

October 23, 2006

Mr. T. Palmisano  
Site Vice President  
Prairie Island Nuclear Generating Plant  
Nuclear Management Company, LLC  
1717 Wakonade Drive East  
Welch, MN 55089

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2  
NRC TRIENNIAL FIRE PROTECTION BASELINE INSPECTION  
INSPECTION REPORT 05000282/2006009(DRS); 05000306/2006009(DRS)  
NFPA 805 - ENFORCEMENT DISCRETION EXERCISED

Dear Mr. Palmisano:

On August 18, 2006, the U. S. Nuclear Regulatory Commission (NRC) completed a triennial fire protection baseline inspection at your Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed at the end of the on-site activities on August 18, 2006, with you and other members of your staff. A re-exit meeting was held by telephone at the conclusion of the inspection on October 2, 2006, with S. McCall and other members of your staff.

As a result of your intent to adopt the National Fire Protection Association Standard (NFPA) 805 code, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition," as defined by Title 10, Code of Federal Regulations (CFR), Part 50, Section 48(c), the inspection was conducted in accordance with Inspection Procedure (IP) 71111.05TTP, "Fire Protection - NFPA 805 Transition Period (Triennial)," dated May 9, 2006. The inspection examined activities conducted under your license, as they relate to safety and to compliance with the Commission's rules and regulations, and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, four NRC-identified findings of very low safety significance, all of which involved violations of NRC requirements were identified. However, because these violations were of very low safety significance, and because the findings were entered into your corrective action program, the NRC is treating three of these findings as Non-Cited Violations in accordance with Section VI.A.1 of the NRC's Enforcement Policy. The fourth NRC-identified finding was a circuit-related finding that was not associated with a finding of high safety significance and meets the four criteria established by Section A of the NRC's Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48) for a licensee in NFPA 805 transition. Therefore, we are exercising enforcement discretion to not cite this violation in accordance with the NRC's Enforcement Policy.

If you contest the subject or severity of a Non-Cited Violation, you should provide a response within 30-days of the date of this inspection report, with the basis for your denial, to the U. S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with a copy to the Regional Administrator, U. S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U. S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the Resident Inspector Office at the PINGP facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room, or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Julio F. Lara, Chief  
Engineering Branch 3  
Division of Reactor Safety

Docket Nos. 50-282; 50-306  
License Nos. DPR-42; DPR-60

Enclosure: Inspection Report 05000282/2006009(DRS); 05000306/2006009(DRS)  
w/Attachment: Supplemental Information

cc w/encl: C. Anderson, Senior Vice President, Group Operations  
M. Sellman, Chief Executive Officer and Chief Nuclear Officer  
Regulatory Affairs Manager  
J. Rogoff, Vice President, Counsel and Secretary  
Nuclear Asset Manager  
State Liaison Officer, Minnesota Department of Health  
Tribal Council, Prairie Island Indian Community  
Administrator, Goodhue County Courthouse  
Commissioner, Minnesota Department  
of Commerce  
Manager, Environmental Protection Division  
Office of the Attorney General of Minnesota

T. Palmisano

-2-

U. S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with a copy to the Regional Administrator, U. S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U. S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the Resident Inspector Office at the PINGP facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room, or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

Julio F. Lara, Chief  
Engineering Branch 3  
Division of Reactor Safety

Docket Nos. 50-282; 50-306  
License Nos. DPR-42; DPR-60

Enclosure: Inspection Report 05000282/2006009(DRS); 05000306/2006009(DRS)  
w/Attachment: Supplemental Information

cc w/encl: C. Anderson, Senior Vice President, Group Operations  
M. Sellman, Chief Executive Officer and Chief Nuclear Officer  
Regulatory Affairs Manager  
J. Rogoff, Vice President, Counsel and Secretary  
Nuclear Asset Manager  
State Liaison Officer, Minnesota Department of Health  
Tribal Council, Prairie Island Indian Community  
Administrator, Goodhue County Courthouse  
Commissioner, Minnesota Department  
of Commerce  
Manager, Environmental Protection Division  
Office of the Attorney General of Minnesota

DOCUMENT NAME:C:\FileNet\ML063040357.wpd

Publicly Available       Non-Publicly Available       Sensitive       Non-Sensitive

To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy

OFFICE	RIII		RIII		RIII		RIII	
NAME	GHausman: Is		RSkokowski		KO'Brien		JLara	
DATE	10/23/06		10/23/06		10/23/06		10/23/06	

**OFFICIAL RECORD COPY**

DISTRIBUTION:

TEB

MLC

RidsNrrDirslrib

GEG

KGO

JTA

CAA1

LSL

CDP1

DRPIII

DRSIII

PLB1

TXN

[ROPreports@nrc.gov](mailto:ROPreports@nrc.gov)

U. S. NUCLEAR REGULATORY COMMISSION  
REGION III

Docket Nos: 50-282; 50-306  
License Nos: DPR-42; DPR-60  
  
Report No: 05000282/2006009(DRS); 05000306/2006009(DRS)  
  
Licensee: Nuclear Management Company, LLC  
  
Facility: Prairie Island Nuclear Generating Plant, Units 1 and 2  
  
Location: Welch, MN  
  
Dates: July 31, 2006 through August 18, 2006  
  
Inspectors: G. Hausman, Senior Reactor Inspector, Lead  
A. Dahbur, Reactor Inspector  
D. Schrum, Reactor Inspector  
  
Approved by: Julio F. Lara, Chief  
Engineering Branch 3  
Division of Reactor Safety

Enclosure

# TABLE OF CONTENTS

SUMMARY OF FINDINGS .....	<a href="#">2</a>
REPORT DETAILS .....	<a href="#">5</a>
1. REACTOR SAFETY .....	<a href="#">5</a>
1R05 <u>Fire Protection (71111.05T)</u> .....	<a href="#">5</a>
.1 <u>Shutdown from Outside Main Control Room</u> .....	<a href="#">6</a>
.2 <u>Protection of Safe Shutdown Capabilities</u> .....	<a href="#">7</a>
a. <u>Inspection Scope</u> .....	<a href="#">7</a>
b. <u>Findings</u> .....	<a href="#">7</a>
b.1 <u>Redundant Circuit Not Entirely Protected</u> .....	<a href="#">7</a>
.3 <u>Passive Fire Protection</u> .....	<a href="#">11</a>
a. <u>Inspection Scope</u> .....	<a href="#">11</a>
b. <u>Findings</u> .....	<a href="#">11</a>
b.1 <u>No Fire-Rated Damper in Ventilation Return Duct</u> .....	<a href="#">11</a>
b.2 <u>Surveillance Did Not Include TS Requirements</u> .....	<a href="#">14</a>
.4 <u>Active Fire Protection</u> .....	<a href="#">16</a>
a. <u>Inspection Scope</u> .....	<a href="#">16</a>
b. <u>Findings</u> .....	<a href="#">16</a>
b.1 <u>Lack of Smoke Detectors</u> .....	<a href="#">16</a>
.5 <u>Protection from Damage from Fire Suppression Activities</u> .....	<a href="#">19</a>
.6 <u>Alternative Shutdown Capability</u> .....	<a href="#">19</a>
.7 <u>Circuit Analyses</u> .....	<a href="#">20</a>
.8 <u>Communications</u> .....	<a href="#">20</a>
.9 <u>Emergency Lighting</u> .....	<a href="#">21</a>
.10 <u>Cold Shutdown Repairs</u> .....	<a href="#">21</a>
.11 <u>Compensatory Measures</u> .....	<a href="#">22</a>
4. OTHER ACTIVITIES .....	<a href="#">22</a>
4OA6 <u>Meetings</u> .....	<a href="#">22</a>
SUPPLEMENTAL INFORMATION .....	<a href="#">A-1</a>
KEY POINTS OF CONTACT .....	<a href="#">A-1</a>
LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED .....	<a href="#">A-2</a>
LIST OF DOCUMENTS REVIEWED .....	<a href="#">A-3</a>
LIST OF ACRONYMS USED .....	<a href="#">A-5</a>

## SUMMARY OF FINDINGS

IR 05000282/2006009(DRS); 05000306/2006009(DRS); 07/31/06 - 08/18/06; Prairie Island Nuclear Generating Plant, Units 1 and 2; Triennial Fire Protection Baseline Inspection.

