

UNITED STATES NUCLEAR REGULATORY COMMISSION

NORTHERN STATES POWER COMPANY

PRAIRIE ISLAND NUCLEAR GENERATING PLANT

DOCKET NO. 50-282
50-306

REQUEST FOR AMENDMENT TO
OPERATING LICENSES DPR-42 & DPR-60

LICENSE AMENDMENT REQUEST DATED November 6, 1996
Resubmittal of Cooling Water System Technical Specification Amendments

Northern States Power Company, a Minnesota corporation, requests authorization for changes to the Prairie Island Operating License, Appendix A as shown on the attachments labeled Exhibits A, B, and C. Exhibit A describes the proposed changes, reasons for the changes, and the supporting safety evaluation and significant hazards determination. Exhibit B contains current Prairie Island Technical Specification pages marked up to show the proposed changes. Exhibit C contains the revised Technical Specification pages.

This letter contains no restricted or other defense information.

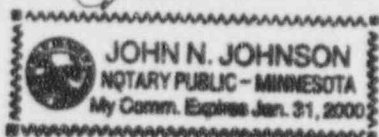
NORTHERN STATES POWER COMPANY

By M. D. Wadley
M. D. Wadley
Plant Manager
Prairie Island Nuclear Generating Plant

On this 6th day of NOVEMBER, 1996, before me a notary public in and for said County, personally appeared M. D. Wadley, Plant Manager, Prairie Island Nuclear Generating Plant, and being first duly sworn acknowledged that he is authorized to execute this document on behalf of Northern States Power Company, that he knows the contents thereof, and that to the best of his knowledge, information, and belief the statements made in it are true and that it is not interposed for delay.

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John N. Johnson 11-06-96



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EXHIBIT A

Description of the Proposed Changes, The Reasons for
Requesting the Changes, and the Supporting Safety
Evaluation/Significant Hazards Determination

Pursuant to 10 CFR Part 50, Sections 50.59 and 50.90, the holders of Operating Licenses DPR-42 and DPR-60 hereby propose the following changes to the Facility Operating Licenses and Appendix A, Technical Specifications:

BACKGROUND

This License Amendment Request revises Prairie Island Technical Specifications relating to the Cooling Water System. These proposed amendments have been identified through operational experience with the vertical Cooling Water pump (#121) as a "swing" safeguards cooling water pump, and preparation efforts associated with the Prairie Island Service Water System Operational Performance Inspection (SWSOPI). The Prairie Island "Cooling Water System" is similar to the system commonly known as the "Service Water System" at other nuclear plants.

In 1992, Prairie Island completed site modifications which upgraded the vertical motor-driven 121 Cooling Water Pump to a safeguards pump. This pump can be powered from either train of Unit 2 safeguards electrical power and accordingly can be valved to supply either cooling water train when the header is split, thus it is a "swing" safeguards cooling water pump. Operating experience since 1992 with 121 Cooling Water Pump as a swing safeguards pump indicate some adjustments in the Technical Specifications are warranted to improve plant operations.

Most of the Technical Specification changes proposed in this License Amendment Request arise from the Prairie Island self-assessment Service Water System Operational Performance Inspection (SWSOPI) completed in late 1995. Changes to

Chapter 5 descriptions were identified for revision to reflect the current plant configuration and operating practices. Also, due to this assessment, Cooling Water system turbine building isolation valve logic will be modified to improve system performance and Technical Specification changes are proposed to support these modifications.

PROPOSED CHANGES AND REASONS FOR CHANGES

The proposed changes to Prairie Island Operating License Appendix A, Technical Specifications are described below, and the specific wording changes are shown in Exhibits B and C.

1. Technical Specifications, TABLE OF CONTENTS: Title of Section 5.1 was revised and title of Section 5.4 deleted.

Justification: Reflects the changes proposed for these Sections.

2. Technical Specification 3.3.D.1.a, Cooling Water System: Insert the phrase "or apply 3.3.D.2.a" in the first sentence.

