MAY 27 1976

Docket No. 50-263

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

Gentlemen:

In response to your request dated December 1, 1975, the Commission has issued the enclosed Amendment No. 19 to Provisional Operating License No. DPR-22 for the Monticello Nuclear Generating Plant. The amendment consists of changes in the Monticello Nuclear Generating Plant Technical Specifications which (1) decrease the main steam line isolation pressure setpoint, and (2) lower the operating Minimum Critical Power Ratio (MCPR) limit.

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

Sincerely,

Original Signed by:
Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Enclosures:
1. Amendment No. 19 to License No. DPR-22
2. Safety Evaluation
3. Notice

cc w/enclosures:
See next page

OR:AD/OR
KRGoller
5/27/76

OFFICE	OR:ORB #2	OR:ORB #2	OELD	OR:RS/OT	OR:AD/OT	OR:ORB #2
SURNAME	RMDiggs	RPSnaider:ro	SH Lewis	RBaer	DEisenhut	DLZiemann
DATE	5/14/76	5/17/76	5/18/76	5/21/76	5/24/76	5/25/76

Form AEC-318 (Rev. 9-53) AECM 0240 ☆ U. S. GOVERNMENT PRINTING OFFICE: 1974-526-166

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Minneapolis, Minnesota 55401

cc w/enclosures and NSP filing
dtd. 2/27/76:
Warren H. Lawson, M. D.
Secretary and Executive Officer
State Department of Health
University Campus
Minneapolis, Minnesota 55440

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-263

MONTICELLO NUCLEAR GENERATING PLANT

AMENDMENT TO PROVISIONAL OPERATING LICENSE

Amendment No. 19
License No. DPR-22

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

   A. The application for amendment by the Northern States Power Company (the licensee) dated December 1, 1975, as supplemented by filing dated February 27, 1976, 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. After weighing the environmental aspects involved, 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 a change to the Technical Specifications as indicated in the attachment to this license amendment.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed by:
Dennis L. Ziemann
for
Karl R. Goller, Assistant Director
for Operating Reactors
Division of Operating Reactors

Attachment:
Changes to the
Technical Specifications

OFFICE ➤	MAY 27 1976					
SURNAME ➤						
DATE ➤						

ATTACHMENT TO LICENSE AMENDMENT NO. 19

PROVISIONAL OPERATING LICENSE NO. DPR-22

DOCKET NO. 50-263

Replace the existing pages of the Technical Specifications listed below with the attached revised pages bearing the same numbers, Changed areas on these pages are shown by marginal lines:

50
66
189D
189F

Table 3.2.1
Instrumentation That Initiates Primary Containment Isolation Functions

Function	Trip Settings	Total No. of Instrument Channels Per Trip System	Min. No. of Operable or Operating Instrument Channels Per Trip System (1,2)	Required Conditions*
1. Main Steam and Recirc Sample Lines (Group 1)				
a. Low Low Reactor Water Level	≥6'-6" ≤6'10"	2	2	A
b. High Flow in Main Steam Line	≤140% rated	8	8	A
c. High temp. in Main Steam Line Tunnel	≤200°F	8	2 of 4 in each of 2 sets	A
d. Low Pressure in Main Steam Line (3)	≥825 psig	2	2	B
e. High Radiation In Main Steam Line Tunnel	≤10 X Normal background at rated power	2	2	A
2. RHR System, Head Cooling, Drywell, Sump, TIP (Group 2)				
a. Low Reactor Water Level	≥10'6" above the top of the active fuel	2	2	C

Bases Continued:

3.2 instrumentation is provided which causes a trip of Group 1 isolation valves. The primary function of the instrumentation is to detect a break in the main steamline, thus only Group 1 valves are closed. For the worst case accident, main steamline break outside the drywell, this trip setting of 140% of rated steam flow in conjunction with the flow limiters and main steamline valve closure, limit the mass inventory loss such that fuel is not uncovered, fuel clad temperatures remain less than 1000° F and release of radioactivity to the environs is well below 10 CFR 100 guidelines. Reference Sections 14.6.5 FSAR.

Temperature monitoring instrumentation is provided in the main steamline tunnel to detect leaks in this area. Trips are provided on this instrumentation and when exceeded cause closure of Group 1 isolation valves. Its setting of 200°F is low enough to detect leaks of the order of 5 to 10 gpm; thus, it is capable of covering the entire spectrum of breaks. For large breaks, it is a back-up to high steam flow instrumentation discussed above, and for small breaks with the resultant small release of radioactivity, gives isolation before the guidelines of 10 CFR 100 are exceeded.

High radiation monitors in the main steamline tunnel have been provided to detect gross fuel failure resulting from a control rod drop accident. This instrumentation causes closure of Group 1 valves, the only valves required to close for this accident. With the established setting of 10 times normal background, and main steamline isolation valve closure, fission product release is limited so that 10 CFR 100 guidelines are not exceeded for this accident. Reference Section 14.6.2 FSAR. The performance of the process radiation monitoring system relative to detecting fuel leakage shall be evaluated during the first five years of operation. The conclusions of this evaluation will be reported to the Atomic Energy Commission.

Pressure instrumentation is provided which trips when main steamline pressure drops below 825 psig. A trip of this instrumentation results in closure of Group 1 isolation valves. In the "refuel" and "Startup" mode this trip function is bypassed. This function is provided primarily to provide protection against a pressure regulator malfunction which would cause the control and/or bypass valves to open. With the trip set at 825 psig inventory loss is limited so that fuel is not uncovered and peak clad temperatures are much less than 1500°F; thus, there are no fission products available for release other than those in the reactor water. Reference License Amendment Request Dated December 1, 1975 from L. O. Mayer (NSP) to R S. Boyd (USNRC).

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
C. Minimum Critical Power Ratio (MCPR) During steady state power operation, the Operating MCPR Limit shall be ≥ 1.38 for 8x8 fuel and ≥ 1.29 for 7x7 fuel at rated power and flow. For core flows other than rated the Operating MCPR Limit shall be the above value multiplied by K_f, where K_f is given by Figure 3.11.2. If at any time it is determined that the limiting value of MCPR is being exceeded, action shall be taken immediately to restore operation to within prescribed limits.	C. Minimum Critical Power Ratio (MCPR) 1. MCPR shall be checked daily during reactor power operation at $\geq$ 25% rated thermal power. 2. Whenever the plant technical staff determines that more frequent surveillance of MCPR is necessary, it shall specify an augmented surveillance program commensurate with reactor conditions.

Bases 3.11 (continued)

C. Minimum Critical Power Ratio (MCPR)

The ECCS evaluation presented in Reference 4 assumed the steady state MCPR prior to the postulated loss of coolant accident to be 1.18 for all fuel types. The Operating MCPR Limit of 1.38 for 8x8 fuel and 1.29 for 7x7 fuel is determined from the analysis of transients discussed in Bases Sections 2.1 and 2.3. By maintaining an operating MCPR above these limits, the Safety Limit of 1.06 (T.S.2.1.A) applicable to all fuel types is maintained in the event of the most limiting abnormal operational transient.

For operation with less than rated core flow the Operating MCPR Limit is adjusted by multiplying the above limit by K_f. Reference 5 discusses how the transient analysis done at rated conditions encompasses the reduced flow situation when the proper K_f factor is applied.

It is recognized that MCPR is a calculated parameter that is not continually monitored and alarmed directly during core power distribution and thermal-hydraulic changes. If at the time of the evaluation it is found that the limits are being exceeded, there is always an action which will return the MCPR to within prescribed limits, namely power reduction. Under most circumstances, this will not be the only alternative. Whenever the limit is exceeded the monitored value will be documented and available for review, audit and inspection of plant operations. The only way to violate the Limiting Condition for Operation is to knowingly allow operation beyond the prescribed limits without taking the necessary action to restore the MCPR to within prescribed limits.

References

1. "Fuel Densification Effects in General Electric Boiling Water Reactor Fuel," Supplements 6, 7, and 8, NEDM-10735, August, 1973.

2. Supplement 1 to Technical Report on Densification of General Electric Reactor Fuels, December 14, 1974 (USAEC Regulatory Staff)

3. Communication: V A Moore to I S Mitchell, "Modified GE Model for Fuel Densification," Docket 50-321, March 27, 1974.

4. "Monticello Nuclear Generating Plant Loss-Of-Coolant Accident Analysis Conformance with 10 CFR 50 Appendix K, August 1974," L O Mayer (NSP) to J F O'Leary, August 20, 1974.

5. "General Electric BWR Generic Reload Application for 8 x 8 Fuel," NEDO-20360, Revision 1, November, 1974.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 19 TO PROVISIONAL OPERATING LICENSE NO. DPR-22

NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

INTRODUCTION

By letter dated December 1, 1975, as supplemented by letter dated February 27, 1976, the Northern States Power Company proposed changes to the Technical Specifications appended to Provisional Operating License No. DPR-22, for the Monticello Nuclear Generating Plant. The proposed changes involve a reduction in the main steam line low pressure isolation setpoint and reduction in the operating Minimum Critical Power Ratio (MCPR) for 8 x 8 and 7 x 7 fuel.

DISCUSSION AND EVALUATION

A. Main Steam Line Pressure Isolation Set Point Reduction

Installation of the main steam line low pressure sensors was required to provide reactor isolation in the event of an abnormal transient associated with the failure of the initial turbine pressure regulator in the open direction. This reactor isolation function was provided to limit the duration and severity of system depressurization so that no significant thermal stresses are imposed on the primary system. No credit was taken for these low pressure sensors in any of the other postulated abnormal operating transients or accidents. The current isolation set point is 850 psig; the proposed setpoint is 825 psig.

Northern States Power Company referenced Edwin I. Hatch Nuclear Plant Unit 1 (50-321) submittal dated October 9, 1975 which provided a bounding analysis for a reduction in the main steam line low pressure setpoint from 880 psig to 825 psig. The NRC staff has reviewed the

Hatch I analysis and has determined that it is applicable to NSP's proposed changes. In both cases (Hatch and Monticello) the additional temperature decrease and subsequent reactor vessel thermal stresses, resulting from the additional pressure reduction during the abnormal transient, are negligible. Because reduction of the low pressure isolation setpoint would not have significant effects on previously analyzed transients, we have concluded that the proposed change is acceptable.

B. Reduction In Operating Minimum Critical Power Ratio (MCPR) Limits

The operating limit MCPR, which is presently 1.41 for 8 x 8 fuel and 1.33 for 7 x 7 fuel, is based upon the most limiting transient, a turbine trip, without bypass, from 100% power and 100% flow conditions. Assuming the fuel is operating at the proposed MCPR limits of 1.38 for 8 x 8 fuel and 1.29 for 7 x 7 fuel, the calculated decrease in MCPR during the transient is .32 for 8 x 8 fuel and .23 for 7 x 7 fuel. Therefore, in the event of the occurrence of the most limiting transient, the MCPR Technical Specification Safety limit of 1.06 would not be violated.

The required operating limit MCPR is a function of the magnitude and location of the axial and rod-to-rod power peaking. In determining the required MCPR, axial and local peaking representative of beginning of cycle were assumed. That is, R-factors of 1.10 for 7 x 7 fuel and 1.102 for 8 x 8 fuel and an axial peaking factor of 1.40 at a mid core point was assumed. The transient analyses included as input data the worst consistent set of local and axial peaking factors. During the fuel cycle the local peaking, and therefore the R-factor, is reduced while the peak in the axial shape moves toward the bottom of the core. Although the operating limit MCPR would be increased by approximately 1% by the reduced end-of-cycle R-factor, this is offset by the reduction in MCPR resulting from the relocation of the axial peak to below the midplane. Because the MCPR will remain essentially constant over the fuel cycle and because the proposed MCPR limits will not result in violation of the Technical Specification Safety limit in event of the limiting transient, the proposed reduction in MCPR Operating limits is acceptable.

ENVIRONMENTAL CONSIDERATION

We have determined that the amendment does 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 amendment involves an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR §51.5(d)(4) that an environmental statement, negative declaration or environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

CONCLUSION

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date:

MAY 27 1976

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-263

NORTHERN STATES POWER COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO
PROVISIONAL OPERATING LICENSE

Notice is hereby given that the U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 19 to Provisional Operating License No. DPR-22, issued to Northern States Power Company (the licensee), which revised Technical Specifications for operation of the Monticello Nuclear Generating Plant (the facility) located in Wright County, Minnesota. The amendment is effective as of its date of issuance.

The amendment revised the provisions in the Technical Specifications of the facility to authorize (1) reduction of the main steam line low pressure isolation setpoint, and (2) reduction of the operating Minimum Critical Power Ratio (MCPR) limits for 7 x 7 and 8 x 8 fuel.

The application for the amendment 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 amendment. Notice of Proposed Issuance of Amendment to Facility Operating License in connection with this action was published in the FEDERAL REGISTER on February 6, 1976 (41 FR 5460). No request for a hearing or petition for leave to intervene was filed following notice of the proposed action.

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SURNAME ➤						
DATE ➤						

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

For further details with respect to this action, see (1) the application for amendment dated December 1, 1975, and the supplement thereto dated February 27, 1976, (2) Amendment No. 19 to License No. DPR-22, and (3) the Commission's concurrently issued related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C., and at the Environmental Conservation Library, 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 MAY 27 1976

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed by:
Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

OFFICE ➤						
SURNAME ➤						
DATE ➤						

DETERMINATION OF PROPOSED LICENSING AMENDMENT

Licensee: Northern States Power Company (Monticello Nuclear Generating Plant)

Request for: (a) Changing the 850 psig main steamline pressure isolation setting to 825 psig

(b) Changing MCPR limits for both 7 x 7 and 8 x 8 fuel

Request Date: December 1, 1975

Proposed Noticing Action: (x) Pre-notice Recommended

( ) Post-notice Recommended

( ) Determination delayed pending completion of Safety Evaluation

Basis for Decision: Change (a) represents relaxation of a limiting safety system setting. Change (b) represents a relaxation of an operational limitation related to safety - both require Pre-notice in accordance with RLOP 601, Enclosure 1a.

Proposed NEPA Action: ( ) EIS Required

( ) Negative Declaration (ND) and Environmental Impact Appraisal (EIA) Required

REVISED (x) No EIS, ND or EIA Required

( ) Determination delayed pending completion of EIA

Basis for Decision: The purpose of the main steam line low pressure isolation is to protect the reactor vessel from excessive cooldown if the turbine initial pressure regulator fails open. Its purpose is not to isolate the primary system in the event of a steam line break. Excessive release of radioactive material resulting from a steam line break is protected against by steam line flow sensors and radiation detectors. Analyses for such breaks, at high and low flow rates, were provided in a September 17, 1975 submittal from Northern States Power. The proposed amendment will not authorize an increase in power, will not change the total amount or types of effluents released, and will not result in a significant environmental impact.

Noticing Concurrences:

Date:

1. R. P. Snaider 4/15/76
2. D. L. Ziemann 4/19/76
3. K. R. Goller KRG 4/19/76
4. OELD 4/30/76 (with revised determination forgiven)