

Docket 50-305

SEPTEMBER 26 1978

DISTRIBUTION

Docket	CMiles
NRC PDR	RDiggs
LOCAL PDR	TBAbernathy
ORB#1 Reading	JRBuchanan
ASchwencer	JMcGough
DEisenhut	JSaltzman
VStello	BHarless
MMXXKXK	LOlshan
CParrish	
OELD	
OI&E(5)	
ACRS(16)	
BJones(4)	
BScharf(16)	

Docket No. 50-305

Wisconsin Public Service Corporation
 ATTN: Mr. E. W. James
 Senior Vice President
 Post Office Box 1200
 Green Bay, Wisconsin 54305

Gentlemen:

The Commission has issued the enclosed Amendment No. 22 to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant. This amendment consists of changes to the Technical Specifications in response to your request dated March 20, 1978.

The amendment reduces the allowable pressurizer heatup rate from 200°F per hour to 100°F per hour. The amendment also changes the frequency of the tests for permissives P8 and P10 and the 25% reactor trip. We have found it necessary to make certain changes in the proposed revised Technical Specifications. These changes were discussed with and accepted by your staff.

Copies of the Safety Evaluation and Notice of Issuance are also enclosed.

Sincerely,

Original Signed By

A. Schwencer, Chief
 Operating Reactors Branch #1
 Division of Operating Reactors

Enclosures:

1. Amendment No. 22 to DPR-43
2. Safety Evaluation
3. Notice

cc w/enc1:
 See next page



Cont. 1
 GD

CP 8/21

OFFICE >	DOR: ORB#1	DOR: ORB1	OELD	DOR: ORB#1		
typed 8/17 SURNAME >	EMoyers	MM		ASchwencer		
DATE >	8/17/78	9/26/78	8/ /78	9/26/78		



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

September 26, 1978

Docket No. 50-305

Wisconsin Public Service Corporation
ATTN: Mr. E. W. James
Senior Vice President
Post Office Box 1200
Green Bay, Wisconsin 54305

Gentlemen:

The Commission has issued the enclosed Amendment No. 22 to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant. This amendment consists of changes to the Technical Specifications in response to your request dated March 20, 1978.

The amendment reduces the allowable pressurizer heatup rate from 200°F per hour to 100°F per hour. The amendment also changes the frequency of the tests for permissives P8 and P10 and the 25% reactor trip. We have found it necessary to make certain changes in the proposed revised Technical Specifications. These changes were discussed with and accepted by your staff.

Copies of the Safety Evaluation and Notice of Issuance are also enclosed.

Sincerely,

A handwritten signature in cursive script, appearing to read "A. Schwencer".

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Enclosures:

1. Amendment No.22 to DPR-43
2. Safety Evaluation
3. Notice

cc w/encl:
See next page

Wisconsin Public Service Corporation

cc: Steven E. Keane, Esquire
Foley and Lardner
777 East Wisconsin Avenue
Milwaukee, Wisconsin 53202

Kewaunee Public Library
314 Milwaukee Street
Kewaunee, Wisconsin 54216

Mr. Donald L. Quistorff
Chairman Kewaunee County Board
Kewaunee County Courthouse
Kewaunee, Wisconsin 54216

Stanley LaCrosse
Chairman, Town of Carlton
Route 1
Kewaunee, Wisconsin 54216

Chairman
Public Service Commission of
Wisconsin
Hill Farms State Office Building
Madison, Wisconsin 53702

Chief, Energy Systems
Analyses Branch (AW-459)
Office of Radiation Programs
U. S. Environmental Protection Agency
Room 645, East Tower
401 M Street, S. W.
Washington, D.C. 20460

U. S. Environmental Protection Agency
Federal Activities Branch
Region V Office
ATTN: EIS COORDINATOR
230 South Dearborn Street
Chicago, Illinois 60604

Mr. Patrick Walsh
Assistant Attorney General
114 East, State Capital
Madison, Wisconsin 53702

Ms. Sandra Bast
1112 N. 11th Street
Manitowoc, Wisconsin 54220



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

WISCONSIN PUBLIC SERVICE CORPORATION

WISCONSIN POWER AND LIGHT COMPANY

MADISON GAS AND ELECTRIC COMPANY

DOCKET NO. 50-305

KEWAUNEE NUCLEAR POWER PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 22
License No. DPR-43

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Wisconsin Public Service Corporation, Wisconsin Power and Light Company and Madison Gas and Electric Company (the licensee) dated March 20, 1978, 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; and
 - 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 this license amendment and paragraph 2.C.(2) of Facility License No. DPR-43 is hereby amended to read as follows:

"(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 22, 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 the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 26, 1978

ATTACHMENT TO LICENSE AMENDMENT NO. 22

FACILITY OPERATING LICENSE NO. DPR-43

DOCKET NO. 50-305

Remove the following pages and replace with identically numbered pages.

