

October 10, 1996

Mr. Thomas C. Bordine
Manager, Licensing
Palisades Plant
27780 Blue Star Memorial Highway
Covert, MI 49043

SUBJECT: PALISADES PLANT - ISSUANCE OF AMENDMENT RE: SHUTDOWN COOLING
TECHNICAL SPECIFICATION CHANGE (TAC NO. M94487)

Dear Mr. Bordine:

The Commission has issued the enclosed Amendment No.173 to Facility Operating License No. DPR-20 for the Palisades Plant. The amendment consists of changes to the Technical Specifications in response to your application dated January 5, 1996, as supplemented by letter dated July 12, 1996.

The amendment revises the shutdown cooling (SDC) requirement to allow one train of the SDC system to be rendered inoperable for testing or maintenance provided that a filled refueling cavity is available to provide backup decay heat removal capability in the event that the operating train of SDC becomes inoperable.

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:

Robert G. Schaaf, 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.173 to DPR-20
- 2. Safety Evaluation

cc w/encl: See next page

DOCUMENT NAME: G:\WPDOCS\PALISADE\PAL94487.AMD

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Consumers Power Company

Palisades Plant

cc:

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August 1996

DATED: October 10, 1996

AMENDMENT NO. 173 TO FACILITY OPERATING LICENSE NO. DPR-20-PALISADES

Docket File

PUBLIC

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

CONSUMERS POWER COMPANY

DOCKET NO. 50-255

PALISADES PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

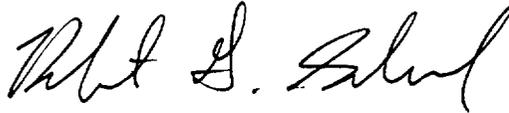
Amendment No. 173
License No. DPR-20

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Consumers Power Company (the licensee) dated January 5, 1996, as supplemented July 12, 1996, 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:

The Technical Specifications contained in Appendix A, as revised through Amendment No. 173 , 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



Robert G. Schaaf, 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: October 10, 1996

ATTACHMENT TO LICENSE AMENDMENT NO. 173

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

3-25j
3-25k

INSERT

3-25j
3-25k

3.1.9 SHUTDOWN COOLING (SDC)

Specification

3.1.9.3 One SDC train shall be in operation providing ≥ 1000 gpm flow through the reactor core, and at least two of the means of decay heat removal listed below shall be OPERABLE:

1. SDC train A consisting of an OPERABLE SDC pump and an OPERABLE heat flow path to Lake Michigan.
2. SDC train B consisting of an OPERABLE SDC pump and an OPERABLE heat flow path to Lake Michigan.
3. The refueling cavity with water level $\geq 647'$.

Applicability

Specification 3.1.9.3 applies when there is fuel in the reactor, with PCS Temperature is $< 200^\circ\text{F}$ and the PCS loops NOT filled.

Exceptions

1. All flow through the reactor core may be intentionally stopped for up to 1 hour provided:
 - a. No operations are permitted that would cause reduction of the PCS boron concentration or PCS inventory, and
 - b. Core outlet temperature stays $\leq 200^\circ\text{F}$, and
 - c. Two SDC trains are OPERABLE.
2. One or both required SDC trains may be intentionally rendered inoperable for testing or maintenance for up to 2 hours provided:
 - a. One SDC train is providing flow through the reactor core, and
 - b. Core outlet temperature stays $\leq 200^\circ\text{F}$, and
 - c. The refueling cavity water level is $\geq 647'$.

Action

1. With fewer OPERABLE means of decay heat removal than required:
 - a. Immediately initiate corrective action to return a second train to OPERABLE status, and
 - b. Maintain PCS temperature as low as practical with available equipment.
2. With less flow through the core than required:
 - a. Immediately suspend all operations involving a reduction in PCS boron concentration, and
 - b. Immediately initiate corrective action to return a train to operation providing flow through the core.

3.1 PRIMARY COOLANT SYSTEM (PCS)

3.1.9 SHUTDOWN COOLING

Basis

The Shutdown Cooling (SDC) specifications require a minimum flow be maintained through the reactor core and two methods of decay heat removal to be OPERABLE, in each of three situations, PCS temperature 200°F to 300°F, PCS temperature below 200°F with the loops filled, and PCS temperature below 200°F with the loops not filled. "Loops Filled" means the PCS loops are intact, not blocked by dams, and totally filled with coolant.

The requirement to maintain 2810 gpm flow through the reactor core when the PCS loops are filled is based on an analysis of potential dilution events. Maintenance of this flow assures that indication of increasing count rate will be available to warn the operator and allow compensating action. The requirement to maintain 1000 gpm flow through the reactor core when the loops are not filled assures mixing of the PCS while allowing flow to be reduced to avoid vortexing in the SDC suction piping. The 1000 gpm is based on operating experience, rather on analysis. With flow less than 2810 gpm, Specification 3.10.1 imposes additional requirements for Shutdown Margin and limits charging pump operability. Maintaining flow through the reactor core also allows use of the SDC temperature indication to determine core outlet temperature when the core outlet thermocouples are not in service.

Natural circulation is adequate for decay heat removal, however it may not provide adequate mixing of the PCS coolant during PCS boron concentration changes or inadvertent dilution events. Therefore, forced circulation is required except during short intervals when the required loops or trains may be intentionally stopped provided additional constraints are followed.

The reactor cavity filled to $\geq 647'$ elevation provides backup decay heat removal capability. Decay heat is moved by natural circulation to the large mass of water in the refueling cavity. The heat storage capacity of the filled reactor cavity provides a temporary method of decay heat removal which provides time to restore the required train of SDC.

An OPERABLE steam generator, for the purposes of this specification, must have both its primary and secondary sides intact, its tubes filled with primary coolant, and a secondary water level of at least -84% on the wide range level channels. The specified steam generator secondary water level of -84% ensures that at least one-third of the effective steam generator heat transfer area is covered and is therefore sufficient to support natural circulation in the PCS^(1,2). In addition, there must be available a method of feedwater addition and a controllable path for steam release.

A heat flow path to the lake may vary in actual component configuration, method of operation and control, but it shall always accomplish the objective of transferring decay heat from the reactor to Lake Michigan. As a minimum, a heat flow path requires: a shutdown cooling pump, a shutdown cooling heat exchanger, a component cooling water pump, a component cooling heat exchanger, a service water pump, and appropriate piping, valves and controls for the equipment to perform its function. All of this equipment must be OPERABLE and must have adequate, but not necessarily redundant, electrical power.



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 173 TO FACILITY OPERATING LICENSE NO. DPR-20

CONSUMERS POWER COMPANY

PALISADES PLANT

DOCKET NO. 50-255

1.0 INTRODUCTION

By letters dated January 5, 1996, and July 12, 1996, Consumers Power Company (the licensee) requested changes to the technical specifications (TS) for the Palisades Nuclear Plant. The proposed changes are related to shutdown cooling (SDC) requirements of TS 3.1.9.3. The current TS requires that one SDC train be in operation with both SDC trains operable. The licensee proposed to add the refueling cavity with water level ≥ 647 feet as a third backup means of decay heat removal to the TS. The licensee stated that this would provide flexibility to allow one train of SDC to be rendered inoperable to conduct testing or maintenance of the SDC system and support systems during refueling outages.

2.0 EVALUATION

The proposed TS change would allow the SDC backup capability to be provided by either a second operable SDC train or the refueling cavity filled to at least the 647-foot elevation. The licensee stated that a filled refueling cavity would provide a substantial heat sink for removal of decay heat if the operating SDC system became unavailable. This heat sink would ensure for a reasonable period of time that fuel design limits would not be exceeded, which would provide time to restore an SDC system to operation or to provide other means of decay heat removal. Heat would be transferred from the reactor core to the water in the refueling cavity by natural circulation with or without the reactor internals upper guide structure installed. The licensee stated that the upper guide structure is an open structure which does not provide any significant restriction to natural circulation flow between the reactor core and the water in the reactor cavity.

The proposed change to add the refueling cavity with water level ≥ 647 feet is consistent with NUREG-1432, "Standard Technical Specifications, Combustion Engineering Plants," (STS). STS Section 3.9.4, "SDC and Coolant Circulation - High Water Level," requires that a minimum of one loop of SDC shall be in operation in Mode 6 with the water level ≥ 23 feet above the top of the reactor vessel flange. Thus, per the STS, the second train of SDC could be rendered inoperable for testing or maintenance during this time period.

The staff has verified the Palisades upper guide structure design and confirmed that a refueling cavity water level of 647 feet equates to a water level of at least 23 feet above the top of the reactor vessel flange. The proposed changes are consistent with current staff positions as reflected in the STS. The staff finds that the proposed changes provide an acceptable backup method of decay heat removal and are therefore acceptable.

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 (61 FR 44348). 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: K. Desai

Date: October 10, 1996