

October 16, 1990

Docket No. 50-305

DISTRIBUTION

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Docket File	DHagan
NRC PDR	EJordan
Local PDR	ARM/LFMB

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. 88 TO FACILITY OPERATING LICENSE NO. DPR-43
(TAC NO. 76824)

The Commission has issued the enclosed Amendment No. 88 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 May 15, 1990.

The amendment revises action statements for TS 3.3.c.2, 3.6.b, and 3.12.b concerning the containment cooling, shield building ventilation, auxiliary building ventilation and control room post accident recirculation system specifications.

The action statements for TS 3.3.c.2 are being revised to ensure that a minimum of one train of containment spray remains operable during power operation. The TS 3.6.b and 3.12.b action statements for the shield building ventilation system, auxiliary building special ventilation system, and control room post accident recirculation system specifications are being revised to remove the requirement to test the opposite train to prove operability when one of the two trains is made, or found to be, inoperable.

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:

Michael J. Davis, Project Manager
Project Directorate III-3
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

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PDR ADOCK 05000305
P PNU

Enclosures:

1. Amendment No. 88 to License No. DPR-43
2. Safety Evaluation

cc w/enclosures: 55
See next page

Office: LA/PD/DII-3
Surname: PKreutzer
Date: 7/26/90

PM/PDIII-3
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7/26/90

PD/PDIII-3
JHannon
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OGC-WF1
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2. Safety Evaluation

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 See next page

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OGC-WF1
Em 3
 4/27/90

EC
 E Cunningham
 9/16/90

Mr. Ken H. Evers
Wisconsin Public Service Corporation

Kewaunee Nuclear Power Plant

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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. 88
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 May 15, 1990, 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:

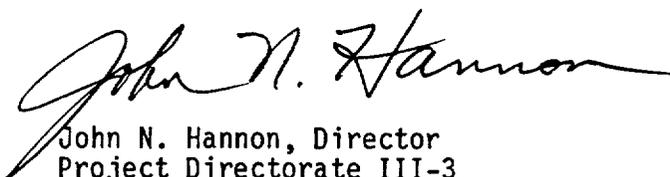
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(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 88, 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



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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 16, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 88

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

TS 3.3-5

TS 3.3-10

TS 3.3-11

TS 3.3-12

TS 3.6-1

TS 3.6-2

TS 3.12-1

INSERT

TS 3.3-5

TS 3.3-10

TS 3.3-11

TS 3.3-12

TS 3.6-1

TS 3.6-2

TS 3.12-1

vals specified. If operability is not restored within the time specified, then within 1 hour action shall be initiated to:

- Achieve Hot Standby within the next 6 hours.
- Achieve Hot Shutdown within the following 6 hours.
- Achieve Cold Shutdown within an additional 36 hours.

- A. The quantity of NaOH solution available as a containment spray additive may be less than that specified in TS 3.3.c.1.A for a period of 48 hours.
- B. One containment fan coil unit train may be out of service for 7 days provided the opposite containment fan coil unit train remains operable.
- C. One containment spray train may be out of service for 72 hours provided the opposite containment spray train remains operable.
- D. Both containment fan coil unit trains may be out of service for 72 hours provided both containment spray trains remain operable.
- E. The same containment fan coil unit and containment spray trains may be out of service for 72 hours provided their opposite containment fan coil unit and containment spray trains remain operable.

dition may be indicative of need for major maintenance, and in such cases the reactor should therefore be placed in the cold shutdown condition.

The accumulator and refueling water storage tank conditions specified are consistent with those assumed in the LOCA analysis.(2)

The containment cooling function is provided by two systems: containment fan-coil units and containment spray systems. The containment fan coil units and containment spray system protect containment integrity by limiting the temperature and pressure that could be experienced following a Design Basis Accident. The Limiting Design Basis accidents relative to containment integrity are the loss of coolant accident and steam line break. During normal operation, the fan-coil units are required to remove heat lost from equipment and piping within the containment.(3) In the event of the Design Basis Accident, any one of the following combinations will provide sufficient cooling to limit containment pressure to less than design values: four fan-coil units, two containment spray pumps, or two fan-coil units plus one containment spray pump.(4)

In addition to heat removal, the containment spray system is also effective in scrubbing fission products from the containment atmosphere. Therefore, a minimum of one train of containment spray is required to remain operable in order to scavenge iodine fission products from the containment atmosphere and ensure their retention in the containment sump water.(8)(9)

Sodium Hydroxide (NaOH) is added to the spray solution for pH adjustment. The resulting alkaline pH of the spray enhances the ability of the spray to scavenge iodine fission products from the containment atmosphere. The NaOH added in the spray also ensures an alkaline pH for the solution recirculated in the containment sump.

The alkaline pH of the containment sump water inhibits the volatility of iodine and minimizes the occurrence of chloride and caustic stress corrosion on mechanical systems and components exposed to the sump fluid. Test data has shown that no significant stress corrosion cracking will occur provided the pH is adjusted within two (2) days following the Design Basis Accident.(4)(7)

A minimum of 300 gallons of not less than 30% by weight of NaOH solution is sufficient to adjust the pH of the spray solution adequately. The additive will still be considered available whether it is contained in the spray additive tank or the containment spray system piping due to an inadvertent opening of the spray additive valves (CI-1001A and CI-1001B).

One component cooling water pump together with one component cooling heat exchanger can accommodate the heat removal load either following a loss-of-coolant accident, or during normal plant shutdown. If, during the post-accident phase, the component cooling water supply were lost, core and containment cooling could be maintained until repairs were effected. (5)

A total of four service water pumps are installed, and a minimum of two are required to operate during the postulated loss-of-coolant accident. (6) The service water valves in the redundant safeguards headers have to be operable in order for the components that they supply to be considered operable.

The various trains of equipment referred to in the specifications are separated by their power supplies (i.e.: SI Pump 1A, RHR Pump 1A, Valves SI-2A and SI-4A, etc.). Shared piping and valves are considered to be common to both trains of the systems (i.e.: SI-3, etc.).

The closure of the hand operated valve for a brief period of time during the surveillance testing of the automatic valves in the safety injection system will prevent dilution of the concentrated boric acid or loss of concentrated boric acid to the refueling water storage tank.

References

- (1) USAR Section 3.2
- (2) USAR Section 14.3
- (3) USAR Section 6.3
- (4) USAR Section 6.4
- (5) USAR Section 9.3
- (6) USAR Section 9.6
- (7) Westinghouse Chemistry Manual SIP 5-1, Rev. 2, dated 3-77, Section 4.
- (8) USAR Section 6.4.3
- (9) USAR Section 14.3.5

3.6 CONTAINMENT SYSTEM

Applicability

Applies to the integrity of the Containment System.

Objective

To define the operating status of the Containment System.

Specification

- a. Containment System integrity shall not be violated if there is fuel in the reactor which has been used for power operation, except whenever either of the following conditions remains satisfied:
 1. The reactor is in the cold shutdown condition with the reactor vessel head installed, or
 2. The reactor is in the refueling shutdown condition.
- b. All of the following conditions shall be satisfied whenever Containment System integrity as defined by Specification 1.0g is required:
 1. Both trains of the Shield Building Ventilation System, including filters and heaters shall be operable or the reactor shall be shut down within 12 hours, except that when one of the two trains of the Shield Building Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding seven days.
 2. Both trains of the Auxiliary Building Special Ventilation System including filters and heaters shall be operable or the reactor shall be shut down within 12 hours, except that when one of the two trains of the Auxiliary Building Special Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding seven days.

3. Performance Requirements

- A. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal adsorber banks shall show $\geq 99\%$ DOP removal and $\geq 99\%$ halogenated hydrocarbon removal.
- B. The results of laboratory carbon sample analysis from the Shield Building Ventilation System and the Auxiliary Building Special Ventilation System carbon shall show $\geq 90\%$ radioactive methyl iodide removal at conditions of 130°C , 95% RH for the Shield Building Ventilation System and 66°C , 95% RH for the Auxiliary Building Special Ventilation System.
- C. Fans shall operate within $\pm 10\%$ of design flow when tested.
- c. If the internal pressure of the Reactor Containment Vessel exceeds 2 psi, the condition shall be corrected within eight hours or the reactor shall be placed in a subcritical condition.
- d. The reactor shall not be taken above the cold shutdown condition unless the containment ambient temperature is greater than 40°F .

Basis

Proper functioning of the Shield Building Ventilation System is essential to the performance of the Containment System. Therefore, except for reasonable periods of maintenance outage for one redundant train of equipment, the complete system should be in readiness whenever Containment System integrity is required. Proper functioning of the Auxiliary Building Special Ventilation System is similarly necessary to preclude possible unfiltered leakage through

3.12 CONTROL ROOM POSTACCIDENT RECIRCULATION SYSTEM

APPLICABILITY

Applies to the operability of the Control Room Postaccident Recirculation System.

OBJECTIVE

To specify operability requirements for the Control Room Postaccident Recirculation System.

SPECIFICATIONS

- a. The reactor shall not be made critical unless both trains of the Control Room Postaccident Recirculation System are operable.
- b. Both trains of the Control Room Postaccident Recirculation System, including filters shall be operable or the reactor shall be shut down within 12 hours, except that when one of the two trains of the Control Room Postaccident Recirculation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding SEVEN days.
- c. During testing the system shall meet the following performance requirements:
 1. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filter and charcoal adsorber banks shall show $\geq 99\%$ DOP removal and $\geq 99\%$ halogenated hydrocarbon removal.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATING TO AMENDMENT NO. 88 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 letter dated May 15, 1990, Wisconsin Public Service Corporation (the licensee) requested an amendment to change the Technical Specifications (TSs) appended to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant (KNPP). The proposed amendment would change the Technical Specifications (TS) 3.3.c.2, 3.6.b.1, 3.6.b.2 and 3.12.b to change the action statements for the containment cooling, shield building ventilation, auxiliary building ventilation and control room postaccident recirculation systems.

The proposed change to the containment cooling specification incorporates the results of reanalyses of the control room operator dose and offsite dose consequences following a design basis accident. The new analyses take credit for the containment spray system to remove radioiodine from the containment atmosphere, whereas the previous analyses took no credit for this attribute in dose calculation assessments.

2.0 EVALUATION

The Westinghouse Standard Technical Specifications offer two options for specifications on the containment spray system, depending on whether or not credit is taken for iodine removal from the containment atmosphere in dose calculations. The existing TS 3.3.c.2 is similar to the Standard TS case where no credit is taken in that it allows both trains of containment spray to be inoperable for up to 72 hours if all containment fan coil units remain operable.

The proposed change to TS 3.3.c.2 is similar to the Standard TS case where credit is taken for lower dose rates due to iodine removal via containment spray and requires both trains of containment spray to be operable during power operation. The proposed change will allow one train of containment spray to be inoperable for up to 72 hours if the opposite train remains operable. The proposed change requiring at least one containment spray train to be operable at all times during power operation is an additional restriction which is not presently included in the TS, and represents an overall increase in safety.

In the Kewaunee Updated Control Room Habitability Evaluation Report of February 28, 1989, two cases were considered in calculating the maximum control room operator dose. Case I is for immediate isolation occurring when the fresh air dampers close on the Safety Injection (SI) signal. In this case the dampers stroke closed prior to the radioactive cloud reaching the control room air intakes. Case II is for delayed isolation initiated by control room radiation monitor R23, when the Train B fresh air dampers fail to close on the SI signal. In this case the isolation is dependent on R23 detecting radioactivity in the control room ventilation system. The time is calculated to be 6.7 seconds from the time the radioactive cloud enters the control room--2.7 seconds for the activity to reach the R23 monitor setpoint and 4 seconds for the dampers to close.

The results for the two cases for post-accident 30-day integrated control room LOCA dose, without fresh air purge, are as follows:

	<u>DOSE (REM)</u> <u>WITH</u> <u>IMMEDIATE</u> <u>ISOLATION</u>	<u>DOSE (REM)</u> <u>WITH R23</u> <u>DELAYED</u> <u>ISOLATION</u>
Gamma Whole Body Dose =	1.9	1.9
Beta Skin Dose =	57.0	57.0
Thyroid Dose =	27.0	38.2

The fact that control room radiation monitor R23 is a QA type 3/3 component was noted as a deficiency in the Updated Control Room Habitability Evaluation. Two alternatives for resolving this deficiency were discussed, upgrading R23 to QA type 1/1 or providing the Train A outside air isolation dampers with an automatic closure signal on initiation of safety injection. The licensee chose the latter option, and the modification to provide a Train A SI signal for control room outside air isolation was completed during the spring 1990 refueling outage.

The requirements for protection of control room personnel against radiation are specified in General Design Criterion 19 of Appendix A, 10 CFR Part 50. According to this criterion, control room design should provide radiation protection such that control room personnel do not receive radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident. The thyroid and beta skin doses should be maintained at less than 30 rem.

For the case of immediate isolation on SI, the values for whole body dose and thyroid dose are below the GDC 19 limits. The beta skin dose exceeds 30 rem for unprotected skin, but Standard Review Plan 6.4 allows taking credit for protective clothing and eye protection to reduce the dose below 30 rem as long as the calculated dose is less than 75 rem.

The licensee's assumptions in the control room operator dose calculations of radioiodine removal efficiencies of 90% by the charcoal adsorbers and the technical specification acceptance criteria of greater than or equal to

a 90% removal efficiency for the 18-month laboratory tests of the charcoal adsorbent samples are not fully consistent with the intent of the guidance of Regulatory Guide 1.52. The licensee, however, stated verbally that a laboratory test result of less than 90% removal efficiency has occurred rarely in the plant's operating history; and that test procedures will be revised to provide sufficient margins to maintain the radioiodine removal efficiencies consistent with the values assumed in the control room operator dose calculations. The staff finds that this meets the intent of Regulatory Guide 1.52 and the Standard Technical Specifications and, therefore, is acceptable.

Since the proposed change to TS 3.3.c.2 is consistent with Westinghouse Standard Technical Specifications and Standard Review Plan 6.4, the staff finds the change to be acceptable.

The revisions to TS action statements 3.6.b.1, 3.6.b.2, and 3.12.b for the shield building ventilation system, auxiliary building special ventilation system, and control room post accident recirculation system will delete the requirement to test the opposite train within 2 hours and daily thereafter when one of the two trains is made, or found to be, inoperable. The requirement to perform this testing to prove operability is not included in the Westinghouse Standard Technical Specifications. The ventilation specifications in Standard TS require two trains to be operable in Modes 1-4 and allow continued operation for 7 days when one train is inoperable.

The licensee has stated that past performance of these ventilation systems has shown that normal surveillance testing is adequate to assure operability when the system is within its surveillance test interval. Testing the opposite train of safety related ventilation is not necessary to prove operability and represents an unnecessary challenge to the equipment. Removing this requirement from the action statements will not result in a decrease in safety.

Based on its review which is described above, the staff concludes that the proposed change is consistent with the intent of the Standard Technical Specification requirements. On this basis, the staff finds the proposed change will not reduce the level of plant safety and is acceptable.

3.0 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. 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.

4.0 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; and (2) 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.

Principal Contributor: Michael J. Davis

Dated: October 16, 1990