This report covers an announced triennial fire protection baseline inspection. The inspection was conducted by Region III inspectors. Based on the results of this inspection, four Green findings associated with three Non-Cited Violations (NCVs) were identified. The fourth finding was associated with the transition to NFPA 805, where the NRC exercised enforcement discretion for a circuit-related violation. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### A. Inspector-Identified and Self-Revealed Findings

#### **Cornerstone: Mitigating Systems**

- Other. The inspectors identified a violation of 10 CFR Part 50, Appendix R, Section III.G.2, involving the licensee's failure to ensure, in the event of a severe fire, that one redundant train of systems necessary to achieve and maintain hot shutdown conditions was free of fire damage. Specifically, the licensee failed to ensure, in the event of a fire in either one of the auxiliary feedwater (AFW) pump rooms (Fire Areas 31 and 32), that cables and circuits of one redundant train were adequately protected by a one-hour fire-rated barrier. This violation was entered into the licensee's corrective action program (CAP) as 01045012, "Appendix R Compliance Issues with Fire Area 31 and 32," dated August 17, 2006. The licensee initiated compensatory measures and will evaluate the violation during their transition to NFPA 805.

The finding was more than minor because this failure could have affected the mitigating systems cornerstone objective and safe shutdown (SSD). Specifically, the licensee's failure to physically protect the entire length of redundant cables required for SSD, in the event of a fire in the 10 CFR Part 50, Appendix R, Section III.G.2 fire area, left the SSD cables vulnerable to fire damage. Because the NRC identified violation was a circuit-related finding that was not associated with a finding of high safety significance, the inspectors evaluated the violation in accordance with the four criteria established by Section A of the NRC's Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48) for a licensee in NFPA 805 transition. The inspectors determined that for this violation; (1) the licensee would have identified the violation during the scheduled transition to 10 CFR 50.48(c); (2) the licensee had established adequate compensatory measures within a reasonable time frame following identification and would correct the violation as a result of completing the NFPA 805 transition; (3) the violation was not likely to have been previously identified by routine licensee efforts; and (4) the violation was not willful. As a result, the inspectors concluded that the violation met all four criteria established by Section A and the NRC is

exercising enforcement discretion to not cite this violation in accordance with the NRC's Enforcement Policy. (Section 1R05.2b.1)

- Green. The inspectors identified a NCV of the Prairie Island Nuclear Generating Plant's (PINGP's) Facility Operating License, Section 2.C.(4) and 10 CFR 50.48(b)(1)(I) having very low safety significance for not having a three-hour fire-rated damper installed between the AFW pump room (Fire Area 31) and the 480 Volt normal switchgear room (Fire Area 37). In the licensee's safety evaluation report (SER) dated September 6, 1979, in Section 5.10.6, the NRC stated that all ventilation return ducts that penetrate room boundaries will have fire-rated dampers (three-hour or equivalent) installed. This finding was entered into the licensee's CAP as 01044959, "SER Committed Damper Not Installed in AFWP Return Duct," dated August 17, 2006, to resolve and initiate appropriate corrective actions. In addition, the licensee established compensatory measures (i.e., an hourly fire watch).

This finding was more than minor because it affected the mitigating systems cornerstone attribute of protection against external factors (i.e., fire) and it impacted the objective of the mitigating systems cornerstone. The failure to have a three-hour fire-rated damper installed in the ventilation's return duct could allow the propagation of a fire that could impact the ability of the plant to achieve and maintain SSD. This finding was determined to be of very low safety significance based on the availability of SSD systems and because other defense-in-depth fire protection elements remained unaffected. (Section 1R05.3b.1)

- Green. The inspectors identified a NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," having very low safety significance for the licensee's failure to include required instructions in a surveillance procedure. Specifically, the licensee failed to include the technical specification (TS) requirements in Surveillance Procedure (SP)-1266 "Fire Damper - 18-Month Inspection," dated June 2, 2004, to ensure that administrative controls were in place when opening the control room special ventilation system doors to inspect the fire dampers. This finding was entered into the licensee's CAP, the licensee also initiated procedure change request PCR01042837 to revise SP-1266 to reference the TS requirements.

This finding was more than minor because it could have become a more significant safety concern if the fire dampers inspection procedure was not revised to include appropriate administrative controls. Specifically, control room habitability could have been adversely affected if the ventilation duct access panel was not immediately closed during an event that could have resulted in smoke or toxic gas entry into the control room. This finding was determined to be of very low safety significance by an SDP Phase 3 evaluation. (Section 1R05.3b.2)

- Green. The inspectors identified a NCV of the PINGP's Facility Operating License having very low safety significance for the failure to have adequate fire detection installed in accordance with the applicable NFPA codes. Specifically, the licensee failed to install detectors in beam pockets at the mezzanine areas located in the AFW pump rooms (Fire Areas 31 and 32). The inspectors determined that the cause of this finding was related to the self- and independent assessments aspect of the problem identification and resolution (PI and R) cross-cutting area because, in July of 2006, the



licensee failed to identify the lack of detectors in the mezzanine areas during their evaluation of the NFPA 72E code compliance deviations for Fire Areas 31 and 32. This finding was entered into the licensee's CAP to evaluate the existing configuration in order to either justify the existing configuration as-is or implement a modification to correct the deficiency.

This finding was more than minor because it affected the mitigating systems cornerstone attribute of protection against external factors (i.e., fire) and it impacted the objective of the mitigating systems cornerstone. As a result of not having an adequate number of detectors, detection of a fire at these locations (i.e., in the AFW pump rooms) could have been delayed. This finding was determined to be of very low safety significance based on the availability of SSD equipment and the low number of ignition sources. (Section 1R05.4b.1)

**B. Licensee-Identified Violations**

None.

## REPORT DETAILS

### 1. REACTOR SAFETY

Cornerstones: Initiating Events and Mitigating Systems

#### 1R05 Fire Protection (71111.05T)

The Nuclear Management Company, LLC (NMC), the licensee, in letters (ADAMS Accession Numbers ML053460342 and ML060730265) to the U. S. Nuclear Regulatory Commission (NRC) dated November 30, 2005, and March 14, 2006, respectively, committed to adopt the National Fire Protection Association Standard (NFPA) 805 code, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition," as defined by 10 CFR 50.48©) at the Prairie Island Nuclear Generating Plant (PINGP). The NFPA 805 code establishes a comprehensive set of requirements for fire protection programs (FPPs) at nuclear power plants. The code incorporated both deterministic and risk-informed, performance-based concepts. The deterministic aspects of the code are comparable to traditional requirements. However, the transition to a risk-informed, performance-based FPP requires an in-depth nuclear safety circuit analysis for equipment identified for nuclear safety functions such as safe shutdown (SSD). Because the conversion and licensing process to NFPA 805 was expected to identify and address a variety of issues that were normally the subject of the triennial fire protection (FP) baseline inspection, the NRC modified the FP inspection program and Enforcement Policy for licensees in transition to NFPA 805. As a result, this inspection was conducted in accordance with IP 71111.05TTP, "Fire Protection - NFPA 805 Transition Period (Triennial)," dated May 9, 2006. Associated with the transition to NFPA 805, when a circuit-related finding not associated with a finding of high safety significance meets the four criteria established by Section A of the NRC's Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48), the violation would receive enforcement discretion in accordance with the NRC's Enforcement Policy.

The purpose of this inspection was to review the PINGP's, FPP for selected risk-significant fire areas. Emphasis was placed on verification of the post-fire SSD capability. The inspection was performed in accordance with the NRC's regulatory oversight process using a risk-informed approach for selecting the areas and attributes to be inspected. The inspectors with assistance from a senior reactor analyst used the PINGP's Individual Plant Examination for External Events (IPEEE) to choose several risk-significant areas for detailed inspection and review. The inspectors' review of the following fire areas represented the completion of three samples for the triennial FP inspection:

<b>Fire Area</b>	<b>Description</b>
13	Control Room (CR)
31	Unit 2 Auxiliary Feedwater (AFW) Pump Room
80	480 Volt (V) alternating current (ac) Bus 111 Area

For each of the selected fire areas, the inspectors focused on the FP features, the systems and equipment necessary to achieve and maintain SSD conditions, determination of licensee commitments, changes to the FPP, and evaluated the licensee's FPP against applicable NRC requirements.

.1 Shutdown from Outside Main Control Room

Title 10 CFR Part 50, Appendix R, Section III.G.1, required that structures, systems, and components (SSCs) that were necessary to achieve and maintain post-fire SSD from outside the main CR be protected by FP features, such that, one train of systems necessary to achieve and maintain hot shutdown (HSD) conditions was free of fire damage; and systems necessary to achieve and maintain cold shutdown (CSD) could be repaired within 72-hours.

a. Inspection Scope

The inspectors reviewed the functional requirements identified by the licensee as necessary for achieving and maintaining HSD conditions to ensure that at least one post-fire SSD success path was available in the event of fire in each of the selected fire areas and for alternative shutdown (SD) in the case of CR evacuation. The inspectors reviewed the plant systems required to achieve and maintain post-fire SSD to determine if the licensee had properly identified the components and systems necessary to achieve and maintain SSD conditions for each fire area selected for review. Specifically, the review was performed to determine the adequacy of the systems selected for reactivity control, reactor coolant inventory makeup, reactor heat removal, process monitoring, and support system functions. The review also included the FP Safe Shutdown Analysis (SSA) to ensure that all required components in the selected systems were included in the licensee's SSA.

The inspectors reviewed the SSA, licensee operating procedures, piping and instrumentation drawings (P and IDs), electrical drawings, the PINGP's Updated Final Safety Analysis Report (UFSAR) and other supporting documents to verify that hot and cold SD could be achieved and maintained from outside the CR for fires that rely on SD from outside the CR. This review included verification that SD from outside the CR could be performed both with and without the availability of offsite power.

The inspectors also reviewed the operators' ability to perform the necessary manual actions for achieving SSD by reviewing procedures, the accessibility of SSD equipment, and the available time for performing the actions.

The inspectors reviewed the PINGP's UFSAR and the licensee's engineering and/or licensing justifications (e.g., NRC guidance documents, license amendments, technical specifications (TSs), safety evaluation reports (SERs), exemptions, and deviations) to determine the licensing basis.

b. Findings

No findings of significance were identified.

## .2 Protection of Safe Shutdown Capabilities

Title 10 CFR Part 50, Appendix R, Section III.G.1, required the licensee to provide FP features that were capable of limiting fire damage to SSCs important to SSD. The SSCs that were necessary to achieve and maintain post-fire SSD were required to be protected by FP features that were capable of limiting fire damage to the SSCs so that:

- one train of systems necessary to achieve and maintain HSD conditions from either the CR or emergency control station(s) was free of fire damage; and
- systems necessary to achieve and maintain cold shutdown (CSD) from either the CR or emergency control station(s) could be repaired within 72-hours.

Specific design features for ensuring this capability were specified by 10 CFR Part 50, Appendix R, Section III.G.2.

### a. Inspection Scope

The inspectors reviewed the fire hazards analysis (FHA), SSA and supporting drawings and documentation to verify that SSD capabilities were properly protected. Under the NFPA 805 transition period IP, the inspectors were to validate 1 to 3 nonconformances identified in the licensee's transitional assessment of their fire areas. At the time of this inspection, no fire areas had been assessed by the licensee.

The inspectors reviewed the licensee procedures and programs for the control of ignition sources and transient combustibles to assess their effectiveness in preventing fires and in controlling combustible loading within limits established in the FHA. A sample of hot work and transient combustible control permits were also reviewed. The inspectors performed plant walk-downs to verify that protective features were being properly maintained and administrative controls were being implemented.

The inspectors also reviewed the licensee's design control procedures to ensure that the process included appropriate reviews and controls to assess plant changes for any potential adverse impact on the FPP and/or post-fire SSA and procedures.

### b. Findings

#### b.1 Redundant Circuit Not Entirely Protected

Introduction: The inspectors identified a violation of 10 CFR Part 50, Appendix R, Section III.G.2, involving the licensee's failure to ensure, in the event of a severe fire, that one redundant train of systems necessary to achieve and maintain HSD conditions was free of fire damage. Specifically, the licensee failed to ensure, in the event of a fire in either one of the AFW pump rooms (Fire Areas 31 and 32), that cables and circuits of one redundant train of systems (e.g., AFW) necessary to achieve and maintain HSD conditions were protected entirely in one-hour fire-rated barriers.

Description: The two rooms housing the AFW pumps, instrument air and HSD panels were located in the center of the turbine building at elevation 695-feet. Each room

contained one AFW pump for both units, a HSD panel and an instrument air compressor. A significant amount of safety-related cables for redundant SD systems of both units were located in each room. The walls, floor and ceiling of each room had a fire resistance of three-hours. A three-hour fire-rated rolling steel door actuated by a fusible link was provided between the two rooms.

Since Fire Area 31 was a Train "B" area, in the event of a fire in this fire area, Train "A" equipment was credited for the fire and would be relied on to accomplish the HSD decay heat removal function for both units. Fire Area 31 contained motor control centers (MCC)-2A1 and MCC-2A2 (only one MCC was needed for SSD), the Unit 1 motor-driven AFW (12 MDAFW) pump, the Unit 2 turbine-driven AFW (22 TDAFW) pump, instrument air compressor 123 with associated equipment and the Train "A" HSD Panel for Units 1 and 2.

Since Fire Area 32 was a Train "A" area, in the event of a fire in this fire area, Train "B" equipment was credited for the fire and would be relied upon to accomplish the HSD decay heat removal function for both units. Fire Area 32 contained motor control centers MCC-1A1 and MCC-1A2 (only one MCC was needed for SSD), the Unit 2 motor-driven AFW (21 MDAFW) pump, the Unit 1 turbine-driven AFW (11 TDAFW) pump, instrument air compressors 121 and 122 with associated equipment and the Train "B" HSD Panel for Units 1 and 2.

The SSD evaluation completed during early 1980's, identified the coexistence of redundant power and control cables required for SSD with less than 20-foot horizontal separation. The redundant cables were installed in open horizontal cable trays between 16-feet and 18-feet above the floor, and within three-feet of the ceiling. The redundant cables cross-over one another and are separated by approximately one-foot at the cross-over. During that time, the licensee requested an exemption from the requirement of 10 CFR Part 50, Appendix R, Section III.G.2, and proposed a modification to install thermal barriers on the top and bottom of Division B cable trays and wrap all Division B conduits in one-hour fire-rated barriers in both rooms. On May 4, 1983, the exemption was granted based on the licensee's proposed modification.

