

1 1979

MAY

Docket Nos / 50-282
and 50-306

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Mr. L. O. Mayer, Manager
 Nuclear Support Services
 Northern States Power Company
 414 Nicolett Mall - 8th Floor
 Minneapolis, Minnesota 55401

Dear Mr. Mayer:

In response to your application dated April 26, 1979, the Commission has issued the enclosed Amendment Nos. and to Facility Operating License Nos. DPR-42 and DPR-60 for the Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2, respectively.

The amendments revise the Technical Specifications to require actuation of safety injection based on 2 out of 3 channels of low pressurizer pressure.

As discussed with you, it is understood and acceptable for the pressurizer level bistables to be returned to their normal position while this modification is underway. Further, it is understood that the changes will be made one train at a time, with each train tested before being placed into service.

Copies of the related Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

A. Schwencer, Chief
 Operating Reactors Branch #1
 Division of Operating Reactors

Cmat
CP

Enclosures:

1. Amendment No. 36 to DPR-42
2. Amendment No. 30 to DPR-60
3. Safety Evaluation
4. Notice

cc w/encl:
 See next page

DOR: S&P
[Signature]
 RHVollmer
 5/1/79

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OFFICE →	DOR:ORB#1 <i>CP</i>	DOR:ORB#1 <i>[Signature]</i>	DOR:ORB#1 <i>[Signature]</i>	DOR:RSB <i>[Signature]</i>	OELD <i>[Signature]</i>	DOR:RSB <i>[Signature]</i>
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DATE →	5/30/79	5/1/79	5/1/79	5/1/79	5/1/79	5/1/79



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

MAY

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Docket Nos. 50-282
and 50-306

Mr. L. O. Mayer, Manager
Nuclear Support Services
Northern States Power Company
414 Nicolett Mall - 8th Floor
Minneapolis, Minnesota 55401

Dear Mr. Mayer:

In response to your application dated April 26, 1979, the Commission has issued the enclosed Amendment Nos. 36 and 30 to Facility Operating License Nos. DPR-42 and DPR-60 for the Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2, respectively.

The amendments revise the Technical Specifications to require actuation of safety injection based on 2 out of 3 channels of low pressurizer pressure.

As discussed with you, it is understood and acceptable for the pressurizer level bistables to be returned to their normal position while this modification is underway. Further, it is understood that the changes will be made one train at a time, with each train tested before being placed into service.

Copies of the related Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

A handwritten signature in cursive script, appearing to read "A. Schwencer".

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Enclosures:

1. Amendment No. 36 to DPR-42
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3. Safety Evaluation
4. Notice

cc w/encl:
See next page

Mr. L. O. Mayer
Northern States Power Company

- 2 -

MAY 1 x 1979

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Chicago, Illinois 60604



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

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-282

PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.36
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 April 26, 1979, 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 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 License No. DPR-42 is hereby amended to read as follows:

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"(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 36 , 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.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: **MAY** 1 1979



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

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-306

PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 30
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 April 26, 1979, 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 License No. DPR-60 is hereby amended to read as follows:

"(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 30 , 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.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: MAY 1 1979

ATTACHMENT TO LICENSE AMENDMENT NOS. 36 AND 30

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

DOCKET NOS. 50-282 AND 50-306

Replace the following pages of the Technical Specifications contained in Appendix A of the above-indicated licenses with the attached pages bearing the same numbers, except as otherwise indicated. The changed areas on the revised pages are reflected by a marginal line.

<u>Remove</u>	<u>Insert</u>
TS. 3.5-2	TS 3.5-2
TS. 3.5-3	TS 3.5-3
Table TS. 3.5-1	Table TS 3.5-1
Table TS. 3.5-3	Table TS 3.5-3

TABLE TS.3.5-1

ENGINEERED SAFETY FEATURES INITIATION INSTRUMENT LIMITING SET POINTS

	<u>FUNCTIONAL UNIT</u>	<u>CHANNEL</u>	<u>LIMITING SET POINTS*</u>
1	High Containment Pressure (Hi)	Safety Injection*	≤ 4 psig
2	High Containment Pressure (Hi-Hi)	a. Containment Spray	≤ 23 psig
		b. Steam Line Isolation of Both Lines	≤ 17 psig
3 ⁺	Pressurizer Low Pressure and Low Level	Safety Injection*	≥ 1815 psig ≥ 5 per cent (of distance) between the instrument taps
3.a	Pressurizer Low Pressure	Safety Injection*	≥ 1815 psig
4	Low Steam Line Pressure	Safety Injection* Lead Time Constant Lag Time Constant	≥ 500 psig ≥ 12 seconds ≤ 2 seconds
5	High Steam Flow in a Steam Line Coincident with Safety Injection and Low T_{avg}	Steam Line Isolation of Affected Line	d/p corresponding to $\leq 0.745 \times 10^6$ lb/hr at 1005 psig $\geq 540^\circ\text{F}$
6	High-high Steam Flow in a Steam Line Coincident with Safety Injection	Steam Line Isolation of Affected Line	\leq d/p corresponding to 4.5×10^6 lb/hr at 735 psig
7	High Pressure Difference Between Shield Building and Containment	Containment Vacuum Breakers	≤ 0.5 psi
8	High Temperature in Ventilation Ducts	Ventilation System Isolation Dampers	$\leq 120^\circ\text{F}$

