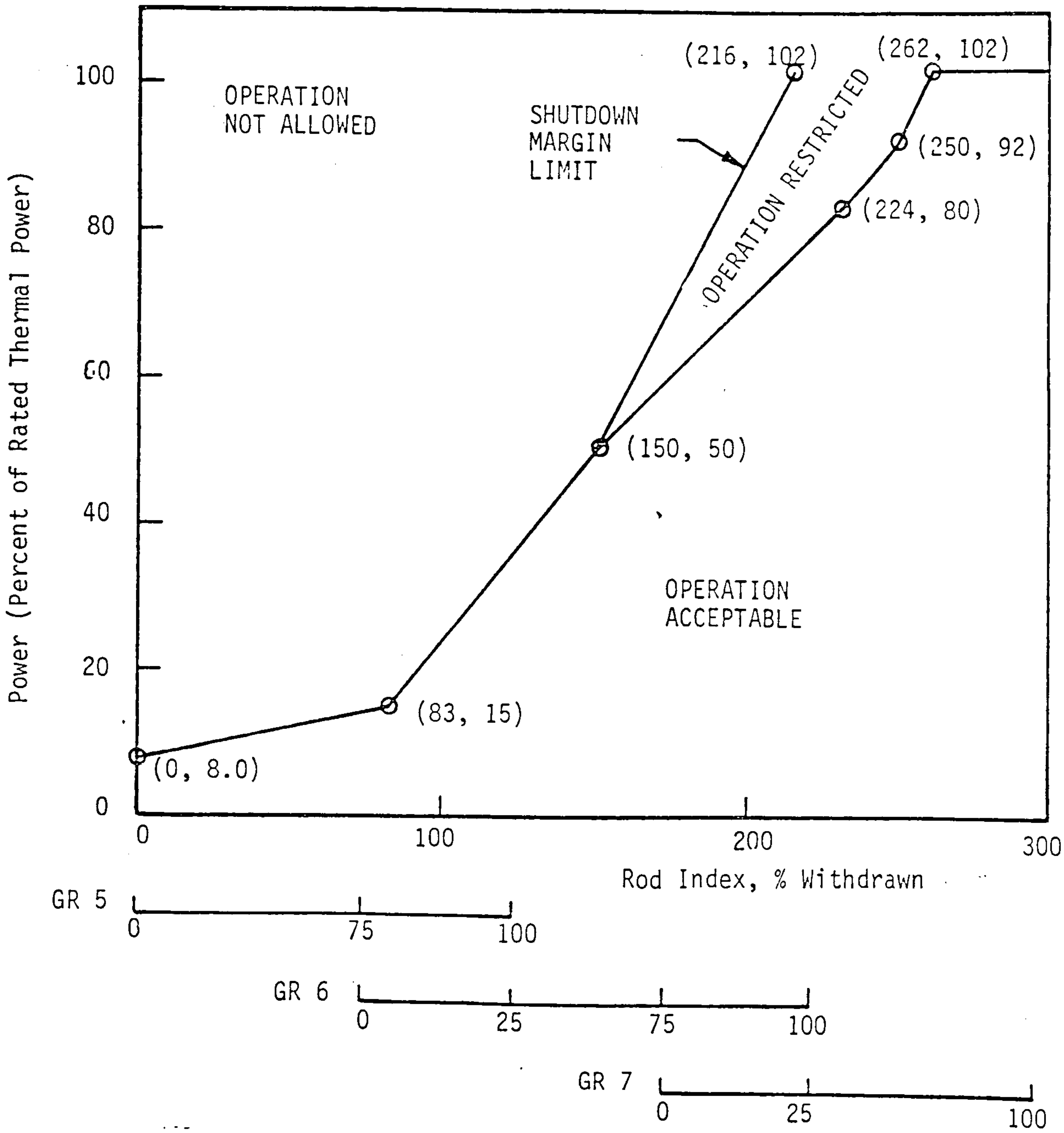

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Figure 3 (Sheet 1 of 3)

Rod Position Limits for Three-Pump Operation,
0 to 30 +10/-0 EFPD, Oconee 1, Cycle 9
(Technical Specification Figure 3.5.2-2A1)

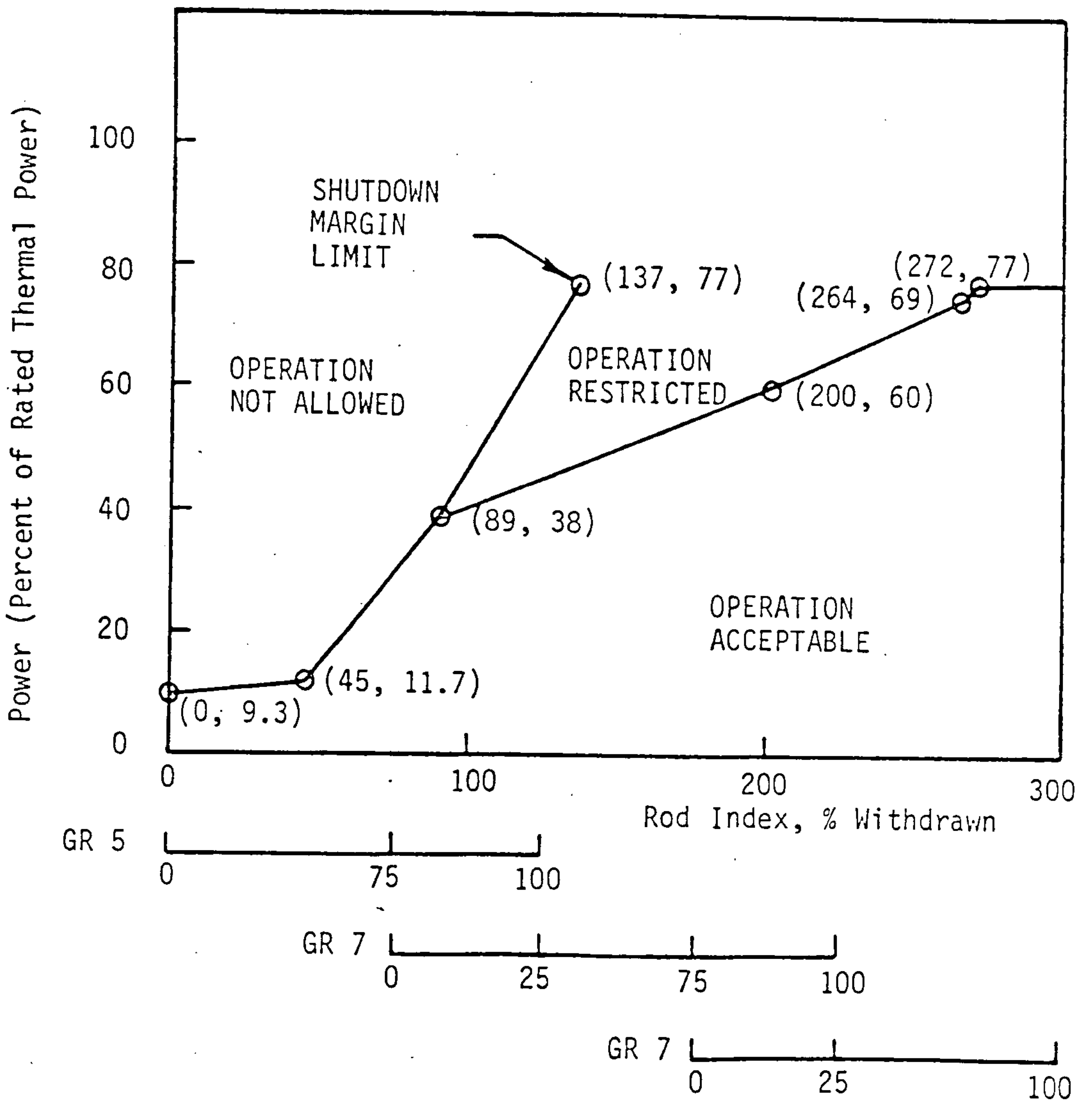

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Figure 3 (Sheet 2 of 3)

