50-282/306

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

September 15, 1997

Mr. Roger O. Anderson, Director
Nuclear Energy Engineering
Northern States Power Company
414 Nicollet Mall
Minneapolis, Minnesota 55401

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT NOS. 1 AND 2 - ISSUANCE OF AMENDMENTS RE: SPENT FUEL POOL SPECIAL VENTILATION TECHNICAL SPECIFICATIONS (TAC NOS. M98752 AND M98753)

Dear Mr. Anderson:

The Commission has issued the enclosed Amendment No. 130 to Facility Operating License No. DPR-42 and Amendment No. 122 to Facility Operating License No. DPR-60 for the Prairie Island Nuclear Generating Plant, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated May 7, 1997, as supplemented May 30, July 29, and September 12, 1997.

The amendments change TS limitations on crane operations in the spent fuel pool enclosure relating to spent fuel pool special ventilation system operability. These changes are necessary to allow movement of loads over spent fuel stored in the spent fuel pool enclosure with the spent fuel pool special ventilation system inoperable. The NRC staff has granted your amendment requests for TS 3.8 including TS 3.8.D.1 and TS 3.8.D.3. However, the NRC staff has concluded that your proposed change to TS 3.8.D.2 cannot be approved and has denied that portion of your amendment request. The basis for this partial denial is documented in the enclosed Safety Evaluation.

A copy of our notice of partial denial to be published in the *Federal Register* is enclosed for your information.

The staff has also reviewed the bases changes related to the spent fuel pool personnel access doors submitted in your letter of July 17, 1997. These bases pages (B.3.8-2 and B.3.8-5) are enclosed.

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A copy of our related Safety Evaluation is also enclosed. The notice of issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

ORIGINAL SIGNED BY

Beth A. Wetzel, Senior Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-282 and 50-306

Enclosures:
1. Amendment No. 130 to DPR-42
2. Amendment No. 122 to DPR-60
3. Safety Evaluation
4. Notice of Partial Denial
5. Bases Page B.3.8-5

cc w/encl: See next page

DISTRIBUTION: See attached page

w/ changes as noted

DOCUMENT NAME: G:\WPDOCS\PRAIRIE\PI98752.AMD

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DATED: September 15, 1997

AMENDMENT NO.130 TO FACILITY OPERATING LICENSE NO. DPR-42-PRAIRIE ISLAND UNIT 1
AMENDMENT NO.122 TO FACILITY OPERATING LICENSE NO. DPR-60-PRAIRIE ISLAND UNIT 2

Docket File
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Mr. Roger O. Anderson, Director
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-282

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 130
License No. DPR-42

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Northern States Power Company (the licensee) dated May 7, 1997, as supplemented May 30, July 29, and September 12, 1997, 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 paragraphs 2.C.(2) and 2.C.(5) of Facility Operating License No. DPR-42 are hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 130, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

(5) Additional Conditions

The Additional Conditions contained in Appendix B, as revised through Amendment No. 130, are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Additional Conditions.

3. This license amendment is effective as of the date of issuance, with full implementation within 30 days. License Condition 4 of Appendix B is effective immediately upon issuance of the amendment.

FOR THE NUCLEAR REGULATORY COMMISSION

Beth A. Wetzel, Senior Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachments: 1. Changes to the Technical Specifications
2. Appendix B - Additional Conditions

Date of Issuance: September 15, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 130

FACILITY OPERATING LICENSE NO. DPR-42

DOCKET NO. 50-282

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 area of change.

REMOVE	INSERT
TS 3.8-1	TS 3.8-1
TS 3.8-4	TS 3.8-4
B 3.8-2	B 3.8-2

3.8 REFUELING AND FUEL HANDLING

Applicability

Applies to operating limitations associated with fuel-handling operations and CORE ALTERATIONS.

Objectives

To ensure that no incident could occur during fuel handling and CORE ALTERATIONS that would affect public health and safety.

Specification

A. Core Alterations

1. During CORE ALTERATIONS the following conditions shall be satisfied (except as specified in 3.8.A.2 and 3 below):

   a. 1) The equipment hatch shall be closed. In addition, at least one isolation valve shall be OPERABLE or locked closed in each line which penetrates the containment and provides a direct path from containment atmosphere to the outside.

      2) Airlock doors

         a) At least one door in each air lock is closed, or

         b) Both doors in each air lock may be open if:

            i. The containment (high flow) purge system is isolated,

            ii. The inservice (low flow) purge system is capable of automatic isolation,

            iii. At least one door in each air lock is OPERABLE, under procedural control, and capable of being closed within 30 minutes following a fuel handling accident in containment, and

            iv. At least two containment fan coil unit fans are capable of operating in the high speed mode following a fuel handling accident in containment.

   b. Radiation levels in the fuel handling areas of the containment shall be monitored continuously.

3.8.C. Small Spent Fuel Pool Restrictions

No more than 45 recently discharged assemblies shall be located in the small pool (pool No. 1).

D. Spent Fuel Pool Special Ventilation System

1. Both trains of the Spent Fuel Pool Special Ventilation System shall be OPERABLE during movement of irradiated fuel assemblies in the spent fuel pool enclosure (except as specified in 3.8.D.2 and 3.8.D.3 below).

2. With one train of the Spent Fuel Pool Special Ventilation System inoperable, fuel handling operations and crane operations with loads over spent fuel (inside the spent fuel pool enclosure) are permissible during the following 7 days, provided the redundant train is demonstrated OPERABLE prior to proceeding with those operations.

3. With both trains of the Spent Fuel Pool Special Ventilation System inoperable, suspend movement of irradiated fuel assemblies in the spent fuel pool enclosure.

4. The provisions of specification 3.0.C are not applicable.

E. Spent Fuel Pool Storage

1. Fuel Assembly Storage

a. The combination of initial enrichment, burnup and decay time of each fuel assembly stored in the spent fuel pool shall be within the unrestricted range of Figures TS.3.8-1 or TS.3.8-2, as applicable, or fuel assemblies shall be stored in accordance with Specification 5.6.A.1.e.

b. If the requirements of 3.8.E.1.a are not met, immediately initiate action to move any noncomplying fuel assembly to an acceptable location.

c. The provisions of Specification 3.0.C are not applicable.

2. Spent Fuel Pool Boron Concentration

a. The spent fuel pool boron concentration shall be ≥ 1,800 ppm when fuel assemblies are stored in the spent fuel pool.

b. If the spent fuel pool boron concentration is not within limit, then immediately:

1. Suspend movement of fuel assemblies in the spent fuel pool, and

2. Initiate action to restore spent fuel pool boron concentration to within limit.

c. The provisions of Specification 3.0.C are not applicable.

3.8 REFUELING AND FUEL HANDLING

Bases continued

The Spent Fuel Pool Special Ventilation System (SFPSVS) (Reference 3) is a safeguards system which maintains a negative pressure in the spent fuel enclosure upon detection of high area radiation. The Spent Fuel Pool Normal Ventilation System is automatically isolated and exhaust air is drawn through filter modules containing a roughing filter, particulate filter, and a charcoal filter before discharge to the environment via one of the Shield Building exhaust stacks. Two completely redundant trains are provided. The exhaust fan and filter of each train are shared with the corresponding train of the Containment In-service, Purge System. High efficiency particulate absolute (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers in each SFPSVS filter train. The charcoal adsorbers are installed to reduce the potential release of radioiodine to the environment. Doors to the spent fuel enclosure are required to be maintained closed when SFPSVS OPERABILITY is required. Opening of personnel doors for personnel use is acceptable (blocking a door open is not allowed) (Reference 9).

During movement of irradiated fuel assemblies or control rods, a water level of 23 feet is maintained to provide sufficient shielding.

The water level may be lowered to the top of the RCCA drive shafts for latching and unlatching. The water level may also be lowered below 20 feet for upper internals removal/replacement. The basis for these allowance(s) are (1) the refueling cavity pool has sufficient level to allow time to initiate repairs or emergency procedures to cool the core, (2) during latching/unlatching and upper internals removal/replacement the level is closely monitored because the activity uses this level as a reference point, (3) the time spent at this level is minimal.

The Prairie Island spent fuel storage racks have been analyzed (Reference 8) in accordance with the methodology contained in Reference 5. That methodology ensures that the spent fuel rack multiplication factor, K_{eff}, is less than 0.95 as recommended by ANSI 57.2-1983 (Reference 6) and NRC guidance (Reference 7). The codes, methods and techniques contained in the methodology are used to satisfy this criterion on K_{eff}. The resulting Prairie Island spent fuel rack criticality analysis allows for the storage of fuel assemblies with enrichments up to a maximum of 5.0 weight percent U-235 while maintaining $K_{eff} \leq 0.95$ including uncertainties and credit for soluble boron. In addition, sub-criticality of the pool ($K_{eff} < 1.0$) is assured on a 95/95 basis, without the presence of the soluble boron in the pool. Credit is taken for radioactive decay time of the spent fuel and for the presence of fuel rods containing Gadolinium burnable poison.

The Prairie Island specific criticality analysis (Reference 8) utilized the following storage configurations to ensure that the spent fuel pool will remain subcritical during the storage of fuel assemblies with all possible combinations of burnup and initial enrichment:

APPENDIX B

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. DPR-42

Northern States Power Company shall comply with the following conditions on the schedules noted below:

Amendment Number	Additional Condition	Implementation Date
128	1. NSP will provide a licensed operator in the control room on an interim basis for the dedicated purpose of identifying an earthquake which results in a decreasing safeguards cooling water bay level. This operator will be in addition to the normal NSP administrative control room staffing requirements and will be provided until License Condition 2 is satisfied.	Prior to Unit 2 entering Mode 2.
128	2. NSP will submit dynamic finite element analyses of the intake canal banks by July 1, 1997 for NRC review. By December 31, 1998, NSP will complete, as required, additional analyses or physical modifications which provide the basis for extending the time for operator post-seismic cooling water load management and eliminating the dedicated operator specified in License Condition 1.	July 1, 1997, and December 31, 1998, as stated in Condition 2.
128	3. Based on the results of License Condition 2, NSP will revise the Updated Safety Analysis Report to incorporate the changes into the plant design bases. These changes will be included in the next scheduled revision of the Updated Safety Analysis Report following completion of License Condition 2 activities.	At the next USAR update following completion of Condition 2, but no later than June 1, 1999.
130	4. Prairie Island will assure that heavy loads do not present a potential for damaging irradiated fuel through use of 1) a single-failure-proof crane with rigging and procedures which implement Prairie Island commitments to NUREG-0612; or 2) spent fuel pool covers with their implementing plant procedures for installation and use.	This is effective immediately upon issuance of the amendment.

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

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-306

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 122
License No. DPR-60

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Northern States Power Company (the licensee) dated May 7, 1997, as supplemented May 30, July 29, and September 12, 1997, 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 paragraphs 2.C.(2) and 2.C.(5) of Facility Operating License No. DPR-60 are hereby amended to read as follows:

Technical Specifications

(2) The Technical Specifications contained in Appendix A, as revised through Amendment No. 122, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

(5) Additional Conditions

The Additional Conditions contained in Appendix B, as revised through Amendment No. 122, are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Additional Conditions.

3. This license amendment is effective as of the date of issuance, with full implementation within 30 days. License Condition 4 of Appendix B is effective immediately upon issuance of the amendment.

FOR THE NUCLEAR REGULATORY COMMISSION

Beth A. Wetzel

Beth A. Wetzel, Senior Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachments: 1. Changes to the Technical Specifications
2. Appendix B - Additional Conditions

Date of Issuance: September 15, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 122

FACILITY OPERATING LICENSE NO. DPR-60

DOCKET NO. 50-306

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 area of change.

REMOVE	INSERT
TS 3.8-1	TS 3.8-1
TS 3.8-4	TS 3.8-4
B 3.8-2	B 3.8-2

3.8 REFUELING AND FUEL HANDLING

Applicability

Applies to operating limitations associated with fuel-handling operations and CORE ALTERATIONS.

Objectives

To ensure that no incident could occur during fuel handling and CORE ALTERATIONS that would affect public health and safety.

Specification

A. Core Alterations

1. During CORE ALTERATIONS the following conditions shall be satisfied (except as specified in 3.8.A.2 and 3 below):

   a. 1) The equipment hatch shall be closed. In addition, at least one isolation valve shall be OPERABLE or locked closed in each line which penetrates the containment and provides a direct path from containment atmosphere to the outside.

      2) Airlock doors

         a) At least one door in each air lock is closed, or

         b) Both doors in each air lock may be open if:

            i. The containment (high flow) purge system is isolated,

            ii. The inservice (low flow) purge system is capable of automatic isolation,

            iii. At least one door in each air lock is OPERABLE, under procedural control, and capable of being closed within 30 minutes following a fuel handling accident in containment, and

            iv. At least two containment fan coil unit fans are capable of operating in the high speed mode following a fuel handling accident in containment.

   b. Radiation levels in the fuel handling areas of the containment shall be monitored continuously.

3.8.C. Small Spent Fuel Pool Restrictions

No more than 45 recently discharged assemblies shall be located in the small pool (pool No. 1).

D. Spent Fuel Pool Special Ventilation System

1. Both trains of the Spent Fuel Pool Special Ventilation System shall be OPERABLE during movement of irradiated fuel assemblies in the spent fuel pool enclosure (except as specified in 3.8.D.2 and 3.8.D.3 below).

2. With one train of the Spent Fuel Pool Special Ventilation System inoperable, fuel handling operations and crane operations with loads over spent fuel (inside the spent fuel pool enclosure) are permissible during the following 7 days, provided the redundant train is demonstrated OPERABLE prior to proceeding with those operations.

3. With both trains of the Spent Fuel Pool Special Ventilation System inoperable, suspend movement of irradiated fuel assemblies in the spent fuel pool enclosure.

4. The provisions of specification 3.0.C are not applicable.

E. Spent Fuel Pool Storage

1. Fuel Assembly Storage

a. The combination of initial enrichment, burnup and decay time of each fuel assembly stored in the spent fuel pool shall be within the unrestricted range of Figures TS.3.8-1 or TS.3.8-2, as applicable, or fuel assemblies shall be stored in accordance with Specification 5.6.A.1.e.

b. If the requirements of 3.8.E.1.a are not met, immediately initiate action to move any noncomplying fuel assembly to an acceptable location.

c. The provisions of Specification 3.0.C are not applicable.

2. Spent Fuel Pool Boron Concentration

a. The spent fuel pool boron concentration shall be ≥ 1,800 ppm when fuel assemblies are stored in the spent fuel pool.

b. If the spent fuel pool boron concentration is not within limit, then immediately:

1. Suspend movement of fuel assemblies in the spent fuel pool, and

2. Initiate action to restore spent fuel pool boron concentration to within limit.

c. The provisions of Specification 3.0.C are not applicable.

3.8 REFUELING AND FUEL HANDLING

Bases continued

The Spent Fuel Pool Special Ventilation System (SFPSVS) (Reference 3) is a safeguards system which maintains a negative pressure in the spent fuel enclosure upon detection of high area radiation. The Spent Fuel Pool Normal Ventilation System is automatically isolated and exhaust air is drawn through filter modules containing a roughing filter, particulate filter, and a charcoal filter before discharge to the environment via one of the Shield Building exhaust stacks. Two completely redundant trains are provided. The exhaust fan and filter of each train are shared with the corresponding train of the Containment In-service, Purge System. High efficiency particulate absolute (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers in each SFPSVS filter train. The charcoal adsorbers are installed to reduce the potential release of radioiodine to the environment. Doors to the spent fuel enclosure are required to be maintained closed when SFPSVS OPERABILITY is required. Opening of personnel doors for personnel use is acceptable (blocking a door open is not allowed) (Reference 9).

During movement of irradiated fuel assemblies or control rods, a water level of 23 feet is maintained to provide sufficient shielding.

The water level may be lowered to the top of the RCCA drive shafts for latching and unlatching. The water level may also be lowered below 20 feet for upper internals removal/replacement. The basis for these allowance(s) are (1) the refueling cavity pool has sufficient level to allow time to initiate repairs or emergency procedures to cool the core, (2) during latching/unlatching and upper internals removal/replacement the level is closely monitored because the activity uses this level as a reference point, (3) the time spent at this level is minimal.

The Prairie Island spent fuel storage racks have been analyzed (Reference 8) in accordance with the methodology contained in Reference 5. That methodology ensures that the spent fuel rack multiplication factor, K_{eff}, is less than 0.95 as recommended by ANSI 57.2-1983 (Reference 6) and NRC guidance (Reference 7). The codes, methods and techniques contained in the methodology are used to satisfy this criterion on K_{eff}. The resulting Prairie Island spent fuel rack criticality analysis allows for the storage of fuel assemblies with enrichments up to a maximum of 5.0 weight percent U-235 while maintaining $K_{eff} \leq 0.95$ including uncertainties and credit for soluble boron. In addition, sub-criticality of the pool ($K_{eff} < 1.0$) is assured on a 95/95 basis, without the presence of the soluble boron in the pool. Credit is taken for radioactive decay time of the spent fuel and for the presence of fuel rods containing Gadolinium burnable poison.

The Prairie Island specific criticality analysis (Reference 8) utilized the following storage configurations to ensure that the spent fuel pool will remain subcritical during the storage of fuel assemblies with all possible combinations of burnup and initial enrichment:

APPENDIX B

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. DPR-60

Northern States Power Company shall comply with the following conditions on the schedules noted below:

Amendment Number	Additional Condition	Implementation Date
120	1. NSP will provide a licensed operator in the control room on an interim basis for the dedicated purpose of identifying an earthquake which results in a decreasing safeguards cooling water bay level. This operator will be in addition to the normal NSP administrative control room staffing requirements and will be provided until License Condition 2 is satisfied.	Prior to Unit 2 entering Mode 2.
120	2. NSP will submit dynamic finite element analyses of the intake canal banks by July 1, 1997 for NRC review. By December 31, 1998, NSP will complete, as required, additional analyses or physical modifications which provide the basis for extending the time for operator post-seismic cooling water load management and eliminating the dedicated operator specified in License Condition 1.	July 1, 1997, and December 31, 1998, as stated in Condition 2.
120	3. Based on the results of License Condition 2, NSP will revise the Updated Safety Analysis Report to incorporate the changes into the plant design bases. These changes will be included in the next scheduled revision of the Updated Safety Analysis Report following completion of License Condition 2 activities.	At the next USAR update following completion of Condition 2, but no later than June 1, 1999.
122	4. Prairie Island will assure that heavy loads do not present a potential for damaging irradiated fuel through use of 1) a single-failure-proof crane with rigging and procedures which implement Prairie Island commitments to NUREG-0612; or 2) spent fuel pool covers with their implementing plant procedures for installation and use. This is effective immediately upon issuance of the amendment.	This is effective immediately upon issuance of the amendment.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 130 AND 122 TO

FACILITY OPERATING LICENSE NOS. DPR-42 AND DPR-60

NORTHERN STATES POWER COMPANY

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-282 AND 50-306

1.0 INTRODUCTION

By letter dated May 7, 1997, as supplemented May 30, July 29, and September 12, 1997, the Northern States Power Company (NSP or the licensee) requested amendments to the Technical Specifications (TS) appended to Facility Operating License Nos. DPR-42 and DPR-60 for the Prairie Island Nuclear Generating Plant, Unit Nos. 1 and 2. The proposed amendments would revise Technical Specifications (TS) 3.8, "Refueling and Fuel Handling."

The July 29 and September 12, 1997, supplements provided clarifying information within the scope of the original application and did not change the staff's initial proposed no significant hazards considerations determination (62 FR 35850).

On July 17, 1997, the licensee also submitted revisions to two bases pages related to the spent fuel pool personnel access doors. These revisions are also included in this safety evaluation.

2.0 BACKGROUND

The licensee's submittal stated that the proposed amendments would maintain limitations on spent fuel handling relating to spent fuel pool special ventilation system (SFPSVS) operability. Limitations on crane operations in the spent fuel pool enclosure relating to SFPSVS operability would be removed from the TS. These changes are necessary to allow movement of loads over spent fuel stored in the spent fuel pool enclosure with the SFPSVS inoperable. The SFPSVS is designed to provide ventilation of the spent fuel pool enclosure in the event that high radiation is detected. This is a safeguards system with two complete 100 percent capacity trains, each capable of meeting the design requirements.

The licensee also stated that this license amendment request proposes to revise Prairie Island TS 3.8.D., which prescribes the limiting conditions for operability for the SFPSVS. Current TS 3.8.D.3 states: "With both trains of the Spent Fuel Pool Special Ventilation System inoperable, suspend all fuel handling operations...." Compliance with this specification as written could preclude movement of any loads, including new fuel, into the spent fuel pool enclosure. The proposed license amendments would remedy this situation by

specifying SFPSVS operability only during movement of irradiated fuel. It would also eliminate confusion with respect to the applicability of this specification by removing crane operating limitations and conforming it to the guidance of NUREG-1431, "Standard Technical Specifications, Westinghouse Plants," the Improved Standard Technical Specifications.

In its letter dated May 7, 1997, the licensee provided a commitment stating that "Prairie Island will assure that heavy loads do not present a potential for damaging irradiated fuel through use of: 1) a single-failure-proof-crane with rigging and procedures which implement Prairie Island commitments to NUREG-0612; or, 2) spent fuel pool covers and their implementing plant procedures."

In 1992 NSP received approval to handle spent fuel storage casks in Spent Fuel Pool 1 while it contains irradiated fuel. In support of that approval, NSP installed a single-failure-proof auxiliary building crane which meets the design criteria of NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants." Prairie Island has also upgraded the west hoist on the spent fuel pool bridge crane to meet the design criteria of NUREG-0612.

3.0 EVALUATION

The spent fuel pool enclosure is a Class I reinforced concrete structure and is located between the containments for Prairie Island Units 1 and 2. The fuel pool enclosure covers the new fuel pit and both spent fuel storage pools and a spent fuel handling crane, and is completely contained within the auxiliary building. The large overhead auxiliary building crane passes over the spent fuel pool enclosure. At the four corners of the enclosure are personnel access doors. On one side is a third, large single-door opening that is used to transfer new fuel into the enclosure for storage in the new fuel pit. At approximately the center of the enclosure, on either side, are two full height double-doored openings that serve as access for large equipment such as casks. In between the double-doored openings there is a roof slot with movable panels. The double-doored openings and roof slot with movable panels facilitate the handling of large equipment by the auxiliary building crane through the enclosure. In order to move loads into the spent fuel pool enclosure or into the auxiliary building central court area through the spent fuel pool enclosure, the enclosure roof slot doors and the large north and south access doors are required to be opened. Therefore, when loads are handled by the auxiliary building crane in the spent fuel pool enclosure, both trains of the spent fuel pool special ventilation system are inoperable.

The SFPSVS consists of two independent, 100 percent capacity trains, each capable of meeting the design requirements. One train takes suction from the spent fuel pool enclosure and is filtered by the Unit 1 containment inservice purge system. The other train also takes suction from the spent fuel pool enclosure and is filtered by the Unit 2 containment inservice purge system. The minimum flow requirement of SFPSVS is sized to maintain a negative pressure in the spent fuel pool enclosure and provides ventilation in the event that high radiation is detected.

The completely enclosed spent fuel pool area is normally ventilated and exhausted through the normal ventilation system which includes roughing and high efficiency particulate absolute (HEPA) filters. In the event of high radiation in the pool area, signals from radiation monitors in the normal ventilation exhaust duct isolate and shut down the normal ventilation system

and initiate the SFPSVS. The SFPSVS shares the exhaust portion of the containment inservice purge system. The air flow is then directed through redundant roughing, HEPA, and charcoal filters in this system. The licensee has determined through testing that when any doors into the spent fuel pool enclosure are opened, the spent fuel pool special ventilation system is unable to develop a negative pressure within the enclosure and therefore, both trains of the spent fuel pool special ventilation system are inoperable.

Proposed License Conditions:

In its submittal dated September 12, 1997, the licensee proposed the following license condition:

> Prairie Island will assure that heavy loads do not present a potential for damaging irradiated fuel through use of 1) a single-failure-proof crane with rigging and procedures which implement Prairie Island commitments to NUREG-0612; or 2) spent fuel pool covers with their implementing plant procedures for installation and use.

The Prairie Island spent fuel pool cover is comprised of three cover sections. These cover sections may be used individually as work platforms over the spent fuel pools or new fuel pit. The cover sections may also be fastened together and used as a protective barrier for handling heavy loads. NSP has evaluated the consequences of dropping one end of a cover section and concluded that, since both ends of the cover sections are required to extend over the pool deck by a minimum of 8 inches and the cover is lifted a maximum of 6 inches above the pool deck, if a failure of the hoist or rigging on one end of a cover section caused the cover section to drop, this physical geometry prevents the dropped end from falling into the spent fuel pool. Thus, NSP concluded that the cover sections can be handled in a safe manner which assures that the cover sections do not fall into a spent fuel pool.

The staff agrees with the licensee's assessment of a hoist or rigging failure while lifting a spent fuel pool cover and that it will not cause the cover to drop into the pool. Therefore, the use of spent fuel pool covers will provide adequate protection against heavy loads damaging irradiated fuel. And the procedures by which the covers (a heavy load themselves) are lifted will not present a potential for damaging irradiated fuel.

The staff agrees with the licensee's proposed license condition.

The proposed changes to TS 3.8, Refueling and Fuel Handling, and justifications thereof are described below:

Current TS 3.8 REFUELING AND FUEL HANDLING:

Applicability

Applies to operating limitations associated with fuel-handling operations, CORE ALTERATIONS, and crane operations in the spent fuel pool enclosure.

Objectives

To ensure that no incident could occur during fuel handling, CORE ALTERATIONS and crane operations that would affect public health and safety.

Proposed TS 3.8 REFUELING AND FUEL HANDLING:

Applicability

Applies to operating limitations associated with fuel-handling operations and CORE ALTERATIONS.

Objectives

To ensure that no incident could occur during fuel handling and CORE ALTERATIONS that would affect public health and safety.

Justifications:

The licensee provided the rationale for the proposed change as follows:

a. Prairie Island has other cranes that are capable of handling heavy loads in the vicinity of safeguards equipment or irradiated fuel. The other cranes, as proposed, are not part of the TS 3.8 but are controlled through commitment to NUREG-0612 and corresponding plant procedures as controlled in accordance with 10 CFR 50.59 review.

b. The auxiliary building crane and spent fuel pool bridge crane west hoist have been modified to meet NUREG-0612 guidance for single-failure-proof-cranes.

c. Spent fuel pool protective covers may be installed prior to handling heavy loads, up to the protective cover design limits of 24,800 pounds, to prevent loads from dropping into the spent fuel pool as controlled by plant procedures. The plant procedures call for (1) protective covers for the crane handling loads up to the design limit or use of a single-failure-proof crane, and (2) loads in excess of design limit, use of the single-failure-proof auxiliary building crane.

Based upon the above, the licensee concluded that the crane operations in the fuel pool enclosure are safe because heavy loads are handled by cranes, rigging, and procedures that implement the commitments of NUREG-0612 or protective covers. NUREG-0612 presents an overall philosophy that provides a defense-in-depth approach for controlling the handling of heavy loads. The approach is directed to preventing load drops. If a licensee complies with the guidance in NUREG-0612, through use of a single-failure-proof crane or associated rigging and procedures, further action is not needed to reduce the risks associated with the handling of heavy loads. This includes the performance of a load drop analysis. If a crane meets the single-failure-proof criteria of NUREG-0554, "Single Failure Proof Cranes," the load is not postulated to drop and, therefore, any load drop consequences would not be required

to be mitigated. The licensee stated in its May 7 and July 29 submittals that it meets single-failure-proof criteria.

The staff agrees with the licensee's proposed change to crane operations; therefore, the proposed change is acceptable.

Current TS 3.8.D.1 Spent Fuel Pool Special Ventilation System

Both trains of the Spent Fuel Pool Special Ventilation System shall be OPERABLE at all times (except as specified in 3.8.D.2 and 3.8.D.3 below).

Proposed TS 3.8.D.1 Spent Fuel Pool Special Ventilation System

Both trains of the Spent Fuel Pool Special Ventilation System shall be OPERABLE during movement of irradiated fuel assemblies in the spent fuel pool enclosure (except as specified in 3.8.D.2 and 3.8.D.3 below).

Justifications:

The licensee's rationale for the proposed change is as follows:

a. The proposed change will require the SFPSVS to be operable only when irradiated fuel assemblies are moved within the spent fuel pool enclosure to maintain the plant within the design-basis assumptions. SFPSVS operability is not required when the auxiliary building crane is used to move loads into the spent fuel pool enclosure due to the need to open the enclosure roof slot doors.

b. The Prairie Island design-basis fuel handling accident analyses, which assume that all fuel rods in one fuel assembly fail due to the drop of one fuel assembly directly onto another fuel assembly, take credit for operation of the SFPSVS.

c. The movement of heavy loads within the spent fuel pool enclosure is governed by the Prairie Island updated safety analysis report (USAR), Northern States Power (NSP) commitments to NUREG-0612, and plant implementing procedures in combination with physical upgrades of the auxiliary building crane and spent fuel pool bridge crane west hoist to assure that radiological releases due to load movements will not occur. Therefore, SFPSVS operability at all times is inconsistent with the system design.

The staff agrees with the licensee's proposed changes as related to the operability of SFPSVS and crane operations; therefore, the proposed change is acceptable. NUREG-0612 presents an overall philosophy that provides a defense-in-depth approach for controlling the handling of heavy loads. The approach is directed to preventing load drops. If a licensee complies with the requirements of NUREG-0612, through use of a single-failure-proof crane or associated rigging and procedures, further action is not required to reduce the risks associated with the handling of heavy loads.

Current TS 3.8.D.2 Spent Fuel Pool Special Ventilation System

With one train of the Spent Fuel Pool Special Ventilation System inoperable, fuel handling operations and crane operations with loads over spent fuel (inside the spent fuel pool enclosure) are permissible during the following 7 days, provided the redundant train is demonstrated OPERABLE prior to proceeding with those operations.

Proposed TS 3.8.D.2 Spent Fuel Pool Special Ventilation System

If one train of the Spent Fuel Pool Special Ventilation System is inoperable during movement of irradiated fuel assemblies in the spent fuel pool enclosure, restore the train to OPERABLE status within 7 days. If the inoperable train is not restored within 7 days, place the OPERABLE Spent Fuel Pool Special Ventilation System in operation or suspend movement of irradiated fuel assemblies in the spent fuel pool enclosure.

Justifications:

The licensee provided the following rationale as justification for the proposed change:

a. The proposed change provides an approach consistent with the current TS such that if one train of the spent fuel pool special ventilation system is inoperable the proposed TS would allow movement of irradiated fuel to continue for 7 days.

b. This 7-day completion time is backed up by a fully redundant SFPSVS train and is acceptable due to the low probability of a fuel handling accident during this period. An alternative to placing the redundant SFPSVS train in service is to suspend movement of irradiated fuel assemblies, which precludes a fuel handling accident.

c. The deletion of crane operations is justified by use of spent fuel pool protective covers to prevent load drops from falling into the spent fuel pool, or use of cranes upgraded to NUREG-0612 single-failure-proof specifications assures that the potential for a load drop is extremely small.

d. The demonstration of operability of the redundant train prior to resumption of fuel handling operations is justified due to (1) a low probability of a fuel handling accident during a 7-day period, (2) a low probability of the redundant SFPSVS train failure since each train is operated monthly, and (3) each SFPSVS train, within 30 days prior to handling irradiated fuel, is actuated by a test radiation source.

e. The proposed TS that allows for the continuous operation of the operable SFPSVS train is justified beyond 7 days without restoration of the inoperable train based upon: (1) Such an occurrence is unlikely and NSP does not intend to operate without safeguards trains operable, and (2) SFPSVS capability through the requirements of current TS 4.14 and invoking the TS.4.15.B.1 provision, which would require the SFPSVS to be inoperable to allow required surveillance testing to be performed after 720 hours of operation.

The NRC staff does not agree with the licensee's claim that the proposed change provides an approach consistent with the current TS such that if one train of spent fuel pool special ventilation system is inoperable the proposed TS would allow movement of irradiated fuel to continue for 7 days. With one train of SFPSVS inoperable, the current TS does permit fuel handling operations and crane operations with loads over spent fuel (inside the spent fuel pool enclosure) for 7 days, but it also requires the redundant train to be demonstrated OPERABLE prior to proceeding with these operations. The proposed change to TS 3.8.D.2 is largely based upon a probabilistic argument that has not been quantified by the licensee. The staff believes that it does not meet the intent of the current TS, in that it allows one train to be inoperable for an indefinite period, thereby reducing the existing margin of safety. Therefore, this proposed change is denied.

Current TS 3.8.D.3 Spent Fuel Pool Special Ventilation System

With both trains of the Spent Fuel Pool Special Ventilation System inoperable, suspend all fuel handling operations and crane operations with loads over spent fuel (inside the spent fuel pool enclosure).

Proposed TS 3.8.D.3 Spent Fuel Pool Special Ventilation System

With both trains of the Spent Fuel Pool Special Ventilation System inoperable, suspend movement of irradiated fuel assemblies in the spent fuel pool enclosure.

Justifications:

The licensee stated that the rationale for the proposed change is similar to the rationale provided for the TS 3.8.D.2

The staff has determined that the rationale for permitting the proposed change is similar to the rationale provided in the justification for the proposed TS 3.8.D.1.

Proposed TS 3.8.D.1 (a) states that the proposed change will require the SFPSVS to be operable only when irradiated fuel assemblies are moved within the spent fuel pool enclosure to maintain the plant within the design basis assumptions. SPFSVS operability is not required when the auxiliary building crane is used to move loads into the spent fuel pool enclosure due to the need to open the enclosure roof slot doors; (b) states that the Prairie Island design-basis fuel handling accident analyses, which assume that all fuel rods in one fuel assembly fail due to the drop of one fuel assembly directly onto another fuel assembly, take credit for operation of the SFPSVS; and (c) states that the movement of heavy loads within the spent fuel pool enclosure is governed by the Prairie Island USAR, NSP commitments to NUREG-0612, and plant implementing procedures in combination with physical upgrades of the auxiliary building crane and spent fuel pool bridge crane west hoist to assure that radiological releases due to load movements will not occur. Thus, SFPSVS operability at all times is inconsistent with the system design.

The staff agrees with the licensee's proposed change for the operability of SFPSVS and crane operations and accepts the proposed change.

Current TS 3.8 Bases REFUELING AND FUEL HANDLING

The Spent Fuel Pool Special Ventilation System (Reference 3) is a safeguards system which maintains a negative pressure in the spent fuel enclosure upon detection of high area radiation. The Spent Fuel Pool Normal Ventilation System is automatically isolated and exhaust air is drawn through filter modules containing a roughing filter, particulate filter, and a charcoal filter before discharge to the environment via one of the Shield Building exhaust stacks. Two completely redundant trains are provided. The exhaust fan and filter of each train are shared with the corresponding train of the Containment In-service Purge System. High efficiency particulate absolute (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers in each SFPSVS filter train. The charcoal adsorbers are installed to reduce the potential release of radioiodine to the environment.

Proposed TS 3.8 Bases REFUELING AND FUEL HANDLING

The Spent Fuel Pool Special Ventilation System (SFPSVS) (Reference 3) is a safeguards system which maintains a negative pressure in the spent fuel enclosure upon detection of high area radiation. The Spent Fuel Pool Normal Ventilation System is automatically isolated and exhaust air is drawn through filter modules containing a roughing filter, particulate filter, and a charcoal filter before discharge to the environment via one of the Shield Building exhaust stacks. Two completely redundant trains are provided. The exhaust fan and filter of each train are shared with the corresponding train of the Containment In-service Purge System. High efficiency particulate absolute (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers in each SFPSVS filter train. The charcoal adsorbers are installed to reduce the potential release of radioiodine to the environment. Doors to the spent fuel pool enclosure are required to be maintained closed when SFPSVS OPERABILITY is required. Opening of personnel doors for personnel use is acceptable (blocking a door open is not allowed).

Justifications:

The licensee's rationale for the proposed change is as follows:

a. The licensee determined through testing that the SFPSVS is unable to develop a negative pressure in the spent fuel pool enclosure when doors into the enclosure are open. Thus, the doors into the spent fuel pool enclosure must be closed as a condition for spent fuel pool special ventilation system operability.

b. Opening of personnel doors for personnel use is acceptable, since the system will readily establish a negative pressure following spring closure of the door if an event occurs and the system is required to be operable. As stated in the proposed Bases, blocking of doors open is not permitted.

The staff agrees with the licensee's proposed changes for the operability of SFPSVS in relation to securing of the spent fuel pool enclosure doors. Therefore, the staff finds acceptable the proposed change to the Bases of TS 3.8. The proposed change will add "Doors to the spent fuel pool enclosure are required to be maintained closed when SFPSVS

OPERABILITY is required. Opening of personnel doors for personnel use is acceptable (blocking a door is not allowed)."

By letter dated July 17, 1997, the licensee submitted two changes to the Prairie Island TS Bases related to the spent fuel pool personnel access doors. One change is addressed above; the other added a reference. The staff finds the addition of the reference acceptable and has enclosed the revised Bases page B.3.8-5.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve 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 amendments involve no significant hazards consideration and there has been no public comment on such finding (62 FR 35850). Accordingly, the amendments meet 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 amendments.

6.0 CONCLUSION

The Commission 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: J. Raval

Date: September 15, 1997

7590-01-P

UNITED STATES NUCLEAR REGULATORY COMMISSION

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-282 and 50-306

NOTICE OF PARTIAL DENIAL OF AMENDMENTS TO FACILITY OPERATING LICENSES AND OPPORTUNITY FOR HEARING

The U.S. Nuclear Regulatory Commission (the Commission) has denied a portion of a request by Northern States Power Company (the licensee) for amendments to Facility Operating Licenses Nos. DPR-42 and DPR-60 issued to the licensee for operation of the Prairie Island Nuclear Generating Plant, Unit Nos. 1 and 2, located in Goodhue County, Minnesota. Notice of Consideration of Issuance of these amendments was published in the FEDERAL REGISTER on July 2, 1997 (62 FR 35850).

The purpose of the licensee's amendment request was to revise the Technical Specifications to delete limitations on crane operations in the spent fuel pool enclosure relating to spent fuel pool special ventilation system operability and conform the Technical Specifications to the guidance of NUREG-1431, "Standard Technical Specifications, Westinghouse Plants."

The NRC staff has concluded that a portion of the licensee's request cannot be granted. The licensee was notified of the Commission's denial of the proposed change by a letter dated September 15 , 1997.

By October 20, 1997, the licensee may demand a hearing with respect to the denial described above. Any person whose interest may be affected by this proceeding may file a written petition for leave to intervene.

A request for hearing or petition for leave to intervene must be filed with the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Rulemakings and Adjudications Staff, or may be delivered to the Commission's Public Document Room, the Gelman Building, 2120 L Street, NW., Washington, DC, by the above date.

A copy of any petitions should also be sent to the Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, DC 20555, and to Jay Silberg, Esq., Shaw, Pittman, Potts, and Trowbridge, 2300 N Street, NW, Washington, DC 20037, attorney for the licensee.

For further details with respect to this action, see (1) the application for amendments dated May 7, 1997, as supplemented May 30, July 29, and September 12, 1997, and (2) the Commission's letter to the licensee dated September 15 , 1997.

These documents are available for public inspection at the Commission's Public Document Room, the Gelman Building, 2120 L Street, NW., Washington, DC, and at the local public document room located at the Minneapolis Public Library, Technology and Science Department, 300 Nicollet Mall, Minneapolis, Minnesota 55401.

Dated at Rockville, Maryland, this 15th day of September 1997.

For the Nuclear Regulatory Commission

Beth A. Wetzel

Beth A. Wetzel, Senior Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

3.8 REFUELING AND FUEL HANDLING

Bases continued

When the concentration of boron in the spent fuel pool is less than required by Specification 3.8.E.2.a, immediate action must be taken to preclude the occurrence of an accident or to mitigate the consequences of an accident in progress. This is most efficiently achieved by immediately suspending the movement of fuel assemblies. The concentration of boron is restored simultaneously with suspending movement of fuel assemblies. The suspension of fuel movement is not intended to preclude movement of a fuel assembly to a safe position.

References

1. USAR, Section 10.2.1.2
2. USAR, Section 14.5.1
3. USAR, Section 10.3.7
4. "Criticality Analysis of the Prairie Island Units 1 & 2 Fresh and Spent Fuel Racks", Westinghouse Commercial Nuclear Fuel Division, February 1993.
5. WCAP-14416-NP-A, "Westinghouse Spent Fuel Rack Criticality Analysis Methodology", Revision 1, November 1996.
6. American Nuclear Society, "American National Standard Design Requirements for Light Water Reactor Fuel Storage Facilities at Nuclear Power Plants", ANSI/ANS-57.2-1983, October 7, 1983.
7. Nuclear Regulatory Commission, Letter to All Power Reactor Licensees from B. K. Grimes, "OT Position for Review and Acceptance of Spent Fuel Storage and Handling Applications", April 14, 1978.
8. "Northern States Power Prairie Island Units 1 and 2 Spent Fuel Rack Criticality Analysis Using Soluble Boron Credit", Westinghouse Commercial Nuclear Fuel Division, February 1997.
9. Safety Evaluation 50-475, "Spent Fuel Pool Personnel Access Doors."

3.8 REFUELING AND FUEL HANDLING

Bases continued

When the concentration of boron in the spent fuel pool is less than required by Specification 3.8.E.2.a, immediate action must be taken to preclude the occurrence of an accident or to mitigate the consequences of an accident in progress. This is most efficiently achieved by immediately suspending the movement of fuel assemblies. The concentration of boron is restored simultaneously with suspending movement of fuel assemblies. The suspension of fuel movement is not intended to preclude movement of a fuel assembly to a safe position.

References

1. USAR, Section 10.2.1.2
2. USAR, Section 14.5.1
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