- *Initiates also containment isolation, feedwater line isolation and starting of all containment fans.
- d/p means differential pressure
- ⁺ Functional Unit 3 requirements are no longer applicable for a particular Prairie Island unit following replacement of the coincident low pressurizer level and pressure SI by the pressurizer low pressure SI actuation logic, after which time Functional Unit 3.a requirements become effective.

Safety Injection

The Safety Injection System is actuated automatically to provide emergency cooling and reduction of reactivity in the event of a loss-of-coolant accident or a steam line break accident.

Safety injection in response to a loss-of-coolant accident (LOCA) is provided by a high containment pressure signal backed up by the low pressurizer pressure signal⁺. These conditions would accompany the depressurization and coolant loss during a LOCA.

Safety injection in response to a steam line break is provided directly by a low steam line pressure signal, backed up by the low pressurizer pressure signal and, in case of a break within the containment, by the high containment pressure signal.

The safety injection of highly borated water will offset the temperature-induced reactivity addition that could otherwise result from cooldown following a steam line break.

Containment Spray

Containment sprays are also actuated by a high containment pressure signal (Hi-Hi) to reduce containment pressure in the event of a loss of coolant or steam line break accident inside the containment.

The containment sprays are actuated at a higher containment pressure (approximately 50% of design containment pressure) than is safety injection (10% of design). Since spurious actuation of containment spray is to be avoided, it is initiated on coincidence of high containment pressure sensed by three sets of one-out-of-two containment pressure signals provided for its actuation.

Containment Isolation

A containment isolation signal is initiated by any signal causing automatic initiation of safety injection or may be initiated manually. The containment isolation system provides the means of isolating the various pipes passing through the containment walls as required to prevent the release of radioactivity to the environment in the event of a loss-of-coolant accident.

⁺The pressurizer low pressure SI initiation logic will be installed to replace the coincident low pressurizer level and pressure SI actuation logic at the earliest scheduled refueling.

Steam Line Isolation

In the event of a steam line break, the steam line stop valve of the affected line is automatically isolated to prevent continuous, uncontrolled steam release from more than one steam generator. The steam lines are isolated on high containment pressure (Hi-Hi) or high steam line flow in coincidence with low T_{avg} and safety injection or high steam flow (Hi-Hi) in coincidence with safety injection. Adequate protection is afforded for breaks inside or outside the containment even when it is assumed that the steam line check valves do not function properly.

Ventilation System Isolation

In the event of a high energy line rupture outside of containment, redundant isolation dampers in certain ventilation ducts are closed. (4)

Limiting Instrument Setpoints

1. The high containment pressure limit is set at about 10% of the maximum internal pressure. Initiation of Safety Injection protects against loss of coolant (2) or steam line break (3) accidents as discussed in the safety analysis.
2. The Hi-Hi containment pressure limit is set at about 50% of the maximum internal pressure for initiation of containment spray and at about 30% for initiation of steam line isolation. Initiation of Containment Spray and Steam Line Isolation protects against large loss of coolant (2) or steam line break accidents (3) as discussed in the safety analysis.
3. The pressurizer low pressure limit is set substantially below system operating pressure limits. However, it is sufficiently high to protect against a loss of coolant accident as shown in the safety analysis. (2)
4. The steam line low pressure signal is lead/lag compensated and its setpoint is set well above the pressure expected in the event of a large steam line break accident as shown in the safety analysis. (3)
5. The high steam line flow limit is set at approximately 20% of nominal full-load flow at the no-load pressure and the high-high steam line flow limit is set at approximately 120% of nominal full-load flow at the full load pressure in order to protect against large steam break accidents. The coincident low T_{avg} setting limit for steam line isolation initiation is set below its hot shutdown value. The safety analysis shows that these settings provide protection in the event of a large steam break. (3)



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATING TO AMENDMENT NO.36 TO FACILITY OPERATING LICENSE NO. DPR 42
AMENDMENT NO.30 TO FACILITY OPERATING LICENSE NO. DPR-60
NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNIT NOS. 1 AND 2
DOCKET NOS. 50-282 AND 50-306

Introduction

By letter dated April 26, 1979, Northern States Power Company (the licensee) requested amendments to Facility Operating License Nos. DPR-42 and DPR-60 for the Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2 (PINGP). The proposed amendments would change the Technical Specifications to require actuation of safety injection based on 2 out of 3 channels of low pressurizer pressure. Until this change has been accomplished, it is understood that the low pressurizer level trips in the existing safety injection logic would remain tripped as provided for in IE Bulletin 79-06A and 79-06A, Revision 1.