Rod Position Limits for Three-Pump Operation, 30 +10/-0 EFPD to 250 ±10 EFPD, Oconee 1, Cycle 9

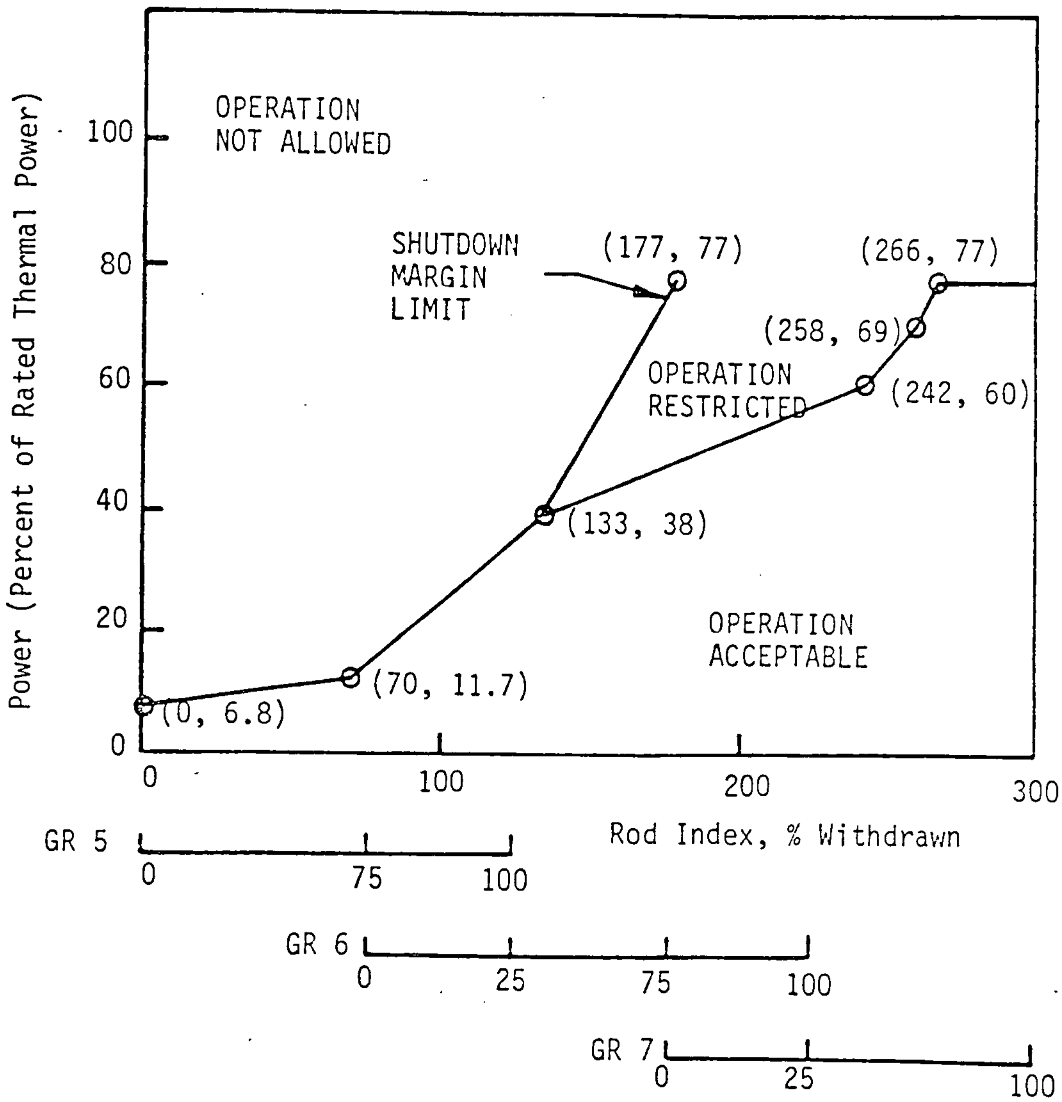

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Figure 3 (Sheet 3 of 3)

Rod Position Limits for Three-Pump Operation
After 250 ±10 EFPD, Oconee 1, Cycle 9

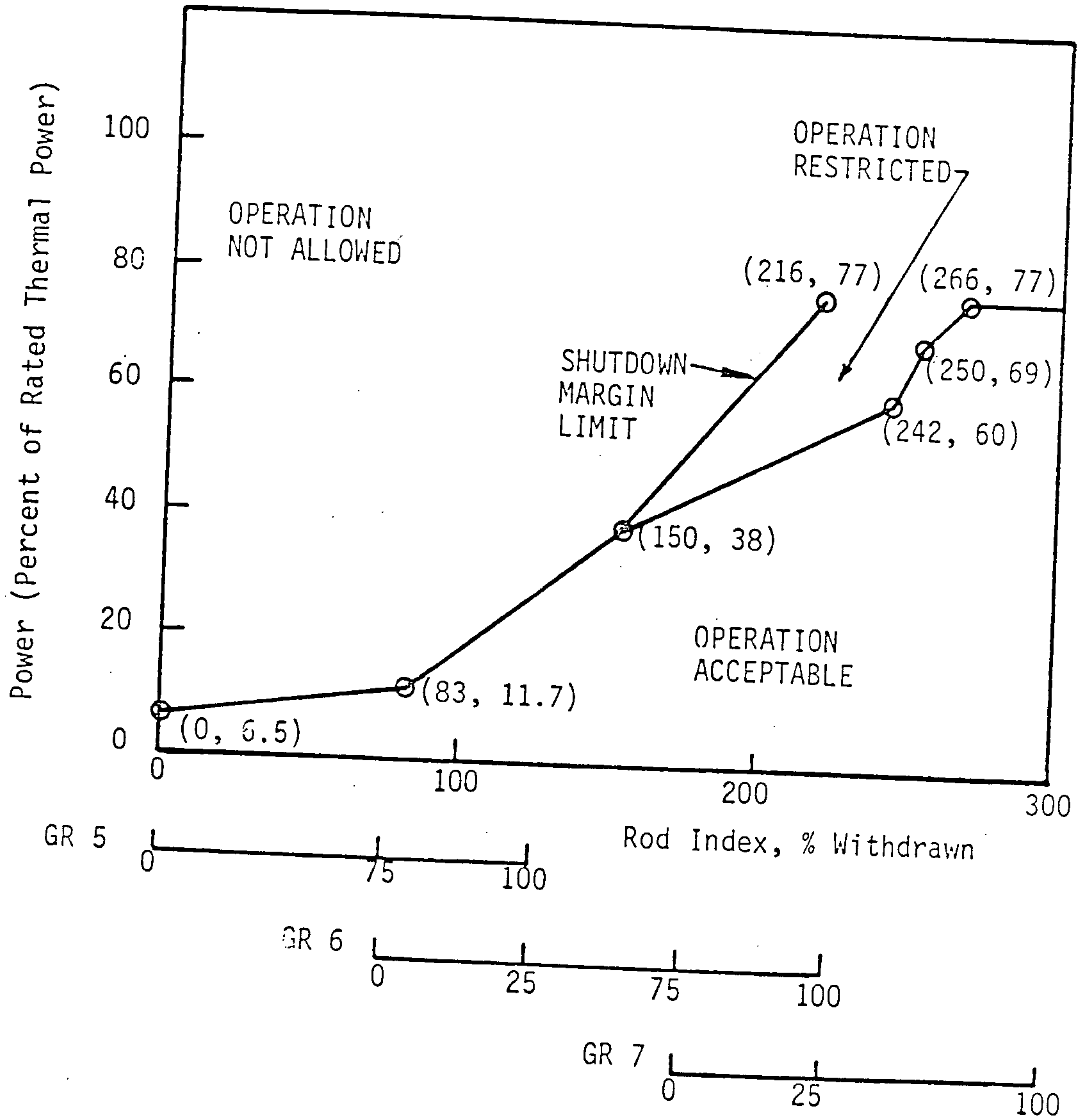

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Figure 4 (Sheet 1 of 3)

Rod Position Limits for Two-Pump Operation,
0 to 30 +10/-0 EFPD, Oconee 1, Cycle 9

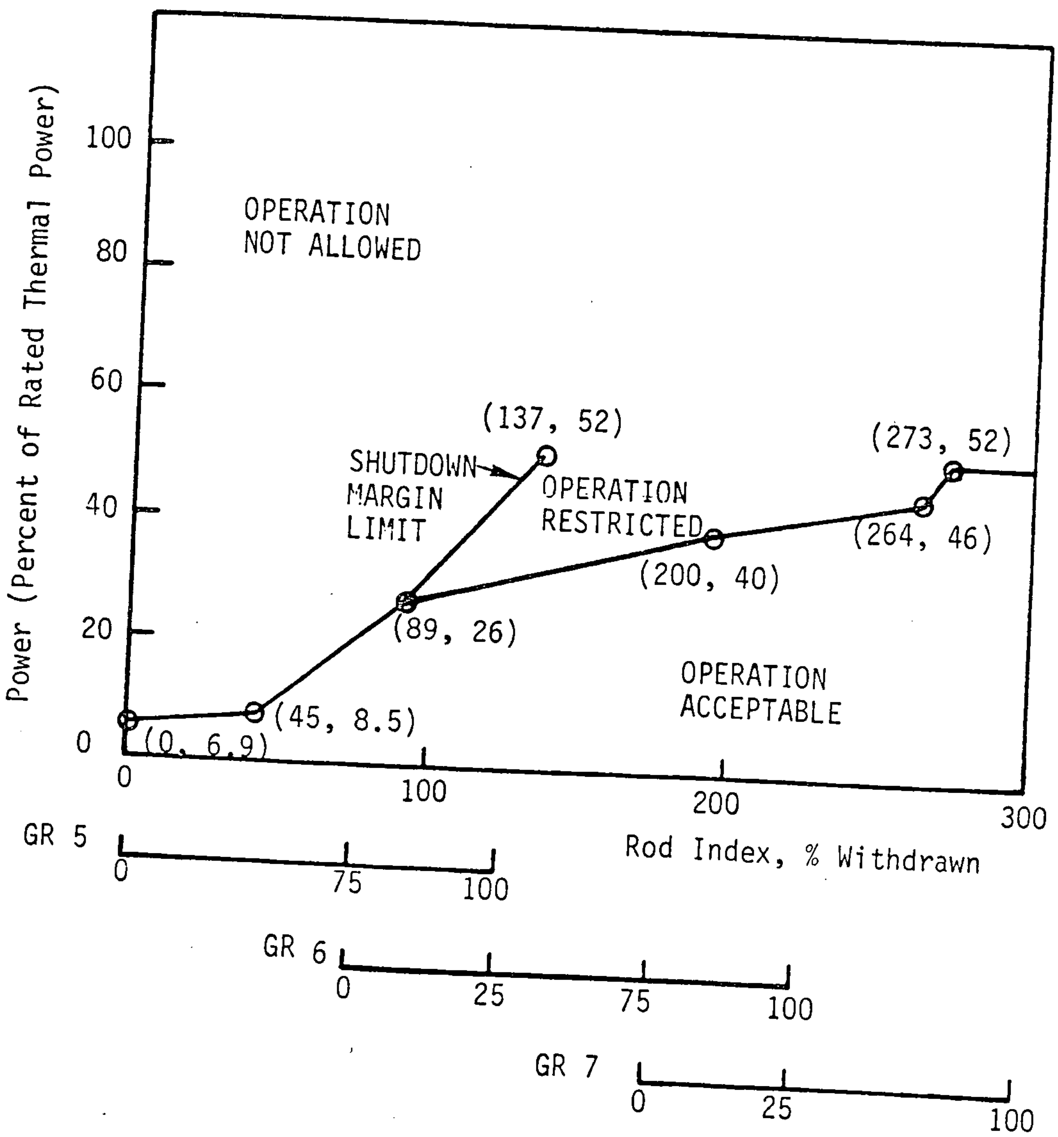

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Figure 4 (Sheet 2 of 3)

Rod Position Limits for Two-Pump Operation, 30 +10/-0 to 250 ±10 EFPD, Oconee 1, Cycle 9

