

September 21, 1993

Mr. Gerald B. Slade
Plant General Manager
Palisades Plant
Consumers Power Company
27780 Blue Star Memorial Highway
Covert, Michigan 49043

Dear Mr. Slade:

SUBJECT: PALISADES PLANT - ISSUANCE OF AMENDMENT RE: REVISION TO RADIAL PEAKING FACTOR LIMITS FOR CYCLE 11 (TAC NO. M87441)

The Commission has issued the enclosed Amendment No. 159 to Facility Operating License No. DPR-20 for the Palisades Plant. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated September 3, 1993.

The amendment changes Table 3.23-2, Radial Peaking Factor Limits, to include limits for the new revised "L" fuel assemblies installed during the 1993 refueling outage, and to delete reference to the "I" fuel assemblies containing 208 fuel rods that are not to be used in Cycle 11. In addition, the unnecessary references of the number of fuel rods in each assembly type in Table 3.23-2 and Table 3.23-1 are also deleted. The bases for several TS (2.1, 2.3, 3.1, 3.12, and 3.23.2) have been updated to reflect the revision of the analytical reports for Cycle 11.

Your September 3, 1993, letter requested that this amendment be treated as an emergency because insufficient time exists for the Commission's usual 30-day notice and NRC staff review has resulted in the determination that appropriate TS controls are necessary prior to startup of the plant and reaching 25% of rated power which in the present schedule would be September 22, 1993, the day the plant is returned on-line.

A copy of our Safety Evaluation is also enclosed. The notice of issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by

Anthony H. Hsia, Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

9309280039 930921
PDR ADOCK 05000255
PDR

Enclosures:

- 1. Amendment No. 159 DPR-20
- 2. Safety Evaluation

NRC FILE CENTER COPY

cc w/enclosures:

See next page

OFFICE	LA:PD31	PM:PD31	BE:SRXB	OGC	(A)D:PD31
NAME	CJamerson	AHsia	RCJones	M Young	for WDean
DATE	9/20/93	9/20/93	9/20/93	9/21/93	9/21/93

OFFICIAL RECORD COPY FILENAME: G:\WPDOCS\PALISADE\PAL87441.AMD

240022

DF01

DATED: September 21, 1993

AMENDMENT NO. 159 TO FACILITY OPERATING LICENSE NO. DPR-20-PALISADES

Docket File

NRC & Local PDRs

PDIII-1 Reading

J. Roe

J. Zwolinski

W. Dean

C. Jamerson

A. H. Hsia

OGC-WF

D. Hagan, 3302 MNBB

G. Hill (4), P1-22

C. Grimes, 11/F/23

R. C. Jones, SRXB

L. Phillips, SRXB

E. D. Kendrick, SRXB

ACRS (10)

OPA

OC/LFDCB

B. Jorgensen, R-III

cc: Plant Service list

Mr. Gerald B. Slade
Consumers Power Company

Palisades Plant

cc:

M. I. Miller, Esquire
Sidley & Austin
54th Floor
One First National Plaza
Chicago, Illinois 60603

Nuclear Facilities and Environmental
Monitoring Section Office
Division of Radiological Health
Department of Public Health
3423 N. Logan Street
P. O. Box 30195
Lansing, Michigan 48909

Mr. Thomas A. McNish, Secretary
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Gerald Charnoff, Esquire
Shaw, Pittman, Potts and Trowbridge
2300 N Street, N. W.
Washington DC 20037

Judd L. Bacon, Esquire
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Alora Davis
Commitment Tracking System
Coordinator
Palisades Plant
Consumers Power Company
27780 Blue Star Memorial Hwy.
Covert, Michigan 49043-9530

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Jerry Sarno
Township Supervisor
Covert Township
36197 M-140 Highway
Covert, Michigan 49043

Office of the Governor
Room 1 - Capitol Building
Lansing, Michigan 48913

Mr. David W. Rogers
Safety and Licensing Director
Palisades Plant
27780 Blue Star Memorial Highway
Covert, Michigan 49043

U.S. Nuclear Regulatory Commission
Resident Inspector Office
Palisades Plant
27782 Blue Star Memorial Highway
Covert, Michigan 49043



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

CONSUMERS POWER COMPANY

DOCKET NO. 50-255

PALISADES PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 159
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 September, 3, 1993, 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 Appendix A, as revised through Amendment No. 159 , and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION



FOR

William M. Dean, Acting 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: September 21, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 159

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 amendment number and contain vertical lines indicating the areas of change.

