Docket No. 50-263

NOV 25 1977

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

Gentlemen:

RE: MONTICELLO NUCLEAR GENERATING PLANT

As you know, the Nuclear Regulatory Commission (NRC) has been working closely with your staff since the Brown's Ferry fire to enhance the fire protection capability of your facility. A number of improvements have been made in the areas of reducing the potential for exposure fires by control of combustible materials, control of sources of flame and improvement of fire protection personnel. These are generally reflected in your January 31, 1977 response to our September 30, 1976 letter which requested preparation of interim Technical Specifications on fire protection for your Monticello Nuclear Generating Plant. Following our review, which included discussion with your staff concerning the interim Technical Specifications, we have determined that revisions to your submittal are needed and that the enclosed Technical Specifications should be implemented by an amendment to your facility license. In many instances these Technical Specifications are similar to things you are already doing at your facility but which have not been included in your Technical Specifications. We believe that it is important that fire protection requirements generally be consistent for all facilities and we are taking these steps to achieve consistent interim action with respect to fire protection for all plants. Please let us know in writing within 20 days as to whether there are any specific requirements to which you object. If you object to any specific provision of the enclosed specifications, cite the portion that you find objectionable and specify your reasons and the technical bases therefor. If you have no objection to these specifications, it is nonetheless important to let us know within

Apn 13

OFFICE ➤						
SURNAME ➤						
DATE ➤						

20 days. We plan to initiate steps to issue the enclosed changes to the Technical Specifications for your facility in approximately 20 days following the date of this letter. If we do not hear from you, we will act to issue the specifications on the basis that assumes your agreement.

Sincerely,

Original signed by
Karl R. Goller

Karl R. Goller, Assistant Director
for Operating Reactors
Division of Operating Reactors

Enclosures:
1. Technical Specifications
2. Safety Evaluation

cc w/enclosures:
See next page

DISTRIBUTION:
Docket
NRC PDR
Local PDR
ORB-2 Reading
VStello
KRGoller
TJCarter
DKDavis
RPSnaider
RMDiggs
Attorney, OELD
I&E (3)
DEisenhut
WButler
TVWambach
JMcGough
JRBuchanan
TBAbernathy
ACRS (16)

generic OELD concurrence by memo from M. Grossman 11/21/77

OFFICE	DOR:ORB-2	DOR:ORB-1	DOR:ORB-2	DOR:AD/ORs		
SURNAME	RPSnaider:esb	TVWambach	DKDavis	KRGoller KRG		
DATE	11/23/77	11/23/77	11/23/77	11/23/77		

cc w/enclosures:
Gerald Charnoff, Esquire
Shaw, Pittman, Potts and
Trowbridge
1800 M Street, N. W.
Washington, D. C. 20036

Arthur Renquist, Esquire
Vice President - Law
Northern States Power Company
414 Nicollet Mall
Minneapolis, Minnesota 55401

Mr. L. R. Eliason
Plant Manager
Monticello Nuclear Generating Plant
Northern States Power Company
Monticello, Minnesota 55362

Russell J. Hatling, Chairman
Minnesota Environmental Control
Citizens Association (MECCA)
Energy Task Force
144 Melbourne Avenue, S. E.
Minneapolis, Minnesota 55414

Mr. Kenneth Dzugan
Environmental Planning Consultant
Office of City Planner
Grace Building
421 Wabasha Street
St. Paul, Minnesota 55102

Sandra S. Gardebring
Executive Director
Minnesota Pollution Control Agency
1935 W. County Road B2
Roseville, Minnesota 55113

Mr. Steve Gadler
2120 Carter Avenue
St. Paul, Minnesota 55108

Anthony Z. Roisman, Esquire
Sheldon, Harmon & Roisman
1025 15th Street, N. W., 5th Floor
Washington, D. C. 20005

The Environmental Conservation
Library
Minneapolis Public Library
300 Nicollet Mall
Minneapolis, Minnesota 55401

State Department of Health
ATTN: Secretary & Executive Officer
University Campus
Minneapolis, Minnesota 55440

Mr. D. S. Douglas, Auditor
Wright County Board of Commissioners
Buffalo, Minnesota 55313

Chief, Energy Systems Analyses
Branch (AW-459)
Office of Radiation Programs
U. S. Environmental Protection Agency
Room 645, East Tower
401 M Street, S. W.
Washington, D. C. 20460

U. S. Environmental Protection Agency
Federal Activities Branch
Region V Office
ATTN: EIS COORDINATOR
230 South Dearborn Street
Chicago, Illinois 60604

OFFICE ➔						
SURNAME ➔						
DATE ➔						

cc w/enclosures:
Gerald Charnoff, Esquire
Shaw, Pittman, Potts and
Trowbridge
1800 M Street, N. W.
Washington, D. C. 20036

Arthur Renquist, Esquire
Vice President - Law
Northern States Power Company
414 Nicollet Mall
Minneapolis, Minnesota 55401

Mr. L. R. Eliason
Plant Manager
Monticello Nuclear Generating Plant
Northern States Power Company
Monticello, Minnesota 55362

Russell J. Hatling, Chairman
Minnesota Environmental Control
Citizens Association (MECCA)
Energy Task Force
144 Melbourne Avenue, S. E.
Minneapolis, Minnesota 55414

Mr. Kenneth Dzugan
Environmental Planning Consultant
Office of City Planner
Grace Building
421 Wabasha Street
St. Paul, Minnesota 55102

Sandra S. Gardebring
Executive Director
Minnesota Pollution Control Agency
1935 W. County Road B2
Roseville, Minnesota 55113

Mr. Steve Gadler
2120 Carter Avenue
St. Paul, Minnesota 55108

Anthony Z. Roisman, Esquire
Sheldon, Harmon & Roisman
1025 15th Street, N. W., 5th Floor
Washington, D. C. 20005

The Environmental Conservation
Library
Minneapolis Public Library
300 Nicollet Mall
Minneapolis, Minnesota 55401

State Department of Health
ATTN: Secretary & Executive Officer
University Campus
Minneapolis, Minnesota 55440

Mr. D. S. Douglas, Auditor
Wright County Board of Commissioners
Buffalo, Minnesota 55313

Chief, Energy Systems Analyses
Branch (AW-459)
Office of Radiation Programs
U. S. Environmental Protection Agency
Room 645, East Tower
401 M Street, S. W.
Washington, D. C. 20460

U. S. Environmental Protection Agency
Federal Activities Branch
Region V Office
ATTN: EIS COORDINATOR
230 South Dearborn Street
Chicago, Illinois 60604

Amendment No. 13,

LIST OF TABLES

INTRODUCTION

These Technical Specifications are prepared in accordance with the requirements of 10 CFR 50.36 and apply to the Monticello Nuclear Generating Plant, Unit No. 1. The bases for these Specifications are included for information and understandability purposes.

1.0 DEFINITIONS

The succeeding frequently used terms are explicitly defined so that a uniform interpretation of the Specifications may be achieved.

A. Alteration of the Reactor Core

The act of moving any component in the region above the core support plate, below the upper grid and within the shroud. (Normal operating functions such as control rod movement using the normal drive mechanism, tip scans, SRM and IRM detector movements, etc., are not to be considered core alterations.)

B. Hot Standby

Hot Standby means operation with the reactor critical in the startup mode at a power level just sufficient to maintain reactor pressure and temperature.

C. Fire Suppression Water System

The fire suppression water system consists of: water sources; pumps; and distribution piping with associated sectionalizing isolation valves. Such valves include yard hydrant valves, and the first valve ahead of the water flow alarm device on each sprinkler, hose standpipe, or spray system riser.

3.0 LIMITING CONDITIONS FOR OPERATION

3.13 FIRE DETECTION AND PROTECTION SYSTEMS

Applicability:

Applies to instrumentation and plant systems used for fire detection and protection of the nuclear safety-related structures, systems, and components of the plant.

Objective:

To insure that the structures, systems, and components of the plant important to nuclear safety are protected from fire damage.

Specification:

A. Fire Detection Instrumentation

1. In each fire detection zone containing equipment required to be operable, at least (N-1) of the fire detection instruments located in that zone shall be operable, where N is the total number of fire detection instruments installed in the zone.

2. If specification 3.13.A.1 cannot be met, within one hour establish a fire watch patrol to inspect the zone(s) with inoperable instrument(s) at least once per hour. Restore at least (N-1) of the instruments to operable status within 14 days or submit a 30-day written report outlining the cause of the malfunction and the plans for restoring the instruments to operable status.

4.0 SURVEILLANCE REQUIREMENTS

4.13 FIRE DETECTION AND PROTECTION SYSTEMS

Applicability:

Applies to the periodic testing of instrumentation and plant systems used for fire detection and protection of the nuclear safety related structures, systems, and components.

Objective:

To verify the operability of instrumentation and plant systems used for fire detection and protection of nuclear safety related structures, systems, and components.

Specification:

A. Fire Detection Instrumentation

1. Fire detectors located in the cable spreading room, standby gas treatment system room, 4.16 KV switchgear area, and intake structure shall be tested in accordance with the following schedule:

   A functional test shall be performed every six months.

2. Fire detector alarm circuitry shall be demonstrated operable every six months.

3.0 LIMITING CONDITIONS FOR OPERATION

B. Fire Suppression Water System

1. Except as specified in 3.13.B.2 or 3.13.B.3 below, the system shall be operable at all times with:

   a. At least two of the following pumps, including automatic initiation logic, operable and capable of delivering at least 1500 gpm at a discharge pressure of 90 psig:

      1. Diesel-driven fire pump
      2. Motor-driven fire pump
      3. Screen wash pump

   b. Piping and correctly positioned valves to supply fire suppression water to all safety related structures, systems, and components.

2. If Specification 3.13.B.1 cannot be met, restore the inoperable equipment to operable status within seven days or provide a 30-day written report outlining the plans and procedures to be used to provide for the loss of redundancy in the Fire Suppression Water system.

4.0 SURVEILLANCE REQUIREMENTS

B. Fire Suppression Water System

1. The system shall be verified operable as follows:

   a. Operability of the diesel-driven fire pump starting battery shall be demonstrated by:

      1. Once each week verify electrolyte level and voltage is within specifications.

      2. Once every three months verify the specific gravity of each cell is within specifications.

      3. Once every 18 months inspect the batteries, battery racks, and electrical connections for damage or abnormal deterioration.

   b. The motor-driven fire pump shall be started every month and run for at least 15 minutes on recirculation flow.

   c. The diesel-driven fire pump shall be started every month from ambient conditions and run for at least 20 minutes on recirculation flow.

   d. The level in the diesel-driven fire pump day tank shall be checked every month and verified to contain at least 65 gallons of fuel.

e. Every three months verify that a sample of fuel from the diesel oil storage tank, obtained in accordance with ASTM-D270-65, is within the acceptable limits specified in Table 1 of ASTM D475-74 when checked for viscosity, water, and sediment.

f. Every 18 months subject the diesel-driven fire pump engine to an inspection in accordance with procedures prepared in conjunction with the manufacturer's recommendations for this class of standby service.

g. A simulated automatic actuation of each fire pump and the screen wash pump, including verification of pump capability, shall be conducted very 18 months.

h. The yard main and the reactor building heater shall be flushed every 12 months.

i. System flow tests shall be performed every three years.

j. Valves in flow paths supplying fire suppression water to safety related structures, systems, and components shall be cycled every 12 months.

k. Each valve (manual, power operated or automatic) in the flow path shall be verified in its correct position every month.

3. From and after the date that the supply of fire suppression water to any safety-related structure, system, or component is made or found to be interrupted for any reason, within 24 hours:

   a. Establish a backup Fire Suppression Water System.

   b. Provide prompt notification with a written followup report outlining the actions taken and the plans and schedule for restoring the system to operable status.

C. Hose Stations

1. Whenever equipment protected by hose stations in the following areas is required to be operable, the hose station(s) protecting those areas shall be operable:

   a. Diesel generator rooms
   b. Safety related switchgear areas
   c. Safety related areas of the screenhouse
   d. Reactor building
   e. Control room
   f. Cable spreading room
   g. Safety related battery rooms

2. When it is determined that one of the two pumps required by specification 3.13.B.1.a is inoperable, the remaining operable pump shall be started daily and run for at least 20 minutes on recirculation flow until specification 3.13.B.1.a can be met.

C. Hose Stations

The hose stations specified in 3.13.C.1 shall be demonstrated operable as follows:

1. Each month a visual inspection shall be conducted to assure all equipment is available.

2. Every 18 months the hose shall be removed for inspection and re-racking and all gaskets in the couplings shall be inspected and replaced if necessary.

3. Every 3 years each hose station valve shall be partially opened to verify valve operability and no flow blockage.

4. Every 3 years each hose shall be hydrostatically tested at a pressure at least 50 psig greater than the maximum pressure available at that hose station. (This specification is effective as of January 1981).

2. If Specification 3.13.C.1 cannot be met, hoses supplied from operable hose stations shall be made available for routing within one hour to each area with an inoperable hose station.

D. Fire Barrier Penetration Fire Seals

1. All penetration fire barriers protecting areas having equipment required to be operable shall be operable.

2. If Specification 3.14.D.1 cannot be met, a continuous fire watch shall be established on at least one side of the affected fire barrier(s) within one hour.

3. Every three years, partially open each hose station valve to verify valve operability and no blockage.

D. Fire Barrier Penetration Fire Seals

1. A visual inspection of fire barrier penetration fire seals shall be conducted every 18 months.

2. Following repair of a fire barrier penetration fire seal, a visual inspection of the seal shall be conducted.

3.13 BASES:

Elements of the fire detection and protection system are required to be operable to protect safety related structures, systems, and components whenever those structures, systems, or components are required to be operable. Fire detection and protection systems will normally be maintained operable at all times except for periods of maintenance and testing.

Ionization type fire detectors are located in the following areas of the plant to protect safety-related structures, systems, and components:

Cable spreading room
Standby gas treatment system room
4.16 KV switchgear area
Intake structure

These detectors sense the airborne products of combustion during the very early stages of a fire. The detectors in each area initiate a local alarm and an alarm in the Control Room. The specifications require all but one detector in each area to be operable. Since there are at least three detectors in each area, the loss of one detector does not significantly degrade the ability to detect fires in any area. If more than one detector is inoperable a patrolling fire watch is established in the affected area until the required number of detectors are restored to operable status.

The fire suppression water system is supplied by three vertical centrifugal pumps rated at 1500 gpm at 100 psig each. Two pumps, one motor driven and one diesel driven, are the assigned fire pumps. The third pump is motor driven and normally assigned as a screen wash pump. Transfer from screen wash duty to fire duty occurs automatically. All pumps are started automatically by instrumentation sensing header pressure. Any one pump is capable of supplying all fire fighting water requirements. Two of the three pumps are required to be operable. If two pumps are inoperable, at least one must be repaired within seven days or a report must be submitted to the Commission. If all pumps are inoperable, or if other circumstances interrupt the supply of water to any safety related area, a backup source of water must be provided within 24 hours and the Commission notified.

Fire protection for all safety related areas is provided by hose stations supplied from the fire suppression water system. If the water supply to these areas is interrupted, continued operation is permitted only if a hose supplied from an operable hose station is made available to protect the area having the inoperable station.

Piping and cabling penetrating fire barriers are provided with fire seals at each fire barrier. If a seal is made or found to be inoperable for any reason, the penetration area is continuously attended until an effective fire seal is restored.

4.13 BASES:

Fire detectors are tested in accordance with the manufacturer's recommendations. All tests and inspections are performed by the plant staff. Every six months each detector is functionally tested. Combustion generated smoke is not used in these tests. Alarm circuits are functionally checked every six months. In addition, all circuitry is automatically supervised for open wiring and ground faults.

Fire pumps are tested each month to verify operability. Test starting of the screen wash pump is not required since it is normally in service. Each fire pump is manually started and operated for at least 15 minutes with pump flow directed through the recirculation test line. Every 18 months the operability of the automatic actuation logic for the fire pumps and the screen wash pump is verified and the performance of each pump is verified to meet system requirements. The specified flush and valve checks provide assurance that the piping system is capable of supplying fire suppression water to all safety related areas.

When one of the two required pumps is inoperable, the operable pump is started daily to verify operability until two pumps are once again available.

A system flow test is specified every three years. This test verifies the hydraulic performance of the fire suppression fire water header system. The testing will be performed using Section 11, Chapter 5 of the Fire Protection Handbook, 14th Edition, as a procedural guide. This test is generally performed in conjunction with a visit from insurance company inspectors.

Hose stations in safety related areas are inspected monthly to verify that all required equipment is in place. Hose station gaskets in hose couplings and the hose are inspected very 18 months. Operability of hose station isolation valves is verified every three years by partially opening each valve to verify flow. All of these tests provide a high degree of assurance that each hose station will perform satisfactorily after periods of standby service.

Plant fire barrier walls are provided with seals for pipes and cables. Where such seals are installed, they must be maintained intact to perform their function. Visual inspection of each installed seal is required every 18 months and after seal repair. A visual inspection following repair of a seal in the secondary containment boundary is sufficient to assure that seal leakage will be within acceptable limits.

6.0 ADMINISTRATIVE CONTROLS

6.1 Organization

A. The Plant Manager has the overall full-time onsite responsibility for safe operation of the facility. During periods when the Plant Manager is unavailable, he may delegate this responsibility to other qualified supervisory personnel.

B. The Northern States Power corporate organizational structure relating to the operation of this plant is showu in Figure 6.1.1.

C. The minimum functional organization for operation of the plant shall be as shown in Figure 6.1.2 and:

1. Each on duty shift shall be composed of at least the minimum shift crew composition shown in Table 6.1.1.

2. At least once licensed operator shall be in the control room when fuel is in the reactor.

3. At least two licensed operators shall be present in the control room during cold startup, scheduled reactor shutdown, and during recovery from reactor trips.

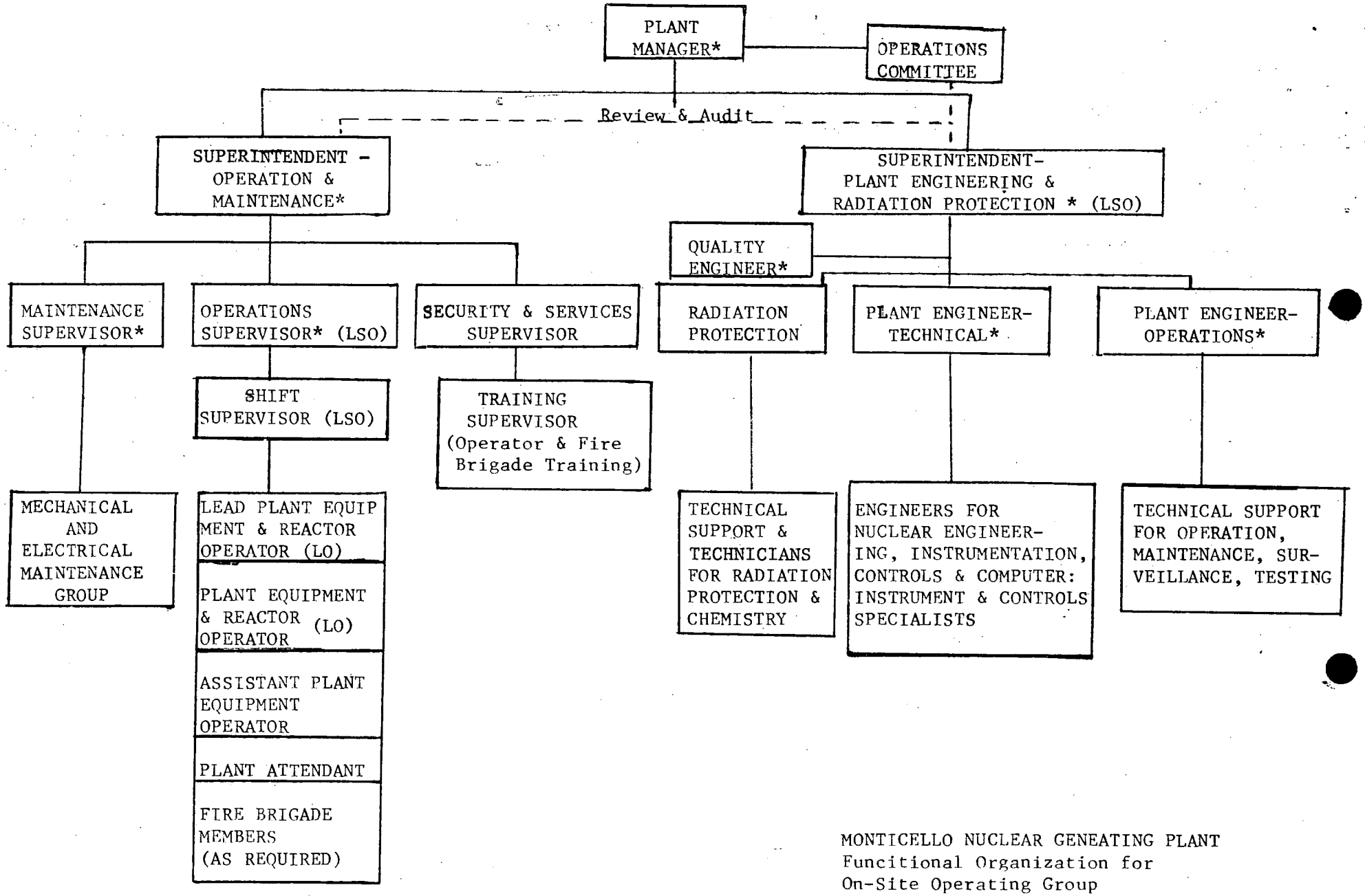
4. An individual qualified in radiation protection procedures shall be on site when fuel is in the reactor.

5. All alterations of the reactor core shall be directly supervised by a licensed Senior Reactor Operator or Senior Reactor Operator Limited to Fuel Handling who has no other concurrent responsibilities during this operation.

6. A Fire Brigade of at least 5 members shall be maintained onsite at all times. The Fire Brigade shall not include the minimum shift crew necessary for safe shutdown of the unit (4 members) or any personnel required for other essential functions during a fire emergency.

D. Minimum qualifications, training, replacement training and retraining of plant personnel shall be in accordance with that stated in the "Standard for Selection and Training of Personnel for Nuclear Power Plants", ANSI N18.1-1971. The minimum frequency of the retraining program shall be every two years. The training program shall be under the direction of a designated member of the plant staff.

E. A training program for individuals serving in the fire brigade shall be maintained under the direction of a designated member of the plant staff. This program shall meet the requirements of Section 27 of the NFPA Code-1976 with the exception of training scheduling. Fire brigade training shall be scheduled as set forth in the plant training program.



MONTICELLO NUCLEAR GENEATING PLANT
Funcitional Organization for
On-Site Operating Group

CODE: * Key Supervisor
LO Licensed Operator
LSO Licensed Senior Operator

FIGURE 6.1.2

TABLE 6.1..

MINIMUM SHIFT CREW COMPOSITION (Note 1)

CATEGORY	APPLICABLE PLANT CONDITIONS	
	COLD SHUTDOWN OR REFUELING OPERATION	ABOVE COLD SHUTDOWN
No. Licensed Senior Operators (LSO)	1 (Note 2	1
Total No. Licensed Operators (LSO& LO)	2	3
Total No. Licensed and Unlicensed personnel	3	5

NOTES:

1. Shift crew composition may be one less than the minimum requirements for a period of time not to exceed two hours in order to accomodate an unexpected absence of one duty shift crew member provided immediate action is taken to restore the shift crew composition to within the minimum requirements specified.

2. Does not include the licensed Senior Reactor Operator, or Senior Reactor Operator Limited to Fuel Handling, supervising alterations of the reactor core.

f. Investigation of all events which are required by regulation or technical specifications to be reported to NRC in writing within 24 hours.

g. Revisions to the Facility Emergency Plan, the Facility Security Plan, and the Fire Protection Program.

h. Operations Committee minutes to determine if matters considered by that Committee involve unreviewed or unresolved safety questions.

i. Other nuclear safety matters referred to the SAC by the Operations Committee, plant management or company management.

j. All recognized indications of an unanticipated deficiency in some aspect of design or operation of safety-related structures, systems, or components.

k. Reports of special inspections and audits conducted in accordance with specification 6.3.

6. Audit - The operation of the nuclear power plant shall be audited formally under the cognizance of the SAC to assure safe facility operation.

a. Audits of selected aspects of plant operation, as delineated in Paragraph 4.4 of ANSI N18.7-1972, shall be performed with a frequency commensurate with their nuclear safety significance and in a manner to assure that an audit of all nuclear safety-related activities is completed within a period of two years. The audits shall be performed in accordance with appropriate written instructions and procedures.

b. Periodic review of the audit program should be performed by the SAC at least twice a year to assure its adequacy.

c. Written reports of the audits shall be reviewed by the Vice President - Power Production & System Operation, by the SAC at a scheduled meeting, and by members of management having responsiblity in the areas audited.

7. Authority

The SAC shall be advisory to the Vice President - Power Production & System Operation.

8. Records

Minutes shall be prepared and retained for all scheduled meetings of the Safety Audit Committee. The minutes shall be distributed to the Vice President-Power Production & System Operation, the General Superintendent of Nuclear Power Plant Operation, each member of the SAC and others designated by the Chairman or Vice Chairman within one month of the meeting. There shall be a formal approval of the minutes.

9. Procedures

A written charter for the SAC shall be prepared that contains:

a. Subjects within the purview of the group.

b. Responsibility and authority of the group.

c. Mechanisms for convening meetings.

d. Provisions of use of specialists or subgroups.

e. Authority to obtain access to the nuclear power plant operating record files and operating personnel when assigned audit functions.

f. Requirements for distribution of reports and minutes prepared by the group to others in the NSP Organization.

c. Mechanism for scheduling meetings

d. Meeting agenda

e. Use of subcommittee

f. Review and approval, by members, of OC actions

g. Distribution of minutes

6.3 Special Inspections and Audits

A. An independent fire protection and loss prevention inspection and audit shall be performed annually utilizing either qualified off-site Northern States Power Company personnel or an outside fire protection consultant.

B. An inspection and audit by an outside qualified fire protection consultant shall be performed at intervals no greater than three years.

6.4 Action to be Taken if a Safety Limit is Exceeded

If a Safety Limit is exceeded, the reactor shall be shut down immediately. An immediate report shall be made to the General Superintendent of Nuclear Power Plant Operation, or his designated alternate in his absence, and reported as specified in Section 6.7. A complete analysis of the circumstances leading up to and resulting from the situation, together with recommendations by the Operations Committee, shall also be prepared. This report shall be submitted to the General Superintendent of Nuclear Power Plant Operation and the Chairman of the Safety Audit Committee.

Reactor operation shall not be resumed until authorized by the U. S. Nuclear Regulatory Commission.

6.5 Plant Operating Procedures

Detailed written procedures, including the applicable check-off and instructions, covering areas listed below shall be prepared and followed. These procedures and changes thereto, except as specified in 6.5.D shall be reviewed by the Operation Committee and approved by a member of plant management designated by the Plant Manager.

A. Plant Operations

1. Integrated and system procedures for normal startup, operation and shutdown of the reactor and all systems and components involving nuclear safety of the facility.

2. Fuel handling operations.

3. Actions to be taken to correct specific and foreseen potential or actual malfunction of systems or components including responses to alarms, primary system leaks and abnormal reactivity changes and including follow-up actions required after plant protective system actions have initiated.

4. Surveillance and testing requirements that could have an effect on nuclear safety.

5. Implementing procedures of the security plan.

6. Implementing procedures of the emergency plan, including procedures for coping with emergency conditions involving potential or actual releases of radioactivity.

7. Implementing procedures of the fire protection program.

Drills on the procedures specified in A.3 above shall be conducted as a part of the retraining program. Drills on the procedures specified in A.6 above shall be conducted at least semi-annually, including a check of communications with offsite support groups.

B. Radiological

Radiation control procedures shall be maintained and made available to all plant personnel. These procedures shall show permissible radiation exposure and shall be consistent with the requirements of 10 CFR 20. This radiation protection program shall be organized to meet the requirements of 10 CFR 20.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

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

NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

INTRODUCTION

Following a fire at the Browns Ferry Nuclear Station in March 1975, we initiated an evaluation of the need for improving the fire protection programs at all licensed nuclear power plants. As part of this continuing evaluation, in February 1976 we published a report entitled "Recommendations Related to Browns Ferry Fire", NUREG-0050. This report recommended that improvements in the areas of fire prevention and fire control be made in most existing facilities and that consideration be given to design features that would increase the ability of nuclear facilities to withstand fires without the loss of important functions. To implement the report's recommendations, the NRC initiated a program for reevaluation of the fire protection programs at all licensed nuclear power stations and for a comprehensive review of all new license applications.

We have issued new guidelines for fire protection programs in nuclear power plants. These guidelines reflect the recommendations in NUREG-0050. These guidelines are contained in the following documents:

"Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," NUREG-75/087, Section 9.5.1, "Fire Protection," May 1976, which includes "Guidelines for Fire Protection for Nuclear Power Plants," (BTP APCSB 9.5-1), May 1, 1976.

"Guidelines for Fire Protection for Nuclear Power Plants" (Appendix A to BTP APCSB 9.5-1), August 23, 1976.

"Supplementary Guidance on Information Needed for Fire Protection Program Evaluation," September 30, 1976.

"Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls and Quality Assurance," June 14, 1977.

Northern States Power Company (licensee) has submitted a description of the fire protection program for the Monticello Nuclear Generating Plant by letter dated March 11, 1977. This program is under detailed review by the NRC. In the interim, until we complete our detailed review, we have concluded that it is appropriate to amend the facility license by incorporating into the Technical Specifications operability and surveillance requirements for the existing fire protection equipment and systems. In addition, the amendment would include administrative requirements for the implementation of the fire protection program.

By letter dated September 30, 1976, we requested the licensee to submit Technical Specifications for the presently-installed fire protection equipment at this facility. The licensee responded by letter of November 22, 1976. By letter of December 6, 1976, we issued sample Technical Specifications and reiterated that these specifications were for existing systems only.

Subsequently, the licensee proposed Technical Specifications by letter dated January 31, 1977. Based on our review and consideration of that response and the responses of other licensees, we modified certain action statements and surveillance frequencies in order to provide more appropriate and consistent specifications which we forwarded to the licensee by letter of June 24, 1977. That letter also requested submittal of appropriately revised specifications.

The licensee responded by letter dated July 20, 1977. We have reviewed the licensee's responses and have made modifications where necessary to assure conformance to the fullest extent practicable with our requirements as set forth in the sample Technical Specifications.

DISCUSSION AND EVALUATION

The guidelines for Technical Specifications that we developed and sent to all licensees are based on assuring that the fire protection equipment currently installed for the protection of safety related areas of the plant is operable. This assurance is obtained by requiring periodic surveillance of the equipment and by requiring certain

corrective actions to be taken if the limiting conditions for operation cannot be met. These guidelines also include administrative features for the overall fire protection program such as interim fire brigade requirements, training, procedures, management review and periodic independent fire protection and loss prevention program inspections.

The equipment and components existing at this facility and included in the scope of these Technical Specification requirements are fire detectors, the fire suppression systems, the hose stations, and penetration fire barriers for piping and cabling penetrations. Operability of the fire detection instrumentation provides warning capability for the prompt detection of fires, to reduce the potential for damage to safety related equipment by allowing rapid response of fire suppression systems. In the event that the minimum coverage of fire detectors cannot be met, hourly fire patrols are required in the affected area until the inoperable instrumentation is restored to operability. The operability of the fire suppression systems provides capability to confine and extinguish fires. In the event that portions of the fire suppression systems are inoperable, alternate backup fire fighting equipment is required to be made available in the affected areas until the inoperable equipment is returned to service. In the event that the fire suppression water system becomes inoperable, a backup fire protection water system is required within 24 hours and a report to the NRC is required within 24 hours to provide for prompt evaluation of the acceptability of the corrective measures for adequate fire suppression capability. The functional integrity of the penetration fire barriers provides protection to confine or retard fires from spreading to adjacent portions of the facility. During periods of time when a fire barrier is not functional, a continuous fire watch is required to be maintained in the vicinity of the affected barrier to provide fire prevention methods and prompt detection and suppression in the event of a fire.

We have reviewed the licensee's proposed interim Technical Specifications against our requirements as implemented in the sample Technical Specifications. We have made some modifications to the Specifications that were proposed by the licensee in order to make them conform to our requirements. One of the proposed specifications that we changed involves the minimum size of the on-site fire brigade. In our previous sample Technical Specifications we did not identify the number of members on a fire brigade that we would find acceptable. We have now concluded that minimum number for a typical commercial nuclear power plant to be five (5). The basis for this conclusion is presented in an attachment to this SER entitled "Staff Position Minimum Fire Brigade Shift Size."

In the report of the Special Review Group on the Browns Ferry Fire (NUREG-0050) dated February 1976, consideration of the safety of operation of all operating nuclear power plants pending the completion of our detailed fire protection evaluation was presented. The following quotations from the report summarize the basis for our conclusion that the operation of the plants, until we complete our review, does not present an undue risk to the health and safety of the public.

> "A probability assessment of public safety or risk in quantitative terms is given in the Reactor Safety Study (WASH-1400). As the result of the calculation based on the Browns Ferry fire, the study concludes that the potential for a significant release of radioactivity from such a fire is about 20% of that calculated from all other causes analyzed. This indicates that predicted potential accident risks from all causes were not greatly affected by consideration of the Browns Ferry fire. This is one of the reasons that urgent action in regard to reducing risks due to potential fires is not required. The study (WASH-1400) also points out that 'rather straight-forward measures, such as may already exist at other nuclear plants, can significantly reduce the likelihood of a potential core melt accident that might result from a large fire'. The Review Group agrees.
>
> "Fires occur rather frequently; however, fires involving equipment unavailability comparable to the Browns Ferry fire are quite infrequent (see Section 3.3 [of NUREG-0050]). The Review Group believes that steps already taken since March 1975 (see Section 3.3.2) have reduced this frequency significantly."
>
> "Based on its review of the events transpiring before, during and after the Browns Ferry fire, the Review Group concludes that the probability of disruptive fires of the magnitude of the Browns Ferry event is small, and that there is no need to restrict operation of nuclear power plants for public safety. However, it is clear that much can and should be done to reduce even further the likelihood of disabling fires and to improve assurance of rapid extinguishment of fires that occur. Consideration should be given also to features that would increase further the ability of nuclear facilities to withstand large fires without loss of important functions should such fires occur."

Subsequent to the Browns Ferry fire and prior to the Special Review Group's investigation, the Office of Inspection and Enforcement took steps with regard to fire protection. Special bulletins were sent to all licensees of operating power reactors on March 24, 1975, and April 3, 1975, directing the imposition of certain controls over fire ignition sources, a review of procedures for controlling maintenance and modifications that might affect fire safety, a review of emergency procedures for alternate shutdown and cooling methods, and a review of flammability of materials used in floor and wall penetration seals. Special inspections covering the installation of fire stops in electrical cables and in penetration seals were completed at all operating power reactors in April and May 1975. Inspection findings which reflected non-compliance with NRC requirements resulted in requiring corrective action by licensees. Follow-up inspections have confirmed that licensees are taking the required corrective actions and that administrative control procedures are in place.

Since these inspection activities and the subsequent Special Review Group recommendations in the 1975 to 1976 time period, there has been no new information to alter the conclusions of the Special Review Group, and the ongoing fire protection program flowing from those conclusions is still adequate.

Therefore, we have found these specifications acceptable on an interim basis until such time that our overall review is complete, required equipment is installed and operable, and final specifications have been developed and issued.

ENVIRONMENTAL CONSIDERATION

We have determined that the planned 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 impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this planned amendment.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does 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 this planned amendment will not be inimical to the common defense and security or to the health and safety of the public.

Attachment: Staff Position - Minimum Fire Brigade Shift Size

Date: November 25, 1977

Staff Position

Minimum Fire Brigade Shift Size

INTRODUCTION

Nuclear power plants depend on the response of an onsite fire brigade for defense against the effects of fire on plant safe shutdown capabilities. In some areas, actions by the fire brigade are the only means of fire suppression. In other areas, that are protected by correctly designed automatic detection and suppression systems, manual fire fighting efforts are used to extinguish: (1) fires too small to actuate the automatic system; (2) well developed fires if the automatic system fails to function; and (3) fires that are not completely controlled by the automatic system. Thus, an adequate fire brigade is essential to fulfill the defense in depth requirements which protect safe shutdown systems from the effects of fires and their related combustion by-products.

DISCUSSION

There are a number of factors that should be considered in establishing the minimum fire brigade shift size. They include:

1) plant geometry and size;
2) quantity and quality of detection and suppression systems;
3) fire fighting strategies for postulated fires;
4) fire brigade training;
5) fire brigade equipment; and
6) fire brigade supplements by plant personnel and local fire department(s).

In all plants, the majority of postulated fires are in enclosed windowless structures. In such areas, the working environment of the brigade created by the heat and smoke buildup within the enclosure, will require the use of self-contained breathing apparatus, smoke ventilation equipment, and a personnel replacement capability.

Certain functions must be performed for all fires, i.e., command brigade actions, inform plant management, fire suppression, ventilation control, provide extra equipment, and account for possible injuries. Until a site specific review can be completed, an interim minimum fire brigade size of five persons has been established. This brigade size should provide a minimum working number of personnel to deal with those postulated fires in a typical presently operating commercial nuclear power station.

If the brigade is composed of a smaller number of personnel, the fire attack may be stopped whenever new equipment is needed or a person is injured or fatigued. We note that in the career fire service, the minimum engine company manning considered to be effective for an initial attack on a fire is also five, including one officer and four team members.

It is assumed for the purposes of this position that brigade training and equipment is adequate and that a backup capability of trained individuals exist whether through plant personnel call back or from the local fire department.

POSITION

1. The minimum fire brigade shift size should be justified by an analysis of the plant specific factors stated above for the plant, after modifications are complete.

2. In the interim, the minimum fire brigade shift size shall be five persons. These persons shall be fully qualified to perform their assigned responsibility, and shall include:

   One Supervisor - This individual must have fire tactics training. He will assume all command responsibilities for fighting the fire. During plant emergencies, the brigade supervisor should not have other responsibilities that would detract from his full attention being devoted to the fire. This supervisor should not be actively engaged in the fighting of the fire. His total function should be to survey the fire area, command the brigade, and keep the upper levels of plant management informed.

   Two Hose Men - A 1.5 inch fire hose being handled within a windowless enclosure would require two trained individuals. The two team members are required to physically handle the active hose line and to protect each other while in the adverse environment of the fire.

   Two Additional Team Members - One of these individuals would be required to supply filled air cylinders to the fire fighting members of the brigade and the second to establish smoke ventilation and aid in filling the air cylinder. These two individuals would also act as the first backup to the engaged team.

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

OCT 3 1 1977

Docket Nos. 50-263
50-282
50-306

Mr. L. R. Carlson, Manager
Cash and Banking
Northern States Power Company
Minneapolis, Minnesota 55401

Dear Mr. Carlson:

We have reviewed the financial information that you have submitted and conclude that it satisfies the requirements of Section 140.21 of 10 CFR Part 140 that each licensee maintain an approved guarantee of payment of deferred premiums for each operating reactor over 100 MW(e) that it owns in whole or in part.

Sincerely,

Jerome Saltzman, Chief
Antitrust & Indemnity Group
Nuclear Reactor Regulation

9

ap3