TS 3.1-3

TS 3.1-7

The first page (1) of Table TS 4.1-1

The third page (3) of Table TS 4.1-1

b. HEATUP AND COOLDOWN LIMIT CURVES FOR NORMAL OPERATION

Specification

1. The reactor coolant temperature and pressure and system heatup and cooldown rates (with the exception of the pressurizer) shall be limited in accordance with Figures TS 3.1-1 and TS 3.1-2 for the service period up to 6.6 equivalent fullpower years.
 - a. Allowable combinations of pressure and temperature for specific temperature change rates are below and to the right of the limit lines shown. Limit lines for cooldown rates between those presented may be obtained by interpolation.
 - b. Figures TS 3.1-1 and TS 3.1-2 define limits to assure prevention of non-ductile failure only. For normal operation other inherent plant characteristics, e.g., pump heat addition and pressurizer heater capacity may limit the heatup and cooldown rates that can be achieved over certain pressure-temperature ranges.
2. The secondary side of the steam generator must not be pressurized above 200 psig if the temperature of the steam generator is below 70°F.
3. The pressurizer cooldown and heatup rates shall not exceed 200°F/hr and 100°F/hr, respectively. The spray shall not be used if the temperature difference between the pressurizer and the spray fluid is greater than 320°F.

34

The results of the first Irradiation Capsule analysis are presented in WCAP 8908. Heatup and cooldown limit curves for normal operation of the reactor vessel are presented in Figures TS 3.1-1 and TS 3.1-2 and represent an operational time period of 6.6 effective fullpower years.

Pressure Limits

Although the pressurizer operates at temperature ranges above those for which there is reason for concern about brittle fracture, operating limits are provided to assure compatibility of operation with the fatigue analysis performed in accordance with Code requirements. In-plant testing and calculations have shown that a pressurizer heatup rate of 100°F/hr. cannot be achieved with the installed equipment.

REFERENCES

1. ASME Boiler and Pressure Vessel Code, "Nuclear Power Plant Components" Section III, Summer 1972 Addenda, Non-Mandatory Appendix G - "Protection Against Non-ductile Failure."
2. Standard Method for Measuring Thermal Neutron Flux by Radioactivation Techniques, ASTM designation E262-70, 1975 Book of ASTM Standards, Part 45, pp. 756-763.
3. W. S. Hazelton, S. L. Anderson, and S. E. Yanichko, "Basis for Heatup and Cooldown Limit Curves," WCAP 7924, July 1972.
4. S. E. Yanichko, S. L. Anderson, and K. V. Scott, "Analysis of Capsule V from the Wisconsin Public Service Corporation Kewaunee Nuclear Plant Reactor Vessel Radiation Surveillance Program," WCAP 8908, January 1977.

TABLE TS 4.1-1

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND
TEST OF INSTRUMENT CHANNELS
(Page 1 of 3)

<u>Channel Description</u>	<u>Check</u>	<u>Calibrate</u>	<u>Test</u>	<u>Remarks</u>
1. Nuclear Power Range	S (1) EPPM (3)****	D (1) EPPQ (3)****	(M), (2) ***	1) Heat balance 2) Signal to ΔT; bistable action (permissive, stop, trips) 3) Upper and lower chambers for axial off-set using in-core detectors
2. Nuclear Intermediate Range	*S (1)	N.A.	P (2)	1) Once/shift when in service 2) Log level; bistable action (permissive, rod stop, trips)
3. Nuclear Source Range	*S (1)	N.A.	P (2)	1) Once/shift when in service 2) Bistable action (alarm, trips)
4. Reactor Coolant Temperature	*S	R	M (1) M (2)	1) Overtemperature ΔT 2) Overpower ΔT
5. Reactor Coolant Flow	S	R **	M	
6. Pressurizer Water Level	S	R **	M	
7. Pressurizer Pressure	S	R **	M	
8A. 4-KV Voltage & Frequency	N.A.	R	M	Reactor protection circuits only
8B. 4-KV Voltage	N.A.	R	R	Safeguards buses only

Table TS4.1-1 (1 of 3)

Proposed Amendment No. 34
Amendment No. 22

34
27

29

TABLE TS 4.1-1

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND
TEST OF INSTRUMENT CHANNELS
(Page 3 of 3)

<u>Channel Description</u>	<u>Check</u>	<u>Calibrate</u>	<u>Test</u>	<u>Remarks</u>
19. Radiation Monitoring System	*D	R	M	Includes all 24 channels
20. Boric Acid Make-Up Flow Channel	N.A.	R	N.A.	
21. Containment Sump Level	N.A.	N.A.	R	
22. Accumulator Level and Pressure	S	R	N.A.	
23. Steam Generator Pressure	S	R	M	
24. Turbine First Stage Pressure	S	A **	M	
25. Portable Radiation Survey Instruments	*M	A	Q	
26. Protective System Logic Channel Testing	N.A.	N.A.	M	Includes auto load sequencer
27. Environmental Monitors	*M	N.A.	N.A.	
28. Turbine Overspeed Protection Trip Channel	N.A.	R	M	
29. Seismic Monitoring System	R	R	N.A.	
30. Fore Bay Water Level	N.A.	R **	R	

A - Annually

D - Daily

M - Monthly

P - Prior to each startup if not done previous week

Q - Quarterly

R - Each refueling shutdown

S - Each shift

B/W - Every two weeks

N.A. - Not applicable

W - Weekly

EFPM - Effective Full Power Month

EFPQ - Effective Full Power Quarter

* See Specification 4.1.d

** Only if test indicates calibration required

*** Permissives P8 and P10 and the 25% reactor trip are tested quarterly.

**** The check and calibration for axial offset shall also be performed prior to exceeding 75 percent power following any core alteration.

Table TS4.1-1 (3 of 3)

Proposed Amendment No. 34
Amendment No. 22



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 22 TO FACILITY LICENSE NO. DPR-43

WISCONSIN PUBLIC SERVICE CORPORATION

WISCONSIN POWER AND LIGHT COMPANY

MADISON GAS AND ELECTRIC COMPANY

KEWAUNEE NUCLEAR POWER PLANT

DOCKET NO. 50-305

Introduction

By letter dated March 20, 1978, Wisconsin Public Service Corporation (the licensee) requested amendment of the Technical Specifications appended to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant (Kewaunee). The amendment reduces the maximum pressurizer heatup rate from 200°F per hour to 100°F per hour and changes the frequency of the tests for permissives P8 and P10 and the 25% reactor trip. We have made certain changes in the revised Technical Specifications. These have been discussed with and agreed to by the licensee.

Background

In August 1977, Mitsubishi Heavy Industries, Ltd., of Japan, noted an inconsistency in the pressurizer heatup rate stated in their Technical Specifications. Specification 3.4.9 required a heatup rate of 200°F/hr; Specification 5.7.1, however, required a heatup rate of 100°F/hr. This discrepancy was reported to the Westinghouse Electric Corporation (Westinghouse), who then reviewed their analysis of the pressurizer heatup rate and determined that the correct heatup rate is 100°F/hr, and that the correct cooldown rate is 200°F/hr; the Technical Specifications for Kewaunee stated that pressurizer heatup and cooldown rates were 200°F/hr. Westinghouse then notified the Nuclear Regulatory Commission (the Commission) and the licensee of this problem. The requested amendment would correct the error in the pressurizer heatup rate limit.

Evaluation

In designing the pressurizer, Westinghouse performed a thermal stress analysis which analyzed the fatigue resulting from a heatup rate of 100°F/hr and a cooldown rate of 200°F/hr. This analysis meets the standards of the ASME Code, Section III, which requires that the analysis be based on a usage factor. The usage factor represent the fraction of the fatigue life (the total amount of stress that a particular component is designed to handle), with a usage factor of zero implying that no stress has been exerted on the component, and a usage factor of one implying that the stress exerted on the component is equal to the amount of stress that the component is designed to handle. For any piece of equipment, certain components receive more stress than others. For the pressurizer, this component is the surge nozzle, which has a usage factor of 0.9 for the design numbers listed above. This usage factor is such that if the heatup and cooldown rates used in the analysis were exceeded more than a few times, the actual usage factor for the surge nozzle would exceed 1.0, which is not allowable under the ASME Code. Thus, we conclude that reducing the heatup rate limit from 200°F/hr to 100°F/hr is necessary to maintain thermal stresses in the pressurizer to allowable levels. For the same reasons, we further conclude that the cooldown rate limit presently listed in the Technical Specifications is adequate.

Because the current Technical Specification provision authorized higher rates of pressurizer heatup than the correct limit, the question arose as to whether the correct limit of 100°F per hour has been exceeded in the past. Discussions with Westinghouse indicate that this is unlikely. This is because system capabilities and Technical Specification limits on the rate of reactor coolant system heatup and pressurization effectively preclude pressurizer heatup rates in excess of 50°F to 75°F per hour. Furthermore, the licensee reviewed startup tests for Kewaunee and performed calculations after being informed of this potential problem. Calculations performed show that the maximum heating rate possible, assuming the maximum heater power and smallest mass of water in the pressurizer, is less than 100°F per hour. Accordingly, we conclude that the only action required by Kewaunee is modification of the Technical Specifications to reduce the limiting pressurizer heatup rate of 200°F per hour to 100°F per hour.

We have talked with Westinghouse and Westinghouse is performing a review of the stress analyses for components of the reactor coolant pressure boundary to assure that no similar inadvertent error appears in any other portion of the applicable Technical Specifications. This action will be confirmed by Westinghouse.

Another change enacted by this amendment involves the monthly test requirements of the P8 and P10 permissives and the 25% reactor trip. In order to perform these tests, the signal from the nuclear instrumentation channel is removed and a "dummy" signal fed into the circuit. Such manipulations are inconsistent with the overall safety of the plant. Under this amendment, the facility would be required to test these interlocks only at those times when the interlocks are required for protection; i.e., during reactor startup. In addition to being consistent with the Standard Technical Specifications for Westinghouse pressurized water reactors, this change would delete the hazard of removing the signal from the NI channel for test purposes and we find the change an acceptable improvement.

The remaining modification brought about by this amendment involves the frequency of calibration and checks performed on the axial offset monitors. Under the current Technical Specifications, these detectors are checked every month and calibrated every quarter. However, these checks and calibrations can only be performed with the reactor at power and changes in the axial offset are dependent on burnup or core alterations. Hence, this amendment uses the Effective Full Power Month and Effective Full Power Quarter as the frequency for checks and calibration, respectively, of the detectors to account for burnup dependent changes and a footnote has been added which requires that anytime the core is altered, the detectors shall be checked and calibrated during the subsequent return to power operation. This change eliminates the requirement for check and calibration of the detectors during periods of shutdown while retaining the same checking and calibration frequencies during those periods when the reactor is at full power. We, therefore, find the change acceptable.

We have made certain changes in the proposed Technical Specifications submitted by the licensee. These changes include the addition of the heatup rate limit, the change in test frequency of the P8 and P10 permissives and the 25% reactor trip, and the addition of the footnote concerning the check and calibration frequency of the axial offset monitors. These changes have been discussed with and agreed to by the licensee.

Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: September 26, 1978

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-305WISCONSIN PUBLIC SERVICE CORPORATIONWISCONSIN POWER AND LIGHT COMPANYMADISON GAS AND ELECTRIC COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 22 to Facility Operating License No. DPR-43 issued to Wisconsin Public Service Corporation, Wisconsin Power and Light Company, and Madison Gas and Electric Company (the licensee) which revised Technical Specifications for operation of the Kewaunee Nuclear Power Plant located in Kewaunee, Wisconsin. The amendment is effective as of the date of issuance.

The amendment reduces the allowable pressurizer heatup rate from 200°F per hour to 100°F per hour and changes the frequency of the tests for permissives P8 and P10 and the 25% reactor trip.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

- 2 -

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated March 20, 1978, (2) Amendment No. 22 to Facility Operating License No. DPR-43, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C. 20555, and at the Kewaunee Public Library, 314 Milwaukee Street, Kewaunee, Wisconsin 54216. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 26th day of September 1978.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors