November 18, 1994

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Mr. C. A. Schrock
Manager - Nuclear Engineering
Wisconsin Public Service Corporation
Post Office Box 19002
Green Bay, WI 54307-9002

SUBJECT: AMENDMENT NO. 113 TO FACILITY OPERATING LICENSE NO. DPR-43 - KEWAUNEE NUCLEAR POWER PLANT (TAC NO. M89531)

Dear Mr. Schrock:

The Commission has issued the enclosed Amendment No. 113to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant (KNPP). This amendment revises the Technical Specifications (TS) in response to your application dated May 17, 1994.

The amendment revises TS 3.3.c by separating the specifications for the internal containment spray (ICS) and the spray additive systems into two distinct specifications. The amendment also removes the requirement that a spray pump suction flow path from the additive tank is needed for a spray train to be operable. In addition, the allowable out-of-service time for the spray additive system is increased from 48 hours to 72 hours.

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 Richard J. Laufer

Richard J. Laufer, Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosures: 1. Amendment No. 113 to License No. DPR-43
2. Safety Evaluation
cc w/encls: See next page

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cc:

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

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. 113
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 17, 1994, 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. 113, 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

Richard J. Laufer, Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of issuance: November 18, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 113

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	INSERT
TS 3.3-4	TS 3.3-4
TS 3.3-5	TS 3.3-5
TS B3.3-3	TS B3.3-3
TS B3.3-4	TS B3.3-4

c. Containment Cooling Systems

1. Containment Spray and Containment Fancoil Units

A. The reactor shall not be made critical unless the following conditions are satisfied, except for low-power physics tests and except as provided by TS 3.3.c.1.A.3.

1. Two containment spray trains are OPERABLE with each train comprised of:

a) ONE containment spray pump.

b) An OPERABLE flow path consisting of all valves and piping associated with the above train of components and required to function during accident conditions. This flow path shall be capable of taking suction from the Refueling Water Storage Tank and from the containment sump.

2. TWO trains of containment fancoil units are OPERABLE with two fancoil units in each train.

3. During power operation or recovery from inadvertent trip, any one of the following conditions of inoperability may exist during the time intervals 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) One containment fancoil unit train may be out of service for 7 days provided the opposite containment fancoil unit train remains OPERABLE.

b) One containment spray train may be out of service for 72 hours provided the opposite containment spray train remains OPERABLE.

c) Both containment fancoil unit trains may be out of service for 72 hours provided both containment spray trains remain OPERABLE.

d) The same containment fancoil unit and containment spray trains may be out of service for 72 hours provided their opposite containment fancoil unit and containment spray trains remain OPERABLE.

2. Spray Additive System

A. The reactor shall not be made critical unless the following conditions are satisfied, except for low-power physics tests and except as provided by TS 3.3.c.2.A.3.

1. A minimum of 300 gallons of not less than 30% by weight of NaOH solution is available as a containment spray system additive.

2. Valves and piping are capable of adding NaOH solution from the additive tank to a containment spray system.

3. During power operation or recovery from inadvertent trip, the spray additive system may be out of service for 72 hours. If OPERABILITY is not restored within 72 hours, 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.

The containment cooling function is provided by two systems: containment fancoil units and containment spray systems. The containment fancoil 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 fancoil 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 fancoil units, two containment spray pumps, or two fancoil 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.[5][6]

Sodium Hydroxide (NaOH) is added to the spray solution for pH adjustment by means of the spray additive system. 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 2 days following the Design Basis Accident.[7][8]

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 and Refueling Water Storage Tank due to an inadvertent opening of the spray additive valves (CI-1001A and CI-1001B).

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[3]USAR Section 6.3

[4]USAR Section 6.4

[5]USAR Section 6.4.3

[6]USAR Section 14.3.5

[7]USAR Section 6.4

[8]Westinghouse Chemistry Manual SIP 5-1, Rev. 2, dated 3/77, Section 4.

The spray additive system may be inoperable for up to 72 hours. The containment spray system would still be available and would remove some iodine from the containment atmosphere in the event of a Design Basis Accident. The 72-hour completion time takes into account the containment spray system capabilities and the low probability of the worst case Design Basis Accident occurring during this period.

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.[9]

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.[10] 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.

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[9]USAR Section 9.3

[10]USAR Section 9.6

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO AMENDMENT NO. 113 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 17, 1994, Wisconsin Public Service Corporation (WPSC), the licensee, requested a revision to the Kewaunee Nuclear Power Plant (KNPP) Technical Specifications (TS). The proposed amendment would revise TS 3.3.c to clarify the Limiting Conditions for Operation (LCOs) for the spray additive system, by separating the single TS for the internal containment spray (ICS) and spray additive systems into two distinct specifications. The proposed amendment would also remove the requirement that a spray pump suction flow path from the additive tank is needed for a spray train to be operable. In addition, the allowable out-of-service time for the spray additive system would be increased from 48 hours to 72 hours.

2.0 BACKGROUND

The licensee submitted this proposed amendment to clarify the Limiting Conditions for Operation (LCOs) for the spray additive system and to eliminate apparent contradictions between the LCOs for the spray additive system and the internal containment spray system. The LCOs affected by this proposed change are:

TS 3.3.c.1.B.2, which defines the spray additive tank as part of the ICS train by stating that a spray suction flow path from the additive tank is required for a spray train to be operable.

TS 3.3.c.2.C, which allows one containment spray train to be inoperable for up to 72 hours provided the opposite train remains operable. If the inoperable train cannot be restored within this time, then the standard shutdown sequence is invoked.

TS 3.3.c.2.A, which allows the volume of the containment spray caustic additive to be less than that specified by TS 3.3.c.1.A for up to 48 hours.

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These LCOs create confusion as to the operability of the ICS when the caustic additive volume is less than required volume, as allowed by TS 3.3.c.2.A, and during the periodic testing of valves CI-1001A&B. When these valves are closed, the spray additive tank is isolated and the specification would strictly require that both trains of ICS be declared inoperable.

3.0 EVALUATION

To resolve the inconsistencies discussed above, the licensee's proposal clarifies TS Section 3.3.c by:

1) separating the single specification for the Internal Containment Spray (ICS) and the Spray Additive Systems into two distinct specifications;

2) removing the requirement that a spray pump suction flow path from the additive tank is needed for a spray train to be operable;

3) extending the time the spray additive system may be out-of-service from 48 hours to 72 hours; and

4) adding a requirement to the Spray Additive System TS that valves and piping shall be capable of adding NaOH solution from the additive tank to a containment spray system.

1) The licensee's proposal reformats TS 3.3.c into two distinct specifications, TS 3.3.c.1, "Containment Spray and Containment Fancoil Units," and TS 3.3.c.2, "Spray Additive System." The existing specifications are renumbered as appropriate. Reformatting TS 3.3.c is an administrative change that does not alter the intent or interpretation of the specification. In addition, having separate specifications for the containment spray system and the spray additive system is consistent with the requirements of the Westinghouse Standard Technical Specifications (STS) in NUREG-1431. The staff, therefore, finds this change acceptable.

2) The licensee's proposal removes the requirement that a spray pump suction flow path from the additive tank is needed for a spray train to be operable. This change is accomplished by revising the wording of the last sentence of current TS 3.3.c.1.B.2 (new TS 3.3.c.1.a.1.b) from:

> "This flow path shall be capable of taking suction from the Refueling Water Storage Tank and the spray additive tank upon a Hi-Hi containment pressure signal and after manual transfer being supplied from the containment sump."

to:

> "This flow path shall be capable of taking suction from the Refueling Water Storage Tank and from the containment sump."

The purpose of the containment spray system is to provide containment atmosphere cooling to limit post-accident pressure and temperature in containment to less than design values. The ability of the system to complete

this task is not compromised by removing the requirement that a spray pump suction flow path from the additive tank is needed for a spray train to be operable. During the injection phase, the refueling water storage tank (RWST) supplies borated water to the containment spray system and during the recirculation mode containment spray pump suction is transferred from the RWST to the containment sump. Based on the above discussion, and since this change is consistent with STS, the staff finds it acceptable.

3) The licensee's proposal extends the time the spray additive system may be out-of-service from 48 hours to 72 hours. This change is accomplished by changing current TS 3.3.c.2.A (new TS 3.3.c.2.A.3) from:

> "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."

to

> "During power operation or recovery from inadvertent trip, the spray additive system may be out of service for 72 hours..."

The Spray Additive System is necessary to reduce the release of radioactive material to the environment in the event of a Design Basis Accident. If the Spray Additive System is inoperable, it must be restored to operable within 72 hours. The pH adjustment of the Containment Spray System flow for corrosion protection and iodine removal enhancement is reduced in this condition. The Containment Spray System would still be available and would remove some iodine from the containment atmosphere in the event of a Design Basis Accident. The 72-hour completion time takes into account the Containment Spray System capabilities and the low probability of the worst case Design Basis Accident occurring during this period. Based on the above discussion, and since this change is consistent with the STS, the staff finds it acceptable.

4) The licensee's proposal adds a new requirement, TS 3.3.c.2.A.2, which states that the reactor shall not be made critical unless "Valves and piping are capable of adding NaOH solution from the additive tank to a containment spray system." Adding a requirement to the Spray Additive System TS to ensure that valves and piping are capable of adding NaOH solution from the additive tank to a containment spray system is an enhancement to the current TS. This change does not alter the intent or interpretation of the specification, the staff, therefore, finds this change acceptable.

The staff also reviewed the licensee's proposed changes to the TS Basis, which incorporate the TS changes described above. The staff finds that the proposed TS Basis changes are consistent with the proposed TS changes discussed above, and are, therefore, acceptable.

4.0 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.

5.0 ENVIRONMENTAL CONSIDERATION

This 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 effluent 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 (59 FR 37090). 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.

6.0 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 Contributors: G. Dentel
R. Laufer

Date: November 18, 1994