

November 12, 1991

Docket No. 50-305

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Mr. Ken H. Evers
Manager - Nuclear Power
Wisconsin Public Service Corporation
Post Office Box 19002
Green Bay, Wisconsin 54307-9002

Dear Mr. Evers:

SUBJECT: AMENDMENT NO. 94 TO FACILITY OPERATING LICENSE NO. DPR-43
(TAC NO. 180891)

The Commission has issued the enclosed Amendment No.94 to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant. This amendment revises the Technical Specifications in response to your application dated June 4, 1991, as supplemented September 4, 1991, and September 27, 1991.

The amendment revises Technical Specification (TS) Section 4.13, "Radioactive Materials Sources," and TS Table 3.5-2, "Instrument Operation Conditions for Reactor Trip." The revisions add a new radiation calibrator and fission detectors to the list of sealed sources which are exempt from periodic leak testing, state that fission detectors shall be leak tested prior to being subjected to core flux, and describe the P-6 permissive set point in percent power consistent with the readout of the new fission detectors. Administrative changes are also included.

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

Sincerely,

original signed by

Allen G. Hansen, Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

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PDR

Enclosures:

1. Amendment No. 94 to License No. DPR-43
2. Safety Evaluation

cc w/enclosures:
See next page

LA/PD33/DRPW
PKreutzer
10/15/91

PM/PD33/DRPW
AHansen:rc
10/15/91 11/12

BC/SPLB
CMcCracken
10/17/91

BC/PPFB
LCunningham
10/13/91

BC/SICB
SNewberry
10/17/91

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DFOI

Mr. Ken H. Evers
Wisconsin Public Service Corporation

Kewaunee Nuclear Power Plant

cc:

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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. 94
License No. DPR-43

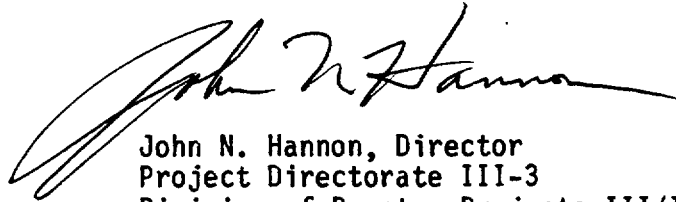
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Wisconsin Public Service Corporation, Wisconsin Power and Light Company, and Madison Gas and Electric Company (the licensees) dated June 4, 1991, as supplemented September 4, 1991, and September 27, 1991, 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 Operating License No. DPR-43 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 94, are hereby incorporated in the license. The licensees shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance, and is to be implemented within 30 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read "John N. Hannon", is written over the typed name and title.

John N. Hannon, Director
Project Directorate III-3
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of issuance: November 12, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 94

FACILITY OPERATING LICENSE NO. DPR-43

DOCKET NO. 50-305

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

REMOVE

3.5-2 (3 pages)

4.13-1

4.13-2

INSERT

3.5-2 (4 pages)

4.13-1

4.13-2

TABLE TS 3.5-2

INSTRUMENT OPERATION CONDITIONS FOR REACTOR TRIP

		1	2	3	4	5	6
NO.	FUNCTIONAL UNIT	NO. OF CHANNELS	NO. OF CHANNELS TO TRIP	MINIMUM OPERABLE CHANNELS	MINIMUM DEGREE OF REDUNDANCY	PERMISSIBLE BYPASS CONDITIONS	OPERATOR ACTION IF CONDITIONS OF COLUMN 3 OR 4 CANNOT BE MET
1	Manual	2	1	1	-		Maintain HOT SHUTDOWN
2	Nuclear Flux Power Range ⁽¹⁾						
	Low setting	4 ⁽²⁾	2	3	1	P-10	Maintain HOT SHUTDOWN
	High setting	4 ⁽²⁾	2	3	1		
	Positive rate	4 ⁽²⁾	2	3	1		
	Negative rate	4 ⁽²⁾	2	3	1		
3	Nuclear Flux Intermediate Range	2	1	1	-	P-10	Maintain HOT SHUTDOWN ⁽³⁾
4	Nuclear Flux Source Range	2	1	1	-	P-6	Maintain HOT SHUTDOWN ⁽³⁾
5	Overtemperature ΔT	4 ⁽²⁾	2	3	1		Maintain HOT SHUTDOWN
6	Overpower ΔT	4 ⁽²⁾	2	3	1		Maintain HOT SHUTDOWN
7	Low Pressurizer Pressure	4 ⁽²⁾	2	3	1	P-7	Maintain HOT SHUTDOWN
8	High Pressurizer Pressure	3	2	2	-		Maintain HOT SHUTDOWN

Table 3.5-2 (page 1 of 4)

Amendment No. 71, 94

TABLE TS 3.5-2

INSTRUMENT OPERATION CONDITIONS FOR REACTOR TRIP

		1	2	3	4	5	6
NO.	FUNCTIONAL UNIT	NO. OF CHANNELS	NO. OF CHANNELS TO TRIP	MINIMUM OPERABLE CHANNELS	MINIMUM DEGREE OF REDUNDANCY	PERMISSIBLE BYPASS CONDITIONS	OPERATOR ACTION IF CONDITIONS OF COLUMN 3 OR 4 CANNOT BE MET
9	Pressurizer High Water Level	3	2	2	-	P-7	Maintain HOT SHUTDOWN
10	Low Flow In One Loop	3/loop	2/loop (any loop)	2	-	P-8	Maintain HOT SHUTDOWN
	Low Flow Both Loops	3/loop	2/loop (both loops)	2	-	P-7	Maintain HOT SHUTDOWN
11	Deleted						
12	Lo-Lo Steam Generator Water Level	3/loop	2/loop	2/loop	-		Maintain HOT SHUTDOWN
13	Undervoltage 4-kV Bus	2/bus	1/bus (both buses)	1/bus	-	P-7	Maintain HOT SHUTDOWN
14	Underfrequency 4-kV Bus ⁽⁴⁾	2/bus	1/bus (both buses)	1/bus	-		Maintain HOT SHUTDOWN
15	Deleted						
16	Steam Flow/Feedwater Flow Mismatch	2	1	1	-		Maintain HOT SHUTDOWN

Table 3.5-2 (page 2 of 4)

Amendment No. 57, 77, 7A, 7B, 94

TABLE TS 3.5-2

INSTRUMENT OPERATION CONDITIONS FOR REACTOR TRIP

		1	2	3	4	5	6
NO.	FUNCTIONAL UNIT	NO. OF CHANNELS	NO. OF CHANNELS TO TRIP	MINIMUM OPERABLE CHANNELS	MINIMUM DEGREE OF REDUNDANCY	PERMISSIBLE BYPASS CONDITIONS	OPERATOR ACTION IF CONDITIONS OF COLUMN 3 OR 4 CANNOT BE MET
17	Reactor Trip Breaker (RTB)	2	1	2	-	The RTBs may be bypassed for up to 8 hrs. for surveillance testing or maintenance	Maintain HOT SHUTDOWN and open the RTBs After 72 hours maintain HOT SHUTDOWN and open the RTBs
	(Independently Test Shunt and Undervoltage Trip Attachments)	2/bkr	1	2	-		

Table 3.5-2 (page 3 of 4)

Amendment No. 94

TABLE TS 3.5-2

INSTRUMENT OPERATION CONDITIONS FOR REACTOR TRIP

NOTES

- (1) One additional channel may be taken out of service for zero power physics testing.
- (2) When one channel is out of service, a bypass may be used to allow testing other channels; a channel shall not be bypassed longer than 4 hours.
- (3) When a block conditions exists, maintain normal operation.
- (4) Underfrequency on the 4-kV buses trips the Reactor Coolant Pump breakers, which in turn trips the reactor when power is above P-7.

P-6 1 of 2 Intermediate Range Nuclear Instrument Channels indicates $> 10^{-5}\%$ power

P-7 3 of 4 Power Range Nuclear Instrument channels $< 10\%$ power AND
2 of 2 Turbine Impulse Pressure Channels $< 10\%$ power

P-8 3 of 4 Power Range Nuclear Instrument Channels $< 10\%$ power

P-10 2 of 4 Power Range Nuclear Instrument Channels $> 10\%$ power

Table 3.5-2 (page 4 of 4)

Amendment No. 51, 71, 94

4.13 RADIOACTIVE MATERIALS SOURCES

APPLICABILITY

Applies to the possession, leak test, and record requirements for radioactive material sources required for operation of the facility.

OBJECTIVE

To ensure that radioactive material sources which are beneficial to facility operation are available to the facility and these sources are verified to be free from leakage.

SPECIFICATION

1. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically authorized by the Commission or the State.
2. Sources which contain by-product material that exceeds the quantities listed in 10 CFR 30.71, Schedule B, and all other sources containing > 0.1 microcuries shall be leak tested in accordance with this specification.
3. Any source specified by TS 4.13.2 which is determined to be leaking shall be immediately withdrawn from use, repaired or disposed of in accordance with the Commission's regulations. Leaking is defined as the presence of .005 microcuries of the source's radioactive material on the test sample.
4. Each sealed source with a half-life > 30 days, and in any form other than gas, shall be tested for leakage at intervals not to exceed 6 months, except for:
 - a. Startup sources inserted in the reactor vessel,
 - b. Fission detectors following exposure to core flux,
 - c. Irradiation sample sources inserted in the reactor vessel,
 - d. Sources enclosed within the Eberline Model 1000 Multi-Source Gamma Calibrator,
 - e. Sources enclosed within the Shepherd Model 89-400 Self-Contained Calibrator, and
 - f. Hydrogen-3 sources.
5. Sources specified by TS 4.13.2 which are in storage and not being used are exempt from the testing of TS 4.13.4. Prior to use or transfer to another licensee of such a source, the leakage test of TS 4.13.4 shall be current.
6. Startup sources and fission detectors shall be leak tested prior to initial insertion into the reactor vessel or prior to being subjected to core flux.

7. A complete inventory of radioactive materials sources shall be maintained current at all times.

BASES

Ingestion or inhalation of source material may give rise to total body or organ irradiation. This specification assures that leakage from radioactive material sources does not exceed allowable limits. In the unlikely event that those quantities of radioactive by-product materials of interest to this specification which are exempt from leakage testing are ingested or inhaled, they represent less than one maximum permissible body burden for total body irradiation. The limits for all other sources (including alpha emitters) are based upon 10 CFR 70.39(c) limits for plutonium.

The Eberline Model 1000 Multi-Source Calibrator and the J. L. Shepherd Model 89-400 are totally enclosed instrument calibrating assemblies for which leak testing of the enclosed sources is not practical. Leak testing of these sources would require disassembly of the calibration assembly shield, controls, etc., resulting in personnel exposure without corresponding benefits.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATING TO AMENDMENT NO. 94 TO FACILITY OPERATING 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

1.0 INTRODUCTION

By Amendment No. 90 dated March 4, 1991, the staff approved the changes to the Technical Specifications proposed by the licensee by letter dated January 28, 1991, which would allow additional enriched fissionable material to be on-site. After approval of this amendment request, the licensee, during the 1991 refueling outage, installed new Category 1 neutron flux detectors.

By letter dated June 4, 1991, the licensee requested an amendment to the Technical Specifications (TSs) appended to Facility Operating License DPR-43 for the Kewaunee Nuclear Power Plant. By letters dated September 4 and 27, 1991, the licensee submitted supplemental, clarifying information to the application. This information did not change the scope of the amendment request or the proposed determination of no significant hazards consideration.

The proposed amendment would revise TS Section 4.13, "Radioactive Materials Sources," and TS Table 3.5-2, "Instrument Operation Conditions for Reactor Trip." These revisions would add the fission detectors mentioned above and a new radiation calibrator to the list of sealed sources which are exempt from periodic leak testing, state that fission detectors shall be leak tested prior to being subjected to core flux, and describe the P-6 permissive set point in percent power consistent with the readout of the new fission detectors. Administrative changes are also proposed.

2.0 EVALUATION

- (1) TS 4.13.4 has been reworded and includes two additions. The main paragraph now reads:

"4.13.4 Each sealed source with a half-life > 30 days, and in any form other than gas, shall be tested for leakage at intervals not to exceed 6 months, except for:"

This is a change in format only and it has no safety significance. Therefore, it is acceptable.

The following two sub-paragraphs have been added:

"b. Fission detectors following exposure to core flux,"

"e. Sources enclosed within the Shepherd Model 89-400 Self-Contained Calibrator, and"

Sub-paragraph 4.13.4.b allows fission detectors to be excluded from leakage testing after they have been exposed to core flux. The new Gamma Metrics excore fission chamber detectors contain about 15 microcuries of special nuclear material. Therefore, periodic leak testing is required. However, once these detectors are exposed to reactor flux, testing is not practical because the fissionable material is inside a sealed detector chamber which is inaccessible following installation near the core. This position is consistent with the NRC position on leakage testing at other plants. Since no additional safety risk is posed, the proposed amendment is acceptable.

Sub-paragraph 4.13.4.e excludes the Shepherd Calibrator (delivered to Kewaunee on July 9, 1991) from the same leakage testing. The Shepherd Calibrator is in use at other plants, including the Point Beach Nuclear Plant. It is similar to the Eberline Model 1000 which is currently being used but needs refurbishing. The exclusion being requested is equivalent to the Eberline exclusion, and does not pose an additional safety risk. Therefore, the proposed amendment is acceptable.

