UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

CONSUMERS POWER COMPANY

DOCKET NO. 50-255

PALISADES PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 144
License No. DPR-20

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Consumers Power Company (the licensee) dated October 23, 1989 as supplemented August 24, 1990, June 25, 1991, and April 1, 1992, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public; and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to the license amendment and Paragraph 2.C.2 of Facility Operating License No. DPR-20 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 144 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

L B Marsh

L. B. Marsh, Director
Project Directorate III-1
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 3, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 144

FACILITY OPERATING LICENSE NO. DPR-20

DOCKET NO. 50-255

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the amendment number and contain marginal lines indicating the area of change.

REMOVE	INSERT
3-65	3-65
3-104	3-104
3-105	3-105
3-107	3-107
3-111	3-111
3-112	3-112
3-113	3-113

3.11 POWER DISTRIBUTION INSTRUMENTATION

3.11.1 INCORE DETECTORS

LIMITING CONDITION FOR OPERATION

The incore detection system shall be operable:

a. With at least 160 of the 215 possible incore detectors and 2 incores per axial level per core quadrant. /

b. With the incore alarming function of the datalogger operable and alarm set points entered into the datalogger.

APPLICABILITY

(1) Item a. above is applicable when the incore detection system is used for:

Measuring quadrant power tilt,

Measuring radial peaking factors,

Measuring linear heat rate (LHR), or

Determining target Axial Offset (AO) and excore monitoring allowable power level.

(2) Items a. and b. above are applicable when the incore detection system is used for monitoring LHR with automatic alarms. (Incore Alarm System).

ACTION 1:

With less than the required number of incore detectors, do not use the system for the measuring and calibration functions under (1) above.

ACTION 2:

With the alarming function of the datalogger inoperable, do not use the system for automatic monitoring of LHR (Inoperable Incore Alarm System).

3.23.1 LINEAR HEAT RATE (LHR)

LIMITING CONDITION FOR OPERATION

ACTION 3:

If the incore alarm system is inoperable and the excore monitoring system is not being used to monitor LHR, operation at less than or equal to 85% of rated power may continue provided that incore readings are recorded manually. Readings shall be taken on a minimum of 10 individual detectors per quadrant (to include a total number of 160 detectors in a 10-hour period) within 4 hours and at least every 2 hours thereafter. If readings indicate a local power level equal to or greater than the alarm setpoints, the action specified in ACTION 1 above shall be taken.

Basis

The limitation of LHR ensures that, in the event of a LOCA, the peak temperature of the cladding will not exceed 2200°F.(1)

Either of the two core power distribution monitoring systems (the incore alarm system or the excore monitoring system) provides adequate monitoring of the core power distribution and is capable of verifying that the LHR does not exceed its limits. The incore alarm system performs this function by continuously monitoring the local power at many points throughout the core and comparing the measurements to predetermined setpoints above which the limit on LHR could be exceeded. The excore monitoring system performs this function by providing comparison of the measured core AO with predetermined AO limits based on incore measurements. An Excore Monitoring Allowable Power Level (APL), which may be less than rated power, is applied when using the excore monitoring system to ensure that the AO limits adequately restrict the LHR to less than the limiting values.(4)

If the incore alarm system and the excore monitoring system are both inoperable, power will be reduced to provide margin between the actual peak LHR and the LHR limits and the incore readings will be manually collected at the terminal blocks in the control room utilizing a suitable signal detector. If this is not feasible with the manpower available, the reactor power will be reduced to a point below which it is improbable that the LHR limits could be exceeded.

3.23.1 LINEAR HEAT RATE (LHR)

LIMITING CONDITION FOR OPERATION

Basis (Contd)

The time interval of 2 hours and the minimum of 10 detectors per quadrant are sufficient to maintain adequate surveillance of the core power distribution to detect significant changes until the monitoring systems are returned to service.

To ensure that the design margin of safety is maintained, the determination of both the incore alarm setpoints and the APL takes into account the local LHGR measurement uncertainty factors[5] given in Table 3.23-3, an engineering uncertainty factor of 1.03, a thermal power measurement uncertainty factor of 1.02.

References

(1) EMF-91-77

(2) (Deleted)

(3) (Deleted)

(4) XN-NF-80-47

(5) FSAR Section 3.3.2.5

(6) FSAR Section 7.6.2.4

TABLE 3.23-1

LINEAR HEAT RATE LIMITS

	No. of Fuel Rods Assembly	
	208	216
Peak Rod	15.28 kW/ft	15.28 kW/ft

TABLE 3.23-2

RADIAL PEAKING FACTOR LIMITS, F_L

Peaking Factor	No. of Fuel Rods in Assembly		
	208	216 (Reload M and earlier)	216
Assembly F_r^A	1.48	1.57	1.66
Peak Rod F_r^T	1.92	1.92	1.92

TABLE 3.23-3

POWER DISTRIBUTION MEASUREMENT UNCERTAINTY FACTORS

LHR/Peaking Factor Parameter	Measurement Uncertainty[a]	Measurement Uncertainty[b]	Measurement Uncertainty[c]
LHR	0.0623	0.0664	0.0795
F_r^A	0.0401	0.0490	0.0695
F_r^T	0.0455	0.0526	0.0722

(a) Measurement uncertainty for reload cores using all fresh incore detectors.
(b) Measurement uncertainty for reload cores using a mixture of fresh and once-burned incore detectors.
(c) Measurement uncertainty when quadrant power tilt, as determined using incore measurements and an incore analysis computer program[8], exceeds 2.8% but is less than or equal to 5%.

POWER DISTRIBUTION LIMITS

3.23.2 RADIAL PEAKING FACTORS

LIMITING CONDITION FOR OPERATION

The radial peaking factors F_r^A, and F_r^T shall be less than or equal to the value in Table 3.23-2 times the following quantity. The quantity is [1.0 + 0.3 (1 - P)] for P ≥ .5 and the quantity is 1.15 for P < .5. P is the core thermal power in fraction of rated power.

APPLICABILITY: Power operation above 25% of rated power.

ACTION:

1. For P < 50% of rated with any radial peaking factor exceeding its limit, be in at least hot shutdown within 6 hours.

2. For P ≥ 50% of rated with any radial peaking factor exceeding its limit, reduce thermal power within 6 hours to less than the lowest value of:

$$\left[1 - 3.33\left(\frac{F_r}{F_L} - 1\right)\right] \times \text{Rated Power}$$

Where F_r is the measured value of either F_r^A, or F_r^T and F_L is the corresponding limit from Table 3.23-2.

Basis

The limitations on F_r^A, and F_r^T are provided to ensure that assumptions used in the analysis for establishing DNB margin, LHR and the thermal margin/low-pressure and variable high-power trip set points remain valid during operation. Data from the incore detectors are used for determining the measured radial peaking factors. The periodic surveillance requirements for determining the measured radial peaking factors provide assurance that they remain within prescribed limits. Determining the measured radial peaking factors after each fuel loading prior to exceeding 50% of rated power provides additional assurance that the core is properly loaded.

The LOCA analysis supports the radial peaking factor limits in Table 3.23-2.

To ensure that the design margin of safety is maintained, the determination of radial peaking factors takes into account the appropriate measurement uncertainty factors[1] given in Table 3.23-3

References

(1) FSAR Section 3.3.2.5

POWER DISTRIBUTION LIMITS

3.23.3 QUADRANT POWER TILT - T_q

LIMITING CONDITION FOR OPERATION

The quadrant power tilt (T_q) shall not exceed 5%.

APPLICABILITY: Power operation above 25% of rated power.

ACTION:

1. With quadrant power tilt determined to exceed 5% but less than or equal to 10%.

   a. Correct the quadrant power tilt within 2 hours after exceeding the limit, or

   b. Determine within the next 2 hours and, at least once every 8 hours thereafter, that the radial peaking factors are within the limits of Section 3.23.2, or

   c. Reduce power, at the normal shutdown rate, to less than 85% of rated power and determine that the radial peaking factors are within the limits of Section 3.23.2. At reduced power, determine at least once every 8 hours that the radial peaking factors are within the limits of Section 3.23.2.

2. With quadrant power tilt determined to exceed 10%:

   a. Correct the quadrant power tilt within 2 hours after exceeding the limit, or

   b. Reduce power to less than 50% of rated power within the next 2 hours and determine that the radial peaking factors are within the limits of Section 3.23.2. At reduced power, determine at least once every 8 hours that the radial peaking factors are within the limits of Section 3.23.2.

3. With the quadrant power tilt determined to exceed 15%, be in at least hot standby within 12 hours.

Basis

Limitations on quadrant power tilt are provided to ensure that design safety margins are maintained. Quadrant power tilt is determined from excore detector readings which are calibrated using incore detector measurements.(1) Quadrant power tilt calibration factors are determined using incore measurements and an incore analysis computer program.(2) / /

POWER DISTRIBUTION LIMITS

3.23.3 QUADRANT POWER TILT - T_q

LIMITING CONDITION FOR OPERATION

References

(1) FSAR, Section 7.4.2.2

(2) FSAR Section 7.6.2.4

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