U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-263/84-11(DRS)

Docket No. 50-263 License No. DPR-22

Licensee: Northern States Power Company
414 Nicollet Mall
Minneapolis, MN 55401

Facility Name: Monticello Nuclear Generating Station

Inspection At: Monticello, MN

Inspection Conducted: May 21-25, 1984

Inspector: J. M. Ulie W. G. Guldemond for 7/20/84
Date

Approved By: W. G. Guldemond, Chief W. G. Guldemond 7/20/84
Operational Programs Section
Date

Inspection Summary

Inspection on May 21-25, 1984 (Report No. 50-263/84-11(DRS))
Areas Inspected: Routine, unannounced inspection of the licensee's fire protection and prevention program and 10 CFR 50, Appendix R, Section III.J including Fire Dampers, Surveillance Test of Deluge Fire Suppression System, Alternate Shutdown System Design, Offsite Fire Department Mutual Aid Agreement, Fire Brigade Classroom Training Records, Administrative Controls, Updating of the Fire Hazards Analysis, Fire Watch Training Program, Cable Spreading Room Ventilation Penetrations, Fire Door Modifications, Plant Tours, Safety Concerns Related to Bearded Fire Brigade Members and Fire Hose Station Pressures, and Fire Detection System. The inspection involved 50 inspector-hours onsite and one inspector-hour in the Region III office by one NRC inspector.
Results: Of the twenty areas inspected, no items of noncompliance or deviations were identified in nineteen areas; one deviation (failure of the fire detection system to provide a permanent record of signals sent to the central supervising station - Paragraph 7.b) was identified in the remaining area.

DETAILS

1. Persons Contacted

*Wayne Shamla, Plant Manager
*Doug Antony, Superintendent of Operations
*Byron Day, Superintendent of Operations Engineering
*Ollie Iverson, Senior Production Engineer
Bill Dhein, Site Superintendent
Bernie Schmitt, Nuclear Training Administrator
Sandy Krutchen, Engineer
Steve Engelke, Engineer
Larry Nolan, Superintendent Nuclear Technical Services
Mike Gant, Training Center Instructor
Ann Huffman, Registered Nurse

*Denotes those present at the exit interview on May 25, 1984.

Charlie Brown, Senior Resident Inspector at Monticello also attended the exit interview on May 25, 1984.

2. List of Documents Reviewed

a. Procedures

Number	Title
Test #0266, Rev. 0	Fire Protection Pumps Simulated Auto - Actuation and Capability Test
Test #0319	Fire Protection System - Yard Hydrant Barrel Inspection
Test #0258, Rev. 0	Diesel Fire Pump Battery Weekly Check
Test #0259, Rev. 0	Diesel Fire Pump Battery Quarterly Check
Test #1145, Rev. 0	Diesel Fire Pump Battery Inspection
Test #0270, Rev. 3 and #0321	Fire Protection System Valve Position Verification
Test #0274, #1235 and #0318, Rev. 4	Fire Hose Station and Yard Hydrant Hose House Equipment Inspection
Test #0272 and #1236, Rev. 7	Fire Hose Station Hose and Gasket Inspection
Test #0273 and #1237, Rev. 2	Fire Hose Station Valve Operability and Flow Blockage Test
Test #0265, Rev. 0	Diesel Fire Pump Engine Inspection
Test #0267, Rev. 1	Fire Protection System Header Flush
Test #0326 and #0327, Rev. 0	Cable Spreading Room Halon Storage Tank Weight and Pressure Check
Test #1078, Rev. 0	Fire Protection System - Transformer and Building Siding Deluge Test
Test #1216, Rev. 1	Fire Door Inspections
Test #1222	Control Room Fire Detector Weekly Test
Test #1223	Control Room Fire Detector Annual Test

Number	Title
Test #0256	Fire Detection Instrumentation Test - Fire Detector Functional Test
Test #0257	Fire Detector Alarm Circuit Operability Test
Test #1147	Fire Detector Sensitivity Check

3. Technical Specification Review

The inspector reviewed the licensee's compliance with technical specifications including fire suppression water system, fire detection and protection system, fire barrier penetration fire seals, and hose stations.

Screen Wash/Fire Pump Capability

By letters dated February 6, 1981, and March 19, 1981, the licensee stated the screen wash pump is equivalent to the electric and diesel fire pumps and the screen wash pump has design points at 100% and 150% of capacity in accordance with normal NFPA recommendations. Further, the licensee stated the local Underwriters Laboratories (U.L.) office would be contacted to determine if U.L. would require any pump modifications in order to approve and label this pump.

During the inspection, the inspector requested the licensee senior production engineer to provide the original fire pump and screen wash pump shop and field acceptance tests including any documentation received from U.L. regarding the screen wash pump. The inspector was provided with copies of the following documents: (1) procurement document for the screen wash pump; (2) screen wash pump manufacturer's self-certification of the screen wash pump; (3) screen wash pump manufacturer's proposal to Northern States Power; and (4) four shop test curves of the electric fire pump, diesel fire pump, removed screen wash pump, and the presently installed screen wash pump. Documentation not provided to the inspector included the original field acceptance tests for the three pumps identified above and any documentation received from U.L. indicating the necessary modifications needed to be performed on the screen wash pump to receive U.L. approval.

During the inspector's review of this documentation the following were identified:

a. Regarding the screen wash pump manufacturer's self-certification of the screen wash pump, the inspector contacted U.L.'s listing department and was informed that the model of the screen wash pump presently installed is not listed by U.L. for industrial or fire protection service.

b. The licensees' transmittals dated February 6, 1981 and March 19, 1981, stated that the screen wash pump was equivalent to the two fire pumps and had design points at 100% and 150% of capacity in accordance with normal NFPA recommendations. The inspector compared the screen wash pump shop curve to NFPA 20 requirements. This comparison indicated that the screen wash pump did not meet the third point (no less than

150% of rated capacity at a total head of not less than 65% of the total rated head) as required by NFPA 20. The screen wash pump design conditions indicate the pump is rated for 1500 GPM at a discharge pressure of 100 PSI. For the NFPA 20 requirements, the third point for the screen wash pump should be capable of delivering 2250 GPM at 65 PSI. The screen wash pump shop curve indicates the pump delivered 2250 GPM at 56 PSI during the shop test. Thus, the screen wash pump did not meet the third point as required by NFPA 20; however, based on the licensee's water supply analysis dated February 6, 1981, combining the maximum fire suppression system plus hose streams, the screen wash pump will meet the required flow requirements as a backup pump to the two fire pumps.

c. For the surveillance tests performed during 1980, 1982, and 1983, no dead head pressure was measured for either of the three pumps nor was the peak load pressure measured for the screen wash pump; thus, the first and third points as required by NFPA 20 could not be determined with the available information for the screen wash pump nor can the first point be determined for the two fire pumps.

Based on the above, the screen wash pump was not equivalent to the two fire pumps and did not meet the design point at 150% of capacity in accordance with NFPA 20 recommendations. This item is considered an unresolved item (263/84-11-01(DRS)) and will be referred to NRR for resolution.

4. Plant Tours

The inspector examined the implementation of the Licensee's Fire Protection Administrative Controls and adequacy of the Plant Manual Fire Fighting Equipment during tours of the Reactor Building, Office and Control Building, Turbine Building and Intake Structure on May 23, 24, and 25, 1984.

During these plant tours the inspector observed and consequently raised the following concerns:

a. Two areas of the plant were observed not having permanently installed sealant in conduits penetrating walls and ceilings where no in-progress work modifications were being performed at the time of the plant tour:

(1) Fire Zone 7B (Room 167B), EL. 928' - one conduit not permanently sealed was located in the center battery room along the upper portion of the north wall. As an approved and controlled interim measure, Kaowool Fire Retardant Blanket was in place.

(2) EFT Building, (No fire zone is listed due to the building being built after the fire hazards analysis was submitted to the NRC - Details in paragraph 12 of the inspection report), EL. 932' - two conduits not permanently sealed were located in the ceiling of Control Panels, Division One (1) room. As an approved and controlled interim measure, Kaowool Fire Retardant Blanket was in place.

At the exit on May 25, 1984, the licensee committed to permanently seal the above listed conduits before startup of cycle number eleven (11). This is considered an open item (263/84-11-02(DRS)) pending these conduits being permanently sealed.

b. One area of the plant was observed having an unsealed pipe chase penetrating a wall where in-progress work modifications were not being performed at the time of the plant tour:

Fire Zone 23A (Room-None Listed), El. 919' - one unsealed pipe chase was located in the north wall of the Intake Structure next to door 209. No Kaowool Fire Retardant Blanket was installed in this location.

This is considered an open item (263/84-11-03(DRS)) pending review by the licensee to determine whether this penetration is required to be sealed.

c. One area of the plant was observed as not having a one and a half inch (1½") interior fire hose connected to the hose station standpipe. This area was where a higher probability of fire was present due to the considerable amount of plant modifications in-progress including cutting and welding activity. A fire watch was on duty at the time of the plant tour. Prior to the inspector's departure from the site on May 25, 1984 the hose was reconnected to the hose station but the licensee was unable to provide an explanation for the hose being disconnected. This particular administrative deficiency appeared to be an isolated case.

d. One area of the plant was observed to have been missing required fire retardant material on beams located in the Recirculation Motor Generator Set Room on EL. 962' in Fire Zone 3A. It appeared that the fire retardant material was removed due to the installation of an overhead crane in the room.

At the exit meeting on May 25, 1984, the licensee committed to reinstall the fire retardant material before startup of cycle number eleven (11). This is considered an open item (263/84-11-04(DRS)) pending reinstallation of the fire retardant material.

e. On May 23, 1984, between the hours of 1700 and 2100, the inspector observed combustible materials including two boxes of rags, one mop, and an empty five (5) gallon unmarked container of what appeared to have been oil. These combustibles were left unattended, in a apparent stored condition where in-progress work modifications were not being performed at the time of the plant tour.

Prior to the inspectors' departure from the site on May 25, 1984, the combustibles listed above were removed but the licensee was unable to provide an explanation for the combustibles being located in this area. This particular administrative deficiency appeared to be an isolated case.

f. In three additional areas of the plant, large amounts (in excess of thirty (30) wooden planks labeled as being fire retardant treated) of wood planking and plastic dust protective covering material was observed by the inspector in the following plant areas:

(1) Fire Zone 13C (Room 12), EL. 911' - located throughout the ESF Motor Control Center Area was wooden planking used mainly for scaffolding and also a tool crib constructed entirely of wood was observed in this area.

(2) Fire Zone 13A (Room 9), EL. 911' - wooden planking and plastic dust protective covering material was located throughout the Lube Oil Storage Tank area.

(3) Fire Zone 2C (Rooms 135 and 137), EL. 935' - wooden planking and plastic dust protective covering material was located throughout the CRD Hydraulic Control Units and HVAC Unit Areas.

Each of the areas listed above was administratively controlled by the use of a fire watch patrol and the removal of unnecessary work debris at the completion of each shift. Due to the type of major modifications being performed and the administrative controls in place at the time of the plant tours, the inspector felt sufficient justification was given not to issue a citation; however, as discussed at the exit interview on May 25, 1984, it was the inspector's understanding that all wooden planking and plastic dust covering material will be removed before startup of cycle number eleven (11).

This is considered an open item (263/84-11-05(DRS)) pending removal of all wooden planking and plastic dust covering material from all safety related areas including those listed above.

g. The inspector observed five (5) gallon containers of firefighting foam that had a date of manufacture of January and May, 1979. Past inspection experience has identified that certain types of firefighting foam break-down chemically after a five year period. At the exit interview on May 25, 1984, the inspector requested the licensee to verify the shelf life of the firefighting foam located on-site. This is considered an open item (263/84-11-06(DRS)) pending verification of the foam shelf life.

5. Fire Dampers

a. At the request of the inspector a surveillance test was performed on May 25, 1984 by the licensee on three (3) ventilation duct penetration fire dampers to determine the operability of the dampers in their installed condition. The tested dampers were as follows:

(1) Fire Zone 7C (Room 167c), EL. 928' - numbered FD 402 and FD 403, two 1½-hour rated dampers located in the 125 Volt Battery Room, supply and return ducts.

(2) Fire Zone 7B (Room 167b), EL. 928' - numbered FD 401, one 1½-hour rated damper located in the 250 Volt Battery Room, return duct.

All three dampers closed completely during the surveillance test.

b. The NRC issued Information Notice No. 83-69, regarding improperly installed fire dampers at nuclear power plants dated October 21, 1983. This information notice was provided as notification of potentially generic problems involving the improper installation of fire dampers in ventilation ducts which penetrate fire barriers in safety-related areas.

During the performance of the fire damper surveillance tests, the inspector observed that the three ventilation duct fire dampers tested were installed within the ducts in the fire area and not within the fire wall penetration as required by the design and installation code, National Fire Protection Association Standard 90A, Air Conditioning and Ventilating Systems. These three improperly installed fire dampers could permit the passage of fire through to the two 125 Volt Battery Rooms, Fire Zones 7A and 7C, respectively, if a fire is postulated in the 250 Volt Battery Room, Fire Zone 7B, consequently losing the function of all three battery rooms. The Fire Hazards Analysis does not postulate the consequence of a fire in the 250 Volt Battery Room combined with the spread of fire to the two adjacent 125 Volt Battery Rooms.

The licensee's staff engineer in charge of fire damper design was not available during the inspection. Thus, the inspector was unable to obtain additional information regarding the applicability of the problem mentioned above on a plant-wide basis or the modifications planned for upgrading the present fire damper installations to meet Section III.G of Appendix R.

At the exit interview on May 25, 1984, the inspector requested the licensee to perform an analysis on the present condition of all fire dampers located in safety-related areas and areas required for plant shutdown. Further, an analysis should be submitted to the NRC on the modifications planned for upgrading the present fire damper installations to meet Section III.G of Appendix R. This is considered an open item (263/84-11-07(DRS)) pending submittal of the above mentioned analyses and proper installation of the required fire dampers.

6. <u>Surveillance Test of Deluge Fire Suppression System</u>

a. At the request of the inspector a surveillance test was performed on May 25, 1984, by the licensee on three (3) fire suppression systems to determine the operability of the suppression systems. The tested fire suppression systems were:

(1) Fire Zone 3A (Room 502), EL. 962' - performed sprinkler surveillance test procedure No. 0323, 0324 and 0325 on two systems for this area. These sprinkler systems passed the surveillance test.

(2) Fire Zone 13B (Space 10 and 11), EL. 911' - performed sprinkler surveillance test procedure No. 0323, 0324, and 0325. This sprinkler system passed the surveillance test.

b. The NRC issued Information Notice No. 84-16, regarding the failure of automatic sprinkler system valves to operate. This information notice was provided as notification of a problem involving the operational failure of deluge and pre-action fire protection water control valves, identified as Model C, manufactured by Automatic Sprinkler Corporation of America of Cleveland, Ohio, dated March 2, 1984. During the performance of the sprinkler system surveillance tests, the inspector observed that the three deluge valves being used in these sprinkler systems were 2½-inch Model C valves manufactured by Automatic Sprinkler Corporation of America. The licensee had not completed their review of the information notice at the time of the inspection.

This is considered an open item (263/84-11-08(DRS)) pending the licensee's review of Information Notice No. 84-16 and request by the inspector that this analysis be submitted to Region III.

7. <u>Fire Detection System</u>

a. <u>Control Room Fire Detection System</u>

Paragraph E.1.(a) of Appendix A to BTP APCSB 9.5-1 requires fire detection systems as a minimum to comply with NFPA 72D-1975, "Standard for the Installation, Maintenance and Use of Proprietary Protective Signaling Systems." Paragraph 2431 of NFPA 72D-1975, states in part, "The electrical supervision shall also include all circuits for signals initiated by the operation of...fire detectors...."

Section 10.3.1.3.1 of the FSAR dated October, 1983, states that all fire protection circuits are supervised and that the installation meets the requirements of NFPA 72D.

By letter dated December 27, 1979, the licensee proposed to install battery powered ionization detectors in the control room in areas not visible from the front of the console. By letter dated July 18, 1980, the licensee committed to test and inspect the detectors weekly. However, the licensees submittal did not identify that the proposed control room fire detection system deviated from NFPA 72D. By letter dated February 12, 1981, NRR accepted the fire detection system for the control room; however, the Fire Protection SER did not exempt the control room from meeting the requirements of NFPA 72D.

During a plant tour of the control room on May 23, 1984, the inspector examined the installation of the fire detectors located in the control room and also reviewed surveillance test procedures numbered 1222 and 1223 for the years 1982 and 1983. All surveillance tests were performed. Subsequently this matter was discussed in a call on July 9, 1984, between the inspector and a member of the licensee's engineering staff.

This apparent deviation from NFPA 72D-1975 will be forwarded to NRR for re-review. This is considered an unresolved item (263/84-11-09(DRS)).

b. Fire Detection System Central Supervising Station

Section 10.3.1.3.1 of the FSAR dated October, 1983, states, "All circuits are supervised and the installation meets the requirements of NFPA-72D."

By letter dated December 27, 1979, the licensee stated that the new fire detection system will comply with NFPA 72D standard on proprietary protective signaling systems.

Section 3221 of NFPA 72D-1975 requires a permanent record indicating each time each signal transmitting station is operated shall be made at a supervising location.

During a plant tour on May 23, 1984, the inspector observed that the licensee's fire detection system does not have the capability of receiving a permanent record of signals sent to the central supervising station. Subsequently this matter was discussed in a call on July 9, 1984, between the inspector and a member of the licensee's engineering staff.

This is considered a deviation from an FSAR commitment (263/84-11-10(DRS)).

8. Safety Concerns Related to Fire Hose Station Use

Paragraph E.3.(d) of Appendix A to the Branch Technical Position (APCSB) 9.5-1, dated August 23, 1976, to which the Monticello Plant was compared against; requires the design and installation of hose standpipe systems to follow the requirements of NFPA 14-1974, "Standpipe and Hose Systems." Appendix A further requires standpipes serving hose stations in areas housing safety-related equipment to have pressure reducing devices (if applicable). Paragraph 442 of NFPA 14-1974 requires where the pressure at any standpipe outlet exceeds 100 pounds per square inch, an approved device shall be installed at the outlet to reduce the pressure with required flow at the outlet to 100 pounds per square inch.

Step 2 of Surveillance Test Procedures Numbered 0274 and 1238 indicates that the fire hose hydrostatic test pressure was determined by adding the maximum pressure available at the hose stations (130 PSI) to the prescribed test overpressure. It was the inspector's understanding that this maximum pressure available was determined by the pressure setting of the relief valve located on the discharge of the diesel fire pump, which has the highest setting of the relief valves associated with the various fire protection pumps, and not the maximum pressure actually available at the hose stations. However, the licensee was unaware of what the hose station outlet (Residual) pressures were when attached with $1\frac{1}{2}$" fire hose.

During the inspector's plant tours on May 23 and 24, 1984, at the request of the inspector the licensee uncoupled three hose stations none of which contained pressure reducing devices. Further, the licensee was unable to provide documentation to show the maximum hose standpipe outlet pressures in a safety-related area or area within hose reach of a safety-related area.

According to paragraph 4.11.2 of the licensees transmittal letter dated March 19, 1981, fire brigade practice sessions will be held at least once every year and include hands-on training of firefighting equipment (i.e., Handling of fire hose). As the training program is currently structural if brigade members are unable to attend their scheduled practice session and unable to attend the makeup session, no further hands-on training is required to be received till the following year.

At the exit interview on May 25, 1984, a representative of the licensee's management staff indicated that he was not aware of any interior hose standpipes which have been used with the hose attached for training or emergency purposes since the plant has been constructed.

Additionally, the NRC issued Information Notice (IEN) No. 83-41, regarding actuation of fire suppression systems causing inoperability of safety-related equipment dated June 22, 1983. This information notice was issued to alert licensees to some recent experiences in which actuation of fire suppression systems caused damage to or inoperability of systems important to safety.

Based on the above, indeterminate and possibly excessive interior fire hose station pressures combined with a lack of hands-on fire hose training could result in consequences similar to those identified in IEN 83-41 (inoperability of systems important to safety or required for safe shutdown).

Licensee actions to bring their hose station installations in conformance with NFPA requirements and to strengthen their training program for fire brigade members will be tracked as an open item (263/84-11-11(DRS)).

9. Safety Concerns Related to Bearded Fire Brigade Members

The inspector observed one fire brigade member with a full facial beard participating in an unannounced fire brigade drill conducted on Thursday, May 24, 1984. The inspector's concern is having assurance that bearded fire brigade members obtain a leak-tight seal so as not to interfere with their ability to mitigate the consequences of fire due to either smoke or airborne contamination intrusion.

Three technical flaws with self-contained breathing apparatus are cited for deviating from normal industry practice of requiring clean shaven faces in the seal area of tight fitting respirators.

The first problem is the potential to "overbreathe"; a person working under heavy physical and mental stress (such as firefighting efforts) can exceed the Self-Contained Breathing Apparatus' air supply capability. When a beard-caused leak in the seal area exists, the additional "makeup" air is drawn from the outside atmosphere through the leak area.

The second problem is beard interference with the operation of the facepiece's exhaust (exhalation) valve. A beard can hold this valve open, and on a deep breath could allow outside, contaminated air to enter the facepiece. Also, on a normal volume inhalation an open exhaust valve could allow loss of air, thereby reducing the user's air service time.

The third problem with individuals who have beards and facial hair is the high probability for increased outward leakage caused by beard interference with the seal. Facial hair characteristics change daily (Lawrence Livermore Laboratory Study - DOE Contract No. W-7405-ENG-48 - sent to licensee on June 1, 1984 through NRC-SRI). Any test of facepiece fit or how long the breathing air cylinder will last on one day may be different on succeeding days. A daily quantitative fit test would be required to ensure adequate air supply service time for bearded users who have facial hair in the seal area.

Personnel having any condition that prevents a leak-tight seal and proper operation of the respirator may suffer the loss of the protection factor afforded by respirator use. During routine planned operations in airborne radioactivity areas, the degree of hazard can be predetermined by air sampling, and licensees can then assume no protection factors and limit the stay time such that administrative intake "Overexposures" should not occur. However, the case for the fire brigade members differs drastically. Prompt emergency response does not lend itself to the pre-work assessment of airborne hazards (toxic smoke, gases, and radioactive material). Licensee actions in response to the inspector's concerns in this area will be tracked as an open item (263/84-11-12(DRS)).

10. Fire Door Modifications

A memorandum from Mr. R. L. Spessard, Director, Division of Project and Resident Programs, Region III, dated May 12, 1982 advised licensees of a 10 CFR Part 21 report concerning inadequate fire resistant rating of bullet resistant doors. At the Monticello Facility, interim measures were initiated to periodically inspect fire areas protected by such doors until the fire resistant rating of the doors could be established. Northern States Power Company and Wisconsin Public Service Corporation entered into a joint agreement to have representative doors tested at the Underwriters Laboratory in Northbrook, Illinois. The purpose of the test was to establish the fire rating of the doors and their suitability for use. The test was conducted on June 20, 1983 and witnessed by Mr. S. Engelke for Northern States Power Company.

By letter dated September 22, 1983, the Monticello Senior Resident Inspector sent the results of the bullet resistant fire door test conducted at Underwriters Laboratories (U.L.) to the Region III office for review.

During a plant tour on May 24, 1984, the inspector examined the two control room doors (North and South doors) and the two cable spreading room doors (North and South doors) for which a prototype was tested at U.L. on June 20, 1983.

The inspector also reviewed photographs of the doors tested at U.L. and those presently installed at the plant. Their was one noticeable difference identified during the review regarding an intrusion alarm mounted on plates on the installed doors at the plant which was not present on the tested doors.

In addition to the four doors mentioned above, a substantial number of other doors required to be fire rated are installed in safety related areas of the plant with the same door configurations.

By letter dated October 26, 1983, the licensee requested Bechtel Power Corporation to have a fire protection engineer evaluate the impact of the noted difference in door construction on the U.L. fire test to determine if the differences are significant enough to change the test results. By letter dated November 21, 1983, Bechtel Power Corporation responded to Northern States Power Company's request on evaluating the bullet resistant/proposed fire doors. The results of this evaluation indicated that the fire test results will not be voided by drilling and tapping of the top 5/16 inch of the surface plate required to mount the intrusion alarm on the doors. The Bechtel transmittal further stated that the Bechtel fire protection engineer has discussed these comments with U.L. and, in general, U.L. is in agreement with the above recommendations. The Bechtel transmittal does not indicate how the fire protection engineer performed his evaluation. Based on the lack of adequate test data to support the fire resistance rating of these doors, and because modifications performed on the doors are to the extent that the performance of the door assembly under fire conditions is unknown, this issue will be tracked as an unresolved item and referred to NRR for resolution (50-263/84-11-13(DRS)).

11. Cable Spreading Room Ventilation Penetrations

By letter dated May 8, 1980, the licensee committed to install a Halon 1301 automatic suppression system in the cable spreading room. The letter further states that the system discharge time will be 10 seconds to full concentration density. Concentration density is to be 5% by volume minimum, with a limit of 6% to assure retention of a breathable atmosphere. Desired concentration will be maintained for 10 minutes minimum.

During a plant tour on May 23, 1984, the inspector identified two ventilation penetrations located along the south wall of the cable spreading room (Fire Zone 8) which have two separate lengths of small piping (approx. ½" dia.) protruding through the ventilation grill covers. The inspector's concern relates to these two piping penetrations which, if not sealed or obstructing the ventilation dampers from closing, would allow the Halogenated extinguishing agent (Halon 1301) to escape from the cable spreading room thereby reducing the extinguishing agent concentration below that needed to extinguish a fire.

The licensee could not provide documentation to assure that the piping penetrations mentioned above would not cause an escape of the extinguishing agent upon actuation of the Halon system. This is considered an open item (263/84-11-14(DRS)) pending verification that sufficient extinguishing agent will not escape to reduce the concentration below what is required to be maintained in the cable spreading room.

12. Updating of the Fire Hazards Analysis

On March 11, 1977, Northern States Power Company submitted a Fire Hazards Analysis for Monticello Nuclear Generating Plant to the NRC. The methodology used in this analysis was to divide the plant into Fire Zones. The boundaries of the zones were determined by consideration of walls, concentrations of combustible materials, affect of fire exposure on safety related systems, and the physical configuration of the area and equipment. A number of the fire zone boundaries were constructed to less than three-hour rated barriers or lacking fire suppression and detection systems as required in 10 CFR 50, Appendix R, Section III.G.2 and further delineated in Generic Letter 83-33, dated October 19, 1983.

By letter dated February 8, 1983, the licensee provided information regarding the upgrading of fire barriers needed to bring Monticello into conformance with Section III.G of Appendix R. The identification of upgrading the fire barriers includes the following:

FIRE BARRIER UPGRADE IDENTIFICATION

From		To	
Fire Area	Fire Zone	Fire Area	Fire Zone
I	1D	IV	1F
I	2C	II	2B
I	2H	II	2G
I	3C	II	3B
I	3D	II	4B
II	2E	III	2A
II	2B	III	2A
II	2G	IV	1F
II	2B	IV	1F
III	1C	IV	1F
VI	7B	VII	7C
VI	8	VII	7C
IX	12A	XII	14A
IX	12A	X	12B
IX	13B	XI	12C
IX	13C	XII	19B
IX	16	XII	14A
IX	16	XII	17
IX	16	XII	19A
IX	19C	XII	19B
X	12B	XI	12C

By letter dated September 21, 1983, NRR granted an exemption for completion of upgrading the fire barriers to be performed before startup of cycle twelve (12).

As a result of the large number of plant modifications being performed to upgrade the fire barriers and due to a new building (EFT building) being built since the original Fire Hazards Analysis was submitted, the inspector requested that the original Fire Hazards Analysis be updated to encompass all Appendix R modifications including the EFT building. Discussions with the licensees' staff indicated such an analysis will begin in approximately December, 1984. This is considered an open item (263/84-11-15(DRS)) pending completion of the updating of the Fire Hazards Analysis.

13. Fire Watch Training Program

The inspector observed and participated in the General Orientation Training (GOT) Program and the Radiation Control Training Program on May 22, 1984. During these training programs information regarding identification badges, Security, Work Request Authorization (WRA), Safety cards used onsite, fire protection, personal safety, what to do in case of emergencies, and training in the use of radiation protective clothing was conducted. Individuals who perform as fire watch patrols participate in the GOT program as part of their fire watch training qualifications.

Paragraph 4.12 of the licensees' transmittal dated March 19, 1981, stated in part, "A person designated as a fire watch and equipped to prevent and combat fire shall be assigned to safety related areas where...open flame work is involved."

During the fire protection portion of the training program, the inspector made the following observations:

(1) The blue pamphlet handed out during the training session included a section titled, "FIRE PROTECTION" which incorrectly stated that carbon dioxide portable fire extinguishers may be used on Class A (ordinary combustibles) type fires. This incorrect information was also presented in the slide and instructor fire protection presentations.

(2) During the slide presentation the accompanying recorder information failed to discuss the proper use of stored pressure pull pin types of portable fire extinguishers in that no mention of where to direct the nozzle when using a portable fire extinguisher was mentioned.

(3) During the slide presentation the accompanying recorder information indicated that licensee dry chemical fire extinguishers may be used on class A (Ordinary Combustibles), class B (Flammable Liquids), and class C (Energized Electrical Equipment) types of fire. However, the accompanying slide picture showed a portable fire extinguisher which was rated and approved for class B and C fires only.

(4) A majority of portable fire extinguishers located in safety related areas of the plant are cartridge operated dry chemical type fire extinguishers. During the fire protection presentation(s) no explanation was devoted to the use of this type of portable fire extinguisher.

(5) No practical demonstration on the use of the various types of portable fire extinguishers found in safety related areas was given during the general orientation training.

Section 2.b.(3) of Attachment No. 4 of NRC guidance document titled, "Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls, and Quality Assurance," dated August 12, 1977, requires a fire watch trained and equipped to prevent and combat fires is present when cutting, welding, grinding, or open flame work is being performed and references NFPA 51B.

(6) During the presentation, the use of interior 1½" fire hose was advocated for plant (general) employees. However, no further classroom training or any practical training was provided to plant employees.

These weaknesses will be tracked as an open item (263/84-11-16(DRS)) pending licensee review of the general orientation program.

14. Administrative Controls

The inspector examined the implementation of the Licensee's Fire Protection Administrative Controls and adequacy of the Plant Manual Fire Fighting Equipment during tours of the plant on May 23, 24, and 25, 1984.

a. Combustible Control Tours

Paragraph 15.8 of attachment No. 1 and Paragraph 5.1 of Northern States Power transmittals dated March 19, 1981 and July 5, 1979, respectively, stated that all areas containing safety related equipment or cables shall be surveyed once each working day for fire hazards by a member of the plant staff. The storage of combustible materials shall be permitted only in posted areas or in approved cabinets and containers. During periods of construction or extensive maintenance in safety related areas, a survey of each area will be made during each working shift.

Paragraph 5.1 of Administrative Control Directive No. 3ACD 8.5 states that Plant Managers shall be responsible for establishing a schedule for inspection of plant fire extinguishers, for performing inspections required by sections 6.1.2 and 6.1.3, for resolution of deficiencies identified during such inspections, and for maintaining required records associated with such inspections. Paragraph 6.1.3 requires inspections each day by qualified personnel to verify appropriate fire protection system status and to verify that no undue ignition source or combustible loading exists. Such surveys may be performed by normally assigned plant staff personnel provided appropriate guidance is provided. During periods of modification or major maintenance these surveys shall be performed each 8 hour shift.

At the time of the inspection, the inspector was unable to determine the manner in which the licensee documents these surveys and the qualifications of the personnel performing the fire hazard surveys.

This is considered an open item (263/84-11-17(DRS)) pending documentation demonstrating that fire hazard surveys are being performed by qualified individuals.

b. Fire Brigade Classroom Training Records

By letter dated June 7, 183, the licensee committed to comply with the requirements of Sections III.H, I, and K of Appendix R to 10 CFR Part 50. Section I.1.d of Appendix R requires that planned meetings shall be held at least every 3 months for all brigade members to review changes in the fire protection program and other subjects as necessary.

In reviewing ten (10) individual brigade members' classroom training records the inspector was unable to find their classroom training records for the third and fourth quarters of 1981.

This is considered an open item (263/84-11-18(DRS)) pending the licensee providing the ten individual brigade members classroom training records for the third and fourth quarters of 1981 to the Senior Resident Inspector as discussed at the exit interview. The licensee was provided with the list of ten (10) fire brigade members.

c. Offsite Fire Department Mutual Aid Agreement

By letter dated May 18, 1978, the licensee responded to an NRC request to review the Monticello Fire Protection Program for conformance with the NRC's staff's guidelines. These guidelines were contained in a document entitled, "Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls, and Quality Assurance," dated August 12, 1977. Section g of Attachment No. 5 of this document requires actions to be taken that will coordinate firefighting activities with offsite fire departments, including identification of the individual who will direct firefighting activities when aided by offsite fire departments and the development of procedures which describe the offsite fire departments resources and estimated response time to provide assistance to the station.

The licensee's response to this item stated, "Coordination of offsite fire department personnel with the plant organization will be specified in procedures and instructions."

At the exit the licensee provided the inspector with a copy of the emergency plan regarding the Wright County Fire Department agreement. This agreement states that the Wright County Fire and Rescue Chief, in coordination with the Monticello Fire Department and area Fire Departments will provide Fire and Rescue service.

During the inspector's review of the mutual aid agreement dated June 8, 1983 it was identified that, the agreement did not specify: (1) the actions to be taken by the offsite fire department(s), (2) who will direct firefighting activities when the fire brigade is aided by the offsite fire department(s), and (3) the offsite fire department resources and estimated response time to provide assistance to the station. Subsequently this matter was discussed in a call on July 9, 1984, between the inspector and a member of the licensee's engineering staff.

This is considered an open item (263/84-11-19(DRS)) pending review by the licensee of the offsite fire department mutual aid agreement including determining who will direct fire fighting activities when the fire brigade is aided by offsite fire departments. During this review by the licensee, consideration needs to be given to state and local codes regarding authority at fires and related emergencies.

15. <u>10 CFR 50, Appendix R, Section III.J, Emergency Lighting</u>

The inspector examined the licensee's emergency lighting system. 10 CFR 50, Appendix R, Section III.J requires that emergency lighting units with at least an eight hour battery power supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes to those areas. To verify that emergency lighting units with at least an eight hour battery power supply were provided in all areas needed for operation of safe shutdown equipment, the inspector, accompanied by a licensed Senior Reactor Operator (2nd Shift Site Superintendent), performed a walkdown on May 23, 1984, of Abnormal Procedure C.4.V, titled, "Procedures For Plant Shutdown From Outside the Control Room" dated December 15, 1983. During the walkdown, the inspector identified the following emergency lighting problems in areas required for safe shutdown:

a. Three areas of the plant did not have installed emergency lighting as follows:

    (1) Fire Zone 3A (Room 502), EL. 962' - in the area of the recirculation shutdown cooling outboard cooling valve (D31307).

    (2) Fire Zone 3C (Room 506), EL. 962' - in the area of the south instrument racks (rack C55).

    (3) Fire Zone (none listed for this area), EL. 951' - on the stairwell between EL. 962' and EL. 935' near the manual scram component area.

b. In three additional areas of the plant required for safe shutdown, lighting unit lamps were in need of being redirected or relocated due to obstructions (lamps located in front of panels):

(1) Fire Zone 12A (Room 6), EL. 911' - at entrance inside lower 4 KV area (load center No. 1).

(2) Fire Zone 14A (Space 100), EL. 931' - at entrance inside upper 4 KV area (load center No. 2).

(3) Fire Zone 2C (Room 135), EL. 935' - west control rod drive hydraulic control unit and HVAC unit area (Bank 394).

At the exit interview the inspector requested the licensee to perform an analysis to verify that the level of illumination for the three areas listed above is sufficient to accomplish any required operator actions for a safe plant shutdown. While this was discussed specifically, it should also be understood that all other areas needed for operation of safe shutdown equipment and in access and egress routes to those areas must also be provided with sufficient illumination levels to accomplish any required operator actions for a safe plant shutdown. Completion of this analysis will be tracked as an open item (263/84-11-20(DRS)).

16. Emergency Lighting Surveillance Procedures

Monticello Emergency Lighting Unit Surveillance Procedures identified as Emergency Lighting Operability Test Numbers 1061 and 1294, dated March 21, 1984, did not specify a level of illumination for access and egress routes or areas requiring operator action(s), verify lamp direction adequacy to assure conformance to design parameters that would provide adequate lighting in an emergency, or document whether the operability test was satisfactory or unsatisfactory. Subsequently this matter was discussed in a call on July 9, 1984, between the inspector and a member of the licensee's engineering staff.

Failure to develop an adequate surveillance procedure to ensure that the emergency lighting units will perform their design function is considered an unresolved item (263/84-11-21(DRS)) pending resolution of the applicability of General Design Criteria No. 1 by the NRC Headquarters staff in Bethesda, Maryland.

17. Alternate Shutdown System Design

By letter dated April 19, 1984, the licensee confirmed a commitment to install a switch on the alternate shutdown system panel which will insure that no spurious signal will prevent the main steam isolation valves from closing. In discussions with the licensee it was identified that the installation of the alternate shutdown system panel and the switch to be installed on the panel are still in the design stages. This is considered an open item pending the licensees' completion of the alternate shutdown system panel and installation of the switch as committed to in the April 19, 1984 licensee transmittal (263/84-11-22(DRS)).

18. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items or items of noncompliance. Unresolved items are contained in paragraphs 3, 7.a, 10, and 16.

19. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. Open items disclosed during the inspection are discussed in Paragraphs 4.a, 4.b, 4.d, 4.f, 4.g, 5.b, 6.b, 8, 9, 11, 12, 13, 14.a, 14.b, 14.c, 15 and 17.

20. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) on May 25, 1984. The inspectors summarized the scope and findings of the inspection. The licensee acknowledged the findings. In addition, a telephone conference call was held between the licensee and Region III staff on July 9, 1984, to further discuss the inspection findings identified during the inspector's in-office review of documentation provided during the inspection of May 21-25, 1984. Further, the inspector wishes to mention the positive attitude shown by the licensee for the proposed review and resolution of the inspector's concerns during the course of the inspection especially by plant management at the exit interview.