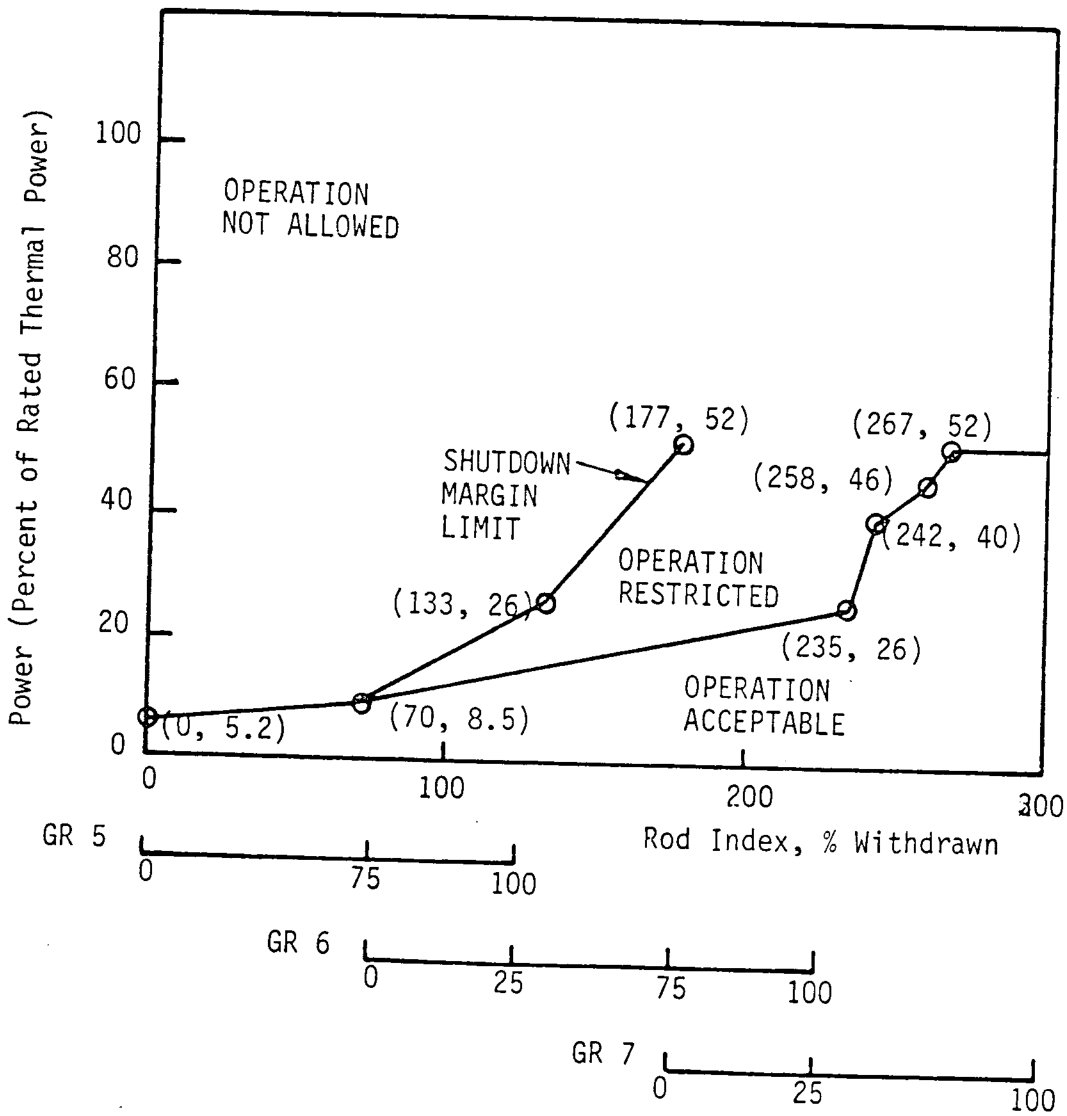

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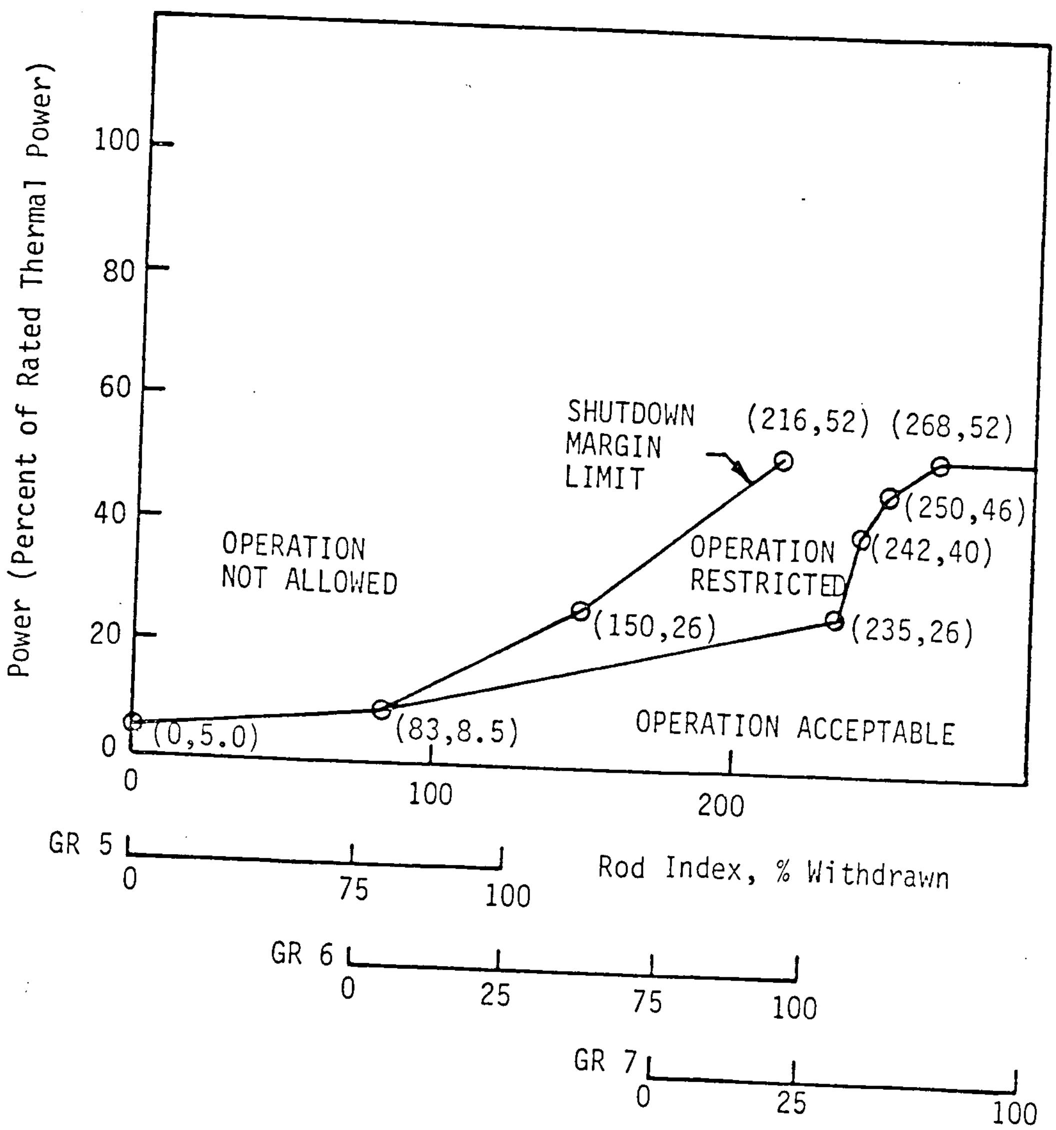
Figure 4 (Sheet 3 of 3)

Rod Position Limits for Two-Pump Operation
After 250 ±10 EFPD, Oconee 1, Cycle 9



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DUKE POWER COMPANY

OCONEE NUCLEAR STATION

OCONEE UNIT 2, CYCLE 8

CORE OPERATIONAL LIMITS REPORT

DPC - COLR - 1001

FEBRUARY 1985

Oconee Nuclear Station

Core Operational Limits Report

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Oconee Unit: 2

Reload Cycle: 8

Nominal Cycle Length: 400 EFPD

Prepared by: J. M. Lunnewski Date: 6 Feb 85

Approved by: ____________________ Date: ____________

Title: ____________________

Approved by: ____________________ Date: ____________

Title: ____________________

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Oconee Unit 2, Cycle 8

Core Operational Limits Report

Per the requirements of Technical Specification 6.6.1.1, this Core Operational Limits Report, DPC - COLR - 1001, has been prepared to provide the necessary limitations on reactor power, imbalance, and control rod position for operation of Oconee 2, Cycle 8. Curves presented in this report are based upon a cycle length of 400 EFPD. If the cycle length is expected to exdeed 410 EFPD, an evaluation shall be performed in accordance with Technical Specification 3.5.2.9 in order to verify the continued validity of the curves presented in this report. Any required changes to the operational limit curves due to extended operation or other causes shall be implemented in accordance with Technical Specification 6.6.1.1.

Figure 1 provides the operational limits upon power and power imbalance. The power-imbalance envelope is determined by the most limiting power distribution criteria of either the loss of coolant accident (LOCA) analyses or the loss of flow accident (LOFA) analyses. Requirements on surveillance and actions required to respond to plant conditions outside of the acceptable power-imbalance envelope are provided in Technical Specification 3.5.2.

Figures 2, 3 and 4 provide the control rod position limits for operation with 4, 3, and 2 reactor coolant pumps in operation respectively. The rod insertion limits ensure the shutdown margin requirements of Technical Specification 3.1.11 are satisfied and therefore provides for achieving hot shutdown by reactor trip at any time (assuming the highest worth control rod remains in the full out position). Rod position limits also ensure that power peaking criteria associated with LOCA and LOFA analyses are not exceeded. In addition, the limits preclude the insertion of rod groups which could result in any single rod worth greater than the safety analysis assumption for the rod ejection transient. Requirements on surveillance and actions required to respond to plant conditions outside the acceptable restricted operation regions are provided in Technical Specification 3.5.2.

The power-level-cutoff values associated with the Technical Specification 3.5.2.6, Xenon Reactivity, are provided by the rod position limit curves of Figures 2, 3, and 4.

Due to the low worth of the axial power shaping rods (APSR'S) due to the use of a gray absorber, Inconel-600, no position limits on the APSR's are required for Oconee Unit 2, Cycle 8.

Figure · 1

Operational Power-Imbalance Limits, 0 EFPD to EOC

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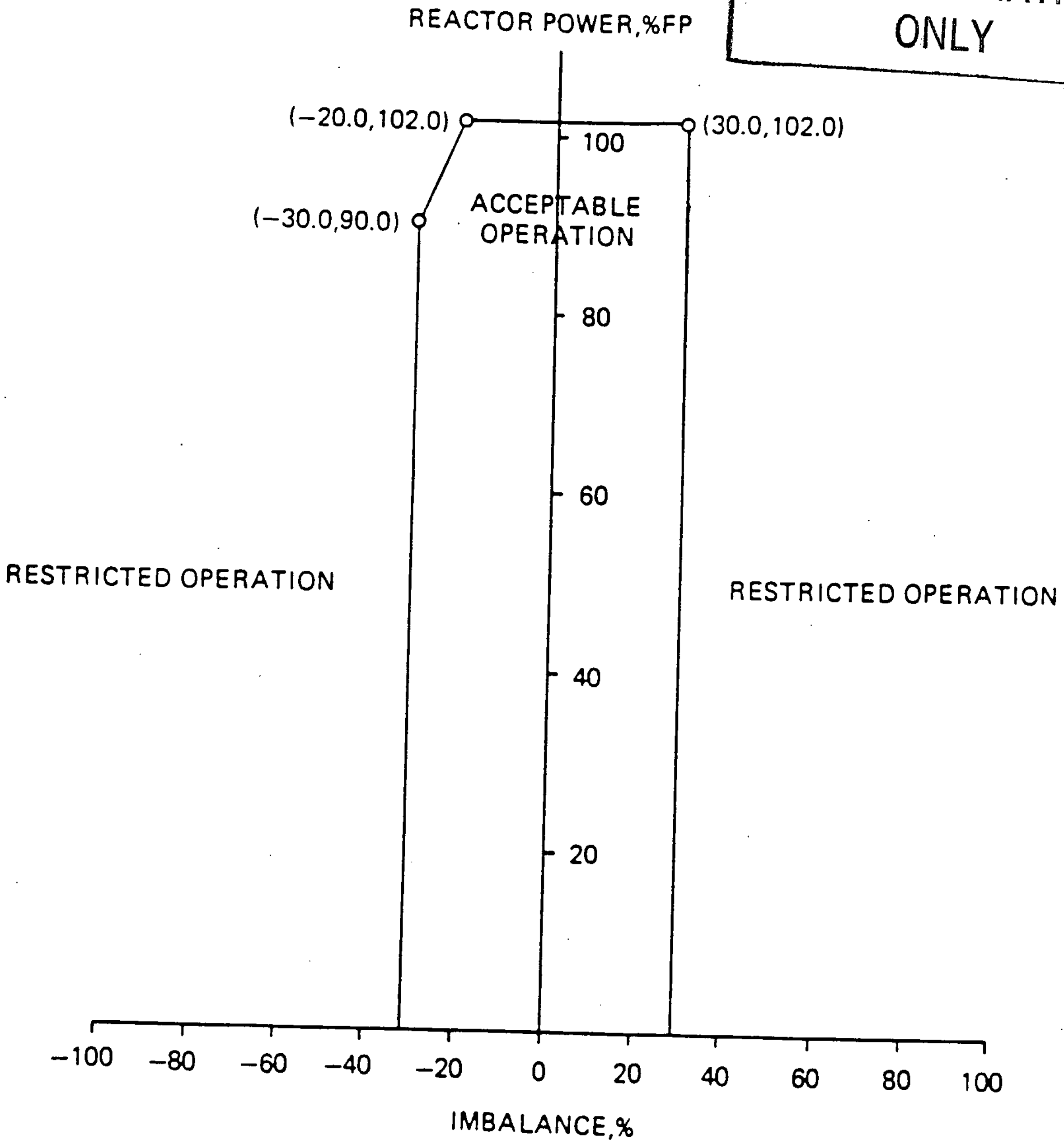

Figure 2

Control Rod Position Limits, 4 Pumps, 0 EFPD to EOC

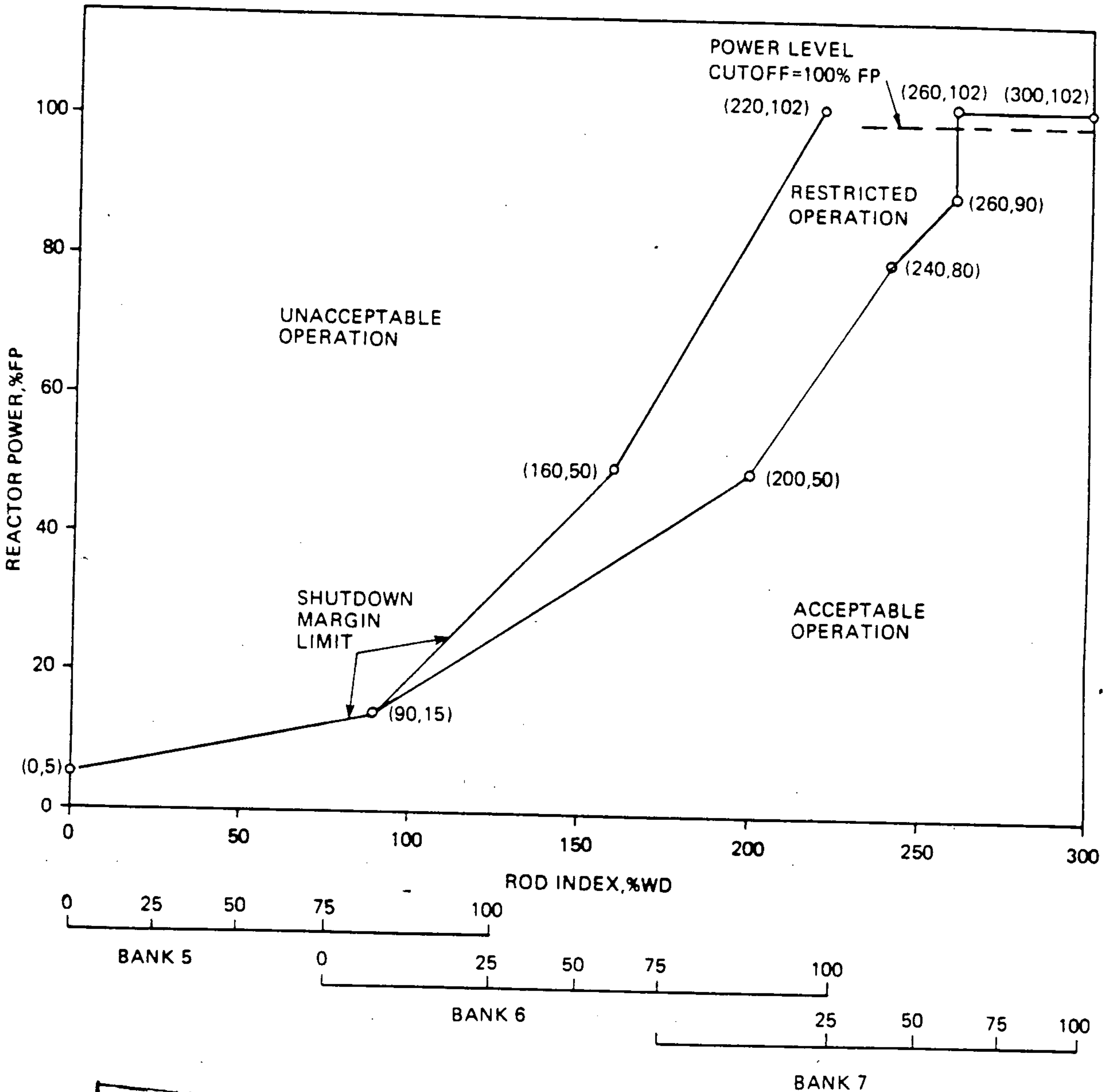

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Figure 3

Control Rod Position Limits, 3 Pumps, 0 EFPD to EOC

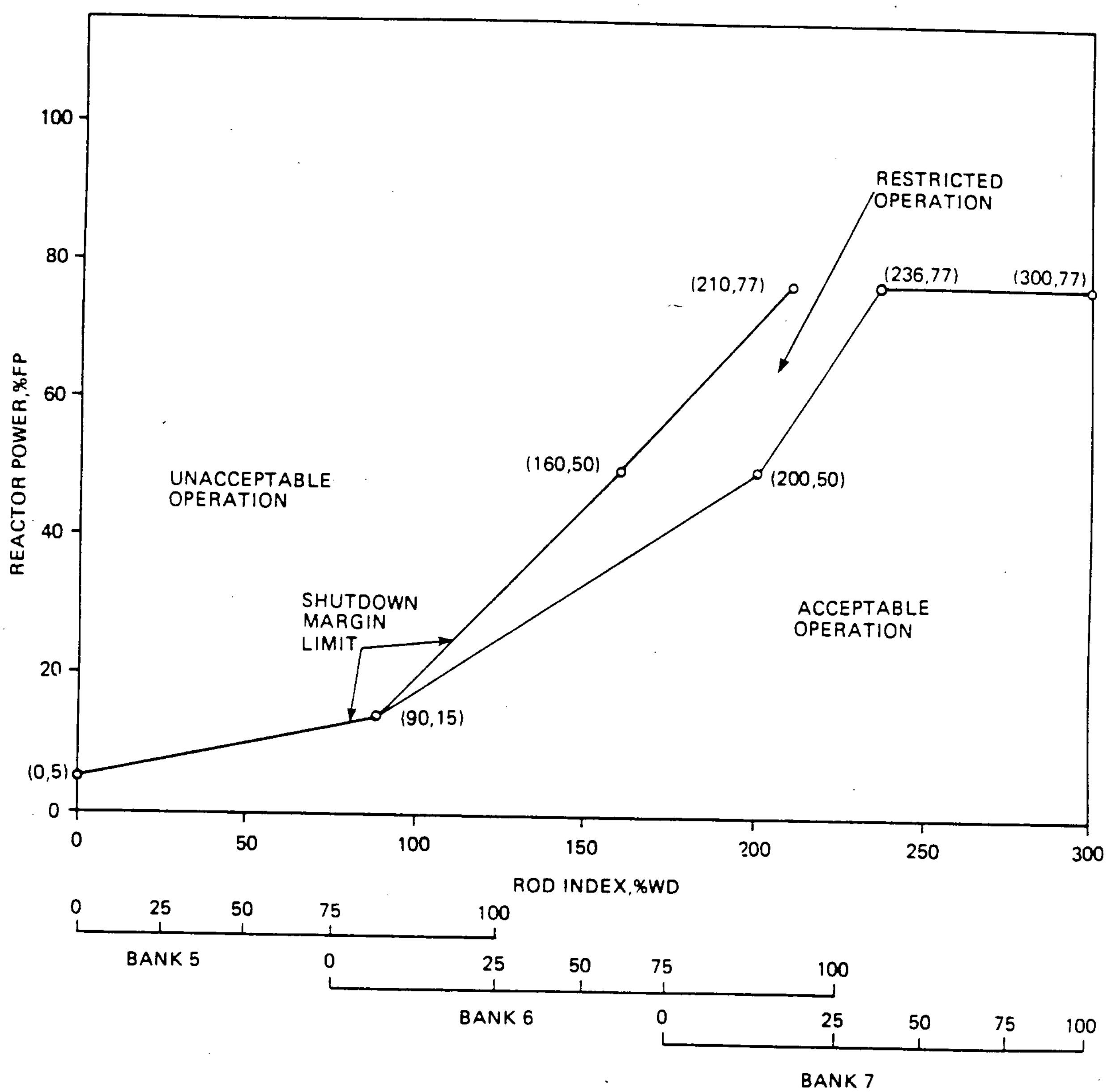

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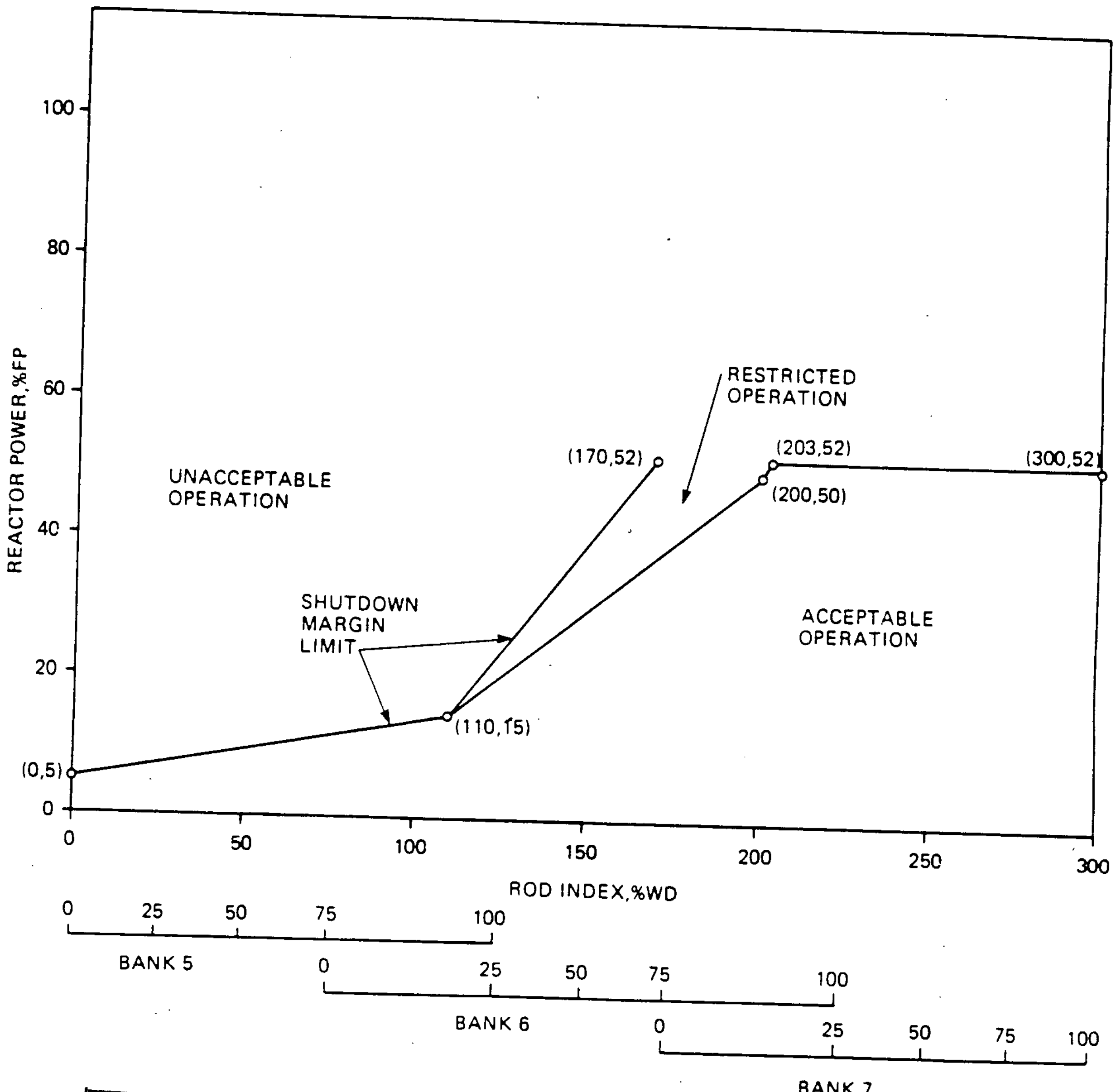
Figure 4

Control Rod Position Limits, 2 Pumps, 0 EFPD to EOC



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DUKE POWER COMPANY

OCONEE NUCLEAR STATION

OCONEE UNIT 3, CYCLE 9

CORE OPERATIONAL LIMITS REPORT

DPC - COLR - 1002

FEBRUARY 1985

Oconee Nuclear Station

Core Operational Limits Report

DRAFT
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Oconee Unit: 3

Reload Cycle: 9

Nominal Cycle Length: 400 EFPD

Prepared by: J. M. Sunieroski Date: 6 Feb 85

Approved by: ____________ Date: ____________

Title: ____________

Approved by: ____________ Date: ____________

Title: ____________

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Oconee Unit 3, Cycle 9

Core Operational Limits Report

Per the requirements of Technical Specification 6.6.1.1, this Core Operational Limits Report, DPC - COLR - 1002, has been prepared to provide the necessary limitations on reactor power, imbalance, and control rod position for operation of Oconee 3, Cycle 9. Curves presented in this report are based upon a cycle length of 400 EFPD. If the cycle length is expected to exdeed 410 EFPD, an evaluation shall be performed in accordance with Technical Specification 3.5.2.9 in order to verify the continued validity of the curves presented in this report. Any required changes to the operational limit curves due to extended operation or other causes shall be implemented in accordance with Technical Specification 6.6.1.1.

Figure 1 provides the operational limits upon power and power imbalance. The power-imbalance envelope is determined by the most limiting power distribution criteria of either the loss of coolant accident (LOCA) analyses or the loss of flow accident (LOFA) analyses. Requirements on surveillance and actions required to respond to plant conditions outside of the acceptable power-imbalance envelope are provided in Technical Specification 3.5.2.

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PRELIMINARY

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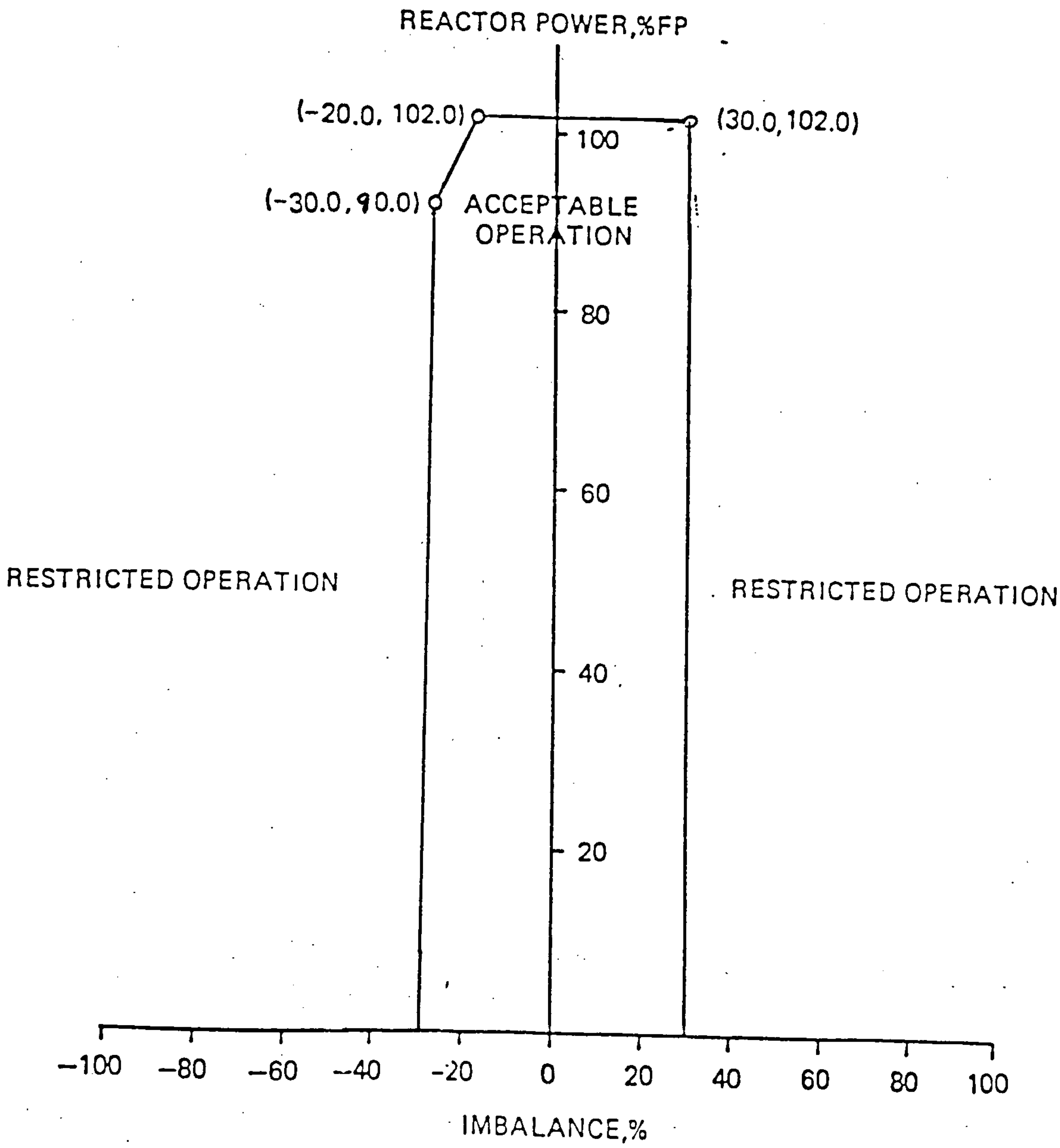
Figure 1

Operational Power-Imbalance Limits, 0 EFPD TO EOC



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PRELIMINARY

Figure 2

Control Rod Position Limits, 4 Pumps, 0 EFPD TO EOC

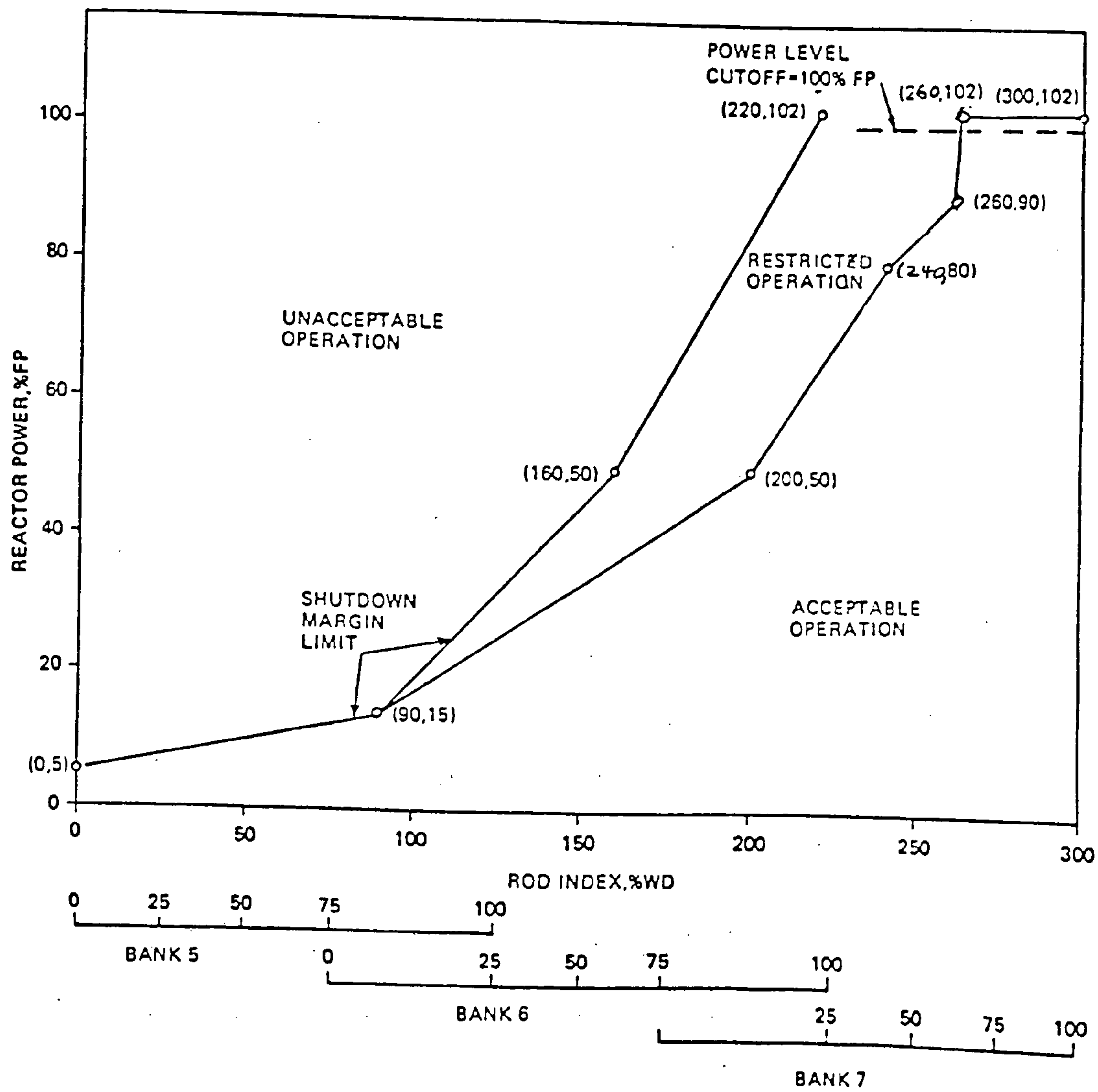

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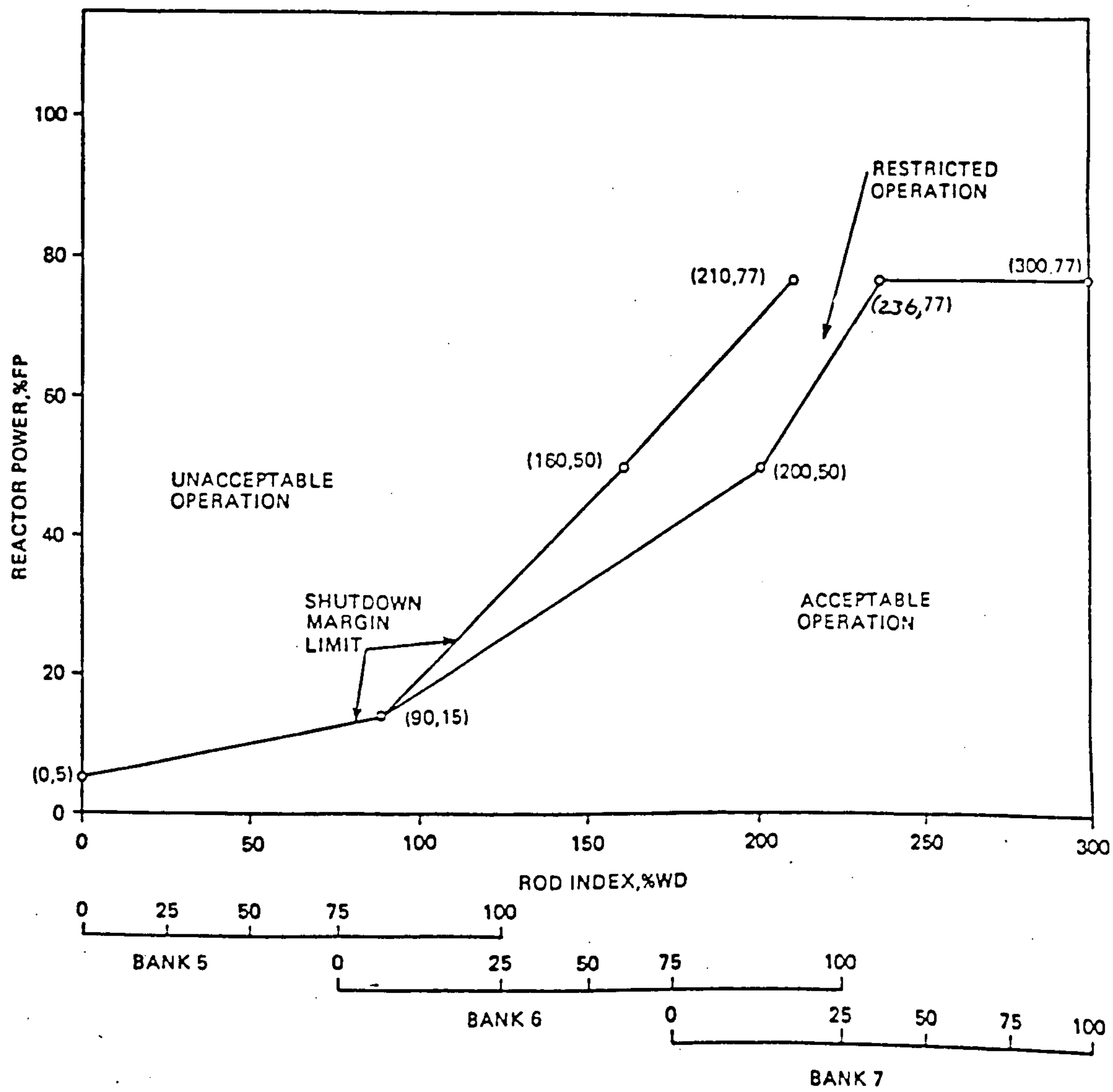
Figure 3

Control Rod Position Limits, 3 Pumps, 0 EFPD TO EOC



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PRELIMINARY

Figure 4

Control Rod Position Limits, 2 Pumps, 0 EFPD TO EOC