

August 12, 1991

Docket No. 50-263

Mr. T. M. Parker, Manager
Nuclear Support Services
Northern States Power Company
414 Nicollet Mall
Minneapolis, Minnesota 55401-1993

Dear Mr. Parker:

SUBJECT: MONTICELLO - AMENDMENT NO. 80 TO FACILITY OPERATING LICENSE NO.
DPR-22, (TAC NO. 80624)

The Commission has issued the enclosed Amendment No. 80 to Facility Operating License No. DPR-22 for the Monticello Nuclear Generating Plant. This amendment consists of changes to the Technical Specifications (TS) in response to your application dated June 13, 1991. The amendment revises the TS to (a) change the description of the drywell vacuum breaker requirements to correctly describe the controls and instrumentation provided for cycling the vacuum breakers open and closed, and (b) change the minimum diesel generator fuel supply from 32,500 gallons to 34,500 gallons.

A copy of our related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by

William O. Long, Project Manager
Project Directorate III-1
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No. 80 to License No. DPR-22
- 2. Safety Evaluation

cc w/enclosures:
See next page

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Mr. T. M. Parker, Manager
Northern States Power Company

Monticello Nuclear Generating Plant

cc:

Gerald Charnoff, Esquire
Shaw, Pittman, Potts and
Trowbridge
2300 N Street, NW
Washington, D. C. 20037

U. S. Nuclear Regulatory Commission
Resident Inspector's Office
2807 W. County Road 75
Monticello, Minnesota 55362

Site General Manager
Monticello Nuclear Generating Plant
Northern States Power Company
Monticello, Minnesota 55362

Robert Nelson, President
Minnesota Environmental Control
Citizens Association (MECCA)
1051 South McKnight Road
St. Paul, Minnesota 55119

Commissioner
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155-3898

Regional Administrator, Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Commissioner of Health
Minnesota Department of Health
717 Delaware Street, S. E.
Minneapolis, Minnesota 55440

O. J. Arlien, Auditor
Wright County Board of
Commissioners
10 NW Second Street
Buffalo, Minnesota 55313



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

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-263

MONTICELLO NUCLEAR GENERATING PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 80
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 June 13, 1991, 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. , 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



Ledyard B. Marsh, Director
Project Directorate III-1
Division of Reactor Projects III/IV/ V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 12, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 80

FACILITY OPERATING LICENSE NO. DPR-22

DOCKET NO. 50-263

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by amendment number and contain marginal lines indicating the area of change.

Remove

164
179
180
202
204

Insert

164
179
180
202
204

3.0 LIMITING CONDITIONS FOR OPERATION

4. Pressure Suppression Chamber-Drywell Vacuum Breakers

- a. When primary containment is required, all eight drywell-suppression chamber vacuum breakers shall be operable and positioned in the closed position as indicated by the position indication system, except during testing and except as specified in 3.7.A.4.b through 3.7.A.4.d below.
- b. Any drywell-suppression chamber vacuum breaker may be nonfully closed as indicated by the position indication and alarm system provided that drywell to suppression chamber differential pressure decay does not exceed that shown on Figure 3.7.1
- c. Up to two drywell-suppression chamber vacuum breakers may be inoperable provided that: (1) the vacuum breakers are determined to be fully closed and at least one position alarm circuit is operable or (2) the vacuum breaker is secured in the closed position or replaced by a blank flange.
- d. Drywell-suppression chamber vacuum breakers may be cycled, one at a time, during containment inerting and deinerting operations to assist in purging air or nitrogen from the suppression chamber vent header.

3.7/4.7

4.0 SURVEILLANCE REQUIREMENTS

4. Pressure Suppression Chamber-Drywell Vacuum Breakers

- a. Operability and full closure of the drywell-suppression chamber vacuum breakers shall be verified by performance of the following:
 - (1) Monthly each operable drywell-suppression chamber vacuum breaker shall be exercised through an opening-closing cycle.
 - (2) Once each operating cycle, drywell to suppression chamber leakage shall be demonstrated to be less than that equivalent to a one-inch diameter orifice and each vacuum breaker shall be visually inspected. (Containment access required)
 - (3) Once each operating cycle, vacuum breaker position indication and alarm systems shall be calibrated and functionally tested. (Containment access required)
 - (4) Once each operating cycle, the vacuum breakers shall be tested to determine that the force required to open each valve from fully closed to fully open does not exceed that equivalent to 0.5 psi acting on the suppression chamber face of the valve disc. (Containment access required)

164

Bases Continued:

One-inch opening of any one valve or a 1/8-inch opening for all eight valves, measured at the bottom of the disc with the top of the disc at the seat. The position indication system is designed to detect closure within 1/8 inch at the bottom of the disc.

At each refueling outage and following any significant maintenance on the vacuum breaker valves, positive seating of the vacuum breakers will be verified by leak test. The leak test is conservatively designed to demonstrate that leakage is less than that equivalent to leakage through a one-inch orifice which is about 3% of the maximum allowable. This test is planned to establish a baseline for valve performance at the start of each operating cycle and to ensure that vacuum breakers are maintained as nearly as possible to their design condition. This test is not planned to serve as a limiting condition for operation.

During reactor operation, an exercise test of the vacuum breakers will be conducted monthly. This test will verify that disc travel is unobstructed and will provide verification that the valves are closing fully through the position indication system. If one or more of the vacuum breakers do not seat fully as determined from the indicating system, a leak test will be conducted to verify that leakage is within the maximum allowable. Since the extreme lower limit of switch detection capability is approximately 1/16", the planned test is designed to strike a balance between the detection switch capability to verify closure and the maximum allowable leak rate. A special test was performed to establish the basis for this limiting condition. During the first refueling outage all ten vacuum breakers were shimmed 1/16" open at the bottom of the disc. The bypass area associated with the shimming corresponded to 63% of the maximum allowable.¹ The results of this test are shown in Figure 3.7.1. Two of the original ten vacuum breakers have since been removed.

When a drywell-suppression chamber vacuum breaker valve is exercised through an opening-closing cycle, the position indicating lights at the remote test panels are designed to function as follows:

Fully Closed	2 Green - On 2 Red - Off
Intermediate Position	2 Green - Off 2 Red - Off
Fully Open	2 Green - Off 2 Red - On

The remote test panels consist of indication and controls in the control room and indication in the reactor building. The control room indication and controls for the drywell to suppression chamber vacuum breakers consist of one red light and one green light for each of the eight valves, a common

Bases Continued:

vacuum breaker selector switch, and a common test switch. The reactor building vacuum breaker panel contains one red light and one green light for each of the eight valves. There are four independent limit switches on each valve. The two switches controlling the green lights are adjusted to provide an indication of disc opening of less than 1/8" at the bottom of the disc. These switches are also used to activate the valve position alarm circuits. The two switches controlling the red lights are adjusted to provide indication of the disc very near the full open position.

The control room alarm circuits are redundant and fail safe. This assures that no simple failure will defeat alarming to the control room when a valve is open beyond allowable and when power to the switches fails. The alarm is needed to alert the operator that action must be taken to correct a malfunction or to investigate possible changes in valve position status, or both. If the alarm cannot be cleared due to the inability to establish indication of closure of one or more valves, additional testing is required. The alarm system allows the operator to make this evaluation on a timely basis. The frequency of the testing of the alarms is the same as that required for the position indication system.

Operability of a vacuum breaker valve and the four associated indicating light circuits shall be established by cycling the valve. The sequence of the indicating lights will be observed to be that previously described. If both green light circuits are inoperable, the valve shall be considered inoperable and a pressure test is required immediately and upon indication of subsequent operation. If both red light circuits are inoperable, the valve shall be considered inoperable, however, no pressure test is required if positive closure indication is present.

Oxygen concentration is limited to 4% by volume to minimize the possibility of hydrogen combustion following a loss of coolant accident. Significant quantities of hydrogen could be generated if the core cooling systems failed to sufficiently cool the core. The occurrence of primary system leakage following a major refueling outage or other scheduled shutdown is more probable than the occurrence of the loss of coolant accident upon which the specified oxygen concentration limit is based. Permitting access to the drywell for leak inspections during a startup is judged prudent in term of the added plant safety offered without significantly reducing the margin of safety. Thus, to preclude the possibility of starting the reactor and operating for extended periods of time with significant leaks in the primary system, leak inspections are scheduled during startup periods, when the primary system is at or near rated operating temperature and pressure. The 24-hour period to provide inerting is judged to be sufficient to perform the leak inspection and establish the required oxygen concentration. The primary containment is normally slightly pressurized during periods of reactor operation. Nitrogen used for inerting could leak out of the containment but air could not leak in to increase oxygen concentration. Once the containment is filled with nitrogen to the required concentration, no monitoring of oxygen concentration is necessary. However, at least once a week the oxygen concentration will be determined as added assurance.

3.0 LIMITING CONDITIONS FOR OPERATION

- c. For the diesel generators to be considered operable, there shall be a minimum of 34,500 gallons of diesel fuel (7 days supply for 1 diesel generator at full load @ 2500 KW) in the diesel oil storage tank.

4.0 SURVEILLANCE REQUIREMENTS

- c. At least once each Operating Cycle during shutdown simulate a loss of offsite power in conjunction with an ECCS actuation test signal, and:
 - 1. Verify de-energization of the emergency busses and load shedding from the emergency busses.
 - 2. Verifying diesel starts from ambient conditions on the auto-start signal and is ready to accept emergency loads within ten seconds, energizes the emergency busses with permanently connected loads, energizes the auto-connected emergency loads in proper time sequence, and operates for greater than five minutes while its generator is loaded with the emergency loads.
- d. During the monthly generator test, the diesel fuel oil transfer pump and diesel oil service pump shall be operated.
- e. Once a month the quantity of diesel fuel available shall be logged.
- f. Once a month a sample of diesel fuel shall be taken and checked for quality.

Amendment No. 3, 7/9, 80

Bases 3.9:

The general objective is to assure an adequate supply of power with at least one active and one standby source of power available for operation of equipment required for a safe plant shutdown, to maintain the plant in a safe shutdown condition, and to operate the required engineered safeguards equipment following an accident.

AC for shutdown requirements and operation of engineered safeguards equipment can be provided by either of the two standby sources of power (the diesel generators) or any of the three active sources of power (No. 1R, No. 2R, or No. 1AR transformers). Refer to Section 8 of the USAR.

To provide for maintenance and repair of equipment and still have redundancy of power sources, the requirement of one active and one standby source of power was established. The plant's main generator is not given credit as a source since it is not available during shutdown.

The plant 250 V dc power is supplied by two batteries. Most station 250 V loads are supplied by the original station 250 V battery. A new 250 V battery has been installed for HPCI loads and may be used for other station loads in the future. Each battery is maintained fully charged by two associated chargers which also supply the normal dc requirements with the batteries as a standby source during emergency conditions. The plant 125 V dc power is normally supplied by two batteries, each with an associated charger. Backup chargers are available.

The minimum diesel fuel supply of 34,500 gallons will supply one diesel generator for a minimum of seven days of full load (2500 KW) operation. Actual fuel consumption during this period would be 33,096 gallons, but the minimum tank level has been established at the higher 34,500 gallon value to allow for instrument inaccuracy, tank volume uncertainties, and the location of the suction piping within the tank. Additional diesel fuel can normally be obtained within a few hours. Maintaining at least 7 days supply is therefore conservative.

In the normal mode of operation, power is available from the off-site sources. One diesel may be allowed out of service based on the availability of off-site power provided that the remaining diesel generator is demonstrated to be operable within 24 hours. This test is required even if the inoperable diesel is restored to operability within 24 hours. Thus, though one diesel generator is temporarily out of service, the off-site sources are available, as well as the remaining diesel generator. Based on a monthly testing period (Specification 4.9), the seven day repair period is justified. (1)

(1) "Reliability of Engineered Safety Features as a Function of Testing Frequency", I.M. Jacobs, Nuclear Safety, Volume 9, No. 4, July - August 1968.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 80 TO FACILITY OPERATING LICENSE NO. DPR-22

NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

1.0 INTRODUCTION

By letter dated June 13, 1991, Northern States Power Company (the licensee) requested an amendment to the Technical Specifications (TS) appended to Facility Operating License No. DPR-22 for the Monticello Nuclear Generating Plant. The proposed amendment would (a) change the description of the drywell vacuum breaker limiting conditions for operation to correctly describe the controls and instrumentation provided for cycling the vacuum breakers open and closed, and (b) change the minimum diesel generator fuel supply from 32,500 gallons to 34,500 gallons.

A discussion of each requested change and the NRC staff's evaluation and findings relative to each are addressed in Section 2 of this Safety Evaluation.

2.0 DISCUSSION AND EVALUATION

Drywell Vacuum Breakers: The Monticello primary containment contains eight normally-closed torus-to-drywell vacuum breakers. Each vacuum breaker is an 18-inch check valve with an air operator. Dual open and dual closed (four total) position switches are provided on each vacuum breaker. These switches operate status lights in the control room and reactor building and also annunciate control room alarms. The air operators are used to cycle the vacuum breakers open and closed as a monthly operability test. In addition, Limiting Condition for Operation (LCO) 3.7.A.4.d states:

Drywell-suppression chamber vacuum breakers may be cycled, one at a time using the exercise test push button during containment inerting and deinerting operations to assist in purging air or nitrogen from the suppression chamber vent header.

The licensee proposes to change the LCO to read:

Drywell-suppression chamber vacuum breakers may be cycled, one at a time during containment inerting and deinerting operations to assist in purging air or nitrogen from the suppression chamber vent header.

The words "using the exercise test push button" would be deleted. The exercise test push button is the control used to activate the air operator.

The proposed change would reflect the fact that the exercise controls are no longer, and need not necessarily be, of the push-button type. The licensee replaced the former push-button controls with a single vacuum breaker selector switch and non-return detent switch. The modification was performed during the 1989 refueling outage as part of a human factors design improvement program. During a Maintenance Team Inspection in 1991, NRC inspectors discovered a violation in that the licensee's safety evaluation for the modification had failed to determine that a Technical Specifications change was required (Ref: Inspection Report 91-002). The licensee's response to the violation, dated June 3, 1991, indicates that the need for a Technical Specifications change was not overlooked but was given low/routine priority. An amendment application was submitted on an expedited basis in response to the violation.

The staff has reviewed the information provided in the June 13, 1991 application and determined that switch replacement and associated Technical Specification change are acceptable. The new controls provide some added measure of safety in that they preclude the capability of opening more than one vacuum breaker at a time. However, a concern arose that the modified controls might permit a vacuum breaker to be inadvertently left open, thereby rendering the primary containment inoperable. The staff considered these factors and concluded that the modified switch design used for selecting and cycling vacuum breakers is functionally the same as the replaced design, and involves no significant safety concern. The position indicators and annunciated alarms provide the operators with sufficient information to ensure that a vacuum breaker is not unintentionally left open, and are unaffected by the modification or the amendment.

Diesel Fuel Storage Tank: Technical Specification Limiting Condition for Operation 3.9.B.3.c states:

For the diesel generators to be considered operable, there shall be 32,500 gallons of diesel fuel (7 days supply for 1 diesel generator at full load @ 2500 KW) in the diesel oil storage tank.

The proposed amendment would change "32,500" to "34,500."

During the October-November 1990 Electrical Distribution System Functional Inspection (Ref: Inspection Report 90-018), NRC inspectors determined that the 7-day fuel calculation was incorrectly performed. The licensee had assumed a 30 degree API gravity for the fuel, whereas a 38 degree API gravity should have been used. The proposed change reflects the new 7-day fuel requirement based on a corrected calculation and is acceptable.

Bases: Consistent with the above-described changes, the proposed amendment would also revise the associated bases.

3.0 STATE CONSULTATION

In accordance with the requirements of 10 CFR 50.91(b), a state consultation was attempted. We were informed, however, that our contact no longer has any official interest in the activities of Minnesota's nuclear power plants.

By memorandum dated January 4, 1991 from L. B. Marsh to C. Karrerer, the NRC Office of Governmental and Public Affairs was requested to identify an appropriate Minnesota contact so that state consultation may resume.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. We have 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 published a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this 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 this amendment.

5.0 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: W. Long

Dated: August 12, 1991