As discussed with you, it is further understood and acceptable for the pressurizer level bistables to be returned to their normal position while this modification is underway. Further, it is understood that the changes will be made one train at a time, with each train tested before being placed into service.

Discussion

As a result of our ongoing review of the events associated with the March 28 accident at Three Mile Island Unit 2, the NRC Office of Inspection and Enforcement issued a number of IE Bulletins describing actions to be taken by licensees. IE Bulletin 79-06 (April 11, 1979) called for licensees with Westinghouse PWR's to instruct operators to manually initiate safety injection when the pressure indication reaches the actuation setpoint whether or not the level indication has dropped to the actuation setpoint. IE Bulletin 79-06A (April 14, 1979) further called for these licensees to trip the low pressurizer level bistables such that, when the pressurizer pressure reaches the low setpoint safety injection would be initiated regardless of the pressurizer level. This action was completed on April 27, 1979.

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IE Bulletin 79-06A, Revision 1 (April 18, 1979) modified the action called for in 79-06A by allowing pressurizer level bistables to be returned to their normal (untripped) operating positions during the pressurizer pressure channel functional surveillance tests.

The effect of tripping the pressurizer low level bistables which are normally coincident with the pressurizer low pressure bistables, has the effect of reducing this safety injection actuation logic to a 1 out of 3 logic. A single instrument failure of 1 of the 3 low pressure bistable channels could therefore result in an unwanted safety injection. To prevent this, the licensee proposed in an April 26, 1979 letter, a design modification which would align the existing pressurizer low pressure bistables in a 2 out of 3 logic.

Evaluation

The proposed modification to the safety injection actuation system entails removing the pressurizer level signal from each of the pressurizer level/pressure channel trip and converting the system to a two-out-of-three pressurizer low pressure trip. The instrumentation logic takes pressurizer pressure signals from three pressure transmitters and initiates a safety injection actuation whenever two of the three signals reach the low pressure setpoint of 1815 psig. These modifications will satisfy the requirements of IEEE 279-1971, and other standards of installation required during the plant construction stage. We find these modifications acceptable.

We have reviewed the instrumentation and controls aspect of the proposed change in accordance with IEEE-279 and other applicable standards and Reg. Guides. The modification eliminates pressurizer level as a required initiating signal to actuate ECCS. The licensee proposes to use a 2-out-of-3 logic on low pressurizer pressure alone. Separation of trains will be maintained, testability will be maintained, and verification of proper actuation of the first train can be performed prior to modification of the second train.

We have reviewed the instrumentation power sources and determined that the four 120V instrument distribution panels are supplied from independent trains. The vital power is provided by inverters that are energized from auctionneered power sources (Batteries/MCC's). We find this acceptable.

The proposed Technical Specifications change the discussion in the basis sections of TS 3.5-2 and TS 3.5-3, and revise Item 3 of Table 3.5-1 and Item 1 of Table 3.5-3 to specify automatic safety injection actuation on a two-out-of-three pressurizer low pressure of 1815 psig. We find the changes to the Technical Specifications to be acceptable.

Based on our review of the licensee's submittal, we conclude that the modifications to the safety injection actuation system logic satisfy the requirements of IEEE 279-1971 and that the associated Technical Specifications are correct; and therefore, are acceptable.

We also conclude that the proposed change will be in accordance with the above standards and guides, and that none of the transient and accident analyses are adversely affected by the change. The only effect may be a sooner SI actuation. Therefore, we find the proposed change to be acceptable.

Environmental Consideration

We have determined that the amendments do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendments involve an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

Conclusion

We have concluded, based on the consideration discussed above, that: (1) because the amendments do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the amendments do not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Date: 5/1/79

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NOS. 50-282 AND 50-306

NORTHERN STATES POWER COMPANY

NOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY
OPERATING LICENSES

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment Nos 36 and 30 to Facility Operating License Nos. DPR-42 and DPR-60, issued to the Northern States Power Company (the licensee), which revised Technical Specifications for operation of Unit Nos. 1 and 2 of the Prairie Island Nuclear Generating Plant (the facilities) located in Goodhue County, Minnesota. The amendments are effective as of their date of issuance.

The amendments revise the Technical Specifications to require actuation of safety injection based on 2 out of 3 channels of low pressurizer pressure.

The application for amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

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The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4), an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of these amendments.

For further details with respect to this action, see (1) the application for amendments dated April 26, 1979, (2) Amendment Nos. 36 and 30 to License Nos. DPR-42 and DPR-60, respectively, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C. , and at the Environmental Conservation Library of the Minneapolis Public Library, 300 Nicollet Mall, Minneapolis, Minnesota 55401. A single copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 1st day of May.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors