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

July 14, 2000

Mr. Michael D. Wadley, President
NSP Nuclear Generation
Northern States Power Company
414 Nicollet Mall
Minneapolis, MN 55401

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: REACTOR COOLANT PUMP OPERATIONS (TAC NOS. MA7172 AND MA7173)

Dear Mr. Wadley:

The Commission has issued the enclosed Amendment No. 152 to Facility Operating License No. DPR-42 and Amendment No. 143 to Facility Operating License No. DPR-60 for the Prairie Island Nuclear Generating Plant, Units 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated November 19, 1999, as supplemented April 6, 2000.

The amendments revise TS 3.1.A.1, "Reactor Coolant Loops and Coolant Circulation," to (1) establish required actions and a 72-hour time limit for operation with the reactor coolant system (RCS) average temperature above 350 °F and no reactor coolant pumps (RCPs) running, (2) extend from 6 hours to 12 hours the time within which the RCS average temperature must be reduced to below 350 °F if 72 hours are exceeded and no RCPs are restored to operablility and operation, and (3) extend the time limit for operations with no RCPs running from 1 hour to 12 hours for situations where the RCPs are stopped as a result of preplanned work activities.

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,

Tae Kim, Senior Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-282 and 50-306

Enclosures: 1. Amendment No. 152 to DPR-42
2. Amendment No. 143 to DPR-60
3. Safety Evaluation

cc w/encl: See next page

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/RA/
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Prairie Island Nuclear Generating Plant,
Units 1 and 2

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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 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.152
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 November 19, 1999, as supplemented April 6, 2000, 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-42 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 152 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Claudia M. Craig, Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: July 14, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 152

FACILITY OPERATING LICENSE NO. DPR-42

DOCKET NO. 50-282

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

REMOVE	INSERT
TS 3.1-1	TS 3.1-1

3.1 REACTOR COOLANT SYSTEM

Applicability

Applies to the operating status of the reactor coolant system when irradiated fuel is in the containment.

Objective

To specify those limiting conditions for operation of the reactor coolant system which must be met to assure safe reactor operation.

Specification

A. Operational Components

1. Reactor Coolant Loops and Coolant Circulation

a. Reactor Critical

(1) A reactor shall not be made or maintained critical unless both reactor coolant loops (with their associated steam generator and reactor coolant pump) are in operation, except 1) during low power PHYSICS TESTS or 2) as specified in 3.1.A.1.a.(2) below.

(2) With less than the above required reactor coolant loops in operation, be in at least HOT SHUTDOWN within 6 hours.

b. Reactor Coolant System Average Temperature Above 350°F.

(1) Reactor coolant system average temperature shall not exceed 350°F unless both reactor coolant loops (with their associated steam generator and reactor coolant pump) are OPERABLE with at least one reactor coolant loop in operation (except as specified in 3.1.A.1.b(2) and 3.1.A.1.b(3) below).

(2) A reactor coolant loop may be inoperable for 72 hours provided STARTUP OPERATION is discontinued until OPERABILITY is restored. If OPERABILITY is not restored within the time specified, reduce reactor coolant system average temperature below 350°F within the next 6 hours.

(3) With both reactor coolant pumps inoperable or not in operation immediately:
(a) De-energize all control rod drive mechanisms,
(b) Suspend all operations involving a reduction of RCS boron concentration,
(c) Establish and maintain core outlet temperature at least 10°F below saturation temperature, and
(c) Initiate action to restore one reactor coolant pump to OPERABLE status and operation.*

If at least one reactor coolant pump is not restored to OPERABILITY and operation within 72 hours, reduce reactor coolant system average temperature to below 350°F within the next 12 hours. While applicable, this specification supercedes 3.1.A.1.b(2).

* If the RCP shutdown or inoperability was due to preplanned work activities, such as testing, switching, or maintenance, immediate restoration action is not required, but if at least one reactor coolant pump is not restored to OPERABILITY and operation within 12 hours, reduce reactor coolant system average temperature to below 350°F within the next 12 hours.

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

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-306

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 143
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 November 19, 1999, as supplemented April 6, 2000, 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-60 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 143 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Claudia M. Craig, Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: July 14, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 143

FACILITY OPERATING LICENSE NO. DPR-60

DOCKET NO. 50-306

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

REMOVE	INSERT
TS 3.1-1	TS 3.1-1

3.1 REACTOR COOLANT SYSTEM

Applicability

Applies to the operating status of the reactor coolant system when irradiated fuel is in the containment.

Objective

To specify those limiting conditions for operation of the reactor coolant system which must be met to assure safe reactor operation.

Specification

A. Operational Components

1. Reactor Coolant Loops and Coolant Circulation

a. Reactor Critical

(1) A reactor shall not be made or maintained critical unless both reactor coolant loops (with their associated steam generator and reactor coolant pump) are in operation, except 1) during low power PHYSICS TESTS or 2) as specified in 3.1.A.1.a.(2) below.

(2) With less than the above required reactor coolant loops in operation, be in at least HOT SHUTDOWN within 6 hours.

b. Reactor Coolant System Average Temperature Above 350°F.

(1) Reactor coolant system average temperature shall not exceed 350°F unless both reactor coolant loops (with their associated steam generator and reactor coolant pump) are OPERABLE with at least one reactor coolant loop in operation (except as specified in 3.1.A.1.b(2) and 3.1.A.1.b(3) below).

(2) A reactor coolant loop may be inoperable for 72 hours provided STARTUP OPERATION is discontinued until OPERABILITY is restored. If OPERABILITY is not restored within the time specified, reduce reactor coolant system average temperature below 350°F within the next 6 hours.

(3) With both reactor coolant pumps inoperable or not in operation immediately:
(a) De-energize all control rod drive mechanisms,
(b) Suspend all operations involving a reduction of RCS boron concentration,
(c) Establish and maintain core outlet temperature at least 10°F below saturation temperature, and
(c) Initiate action to restore one reactor coolant pump to OPERABLE status and operation.*

If at least one reactor coolant pump is not restored to OPERABILITY and operation within 72 hours, reduce reactor coolant system average temperature to below 350°F within the next 12 hours. While applicable, this specification supercedes 3.1.A.1.b(2).

* If the RCP shutdown or inoperability was due to preplanned work activities, such as testing, switching, or maintenance, immediate restoration action is not required, but if at least one reactor coolant pump is not restored to OPERABILITY and operation within 12 hours, reduce reactor coolant system average temperature to below 350°F within the next 12 hours.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 152 TO FACILITY OPERATING LICENSE NO. DPR-42

AND AMENDMENT NO. 143 TO FACILITY OPERATION LICENSE NO. DPR-60

NORTHERN STATES POWER COMPANY

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2

DOCKET NOS. 50-282 AND 50-306

1.0 INTRODUCTION

By application dated November 19, 1999, as supplemented April 6, 2000, Northern States Power Company (NSP or the licensee) requested changes to Technical Specifications for the Prairie Island Nuclear Generating Plant, Units 1 and 2. The proposed changes would modify TS 3.1.A.1, "Reactor Coolant Loops and Coolant Circulation," to (1) establish required actions and a 72-hour time limit for operation with the reactor coolant system (RCS) average temperature above 350 °F and no reactor coolant pumps (RCPs) running, (2) extend from 6 hours to 12 hours the time within which the RCS average temperature must be reduced to below 350 °F if 72 hours are exceeded and no RCPs are restored to operablility and operation, and (3) extend the time limit for operations with no RCPs running from 1 hour to 12 hours for situations where the RCPs are stopped as a result of preplanned work activities.

The April 6, 2000, letter provided clarifying information and was within the scope of the November 29, 1999 Federal Register notice.

2.0 BACKGROUND

The licensee proposed to add the following TS to establish the required actions for operation with the RCS average temperature above 350 °F and no RCPs in operation:

"(3) With both reactor coolant pumps inoperable or not in operation immediately:

- *(a) De-energize all control rod drive mechanisms,*
- *(b) Suspend all operations involving a reduction of RCS boron concentration,*
- *(c) Establish and maintain the core outlet temperature at least 10°F below saturation temperature, and*
- *(d) Initiate action to restore one reactor coolant pump to OPERABLE status and operation.**

If at least one reactor coolant pump is not restored to OPERABILITY and operation within 72 hours, reduce reactor coolant system average temperature to

below 350 °F within the next 12 hours. While applicable, this specification supercedes 3.1.A.1.b(2).

* *If the RCP shutdown or inoperability was due to preplanned work activities, such as testing, switching, or maintenance, immediate restoration action is not required, but if at least one reactor coolant pump is not restored to operability and operation within 12 hours, reduce reactor coolant system average temperature to below 350 °F within the next 12 hours."*

The above consists of the following changes to the existing TS. First, the above would add a new TS (TS 3.1.A.1.b(3)) which would include the required actions to be taken when the RCS average temperature is above 350 °F and both RCPs are inoperable or not in operation. Second, the above would establish a 72-hour time limit for operation with the RCS average temperature above 350 °F and no RCPs are in operation. The 72 hours would be allowed for recovery actions to restore one RCP to operable status and operation. Third, the above would extend from 6 hours to 12 hours the time within which the RCS average temperature must be reduced to below 350 °F if 72 hours are exceeded and no RCP is returned to operable status and operation. Fourth, the above would extend from 1 hour to 12 hours the time limit for preplanned operation with RCS average temperature above 350 °F and no RCPs in operation. In addition, the above includes clarifying and format changes. The following section provides an evaluation of each of these changes.

3.0 EVALUATION

3.1 Required Actions For Operation With No RCPs in Operation

When both RCPs are not in operation, the existing TS includes an asterisk note which requires:

(1) the reactor to be subcritical,
(2) the reactor trip breakers to be open,
(3) no operations to be permitted that would cause dilution of the reactor coolant boron concentration, and
(4) the core outlet temperature to be maintained at least 10 °F below saturation temperature.

The licensee proposed to replace these requirements with Actions (a) through (d) discussed in the previous section. Actions (a) through (d) are repeated here for convenience:

(a) De-energize all control rod drive mechanisms (CRDMs),
(b) Suspend all operations involving a reduction of RCS boron concentration,
(c) Establish and maintain the core outlet temperature at least 10 °F below saturation temperature, and
(d) Initiate action to restore one RCP to operable status and operation.

Proposed Actions (a) through (d), in combination with existing TS 3.1.A.1.a, are essentially the same as the existing requirements in the asterisk note. Specifically, Item (1) described above is covered by existing TS 3.1.A.1.a which prohibits the licensee from making or maintaining the reactor critical unless both RCS loops (with their associated steam generator and RCP) are in operation. Item (2) is covered by Action (a) which requires the licensee to de-energize all

CRDMs. Item (3) is covered by Action (b) which requires the licensee to suspend all operations involving a reduction of RCS boron concentration. Item (4) is covered by Action (c) which requires the licensee to establish and maintain the core outlet temperature at least 10 °F below saturation temperature. In addition to the existing requirements, and consistent with NUREG-1431, Volume 1, Revision 1, "Standard Technical Specifications Westinghouse Plants" (STS), the licensee proposed a new requirement in Action (d) to immediately take action to restore one RCP to operable status and operation. This action was not explicitly included in the existing TS.

The staff has reviewed the proposed changes described in this section and finds that the proposed changes are consistent with the requirements and wording of Note b and Actions D.1, D.2, and D.3 of TS 3.4.5, "RCS Loops -- MODE 3," in the standard TS (STS). The staff further finds that the proposed actions adequately cover the requirements contained in the licensee's existing TS. Therefore, the staff finds these changes acceptable.

3.2 Extension of Time Allowed For Recovery Action

The existing TS does not include specific actions for situations where both RCPs are not in operation and the RCS average temperature is above 350 °F. Therefore, for such a situation, the licensee would enter TS 3.0.C. TS 3.0.C requires that when a limiting condition for operation is not met, and a required action is not specified or cannot be satisfied, within 1 hour, initiate the actions necessary to place the affected unit in a condition in which the equipment is not required to be operable. In the case when both RCPs are not in operation, TS 3.0.C also requires the plant to be in at least hot shutdown within the next 6 hours, and that the RCS average temperature be reduced to below 350 °F within the following 6 hours. The licensee's proposed changes would extend this time to 72 hours.

The bases for requiring RCPs to be in operation when the RCS average temperature is above 350 °F are: (1) to mitigate the power excursion due to the postulated event of an inadvertent rod withdrawal from subcritical conditions, (2) to remove decay heat from the core, and (3) to provide sufficient mixing of the RCS to maintain a homogeneous boron concentration.

The inadvertent rod withdrawal event is only credible when the CRDMs are energized. Action (a) in the proposed TS requires that the CRDMs be immediately de-energized when both RCPs are not in operation. Therefore, Action (a) provides the necessary barriers to preclude an inadvertent rod withdrawal.

The capability to remove decay heat by means of single phase natural circulation (i.e., with both RCPs not in operation) was demonstrated for Prairie Island through Westinghouse calculations and validation. Natural circulation flow versus reactor power was calculated by Westinghouse using an analytical model based on the conditions of equilibrium flow and maximum loop flow impedance. The results from this model were validated against measured data for a variety of Westinghouse pressurized water reactors. The calculated natural circulation flow values presented in the Point Beach and Ginna Nuclear Plants' Updated Final Safety Analysis Reports are in close agreement to each other and demonstrate that the flow-to-power ratio for natural circulation is always greater than 1.0. They further demonstrate that the ratio increases as the decay heat power levels decrease. Because Prairie Island, Point Beach, and Ginna have nearly identical RCS designs, the natural circulation conditions calculated for Point Beach and

Ginna support the conclusion that extended natural circulation operation at Prairie Island will not degrade reactor fuel thermal margins.

A supply of cooling water must be available for the auxiliary feedwater (AFW) system to pump to the steam generators. This supply must be sufficient to remove decay heat during the period of steady-state natural circulation operation in Mode 3 and to remove the decay heat and the latent heat in the RCS during cooldown to Mode 4. An ample quantity of cooling water can be supplied by the cooling water system drawing suction on the river. For economic reasons related to steam generator performance and steam generator secondary side chemistry control, the preferred source of cooling water is condensate water. Condensate water is available from three 150,000-gallon capacity condensate storage tanks. The quantity of water required by TS 3.4.B.1.d to be in these tanks (i.e., 100,000 gallons) in combination with the available supply from the river through the cooling water system is sufficient to support natural circulation operation for the period of time required to achieve Mode 4.

Natural circulation can be established and maintained as long as significant voiding in the RCS is prevented and the steam generator water level is maintained. While maintaining RCS pressure and temperature, voiding in the RCS is prevented by Action (c), which requires that the core outlet temperature be maintained at least 10 °F below saturation temperature. For a natural circulation cooldown, licensee procedures provide additional guidance to the operators on required cooldown rates, required subcooling margins, and required hold points to allow for upper head cooling. This guidance was incorporated to ensure that upper-head voiding is prevented. This guidance was the subject of the licensee's response to Generic Letter (GL) 81-21, "Natural Circulation Cooldown," which was issued May 5, 1981. The staff reviewed the licensee's response to this GL and in a letter to the licensee dated July 18, 1993, concluded that there was reasonable assurance that steam formation in the upper head of the reactor vessel during natural circulation cooldown will not occur. The staff reviewed the correspondence related to GL 81-21 and concludes that the changes evaluated in this report do not negatively impact the conclusion related to that matter.

Steam generator water level is maintained by flow from the AFW system, which has both a turbine-driven pump and a motor-driven pump powered from a vital electrical power supply. Each pump is capable of providing 100 percent of the required design cooling water flow rate to both steam generators. Although the turbine-driven AFW pump will be operating below nominal design capacity when the RCS average temperature is below 350 °F, significant margin exists between the heat removal capacity (flow rate) provided by the pump and the core decay heat rate at 72 hours after reactor trip.

To remove the heat transferred into the steam generators, steam will be discharged to the atmosphere by either the steam generator's power-operated relief valve or its safety relief valve. A single operable steam generator under natural circulation conditions is sufficient to remove the decay heat. The other steam generator provides the required redundancy.

During Mode 3, it will be necessary to increase boron concentration to establish the required shutdown margin. The mixing provided by natural circulation is slower than that provided with RCPs in operation. The capability to provide mixing in the RCS under natural circulation conditions was demonstrated by a test at the Diablo Canyon Nuclear Plant on March 29, 1985, which was determined to be applicable to Prairie Island. The test concluded that RCS mixing under natural circulation was adequate for the mixing of boron added to the RCS. Operations

involving reduction of boron concentration, however, can result in nonuniform boron concentrations in the RCS, with portions of the RCS at lower boron concentrations than the core region. The licensee's analyses methodology does not address this situation, and, therefore, such operations must be avoided. Proposed Action (b) requires the licensee to suspend operations involving a reduction of RCS boron concentration when both RCPs are inoperable or not in operation; and, therefore, precludes such situations.

Based on the above, the staff concurs with the licensee's conclusion that natural circulation operation at Prairie Island, in combination with the proposed required actions, will provide sufficient decay heat removal and RCS mixing in Mode 3 to satisfy the intent of the bases for requiring the RCPs to be in operation. In addition, the licensee's submittal indicated that maintaining the plant in Mode 3 for 72 hours while taking actions to restore RCPs provides several desirable plant safety enhancements. These include:

(1) If RCPs are restored within 72 hours, an unnecessary thermal cycling of the RCS and the residual heat removal system would have been avoided.

(2) If RCPs are restored within 72 hours, the need for plant operations personnel to perform a natural circulation cooldown either with or without the "non-vital AC powered" CRDM cooling fans would have been avoided.

(3) The availability of a method for removing decay heat that is not dependent on a diesel generator would have been preserved (i.e., natural circulation with the turbine-driven AFW pump providing water to the steam generators).

(4) After 72 hours, the decay heat will be less than half of the decay heat at 6 hours.

(5) If offsite power is lost to both units and sufficient offsite power is not available to permit an RCP on each or either unit to be restarted within 72 hours, the two units can first be stabilized in natural circulation operation and then taken sequentially to Mode 4. When handling a transient on one unit, it is preferable to have the other unit maintained in a stable condition.

The staff concurs with the above safety enhancements proposed by the licensee. In addition, the requested change to add the 72-hour time limit for actions to restore an RCP is consistent with the completion time allowed for this action in the STS (STS 3.4.5 Actions A and D). Based on the above the staff finds the proposed changes acceptable.

3.3 Extension of Time to Reduce RCS Average Temperature

The licensee proposed to add a statement in TS 3.1.A.1.b(3) to indicate that while applicable, this specification supercedes TS 3.1.A.1.b(2). This change has two effects. The first is a change in the wording of the required actions statement for the situation when no RCPs are running. The existing TS requires that startup operation be discontinued. The proposed TS would instead require the actions discussed in Section 2.1 (i.e., immediately de-energize all CRDMs, immediately suspend all operations involving a reduction of RCS boron concentration, immediately establish and maintain the core outlet temperature at least 10 °F below saturation temperature, and immediately initiate action to restore one RCS loop to operable status and operation). The proposed actions are the same as those provided in the STS and are

consistent with the existing requirement to discontinue startup operations. Therefore, this change is acceptable.

The second effect is to allow the plant 12 hours instead of the existing 6 hours to reduce RCS average temperature to below 350°F. The extension from 6 hours to 12 hours is needed because this action will be required when both RCPs are inoperable and the plant will be cooled on natural circulation. The licensee's submittal indicated that a cooldown from Mode 3 to Mode 4 on natural circulation requires approximately 12 hours. The licensee stated that 2 hours would be required to establish the RCS boron concentration needed to maintain the shutdown margin required for Mode 4 and at least 8 additional hours would be required to cool the plant down from 547 °F to less than 350 °F. The licensee's submittal stated that the cooldown rate is limited to a maximum of 25 °F/hour in order to preclude void formation in the reactor head. Based on the above discussion, the proposal to allow 12 hours for cooling the plant is reasonable and necessary to ensure that the cooldown is conducted in an deliberate and safe manner. Furthermore, the proposed 12 hours for cooling is consistent with the time provided for the corresponding required action in the STS (TS 3.4.5 Action B.1). The Bases to the STS state that the completion time of 12 hours is compatible with required operations to achieve cooldown and depressurization from the existing plant conditions in an orderly manner and without challenging plant systems. This is consistent with the justification provided by the licensee for 12 hours. Based on the above discussion, this change is acceptable.

3.4 Extension of Time Allowed For Preplanned Operation With No RCPs in Operation

The electrical distribution system at Prairie Island provides the flexibility for the licensee to power any unit's RCPs from alternate power sources from the other unit. In order to accomplish this task in Mode 3, several actions must be performed. These include load shedding, switching, protective relay setpoint changes, and load restorations. These actions require a significant amount of time for completion because:

(1) One or more disconnects must be operated to effect a change in the alignment of the alternate power supply. These disconnects are not designed to be operated under load. To provide for physical safety of the operations personnel and the equipment, these activities can only be done with the buses de-energized.

(2) The breakers between the RCP buses and their power sources must be opened and racked out for the safety of the personnel operating the necessary manual disconnects.

(3) If the supply side of a reserve transformer is to be de-energized and isolated, then breakers and disconnects under the jurisdiction of the system control center (SCC) must be operated. The SCC must authorize all switching and provide clearances for all work activities involving equipment under SCC jurisdiction.

(4) In addition to the RCPs, the involved buses also power the main feedwater pumps. Therefore, significant loads will be transferred from one part of the switchyard to another. This switching must be coordinated with the SCC to have system voltages adjusted prior to the restart of these large motors.

(5) This switching activity temporarily involves the complicated sequencing of activities at multiple locations and amongst multiple workgroups. Such an infrequent test or evolution has attendant upon it more extensive pre-job briefings, activity oversight, checkpoints, and communications than a routine operating evolution.

During this procedure, both RCPs must be de-energized. The existing TS includes a note which allows the licensee to shut down both RCPs for up to 1 hour when the RCS average temperature is above 350 °F. However, if neither RCP is restored to operation within 1 hour, the existing TS requires the licensee to cool the affected unit down to an RCS average temperature less than 350 °F. Based on plant-specific experience at Prairie Island, the note does not provide sufficient time to complete all the necessary actions to accomplish the realignment. Therefore, the licensee proposed to extend the time allowed in the note from 1 hour to 12 hours. This change would allow the licensee to perform the necessary tasks for the realignment in a safe and deliberate manner without having to cool down the affected unit. In addition, the proposed wording for the extension in the time limit clarifies that the 12-hour allowance only applies to situations where the RCP inoperablity is the result of preplanned work activities.

As discussed in the STS, the intent of the allowance to shut down all RCPs for 1 hour in the TS note was to permit certain required testing. Such testing was not originally intended to include the procedure discussed in this section. However, should the need arise for the procedure discussed here (as has occurred in the past), Prairie Island's TS would require the licensee to cycle the unit through a cooldown in order to complete the procedure without violating the TS.

As was discussed in Section 2.2 above, the bases for requiring RCPs to be in operation when the RCS average temperature is above 350 °F are: (1) to mitigate the power excursion due to the postulated design basis event of an inadvertent rod withdrawal from subcritical conditions, (2) to remove decay heat from the core, and (3) to provide sufficient mixing of the RCS to maintain a homogeneous boron concentration. Each of these items was evaluated in Section 2.2 for the case where both RCPs are lost for 72 hours. The evaluation provided in Section 2.2 is applicable to this section as well. Furthermore, the safety significance of the condition attendant with a planned work evolution that disables both RCPs for 12 hours (as would be allowed by the proposed note) is bounded by the safety significance of the conditions attendant with unplanned events that disable both RCPs for 72 hours (Section 2.2). Natural circulation has been demonstrated to provide sufficient cooling for decay heat removal and sufficient mixing, during boron addition, to maintain a homogeneous boron concentration in the RCS. In addition, proposed Action (a) provides the necessary barriers to preclude an inadvertent rod withdrawal. Proposed Action (c) provides assurance that the conditions required for single-phase natural circulation are maintained. Furthermore, based on plant-specific experience, it is anticipated that situations that would require shutting down and disabling both RCPs in Mode 3 will be very infrequent. Based on past experience, this frequency is expected to average less than once per 5 years of reactor operation.

Based on the above discussion and the evaluation included in Section 2.2, for the case where no RCPs are in operation for 72 hours, the staff finds this change acceptable.

3.5 Applicability of Note For Preplanned Operation With Both RCPs Not in Operation

The licensee proposed to move the asterisk note for TS 3.1.A.1.b(1), which allows both RCPs to be deliberately shut down for up to 1 hour, to Action (d) in proposed TS 3.1.A.1.b(3). In addition, the licensee proposed to delete from the asterisk note the required actions that have been incorporated into TS 3.1.A.1.b(3).

The existing TS requires at least one RCP to be in operation when RCS average temperature is above 350 °F. The existing TS includes an exception to this requirement in the form of a note which allows the licensee to deliberately shut down both RCPs for up to 1 hour. The purpose of this note is to allow the licensee to perform tests that are designed to validate various accident analyses values. The proposed TS also requires that at least one RCP be in operation when the RCS average temperature is above 350 °F. Furthermore, for situations where both RCPs are inoperable, proposed TS 3.1.A.1.b(3)(d) requires operators to immediately take action to restore one RCP to operable status. Therefore, in order to retain the allowance by the note to shut down both RCPs without having to implement TS 3.1.A.1.b(3)(d) and in order to correctly apply the note to the proposed TS-required action where the note is expected to be invoked, it was necessary to relocate the note to TS 3.1.A.1.b(3)(d). The staff reviewed this change (the relocation of applicability) and finds that the change is necessary, clarifying in nature, and does not change the existing requirements.

In addition, the conditions provided in the existing note are either contained in or adequately covered by the required actions in proposed TS 3.1.A.1.b(3) in combination with existing TS 3.1.A.1.a. This was specifically addressed in Section 2.1 above.

Based on the above discussion, the staff finds these changes acceptable.

The staff has reviewed the licensee's proposed changes and finds that, except for the extension from 1 hour to 12 hours of the time allowed for shutting down both RCPs (Section 3.2), the proposed changes are consistent with the STS. The staff also finds these changes acceptable as discussed in Section 3.0 above. The staff finds that the proposed change to extend to 12 hours the time allowed for shutting down both RCPs necessary to allow operators to complete the tasks to realign the electrical feed to the RCPs in a safe and deliberate manner without having to unnecessarily cool down the affected unit. The staff further concurs with the licensee's conclusion that the safety significance of the condition attendant with a planned work evolution that disables both RCPs for 12 hours are bounded by the safety significance of the condition attendant with unplanned events that disable both RCPs for 72 hours. Since the latter is allowed by the proposed TS, was found acceptable, and is consistent with the STS, the staff also finds this change acceptable.

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 (64 *FR* 66670). 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.

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