Justification: Modifications completed in 1992 allow the vertical 121 Cooling Water Pump to be operated as a safeguards cooling water pump in lieu of one of the diesel driven Cooling Water Pumps. The primary objective of this project was providing 121 Cooling Water Pump with safeguards power from safeguards Bus 25 (normal source) or safeguards Bus 26 which significantly increased the Cooling Water System reliability. Also these modifications allow 121 Cooling Water Pump to be operated as a "swing" safeguards Cooling Water Pump in that through manual operator action it can be powered from either Unit 2 safeguards Bus and aligned to either Cooling Water train. These modifications were made to increase plant safety and improve operational flexibility.

Operational experience with use of 121 Cooling Water Pump as a swing pump has demonstrated that the Technical Specifications as currently worded are ambiguous and may limit operational flexibility without a commensurate increase in plant safety. During normal operating conditions, 121 Cooling Water Pump is not considered a safeguards pump. In order to consider 121 Cooling Water Pump as a safeguards pump with one diesel driven Cooling Water Pump inoperable, it has to be aligned by manual operator actions as required by

Specification 3.3.D.1.a. This assures that cooling water is provided to the same train as the train from which the 121 pump is powered. Therefore, if a diesel driven Cooling Water Pump is inoperable, Specification 3.3.D.2.a must be entered to accomplish the manual operator actions required to align 121 for safeguards OPERABILITY.

This amendment proposes to insert the phrase, "or apply 3.3.D.2.a", in Specification 3.3.D.1.a as a specified alternative to alignment of 121 Cooling Water Pump in accordance with Specification 3.3.D.1.a. Since entry into Specification 3.3.D.2.a is always required, there may be circumstances when operating requirements are better served by remaining in Specification 3.3.D.2.a rather than aligning 121 Cooling Water Pump in accordance with Specification 3.3.D.1.a. For example, Circulating Water system temperatures may be elevated due to mandated low system blowdown to the river or due to high ambient temperatures. During these conditions, additional flow through the Cooling Water System is required and 121 Cooling Water Pump would be operating in addition to 11 Cooling Water Pump and 21 Cooling Water Pump to maintain equipment temperatures. In this situation, alignment of 121 Cooling Water Pump in accordance with Specification 3.3.D.1.a would require shutdown of the pump and splitting the header which would be operationally undesirable.

3. Technical Specification 4.5.B, Component Tests, 3. Valves: Provision is made for testing system isolation valve actuation circuits during refueling outages and delete reference to Section 4.2 (Inservice Inspection and Testing programs).

Justification: Currently the turbine building cooling water loads are isolated if the header experiences high flow coincident with low pressure. Recent system assessment activities determined that system performance could be improved if the valve actuation logic were modified to isolate on a SI signal coincident with low header pressure. This modification is planned for implementation in 1997.

Due to presence of the SI logic introduced by this modification it will no longer be practical to test the actuation circuits for these valves during plant operation. Current plans are to test the valve actuation circuits associated with the unit which is shut down. Accordingly this specification is revised to delete reference to Technical Specification 4.2 which would require quarterly testing and instead require actuation circuit testing during refueling outages.

4. Technical Specification 5.1, SITE: Change the title of this section to SITE LOCATION and condense the section to one paragraph which defines the site location.

Justification: The site modifications which upgraded the vertical Cooling Water pump to a safeguards pump included addition of two safeguards diesel generators and a flood protected building to enclose them. Those modifications changed the number of flood doors as described in this Technical Specification section due to openings in the new buildings. Other changes to this section are also required to make it consistent with current plant design.

Prairie Island is currently engaged in the process of converting the Prairie Island Technical Specifications to conform to NUREG-1431. This License Amendment Request proposes to conform this section to the guidance of NUREG-1431 now as the most efficient means of updating the section.

Technical Specification Section 5.1 is included in the Prairie Island Technical Specifications as part of the Design Features Chapter. Design Features Technical Specifications are required by 10CFR50.36(c)(4). Current interpretations of these requirements are expressed in the Improved Standard Technical Specification NUREGs and the Nuclear Regulatory Commission approved conversions to these NUREGs. The guidance provided by these documents indicate that Technical Specification Section 5.1 should be reduced to a single paragraph which describes the location of the site and the minimum radius of the site exclusion area boundary. The other requirements in this section have been or will be relocated to site administrative procedures or the plant Updated Safety Analysis Report.

5. Technical Specification 5.4, ENGINEERED SAFETY FEATURES: This section is deleted in its entirety.

Justification: The self-assessment SWSOPI identified a number of changes required in this section. Since Prairie Island is converting to Improved Technical Specifications, this amendment request proposes to delete the section in its entirety in conformance with NUREG-1431 rather than implement changes now which will be deleted later in the Improved Technical Specifications submittal. This approach provides for more efficient use of Nuclear Regulatory Commission resources and brings this section of Prairie Island Technical Specifications into conformance with NUREG-1431 sooner. The requirements of this section have been or will be relocated to site administrative procedures or the plant Updated Safety Analysis Report.

SAFETY EVALUATION

Entry into LCO 3.3.D.2.a

This proposed Technical Specification amendment would allow the plant to remain in Specification 3.3.D.2.a when a diesel driven Cooling Water Pump becomes inoperable rather than aligning 121 Cooling Water Pump for safeguards operation in accordance with Specification 3.3.D.1.a.

During normal plant operations, the 11 and 21 non-safeguards motor driven Cooling Water Pumps supply cooling water to the common Cooling Water header. The 12 and 22 safeguards diesel driven Cooling Water Pumps and the 121 motor driven Cooling Water Pump are also connected to the common header but are not operating. Under these normal conditions 121 Cooling Water Pump is not considered a safeguards pump although it is normally powered from safeguards Bus 25 (train A).

The Cooling Water system design will automatically start 121 Cooling Water Pump when the Cooling Water header experiences pressure below its automatic start setpoint pressure. If the pressure continues to drop, the diesel driven Cooling Water Pumps will automatically start when the pressure stays below their automatic start setpoint pressure for more than a preset time delay. In the event of an SI signal all three safeguards pumps will start and 121 Cooling Water Pump will trip when both diesels reach a predetermined speed indicating they have started. Also, with an SI signal the header isolation valves will close to split the header and automatically align 121 Cooling Water Pump with one train. The 121 Cooling Water Pump will align with Train A for a Unit 1 SI signal and align with Train B for a Unit 2 SI signal.

Modifications completed in 1992 upgraded 121 Cooling Water Pump with safeguard power sources which allow it to be used as an equivalent replacement for either of the diesel driven safeguards Cooling Water Pumps. Specification 3.3.D.1.a specifies the required alignment conditions for 121 Cooling Water Pump to be used as a replacement safeguards pump. Alignment of 121 Cooling Water Pump in accordance with the provisions of Specification 3.3.D.1.a requires: 1) declaring 121 Cooling Water Pump inoperable; 2) shutdown of the 121 Cooling Water Pump if it is operating; 3) manually aligning breakers to repower the pump from the same safeguards train as the inoperable diesel driven Cooling Water Pump; 4) manually closing valves to split the Cooling Water header and align 121 Cooling Water Pump with the Cooling Water train which has the inoperable diesel driven Cooling Water Pump; 5) opening the breakers for the header isolation valves to assure they are not repositioned inadvertently or by an automatic signal; and 6) declaring 121 OPERABLE as a safeguards pump. It should

be emphasized that repowering 121 Cooling Water Pump requires disconnecting the pump from its power sources while its source breaker is physically removed from its cubicle and manually rolled to another Bus cubicle. These actions assure that a safeguards pump is aligned with each Cooling Water loop and powered from each train of safeguards Buses, however, they also limit Cooling Water operational flexibility.

Implementation of this amendment would allow the plant to remain in Specification 3.3.D.2.a (with 121 Cooling Water Pump declared inoperable) in accordance with its limiting conditions rather than align 121 Cooling Water Pump in accordance with Specification 3.3.D.1.a.

When 121 Cooling Water Pump is aligned as a safeguards pump, the Cooling Water header is split to align 121 Cooling Water Pump with the train in which the diesel driven Cooling Water Pump is inoperable and the power supply is aligned so that 121 Cooling Water Pump is powered from the same train as the train to which it provides cooling water. In the event an SI signal is generated and there is a single active failure, plant safety is maintained because at least one pump will remain OPERABLE to supply one train with cooling water. In accordance with the design basis of the plant, one pump is capable of supplying the plant cooling water requirements with one unit experiencing a Design Basis Accident and the other unit in hot shutdown. Thus, the plant cooling water needs are met in this configuration.

Remaining in Specification 3.3.D.2.a with 121 Cooling Water Pump declared inoperable is also acceptable since there is not a significant reduction in plant safety. Specification 3.3.D.2.a allows one diesel driven Cooling Water Pump and 121 Cooling Water Pump to be completely inoperable, that is, neither pump would start under any circumstances. When there is discretionary entry into Specification 3.3.D.2.a with 121 Cooling Water Pump declared inoperable, 121 Cooling Water Pump is powered from the safeguards Bus 25, it will start on low header pressure and it will start on an SI signal and the header will split. Therefore, more cooling water is provided than credited in Specification 3.3.D.2.a and some redundancy exists. The probability of being in Specification 3.3.D.2.a is low (through the limitations of 7 days per event and 7 days in any consecutive 30 days) and an active failure is not required to be considered. Thus, during postulated discretionary entry into Specification 3.3.D.2.a, two Cooling Water pumps are available to mitigate the consequences of an accident in one unit and maintain cooling in the other unit.

Depending on which diesel driven Cooling Water Pump is out of service and which Unit generates the SI signal, two cases should be considered further during discretionary entry into Specification 3.3.D.2.a. In the event an SI signal occurs, the common header would automatically split and align 121 Cooling Water Pump as follows: a Unit 1 SI signal will align it with Train A and a Unit 2 SI signal will align it with Train B. If the

inoperable diesel driven Cooling Water Pump were in the train associated with the unit which generated the SI signal, then one Cooling Water train is supplied by a diesel driven Cooling Water Pump and the other train is supplied by 121 Cooling Water Pump which is an acceptable configuration.

If the inoperable diesel driven Cooling Water Pump is in the train which is not associated with the unit which generates the SI signal, then the train associated with the unit experiencing the SI signal will be supplied by a diesel driven Cooling Water Pump and 121 Cooling Water Pump and the other train will have no safeguards Cooling Water Pumps capable of supplying it. This condition meets the plant design basis since one Cooling Water train is capable of supplying the cooling water requirements of both units, one experiencing an SI and the other one in hot shutdown. Thus, this configuration is also acceptable.

From a probabilistic safety assessment perspective, it should be noted that remaining in Specification 3.3.D.2.a is also acceptable when plant evolutions other than Design Basis Accidents are considered. The Design Basis Accident assumes that loss of offsite power has occurred coincident with the Loss of Coolant Accident. For example, a much more probable event is a loss of offsite power event by itself (no concurrent Loss of Coolant Accident). Both the original IPE and current, updated plant Probabilistic Safety Assessment results show that this "simple" loss of offsite power is the initiating event for which the availability of cooling water is the most critical to plant risk. This is due to the fact that the D1 and D2 diesel generators are directly dependent on cooling water, and plant recovery from the loss of offsite power is highly dependent on the availability of cooling water and the diesel generators. On this "simple" loss of offsite power event, only one Cooling Water pump is required to meet the cooling water requirements. If one of the diesel driven Cooling Water Pumps is unavailable due to maintenance prior to the event, two Cooling Water pumps remain available to automatically respond (the other diesel driven Cooling Water Pump and the 121 Cooling Water Pump), regardless of whether the system was aligned in accordance with Specification 3.3.D.1.a or 3.3.D.2.a.

The primary safety benefit of upgrading 121 Cooling Water Pump was providing it with safeguards power. This proposed License Amendment Request does not change that benefit since under the conditions proposed, 121 Cooling Water Pump remains available with a safeguards power supply.

Based on the discussion above, NSP concludes that the health and safety of the public is protected by discretionary entry into Specification 3.3.D.2.a when 121 Cooling Water Pump is available for operation. Under these conditions, operation within the limiting conditions of Specification 3.3.D.2.a will provide needed operational flexibility with an

insignificant impact on plant safety. Thus the provision to remain in Specification 3.3.D.2.a should be included in Specification 3.3.D.1.a.

Isolation Valve Actuation Circuit Testing

This amendment would allow testing the Turbine Building isolation valve actuation circuits associated with a shutdown unit during its refueling outage.

Currently the Cooling Water system header supplying non-safety related equipment in the turbine building is isolated if there is high flow coincident with low header pressure. Internal review of system performance determined that plant safety will be improved if the isolation is initiated by an SI signal coincident with low header pressure.

Current Prairie Island Technical Specifications require testing of the actuation circuitry for these valves each quarter. However, since the Prairie Island design does not allow testing SI circuitry during plant operation, it is tested each refueling outage. Since the planned modification will actuate the Cooling Water isolation valves by an SI signal, this change will require testing of the Unit 1 actuation circuitry for the Cooling Water Train A and Train B isolation valves during each Unit 1 refueling outage. Likewise, the Unit 2 actuation circuitry for the Cooling Water Train A and Train B isolation valves will be tested during each Unit 2 refueling outage. Thus the testing frequency of the actuation circuitry for these isolation valves will be consistent with other portions of SI circuitry testing.

Overall, modification of the actuation circuitry for these Cooling Water isolation valves will improve plant safety and this proposed change will enable the circuitry to be tested on a timely basis and assure its proper functioning. Plant and industry experience has shown that testing of the SI circuitry each refueling outage is sufficient to assure reliable operation of the system. Changing the testing frequency of the actuation circuitry for these valves to each refueling outage will continue to maintain the plant in a safe condition.

Design Features Amendment

This proposed amendment would conform Technical Specifications 5.1 and 5.4 to NUREG-1431 guidance by reducing Technical Specifications 5.1 to a single paragraph describing the plant location and minimum site exclusion area radius and relocating all other descriptions to the Updated Safety Analysis Report.

Currently Technical Specification Section 5.1 contains requirements for flood and earthquake emergency procedures. Deletion of these requirements was addressed in Northern States Power Company's License Amendment Request Dated December 14, 1995, "Conformance of Administrative Controls Section 6 to the Guidance of Standard Technical Specifications", Exhibit A, Page 3. The original Safety Evaluation Report for Prairie Island specifically required Prairie Island Technical Specifications to contain provision to shut down the plant at a flood elevation of +692 feet MSL at the plant site. This License Amendment Request does not amend Chapter 6.5 which would continue to explicitly require flood and earthquake procedures, thus the original commitment continues to be met under this License Amendment Request. Northern States Power Company's License Amendment Request Dated December 14, 1995 should continue to be evaluated on its own merits independent of this License Amendment Request.

These proposed amendments to the Technical Specifications will continue to maintain plant safety since they meet the requirements of 10CFR50.36(c)(4), the guidance of NUREG-1431 and their interpretations through Nuclear Regulatory Commission approved Improved Technical Specification conversions.

DETERMINATION OF SIGNIFICANT HAZARDS CONSIDERATIONS

The proposed changes to the Operating License have been evaluated to determine whether they constitute a significant hazards consideration as required by 10 CFR Part 50, Section 50.91 using the standards provided in Section 50.92. This analysis is provided below:

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated

Operation of the Prairie Island plant in accordance with the proposed changes does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Probability

The Cooling Water System is provided in the plant to mitigate accidents and it is not a Design Basis Accident initiator, thus these proposed changes do not increase the probability of an accident.

Consequences

Entry into LCO 3.3.D.2.a

This License Amendment proposes to allow the plant to remain in Specification 3.3.D.2.a when 121 Cooling Water Pump is available for operation.

Consequences of an accident would only be impacted if there was no cooling water supply to cool plant equipment. Remaining in Specification 3.3.D.2.a does not involve an increase in the consequences of an accident because, even though the plant operators may not align 121 Cooling Water Pump in accordance with Specification 3.3.D.1.a under this proposed amendment, the pump is still available to automatically start, it is powered by a safeguards Bus (normally Bus 25) and if there is an SI signal it will automatically align to Train A if the SI signal is generated by Unit 1 or Train B if the SI signal is generated by Unit 2. Since one active component has already been declared inoperable (the diesel driven Cooling Water Pump which has been removed from service) the remaining diesel driven Cooling Water Pump and 121 Cooling Water Pump will provide Cooling Water sufficient to meet the design basis of plant. The primary safety benefit of upgrading 121 Cooling Water Pump was providing it with a safeguards power source. This proposed amendment does not change this safety enhancement. Thus this change does not involve an increase in the consequences of an accident.

Isolation Valve Actuation Circuit Testing

Changing the actuation circuitry testing frequency from quarterly to each refueling outage does not significantly increase the consequences of an accident. Plant and industry experience has shown that testing SI circuitry each refueling outage provides adequate assurance that the SI actuation circuitry will function as designed. Thus testing the Cooling Water isolation actuation circuitry each refueling outage also provides assurance that these circuits will perform as designed.

Design Features Amendment

Conformance of Sections 5.1 and 5.4 to the Improved Standard Technical Specifications is administrative in nature. The current Technical Specifications descriptions will be maintained under site administrative controls (Updated Safety Analysis Report), thus the consequences of an accident are not affected.

Conclusion

In total these changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed

The Cooling Water System is provided in the plant to mitigate accidents and it is not a Design Basis Accident initiator, thus these proposed changes do not increase the possibility of a new or different kind of accident.

In total, the possibility of a new or different kind of accident from any accident previously evaluated would not be created by these amendments to the Cooling Water Technical Specifications.

3. The proposed amendment will not involve a significant reduction in the margin of safety

The proposed changes do not involve a significant reduction in a margin of safety because the current Technical Specifications requirements for safe operation of the Prairie Island plant are maintained or increased.

Entry into LCO 3.3.D.2.a

This License Amendment proposes flexibility to remain in Specification 3.3.D.2.a when 121 Cooling Water Pump is available for operation. This change does not involve a significant reduction in the margin of safety because 121 Cooling Water Pump is still available to perform safety functions when Specification 3.3.D.2.a is entered under the provisions of this amendment which means the pump is still available to automatically start, it is powered by a safeguards Bus (normally Bus 25), and if there is an SI signal it will automatically align to Train A if the SI signal is generated by Unit 1 or Train B if the SI signal is generated by Unit 2. Since one active component has already been declared inoperable (the diesel driven Cooling Water Pump which has been removed from service) the remaining diesel driven Cooling Water Pump and 121 Cooling Water Pump will provide cooling water sufficient to meet the plant design basis. The primary safety benefit of upgrading 121 Cooling Water Pump was providing it with a safeguards power source. This proposed amendment does not change this safety enhancement. Thus this change does not involve a significant reduction in the plant margin of safety.

Isolation Valve Actuation Circuit Testing

Changing the actuation circuitry testing frequency from quarterly to each refueling outage does not significantly reduce the margin of plant safety. Plant and industry experience has shown that testing SI circuitry each refueling outage provides adequate assurance that the SI actuation circuitry will function as designed. Thus testing the Cooling Water isolation actuation circuitry each refueling outage also provides assurance that these circuits will perform as designed.

Design Features Amendment

Relocation of plant descriptions from Technical Specifications is administrative in nature and therefore does not significantly reduce the plant margins of safety.

Conclusion

Therefore, a significant reduction in the margin of safety would not be involved with these Cooling Water amendments.

Based on the evaluation described above, and pursuant to 10 CFR Part 50, Section 50.91, Northern States Power Company has determined that operation the Prairie Island Nuclear Generating Plant in accordance with the proposed license amendment request does not involve any significant hazards considerations as defined by Nuclear Regulatory Commission regulations in 10 CFR Part 50, Section 50.92.

ENVIRONMENTAL ASSESSMENT

Northern States Power Company has evaluated the proposed changes and determined that:

1. The changes do not involve a significant hazards consideration, or
2. The changes do not involve a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or
3. The changes do not involve a significant increase in individual or cumulative occupational radiation exposure.

Accordingly, the proposed changes meet the eligibility criterion for categorical exclusion set forth in 10 CFR Part 51 Section 51.22(c)(9). Therefore, pursuant to 10 CFR Part 51 Section 51.22(b), an environmental assessment of the proposed changes is not required.