REMOVE

B 2-5
3-3
3-67
3-107

INSERT

B 2-5
3-3
3-67
3-107

2.0 BASIS - Safety Limits and Limiting Safety System Settings

2.3 Basis - Limiting Safety System Settings (continued)

5. Low Steam Generator Water Level - The low steam generator water level reactor trip protects against the loss of feed-water flow accidents and assures that the design pressure of the primary coolant system will not be exceeded. The specified set point assures that there will be sufficient water inventory in the steam generator at the time of trip to allow a safe and orderly plant shutdown and to prevent steam generator dryout assuming minimum auxiliary feedwater capacity.⁽⁶⁾

The setting listed in Table 2.3.1 assures that the heat transfer surface (tubes) is covered with water when the reactor is critical.

6. Low Steam Generator Pressure - A reactor trip on low steam generator secondary pressure is provided to protect against an excessive rate of heat extraction from the steam generators and subsequent cooldown of the primary coolant. The setting of 500 psia is sufficiently below the rated load operating point of 739 psia so as not to interfere with normal operation, but still high enough to provide the required protection in the event of excessively high steam flow. This setting was used in the accident analysis.⁽⁵⁾
7. Containment High Pressure - A reactor trip on containment high pressure is provided to assure that the reactor is shutdown before the initiation of the safety injection system and containment spray.⁽⁷⁾

References

- (1) EMF-92-178, Revision 1, Table 15.0.7-1
(2) Updated FSAR, Section 7.2.3.3.
(3) EMF-92-178, Revision 1, Section 15.0.7-1
(4) XN-NF-86-91(P)
(5) ANF-90-078, Section 15.1.5
(6) ANF-87-150(NP), Volume 2, Section 15.2.7
(7) Updated FSAR, Section 7.2.3.9.
(8) ANF-90-078, Section 15.2.1

Amendment No 31, 82, 118, 137, 150, 156, 159

3.1 PRIMARY COOLANT SYSTEM (Cont'd)

Basis (Cont'd)

measurement; ± 0.06 for ASI measurement; ± 50 psi for pressurizer pressure; $\pm 7^\circ\text{F}$ for inlet temperature; and 3% measurement and 3% bypass for core flow. In addition, transient biases were included in the derivation of the following equation for limiting reactor inlet temperature:

$$T_{\text{inlet}} \leq 542.99 + .0580(P-2060) + 0.00001(P-2060)**2 + 1.125(W-138) - .0205(W-138)**2$$

The limits of validity of this equation are:

$$\begin{aligned} 1800 &\leq \text{pressure} \leq 2200 \text{ psia} \\ 100.0 \times 10^6 &\leq \text{Vessel Flow} \leq 150 \times 10^6 \text{ lb/h} \\ \text{ASI as shown in Figure 3.0} \end{aligned}$$

With measured primary coolant system flow rates $> 150 \text{ M lbm/hr}$, limiting the maximum allowed inlet temperature to the T_{inlet} LCO at 150 M lbm/hr increases the margin to DNB for higher PCS flow rates⁽⁴⁾.

The Axial Shape Index alarm channel is being used to monitor the ASI to ensure that the assumed axial power profiles used in the development of the inlet temperature LCO bound measured axial power profiles. The signal representing core power (Q) is the auctioneered higher of the neutron flux power and the Delta-T power. The measured ASI calculated from the excore detector signals and adjusted for shape annealing (Y_1) and the core power constitute an ordered pair (Q, Y_1). An alarm signal is activated before the ordered pair exceed the boundaries specified in Figure 3.0.

The requirement that the steam generator temperature be \leq the PCS temperature when forced circulation is initiated in the PCS ensures that an energy addition caused by heat transferred from the secondary system to the PCS will not occur. This requirement applies only to the initiation of forced circulation (the start of the first primary coolant pump) when the PCS cold leg temperature is $< 430^\circ\text{F}$. However, analysis (Reference 6) shows that under limited conditions when the Shutdown Cooling System is isolated from the PCS, forced circulation may be initiated when the steam generator temperature is higher than the PCS cold leg temperature.

References

- (1) Updated FSAR, Section 14.3.2.
- (2) Updated FSAR, Section 4.3.7.
- (3) Deleted
- (4) EMF-92-178, Revision 1, Section 15.0.7.1
- (5) ANF-90-078
- (6) Consumers Power Company Engineering Analysis EA-A-NL-89-14-1

3.12 MODERATOR TEMPERATURE COEFFICIENT OF REACTIVITY

Applicability

Applies to the moderator temperature coefficient of reactivity for the core.

Objective

To specify a limit for the positive moderator coefficient.

Specifications

The moderator temperature coefficient (MTC) shall be less positive than $+0.5 \times 10^{-4} \Delta\rho/^{\circ}\text{F}$ at $\leq 2\%$ of rated power.

Bases

The limitations on moderator temperature coefficient (MTC) are provided to ensure that the assumptions used in the safety analysis⁽¹⁾ remain valid.

Reference

- (1) EMF-92-178, Revision 1, Section 15.0.5

TABLE 3.23-1
LINEAR HEAT RATE LIMIT

Peak Rod	15.28 kW/ft
----------	-------------

TABLE 3.23-2
RADIAL PEAKING FACTOR LIMITS, F_L

Peaking Factor	Reload L & M	Reload N	Reload O
Assembly F_r^A	1.57	1.66	1.76
Peak Rod F_r^T	1.92	1.92	2.04

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⁽⁶⁾, exceeds 2.8% but is less than or equal to 5%.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 159 TO FACILITY OPERATING LICENSE NO. DPR-20
CONSUMERS POWER COMPANY
PALISADES PLANT
DOCKET NO. 50-255

1.0 INTRODUCTION

By letter of January 29, 1993 (Ref. 1), Consumers Power Company (CPCo), the licensee, submitted a request to amend the Palisades Nuclear Plant Technical Specifications (TSs) to Facility Operating License DPR-20 to change the radial peaking factor limits for the planned Cycle 11 operation. The staff reviewed the impact of the proposed changes on the Chapter 15 accident analyses and found the changes acceptable. TS Amendment 156 was issued on June 16, 1993. During the subsequent refueling outage, a failed fuel rod was discovered in a peripheral assembly that was scheduled for Cycle 11 operation. Further inspection was performed on other assemblies from this reload batch, which had achieved five operating cycles, with the last two on the core periphery. Based on results of this inspection program, CPCo evaluations using new selection criteria led to a core configuration redesign, using a later fuel batch design with only three operating cycles. Reanalysis of the Chapter 15 events confirmed the acceptability of the approved radial peaking factor limits for the revised Cycle 11 core design. CPCo performed a 10 CFR 50.59 evaluation of the revised Cycle 11 core design, which was reviewed by the NRC staff during an inspection trip on August 19-21, 1993. By letter of September 3, 1993 (Ref. 2), CPCo submitted an additional TS change request to clarify the application of the previously approved peaking limits to the newly reconstituted fuel batch.

The proposed amendment would change Table 3.23-2, Radial Peaking Factor Limits, to include limits for the new revised "L" fuel assemblies installed during the 1993 refueling outage, and to delete reference to the "I" fuel assemblies containing 208 fuel rods that are not to be used in Cycle 11. In addition, the unnecessary references of the number of fuel rods in each assembly type in Table 3.23-2 and Table 3.23-1 would be deleted. The bases for several TSs (2.1, 2.3, 3.1, 3.12, and 3.23.2) have been updated to reflect the revision of the analytical reports for Cycle 11.

