UNITED STATES NUCLEAR REGULATORY COMMISSION

NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT DOCKET NO. 50-263

REQUEST FOR AMENDMENT TO
OPERATING LICENSE DPR-22

SUPPLEMENT TO LICENSE AMENDMENT REQUEST DATED NOVEMBER 25, 1996

Northern States Power Company, a Minnesota corporation, is submitting supplimental information to support License Amendment Request dated November 25, 1996. This supplement responds to NRC Staff questions.

This letter contains restricted information as indicated by the attached General Electric (GE) Proprietary Notice.

NORTHERN STATES POWER COMPANY

By William J Hill
William J Hill
Plant Manager
Monticello Nuclear Generating Plant

On this 29 day of April 1997 before me a notary public in and for said County, personally appeared William J Hill, Plant Manager, Monticello 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.

Samuel I. Shirey
Samuel I. Shirey
Notary Public - Minnesota
Sherburne County
My Commission Expires January 31, 2000

SAMUEL I. SHIREY
NOTARY PUBLIC - MINNESOTA
My Comm. Exp. Jan. 31, 2000

Exhibit A

# MONTICELLO NUCLEAR GENERATING PLANT

Supplement to
License Amendment Request Dated November 25, 1996

Exhibit A
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Safety Limit Minimum Critical Power Ratio

Question #1:

Discuss the conservative variations of projected control rod patterns that were used to determine the Monticello Cycle 18 SLCPR value.

The cycle specific SLCPR is not sensitive to the control rod depletion patterns. This is supported by the following information. The predicted target A2 sequence control rod patterns are used for the base 3D simulator (PANACEA) depletion through the cycle of interest. Restart PANACEA cases are performed at several cycle exposures from the base depletion to establish the initial condition for the SLCPR calculation. The initial condition is restricted to those conditions where the limiting bundles are close to MCPR limits while avoiding unreasonable power distributions and violation of LHGR limits. The objective in establishing the initial condition power distribution is to satisfy the total power and local limits and to reasonably bound the total rods expected to experience boiling transition. These restart cases utilize non-typical control rod patterns to force the MCPR distribution to be conservatively flat and have the MCPR close to the OLCPR. Variations in the core depletion conditions do not have a significant impact on these forced distribution restart cases. The forced distribution restart cases are the initial starting conditions for the Monte Carlo SLCPR calculation. In fact, non-typical variations in control rod depletion such a stuck control blade would tend to make the initial CPR distribution for the SLCPR calculation more peaked (less flat). This would tend to non-conservatively reduce the calculated SLCPR. Since the calculation of the SLCPR is not sensitive to the base depletion, the calculated SLCPR is valid for typical variations in the actual operating control rod patterns.

Discuss the actual bundle parameters (e.g. local peaking) used to determine the Monticello Cycle 18 SLCPR value.

The initial condition for the SLCPR calculation is as mentioned above based on 3D Simulator (PANACEA) restart cases. The PANACEA cases provide the initial condition for the nominal reactor state calculation. These cases provide the flow , void fraction, and power distribution for each bundle in the core. The R-factors (E.G. bundle local peaking) for each bundle are a function of bundle exposure for each bundle and are accessed by the PANACEA along with the appropriate GEXL correlation constants to calculate the critical power ratio for each fuel rod in the core.

The R-Factors for the Monticello cycle 18 specific SLCPR calculation are based on the fuel bundles consistent with the actual core loading. This is consistent with the cycle specific SLCPR calculation methodology to ensure the applicability of the SLCPR to the particular plant/cycle of interest. Part of the problem with the old generic SLCPR calculation was that the more recent fuel bundle designs evolved to have flatter bundle local peaking than the original fuel design utilized for the generic calculation. The flatter bundle local peaking results in more fuel rods participating in the boiling transition. The more fuel rods that participate in the boiling transition will yield a more restrictive (larger) SLCPR.

Question #2:

Discuss whether a Monticello cycle-specific Single Loop Operation adder calculation was performed and compare the result to generic results.

A cycle specific Single Loop Operation (SLO) penalty calculation for Monticello Cycle 18 was prepared by GE Nuclear Energy to provide additional support for the Technical Specification change. This analysis was prepared in accordance with GE Technical Design Procedures and Design Verification Guide corresponding to the Cycle Specific SLCPR calculation. Performing the SLO penalty was recently added to the Cycle Specific SLCPR Technical Design Procedure and is required for all current reload core applications.

The resulting SLO penalty calculated for Monticello Cycle 18 is 0.01. This is consistent with the previously reported SLO penalty from the original generic calculation. The original generic based SLO penalty (0.01) was transmitted to NSP along with the cycle specific SLCPR on May 8, 1996.

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Question #3:

Provide a table showing differences between generic calculations and Monticello Cycle 18 specific calculations in the parameters that influence the SLCPR calculation to demonstrate that the 1.07 to 1.08 change in SLCPR calculated for Monticello Cycle 18 is reasonable.

See attached proprietary information letter by General Electric.

Question #4:

Discuss SLCPR determination for the Siemens fuel (8 bundles) currently resident in the Monticello core.

Exhibit B

MONTICELLO NUCLEAR GENERATING PLANT

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GE Nuclear Energy

Todd R. Brohaugh
Fuel Project Manager

Nuclear Fuel-Americas
General Electric Company
P.O. Box 780, M/C A33
Wilmington, NC 28401-0780
910 675-5739
Fx: 910 675-5684

April 21, 1997
TRB:97-089

cc: C. A. Bonneau
C. L. Heck
K. S. Schnoebelen
T. Slayton
C. W. Smith
D. B. Waltermire
D. G. Wegener

Mr. H. H. Paustian
Northern States Power Company
Monticello Nuclear Generating Plant
2807 West Highway 75
Monticello, MN 55362

Subject: **Monticello Cycle 18 SLMCPR Calculation**

Dear Harold:

Attached, please find information pertaining to the Safety Limit MCPR for Monticello Cycle 18.

The attached information is in the format with which the NRC is familiar and which has been used for recent submittals from other plants. This should minimize any questions.

The attachment contains GE Proprietary Information. A proprietary affidavit will be provided for your use if you provide us a copy of your letter to the NRC transmitting this information.

If you have any questions, please call me.

Very truly yours,

T K Brohaugh

T. R. Brohaugh