February 16, 2000

Template NRR-058

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

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT - ISSUANCE OF AMENDMENT RE: MONTICELLO CYCLE 20 SAFETY LIMIT MINIMUM CRITICAL POWER RATIO (TAC NO. MA7355)

Dear Mr. Wadley:

The Commission has issued the enclosed Amendment No. 109 to Facility Operating License No. DPR-22 for the Monticello Nuclear Generating Plant. The amendment consists of changes to the Technical Specifications in response to your application dated December 16, 1999. You provided clarifying information to your application in a letter dated January 21, 2000, in response to a request for additional information from the staff dated January 18, 2000.

The amendment revises the Technical Specification (TS) Safety Limit Minimum Critical Power Ratio (SLMCPR) values for two recirculation pump and single-loop operation, deletes cycle specific footnotes, updates the single-loop operation Average Planar Heat Generation rate limiting values, corrects a typographical error, and deletes an obsolete reference to Siemens fuel.

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,

/RA/

Carl F. Lyon, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-263

Enclosures: 1. Amendment No. 109 to DPR-22
2. Safety Evaluation

cc w/encl: See next page

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February 16, 2000

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

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

February 16, 2000

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

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT - ISSUANCE OF AMENDMENT RE: MONTICELLO CYCLE 20 SAFETY LIMIT MINIMUM CRITICAL POWER RATIO (TAC NO. MA7355)

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Sincerely,

CFLyon

Carl F. Lyon, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-263

Enclosures: 1. Amendment No. 109 to DPR-22
2. Safety Evaluation

cc w/encl: See next page

Monticello Nuclear Generating Plant

cc:

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

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-263

MONTICELLO NUCLEAR GENERATING PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 109
License No. DPR-22

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

   A. The application for amendment by Northern States Power Company (the licensee) dated December 16, 1999, as supplemented January 21, 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.

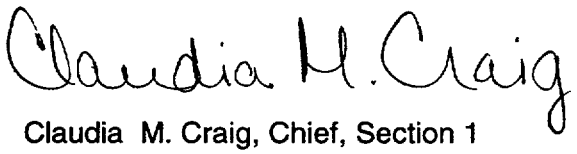
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.2 of Facility Operating License No. DPR-22 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 109 , 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 issuance and shall be implemented within 45 days.

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: February 16, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 109

FACILITY OPERATING LICENSE NO. DPR-22

DOCKET NO. 50-263

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE	INSERT
6	6
211	211
212	212
249b	249b

2.0 SAFETY LIMITS

2.1 FUEL CLADDING INTEGRITY

Applicability:

Applies to the interrelated variables associated with fuel thermal behavior.

Objective:

To establish limits below which the integrity of the fuel cladding is preserved.

Specification:

A. Core Thermal Power Limit (Reactor Pressure >800 psia and Core Flow is >10% of Rated)

When the reactor pressure is >800 psia and core flow is >10% of rated, the existence of a minimum critical power ratio (MCPR) less than 1.11, for two recirculation loop operation, or less than 1.12 for single loop operation, shall constitute violation of the fuel cladding integrity safety limit.

LIMITING SAFETY SYSTEM SETTINGS

2.3 FUEL CLADDING INTEGRITY

Applicability:

Applies to trip settings of the instruments and devices which are provided to prevent the reactor system safety limits from being exceeded.

Objective:

To define the level of the process variables at which automatic protective action is initiated to prevent the safety limits from being exceeded.

Specification:

The Limiting safety system settings shall be as specified below:

A. Neutron Flux Scram

1. APRM - The APRM flux scram trip setting shall be:

   a. For two recirculation loop operation (TLO):

   $$S \leq 0.66W + 65.6\%$$

   where

   S = Setting in percent of rated thermal power, rated power being 1775 MWt

   W = Percent of recirculation drive flow required to produce a core flow of 57.6×10^6 lb/hr

   b. For single recirculation loop operation (SLO):

   $$S \leq 0.66(W - 5.4) + 65.6\%$$

   c. No greater than 120%.

3.0 LIMITING CONDITIONS FOR OPERATION

3.11 REACTOR FUEL ASSEMBLIES

Applicability:

The Limiting Conditions for Operation associated with the fuel rods apply to those parameters which monitor the fuel rod operating conditions.

Objective:

The objective of the Limiting Conditions for Operation is to assure the performance of the fuel rods.

Specifications:

A. Average Planar Linear Heat Generation Rate (APLHGR)

During two recirculation loop power operation, the APLHGR for each type of fuel as a function of average planar exposure shall not exceed the applicable limiting values specified in the Core Operating Limits Report. When hand calculations are required, the APLHGR for each type of fuel as a function of average planar exposure shall not exceed the limiting value for the most limiting lattice (excluding natural uranium) provided in the Core Operating Limits Report.

During one recirculation loop power operation, the APLHGR limiting condition for operation for each type of fuel shall not exceed the most limiting of:

a. The above values multiplied by 0.78 for GE10 fuel and 0.80 for GE11 and GE12 fuel, or

b. The above values multiplied by the appropriate flow and power dependent correction factors provided in the Core Operating Limits Report.

4.0 SURVEILLANCE REQUIREMENTS

4.11 REACTOR FUEL ASSEMBLIES

Applicability:

The Surveillance Requirements apply to the parameters which monitor the fuel rod operating conditions.

Objective:

The objective of the Surveillance Requirements is to specify the type and frequency of surveillance to be applied to the fuel rods.

Specifications:

A. Average Planar Linear Heat Generation Rate (APLHGR)

The APLHGR for each type of fuel as a function of average planar exposure shall be determined daily during reactor operation at ≥25% rated thermal power.

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
If at any time during power operation, it is determined that the APLHGR limiting condition for operation is being exceeded, action shall be initiated within 15 minutes to restore operation to within the prescribed limits. Surveillance and corresponding action shall continue until reactor operation is within the prescribed limits. If the APLHGR is not returned to within the prescribed limits within two hours, reduce thermal power to less than 25% within the next four hours.	
B. Linear Heat Generation Rate (LHGR) During power operation, the LHGR shall be less than or equal to the limits specified in the Core Operating Limits Report. If at any time during operation it is determined that the limiting value for LHGR is being exceeded, action shall be initiated within 15 minutes to restore operation to within the prescribed limits. Surveillance and corresponding action shall continue until reactor operation is within the prescribed limits. If the LHGR is not returned to within the prescribed limits within 2 hours, reduce thermal power to less than 25% within the next 4 hours.	B. Linear Heat Generation Rate (LHGR) The LHGR shall be checked daily during reactor operation at ≥ 25% of rated thermal power.

7. Core Operating Limits Report

a. Core operating limits shall be established and documented in the Core Operating Limits Report before each reload cycle or any remaining part of a reload cycle for the following:

Rod Block Monitor Operability Requirements (Specification 3.2.C.2a)
Rod Block Monitor Upscale Trip Settings (Table 3.2.3, Item 4.a)
Recirculation System Power to Flow Map Stability Regions (Specification 3.5.F)
Maximum Average Planar Linear Heat Generation Rate Limits (Specification 3.11.A)
Linear Heat Generation Rate Limits (Specification 3.11.B)
Minimum Critical Power Ratio Limits (Specification 3.11.C)
Power to Flow Map (Bases 2.3.A)

b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel" (the approved version at the time the reload analyses are performed)

NSPNAD-8608-A, "Reload Safety Evaluation Methods for Application to the Monticello Nuclear Generating Plant" (the approved version at the time the reload analyses are performed)

NSPNAD-8609-A, "Qualification of Reactor Physics Methods for Application to Monticello" (the approved version at the time the reload analyses are performed)

NEDO-31960, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology," June 1991 (the approved version at the time the reload analyses are performed)

NEDO-31960, Supplement 1, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology," March 1992 (the approved version at the time the reload analyses are performed)

c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal-mechanical limits, core thermal-hydraulic limits, ECCS limits, nuclear limits such as shutdown margin, transient analysis limits and accident analysis limits) of the safety analysis are met.

d. The Core Operating Limits Report, including any mid-cycle revisions or supplements, shall be supplied upon issuance, for each reload cycle, to the NRC Document Control Desk with copies to the Regional Administrator and Resident Inspector.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 109 TO FACILITY OPERATING LICENSE NO. DPR-22

NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

1.0 INTRODUCTION

By application dated December 16, 1999, as supplemented January 21, 2000, the Northern States Power Company (the licensee) requested changes to the Technical Specifications (TSs) for Monticello Nuclear Generating Plant for Cycle 20. The proposed amendment would revise the Technical Specification (TS) Safety Limit Minimum Critical Power Ratio (SLMCPR) values for two recirculation pump and single-loop operation, delete cycle specific footnotes, update the single-loop operation Average Planar Heat Generation rate limiting values, correct a typographical error, and delete an obsolete reference to Siemens fuel.

The January 21, 2000, letter provided clarifying information that was within the scope of the original *Federal Register* notice and did not change the staff's initial proposed no significant hazards considerations determination.

The Monticello Cycle 20 core has 484 fuel assemblies, of which there are 144 fresh GE11 bundles, 128 once-burned GE11 bundles, 4 twice-burned GE12 bundles, 104 twice-burned GE11 bundles, and 68 thrice-burned GE10 bundles.

2.0 EVALUATION

2.1 TS 2.1.A Core Thermal Power Limit

The licensee proposed to change the SLMCPR in TS 2.1.A from 1.10 to 1.11 for two recirculation loop operation and from 1.11 to 1.12 for single recirculation loop operation when the reactor steam dome pressure is > 800 psia and core flow is > 10 percent of rated core flow. This proposed TS change also involves deleting cycle specific footnote "*MCPR values for Cycle 19 only."

The licensee described the methodologies used to calculate the SLMCPR values for the proposed TS changes in the submittal. The Cycle 20 SLMCPR analysis was performed by GE Nuclear Energy (GENE) using the plant- and cycle-specific fuel and core parameters, and NRC approved methodologies including NEDC-32505P, Revision 1, "R-Factor Calculation Method for GE11, GE12 and GE13 Fuel," NEDO-10958-A, "General Electric BWR [boiling water reactor]

Thermal Analysis Basis (GETAB): Data, Correlation and Design Application," and Amendment 25 to NEDE-24011-P-A on Cycle Specific Safety Limit MCPR (GESTAR-II).
The staff has reviewed the justification for the SLMCPR value of 1.11 for two recirculation loop operation and 1.12 for single loop operation for Cycle 20 using the approach stated in Amendment 25 to GESTAR II. Based on our review of the submittal and the detailed summary results of the analysis for Cycle 19 and 20 operation in Table 1 of Exhibit D of December 16,1999 submittal, the staff has concluded that the SLMCPR analysis for Monticello Cycle 20 operation using the plant- and cycle-specific parameters in conjunction with the approved method is acceptable. The Cycle 20 SLMCPR will ensure that 99.9 percent of the fuel rods in the core will not experience boiling transition, which satisfies the requirements of General Design Criterion 10 of Appendix A to 10 CFR Part 50 regarding acceptable fuel design limits. Therefore, the staff has concluded that the justification for analyzing and determining the SLMCPR of 1.11 for two recirculation loop operation and 1.12 for single loop operation for Monticello Cycle 20 is acceptable.

The staff has also reviewed the proposed change to delete the cycle-specific footnote and found it acceptable, since the staff has approved the methodologies for cycle-specific MCPR Safety Limit calculations described in Amendment 25 to NEDE-24011-P-A, and the licensee has performed its analyses based on the approved methodologies.

2.2 TS 3.11.A Average Planar Linear Heat Generation Rate (APLHGR)

The licensee proposed: (1) to change "Generating Ratio" to "Generation Rate"; (2) to change the multiplier from constant 0.85 to 0.78 for GE10 fuel and to 0.80 for GE11 and GE12 fuel in TS 3.11.A.a; and (3) to relocate the last paragraph in TS 3.11.A.b to next page.

The staff has reviewed the proposed TS changes and found them acceptable, because items (1) and (3) are administrative in nature to correct a typographical error and to relocate the existing paragraph, and item (2) is to correct the single loop operation (SLO) multiplier to be consistent with the GE requirement that the nominal peak clad temperature (PCT) of the SLO case is bounded by the nominal PCT for the two-loop case using approved methodologies.

2.3 TS 6.7.A.7 Core Operating Limits Report

The licensee proposed to delete: (1) the cycle specific footnote "*", and (2) obsolete reference ANF-91048(P)(A).

The staff has reviewed the proposed changes to TS 6.7.A.7.b and found them acceptable. Since the approved cycle-specific analysis is applied to the SLMCPR calculation for Monticello Cycle 20 operation, the cycle specific footnote and ANF-91048(P)(A) are no longer applicable.

3.0 CONCLUSIONS

The staff has reviewed the request by NSP to revise the TSs for Monticello Cycle 20. Based on its review, the staff concludes that the proposed changes to TSs 2.1.A, 3.11.A and 6.7.A.7 are acceptable for the Monticello Nuclear Generating Plant Cycle 20 application, since the changes are analyzed based on the NRC-approved method, and the most conservative cycle-specific parameters for SLMCPR analysis are used.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment involves 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 amendment involves no significant hazards consideration and there has been no public comment on such finding (64 *FR* 73094). Accordingly, the amendment meets 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 amendment.

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

Principal Contributor: T. Huang

Date: February 16, 2000