- (2) TS 4.13.5 has one addition, "... to another licensee...", and now reads:

"4.13.5 Sources specified by TS 4.13.2 which are in storage and not being used are exempt from the testing of TS 4.13.4. Prior to use or transfer to another licensee of such a source, the leakage test of TS 4.13.4 shall be current."

This change has been proposed to clarify the intent of the TS, and has no safety significance. Therefore, this change is acceptable.

- (3) TS 4.13.6 has two additions, "... and fission detectors ..." and "... or prior to being subjected to core flux ...", and now reads:

"4.13.6 Startup sources and fission detectors shall be leak tested prior to initial insertion into the reactor vessel or prior to being subjected to core flux."

These additions are necessary to accommodate the new fission detectors discussed in 4.13.4.b, are consistent with current NRC guidance, and pose no additional safety risk. Therefore, these additions are acceptable.

- (4) The second paragraph of the BASES for TS 4.13 has one addition, "... and the J. L. Shepherd Model 89-400 are ..." and now reads:

"The Eberline Model 1000 Multi-Source Calibrator and the J. L. Shepherd Model 89-400 are totally enclosed instrument calibrating assemblies for which leak testing of the enclosed sources is not practical. Leak testing of these sources would require disassembly of the calibration assembly shield, controls, etc., resulting in personnel exposure without corresponding benefits."

The justification for allowing the new calibrator to be used at Kewaunee is provided in TS 4.13.4.e. This addition to the bases allows the new calibrator being procured for Kewaunee to be handled in the same manner as the existing calibrator. Since the calibrators are similar in design and function, this is an administrative change only, and is acceptable.

- (5) The final proposed change is on the last page of TS Table 3.5-2, where "... 1.0E-10 amps ..." is being replaced with "... 1.0E-5% power ..." in the Note regarding the P-6 permissive set point. This note now reads:

"P-6 1 of 2 Intermediate Range Nuclear Instrument Channels
 indicates > 1.0E-5% power"

This change is being proposed so that the limit is stated in percent power similar to the readout of the new instrumentation. The basis for the P-6 set point, as referenced in the Updated Safety Analysis Report, is provided in Section 4.2 of Westinghouse Topical Report WCAP-7669 entitled "Nuclear Instrumentation System" dated April 6, 1971. The basis states that the P-6 permissive allows the operator to manually block the source range (SR) logic circuitry, thus cutting off the SR voltages and blocking the SR high flux trip logic outputs. Procedurally, this block is not to be initiated until at least one decade of satisfactory intermediate range (IR) operation is obtained.

The SR high flux reactor trip prevents a startup accident from sub-critical conditions from proceeding into the power range. As stated in the Technical Specifications Basis for Section 2.3, any trip set point within the range of the SR instrumentation would prevent an excursion from proceeding to the point at which significant thermal power is generated. Indeed, Section 2.3.a.1.A specifies that the trip set point be "within span of the source range instrumentation." Hence, as long as the P-6 permissive set point is below the SR high flux trip set point (so that the operator can block the trip before the trip set point is reached), the system will function as designed.

Since the SR high flux trip can be set anywhere within the range of the SR instrumentation, the only requirement for the P-6 set point is that it be below the SR high flux trip set point. The proposed P-6 permissive (1.0E-5% power) is very close to the current P-6 permissive (1.0E-10 amps), as determined by the licensee through a review of historic

plant operations data and through projections made from low power physics testing data. The data indicate that 39% power is equivalent to $3.2E-4$ amps. Assuming instrumentation linearity, extrapolation indicates that the proposed set point of $1.0E-5\%$ power is approximately equal to $0.82E-10$ amps, which is below and within 20 percent of the current permissive set point of $1.0E-10$ amps. Since the SR high flux trip set point has not been changed, the P-6 permissive set point is below the trip set point, satisfying the operational requirement.

As stated above, the basis requires that the operator not block the SR high flux trip until at least one decade of satisfactory IR instrumentation operation is obtained. The new IR instrumentation has a wider range than the old instrumentation, so that the proposed P-6 set point is three decades above the initial indication point of the new IR instrumentation.

Since there is no safety significance to the proposed P-6 set point slightly deviating from the current set point, and since the new P-6 set point is three decades on scale, which is more conservative than the current setting, the proposed amendment is acceptable.

3.0 STATE CONSULTATION

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

4.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change to 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 or changes a surveillance requirement. 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding (56 FR 37594). Accordingly, this 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 this 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 this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: A. Hansen

Date: November 12, 1991