2.0 EVALUATION

The safety analyses for the revised Palisades Cycle 11 core operation are provided in Siemens Power Corporation (SPC) reports EMF-92-177, Revision 2 (Ref. 3) and EMF-92-178, Revision 1 (Ref. 4). The first report describes the revised core design and the safety evaluation of the changes to the core

neutronics and thermal-hydraulic characteristics. Cycle 11 includes three reload batches of SPC fuel with high thermal performance (HTP) grid spacers (Reload Batches M, N, and O). Eight Reload Batch N partial shielding assemblies (SAN), first loaded in Cycle 9, were reinserted along with the sixteen newly reconstituted Reload Batch L assemblies in low power peripheral locations to reduce vessel weld fluence. The physics characteristics evaluated include power distribution, control rod reactivity, and moderator temperature coefficient (MTC) considerations. The core loading configuration was optimized by SPC to remain within the approved TS limits of:

- Assembly Radial Peaking Factor (F_r^A) limits of 1.76 (Batch O), 1.66 (Batch N), 1.57 (Batches M and L)
- Total Radial Peaking Factor (F_r^T) limits of 2.04 (Batch O), 1.92 (all others)
- Linear Heat Generation Rate (LHGR) limit of 15.28 kw/ft to 60% of core height; linearly decreasing to 14.21 kw/ft at 100% core height

The maximum calculated values for the limiting Batch O assembly F_r^A and F_r^T were 1.575 and 1.851, respectively; which, when combined with the TS uncertainties, are within the TS power peaking limits. The largest calculated LHGR is 11.63 kw/ft which is also within the TS limiting value with the TS uncertainty included.

Shutdown margin calculations were performed for the modified Cycle 11 configuration, yielding a cycle minimum shutdown margin of 2.56% delta-rho at end of cycle (EOC), hot full power (HFP) conditions, which is above the TS limit of 2.00. The MTC was evaluated for the revised Cycle 11 core configuration at both hot zero power (HZP) and HFP for beginning of cycle (BOC) and EOC conditions. The calculated MTC values are within the safety analysis limits of $+0.5 \times 10^{-4}$ delta-rho/degrees F and -3.5×10^{-4} delta-rho/degrees F.

Report EMF-92-178, Revision 1, documents the disposition and analysis of the Palisades Final Safety Analysis Report (FSAR) Chapter 14 events in support of Cycle 11 operation. The events were evaluated in accordance with Chapter 15 of the Standard Review Plan (SRP) and used approved SPC methodologies.

SPC reviewed the previous SRP Chapter 15 analyses and reanalyzed the eight events affected by the Cycle 11 redesign:

Increase In Heat Removal by the Secondary System
15.1.3 Increase in Steam Flow

Decrease in Reactor Coolant System Flow
15.3.1 Loss of Forced Reactor Coolant Flow
15.3.3 Reactor Coolant Pump Rotor Seizure

Reactivity and Power Distribution Anomalies
15.4.2 Uncontrolled Control Rod Bank Withdrawal at Power Operation Conditions

- 15.4.3 Control Rod Misoperation
 - (1a) Dropped Control Rod
 - (1b) Dropped Control Rod Bank
 - (5) Single Control Rod Withdrawal

Decreases in Reactor Coolant Inventory

- 15.6.1 Inadvertent Opening of a PWR Pressurizer Pressure Relief Valve

The minimum departure from nucleate boiling ratio (MDNBR) evaluation for the revised Cycle 11 core configuration was performed with the ANFP CHF correlation for the TS limiting radial peaking factor values. The reanalysis of eight SRP Chapter 15 events, as reported in EMF-92-178, Revision 1, shows that calculated DNB margins are improved with the exception of Events 15.4.2 - Uncontrolled control rod bank withdrawal at power, 15.4.3(5) - Control rod misoperation: single rod withdrawal, and 15.6.1 - Inadvertent opening of pressure relief valve, which show a slight DNB margin degradation. All event acceptance criteria, however, are met for the revised Cycle 11 core.

Since the design criteria were met for the redesign, the licensee proposes to change Table 3.23-1 Linear Heat Rate Limits and Table 3.23-2 Radial Peaking Factor Limits only to clarify the application of the previously approved limits to the revised Cycle 11 core design reload batches.

