

June 13, 1995

Mr. Kurt M. Haas
Plant Safety and Licensing Director
Palisades Plant
27780 Blue Star Memorial Highway
Covert, MI 49043

SUBJECT: PALISADES PLANT - ISSUANCE OF AMENDMENT RE: HIGH THERMAL
PERFORMANCE (HTP) (TAC NO. M91112)

Dear Mr. Haas:

The Commission has issued the enclosed Amendment No. 168 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 December 13, 1994, as supplemented May 3, 1995.

The amendment revises the TS to add a high thermal performance (HTP) departure
from nucleate boiling correlation to Safety Limit 2.1. The HTP correlation is
used for high thermal performance fuel loaded during recent fuel cycles.

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

Marsha Gamberoni, Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosures: 1. Amendment No. 168 to DPR-20
2. Safety Evaluation

cc w/encl: See next page

DOCUMENT NAME: G:\WPDOCS\PALISADE\PAL91112.AMD

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure
"N" = No copy

OFFICE	LA:PD31	E	PM:PD31 JKJ	E	OGC	(A):PD31	N
NAME	CJamerson		MGamberoni:jkd			CCarpenter	
DATE	5/26/95		5/24/95		5/31/95	5/8/95	

OFFICIAL RECORD COPY

9506230250 950613
PDR ADOCK 05000255
P PDR

CP-1
DFD
NRC FILE CENTER COPY

Mr. Kurt M. Haas
Consumers Power Company

Palisades Plant

cc:

Mr. Thomas J. Palmisano
Plant General Manager
Palisades Plant
27780 Blue Star Memorial Highway
Covert, Michigan 49043

Mr. Robert A. Fenech
Vice President, Nuclear Operations
Palisades Plant
27780 Blue Star Memorial Highway
Covert, Michigan 49043

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

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

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

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, Illinois 60532-4351

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

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

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

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

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

Michigan Department of Attorney
General
Special Litigation Division
630 Law Building
P.O. Box 30212
Lansing, Michigan 48909

February 1995

DATED: June 13, 1995

AMENDMENT NO. 168 TO FACILITY OPERATING LICENSE NO. DPR-20-PALISADES

Docket File

PUBLIC

PDIII-1 Reading

E. Adensam (e-mail)

J. Hannon

C. Carpenter

C. Jamerson

M. Gamberoni

OGC

G. Hill, IRM (2)

C. Grimes, OTSB 0-11F23

T. Huang

ACRS (4)

OPA

OC/LFDCB

W. Kropp, RIII

SEDB

cc: Plant Service list



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. 168
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 December 13, 1994, as supplemented May 3, 1995, 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. 168, 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



Marsha Gamberoni, Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: June 13, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 168

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

2-1

B 2-1

INSERT

2-1

B 2-1

2.0 SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

2.1 Safety Limit - Reactor Core

The Minimum DNBR of the reactor core shall be maintained greater than or equal to the DNB correlation safety limit.

<u>Correlation</u>	<u>Safety Limit</u>
XNB	1.17
ANFP	1.154
HTP	1.141

Applicability

Safety Limit 2.1 is applicable in HOT STANDBY and POWER OPERATION.

Action

- 2.1.1 If a Safety Limit is exceeded, comply with the requirements of Specification 6.7

2.2 Safety Limit - Primary Coolant System Pressure (PCS)

The PCS Pressure shall not exceed 2750 psia.

Applicability

Safety Limit 2.2 is applicable when there is fuel in the reactor.

Action

- 2.2.1 If a Safety Limit is exceeded, comply with the requirements of Specification 6.7

2.3 Limiting Safety System Settings - Reactor Protective System (RPS)

The RPS trip setting limits shall be as stated in Table 2.3.1.

Applicability

Limiting Safety System Settings of Table 2.3.1 are applicable when the associated RPS channels are required to be OPERABLE by Specification 3.17.1.

Action

- 2.3.1 If an RPS instrument setting is not within the allowable settings of Table 2.3.1, immediately declare the instrument inoperable and complete corrective action as directed by Specification 3.17.1.

2.0 BASIS - Safety Limits and Limiting Safety System Settings

2.1 Basis - Reactor Core Safety Limit

To maintain the integrity of the fuel cladding and prevent fission product release, it is necessary to prevent overheating of the cladding under normal operating conditions. This is accomplished by operating within the nucleate boiling regime of heat transfer, wherein the heat transfer coefficient is large enough so that the clad surface temperature is only slightly greater than the coolant temperature. The upper boundary of the nucleate boiling regime is termed "departure from nucleate boiling" (DNB). At this point, there is a sharp reduction of the heat transfer coefficient, which would result in high-cladding temperatures and the possibility of cladding failure. Although DNB is not an observable parameter during reactor operation, the observable parameters of thermal power, primary coolant flow, temperature and pressure, can be related to DNB through the use of a DNB Correlation. DNB Correlations have been developed to predict DNB and the location of DNB for axially uniform and nonuniform 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 DNB correlation safety limit. A DNBR equal to the DNB correlation safety limit corresponds to a 95% probability at a 95% confidence level that DNB will not occur which is considered an appropriate margin to DNB for all operating conditions.

The reactor protective system is designed to prevent any anticipated combination of transient conditions for primary coolant system temperature, pressure and thermal power level that would result in a DNBR of less than the DNB correlation safety limit. The Palisades safety analyses uses three DNB correlations. The XNB correlation discussed in References 1 and 2 determines the safety limit for those fuel assemblies initially loaded prior to Cycle 9. Fuel assemblies, initially loaded in cycle 9 and later, utilize a high thermal performance (HTP) design which is different than the fuel design used for cycle 8 and earlier reloads. The ANFP correlation discussed in References 4 and 5 and the HTP correlation discussed in Reference 7 determine the safety limit for those fuel assemblies initially loaded in cycle 9 and later. The ANFP correlation was developed for the HTP fuel design; the HTP correlation is an extension of the ANFP correlation and reflects the results of additional DNB testing of HTP fuel. The HTP correlation is restricted to the operating conditions specified in Reference 7, outside of which the ANFP correlation is used. In the presence of a mixed core consisting of both HTP and non-HTP fuel assemblies, situated such that the non-HTP fuel assemblies affect the flow distribution, the minimum DNBR analyses are in accordance with Reference 6.

References

- (1) XN-NF-621(P)(A), Rev 1
- (2) XN-NF-709
- (3) Updated FSAR, Section 14.1.
- (4) ANF-1224 (P)(A), May 1989
- (5) ANF-89-192(P), January 1990
- (6) XN-NF-82-21(A), Revision 1
- (7) EMF-92-153(P)(A) and Supplement 1, March 1994.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 168 TO FACILITY OPERATING LICENSE NO. DPR-20

CONSUMERS POWER COMPANY

PALISADES PLANT

DOCKET NO. 50-255

1.0 INTRODUCTION

By letter dated December 13, 1994, as supplemented May 3, 1995, the Consumers Power Company (the licensee) requested an amendment to the Technical Specifications (TS) appended to Facility Operating License No. DPR-20 for the Palisades Plant. The proposed amendment revises the TS to add a high thermal performance (HTP) departure from nucleate boiling (DNB) correlation to Safety Limit 2.1. The HTP correlation is used for HTP fuel loaded during recent fuel cycles. The May 3, 1995, submittal provided clarifying information which was within the scope of the initial application and did not affect the staff's initial proposed no significant hazards considerations findings.

2.0 EVALUATION

The proposed changes involve the addition of a third DNB correlation. The affected specifications are:

(1) TS 2.1 Safety Limit - Reactor Core

The "HTP" DNB correlation is added under the correlation column and its appropriate minimum DNB limit of "1.141" is added under the Safety Limit. The HTP correlation is an extension of the ANFP correlation. The HTP correlation reflects the results of additional DNB testing of HTP fuel. The HTP DNB correlation and its associated Safety Limit of maintaining a minimum DNBR [DNB ratio] of 1.141 are documented in the NRC-approved Siemens topical report, EMF-92-153(P)(A) (December 28, 1993). Therefore, the addition of the HTP correlation and Safety Limit of 1.141 is acceptable.

(2) Basis 2.1 Reactor Core Safety Limit

The change to the basis is to clarify the proper use of the HTP correlation in relation to the ANFP correlation and to add the approved methodology, which is Topical Report EMF-92-153(P)(A) and Supplement 1, "HTP: Departure from Nucleate Boiling Correlation for High Thermal Performance Fuel," March 1994.

We have reviewed the request by Consumers Power Company to revise the Palisades Nuclear Plant TS to add a third DNB correlation (HTP), its Safety Limit of 1.141, its Basis, and an approved topical report to support the

proposed changes since an approved methodology is used. Based on our review, we conclude that the proposed changes are acceptable since an approved methodology is used.

3.0 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.

4.0 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 previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding (60 FR 24910). 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.

5.0 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.

Principal Contributor: T. Huang

Date: June 13, 1995