3.0 CONCLUSION

The licensee and SPC performed a redesign of the Palisades Cycle 11 core and completed the required reanalysis to demonstrate that the radial peaking factor limits would not be exceeded.

The staff has reviewed the submittal and has concluded that the previously approved Cycle 11 radial peaking factors limits are acceptable with the added clarification to Tables 3.23-1 and 3.23-2.

4.0 EMERGENCY CIRCUMSTANCES

In its September 3, 1993, application, the licensee requested that the amendment request be treated as an emergency amendment because the changes to the TS controls are needed prior to Palisades startup and reaching 25% of rated power which in the present schedule would be September 22, 1993, the day the plant would be returned on-line.

In accordance with 10 CFR 50.91(a)(5), the licensee has provided information that the need for the emergency arose as a result of information obtained over the past few weeks during the investigation and evaluation of Palisades' fuel handling events and the plan to reconfigure the reactor core. This plan included a selection criteria and appropriate justification and was provided to the NRC in CPCo's August 16, 1993, reply to NRC's request for additional information and in CPCo's revised Cycle 11 core design 10 CFR 50.59 evaluation. The 50.59 evaluation had been reviewed by the NRC staff during its August 19-21, 1993, inspection. In the exit meeting following the inspection, the NRC suggested that changes be made to clarify the TS with

regard to the peaking factor limits for the reconstituted "L" fuel assemblies in Table 3.23-2. Further review by the NRC resulted in the determination that appropriate TS controls would be necessary prior to startup and reaching 25% of rated power.

CPCo's review of the potential need for a TS amendment had recognized that no safety significance existed with the peaking factors associated with the "L" fuel assemblies which are located in the core periphery. However, the licensee failed to consider that even though the "L" fuel was located in a low power region of the core, there were no specific peaking factor limits identified for these reconstituted fuel assemblies listed in the TS. Once the need for the TS amendment was confirmed by the NRC, CPCo immediately compiled the necessary documentation for the TS amendment request. Failure to have an approved TS amendment in place by the time the plant is returned on-line would prevent the plant from returning to power operation. Accordingly, the Commission has determined that there are emergency circumstances warranting prompt approval by the Commission pursuant to 10 CFR 50.91(a)(5).

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92(c) state that the Commission may make a final determination that a license amendment involves no significant hazards consideration if operation of the facility in accordance with the amendment would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- (3) Involve a significant reduction in a margin of safety.

The proposed changes do not involve a significant hazards consideration because the operation of the Palisades Plant in accordance with the proposed changes would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated.

The radial peaking factor limits for 208 fuel rod assemblies are being removed and the limits for Reload L fuel assemblies are being reinserted. Sixteen Reload L assemblies that have been reconstituted with fourteen stainless steel pins in corner positions are being used in the Cycle 11 core design. The Reload L assemblies are replacing Reload I hafnium assemblies that were part of the original Cycle 11 core design. This change is in core neutronics parameters due to changes in the fuel design and fuel management scheme. No changes to plant hardware (other than the new fuel and reconstituted Reload L fuel assemblies) are involved. There are no associated changes in plant systems operating procedures or in instrument trip settings. Operation of the facility in accordance with the proposed TS would, therefore, have no effect on the way the plant

systems are operated, or the way these systems would respond to postulated events.

The increased radial peaking limits for Cycle 11 caused the predicted MDNBR to decrease and peak linear heat rate to increase for several anticipated operational occurrences (A00s). The MDNBR is predicted to remain above the ANFP correlation limit and the peak linear heat rate is predicted to remain below the fuel centerline melt criteria for all A00 events. Therefore, the consequences of all A00 events are within the specified acceptable fuel design limits.

Several postulated accidents were not bounded by the previous analyses. The licensee analyzed the effect of increased radial peaking limits on MDNBR and peak linear heat rate for the reactor coolant pump rotor seizure and single rod withdrawal events. The MDNBR for the reactor coolant pump rotor seizure and single rod withdrawal events is predicted to remain above the ANFP correlation limit and the peak linear heat rate is predicted to remain below the fuel centerline melt criteria.

The license also assessed the effect of increased radial peaking limits on radiological consequences for the fuel handling and spent fuel cask drop accidents. The predicted radiological consequences for the fuel handling and spent fuel cask drop accidents are less than those predicted by the previous analyses of record. Though higher peaking factors are allowed, the use of dose conversion factors from ICRP 30, which are consistent with the latest revision to 10 CFR Part 20, results in lower predicted consequences.

Therefore, the NRC staff concludes that the consequences of all events remain below those calculated in the acceptance criteria and operation of Palisades in accordance with the proposed TS would not result in a significant increase in the probability or consequences of an accident previously evaluated.

(2) Create the possibility of a new or different kind of accident from any accident previously evaluated.

The radial peaking factor limits for 208 fuel rod assemblies are being removed and the limits for Reload L fuel assemblies are being reinserted. Sixteen Reload L assemblies that have been reconstituted with fourteen stainless steel pins in corner positions are being used in the Cycle 11 core design. This change is in core neutronics parameters due to changes in the fuel design and fuel management scheme. No changes to plant hardware (other than the new fuel and reconstituted Reload L assemblies) are involved. There are no associated changes in plant systems operating procedures or in instrument alarm or trip settings. Therefore, the NRC staff concludes that operation of Palisades in accordance with the proposed TS would not create the possibility of a new or different kind of accident from any previously evaluated.

(3) Involve a significant reduction in a margin of safety.

The radial peaking factor limits for 208 fuel rod assemblies are being removed and the limits for Reload L fuel assemblies are being reinserted. Sixteen Reload L assemblies that have been reconstituted with fourteen stainless steel pins in corner positions are being used in the Cycle 11 core design. The increased radial peaking limits for Cycle 11 caused the predicted MDNBR to decrease and peak linear heat rate to increase for several AOOs. The MDNBR is predicted to remain above the ANFP correlation limit and the peak linear heat rate is predicted to remain below the fuel centerline melt criteria for all AOO events. Therefore, the consequences of all AOO events are within the specified acceptable fuel design limits.

Several postulated accidents were not bounded by the previous analyses. The licensee analyzed the effect of increased radial peaking limits on MDNBR and peak linear heat rate for the reactor coolant pump rotor seizure and single rod withdrawal events. The MDNBR for the reactor coolant pump rotor seizure and single rod withdrawal events is predicted to remain above the ANFP correlation limit and the peak linear heat rate is predicted to remain below the fuel centerline melt criteria.

The license also assessed the effect of increased radial peaking limits on radiological consequences for the fuel handling and spent fuel cask drop accidents. The predicted radiological consequences for the fuel handling and spent fuel cask drop accidents are less than those predicted by the previous analyses of record. Though higher peaking factors are allowed, the use of dose conversion factors from ICRP 30, which are consistent with the latest revision to 10 CFR Part 20, results in lower predicted consequences.

Therefore, the NRC staff concludes that operation of Palisades in accordance with the proposed TS would not involve a significant reduction in a margin of safety.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Michigan State Official was notified of the proposed issuance of the amendment. The Michigan State Official had no comments.

7.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has made a final no significant hazards consideration determination with respect to this amendment. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement

or environmental assessment need be prepared in connection with the issuance of the amendment.

8.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

9.0 REFERENCES

1. Letter from G.B. Slade, CPCo, to U.S. NRC, "Palisades Plant - Technical Specifications Change Request - Radial Peaking Factor Limits for Cycle 11," dated January 29, 1993.
2. Letter from G. B. Slade, CPCo, to U.S. NRC, "Palisades Plant - Technical Specification Change Request - Revision to Radial Peaking Factor Limits for Cycle 11," dated September 3, 1993.
3. EMF-92-177, Revision 2, "Palisades Cycle 11 Safety Analysis Report," Siemens Power Corporation, dated August 17, 1993.
4. EMF-92-178, Revision 1, "Palisades Cycle 11: Disposition and Analysis of Standard Review Plan Chapter 15 Events," Siemens Power Corporation, dated August 23, 1993.

Principal Contributor: E. D. Kendrick

Date: September 21, 1993