As a result of the Licensee Event Report (LER) 50-282/306-1998-012 "Fire Areas 58/73 Appendix R Safe Shutdown Analysis Issues," the licensee evaluated the technical bases for each approved exemption. Some discrepancies were identified and documented in Supplement 3 of the LER. The licensee identified that several cables and/or circuits for the Train "A" AFW system, which was required to be available for SSD in the event of a fire in Fire Area 31 (i.e., where Train "B" AFW pumps were located), were not protected by fire wrap. Similar cables and/or circuits associated with Train "B" were also identified and were located in Fire Area 32. The licensee had since installed a one-hour fire-rated barrier to protect these cables. The above approved exemption for Fire Areas 31 and 32 required installation of one-hour fire-rated barriers for the Train "B" circuits. However, the licensee determined that protecting Train "B" in the Train "B" AFW pump room (Fire Area 31) did not ensure that the Train "A" circuits would be available. The licensee revised the SSD capability for Fire Area 31 to rely on Train "A" equipment and protected Train "A" circuits in Fire Area 31. This issue was closed per NRC Inspection Report 05000282/306-01-08, since the licensee was in the process of re-submitting the exemption to change fire wrapping of Division B to Division A in Fire Area 31.

On August 25, 2003, the licensee re-evaluated this issue using the PINGP's regulatory commitment change (No. 03-02) process and determined that re-submitting the exemption was not required. It was determined that protecting Train "A" SSD cables (in lieu of Train "B") with a one-hour fire-rated wrap met the intent of 10 CFR Part 50, Appendix R, Section III.G.2. The commitment change only addressed the commitment specifically made in Fire Area 31 to protect Train "B" SSD conduits with a one-hour fire-rated barrier and to install a thermal shield on the top and bottom of cable tray 2SG-LB17. Other commitments made in the approved exemption would continue to be maintained. The inspectors determined that since the revised commitment did not preserve compliance with 10 CFR Part 50, Appendix R, Section III.G.2 (redundant SSD equipment (i.e., MCCs) in the fire area still did not meet the separation requirements of 10 CFR Part 50, Appendix R, Section III.G.2.b), the conclusion of the licensee's regulatory commitment change worksheet was inappropriate in that re-submitting the exemption was required.

During a walkdown through Fire Area 31 and 32, the inspectors identified a lack of one-hour fire-rated wrap on junction boxes attached directly to the side of the HSD panels in the rooms. Redundant conduits were protected to the point where they entered the junction boxes, however, the junction boxes themselves were not protected. The inspectors were concerned that redundant SSD cables were vulnerable to fire damage because of the lack of protection on the junction boxes. Cable 2CA-115 associated with valve MV-32383 (i.e., 21 MDAFW pump discharge to the 21 steam generator(SG)) was protected by a one-hour fire-rated wrap throughout Fire Area 31, except where it entered the HSD panel via the unprotected junction box. A similar configuration existed in Fire Area 32 for cable 2CB-163 associated with valve MV-32247 (i.e., 22 TDAFW pump discharge to the 22 SG). Cable 1CA-115 associated with valve MV-32238 (i.e., 11 TDAFW pump discharge to the 11 SG) and cable 1CB-55 associated with valve MV-32382 (i.e., 12 MDAFW pump discharge to the 12 SG) were protected by a one-hour fire-rated wrap throughout Fire Areas 31 and 32, except where each cable entered through the top of its associated HSD panel.

On August 17, 2006, the licensee entered the inspectors' finding into the PINGP's corrective action program (CAP) as 01045012, "Appendix R Compliance Issues with Fire Area 31 and 32," and 01045016, "Issues with Regulatory Commitment Change No.03-02." The licensee established hourly fire watches in Fire Area 31 and 32 at the end of the inspection and was in the process of revising the SSA and Operation procedures (i.e., adding mitigating actions and providing additional guidance). The licensee will evaluate these concerns during the PINGP's transition to NFPA 805.

Analysis: The inspectors determined that failure to ensure that cables and circuits of one redundant train of systems necessary to achieve and maintain HSD conditions were entirely protected in a fire-rated barrier having a one-hour rating was a performance deficiency warranting a significance evaluation. The inspectors concluded that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," issued on September 30, 2005. The finding involved the attribute of protection against external factors (i.e., fire) and could have affected the mitigating systems cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee's failure to

ensure, in the event of a fire in either one of the AFW pump room fire areas, that one redundant train of systems remained free of fire damage did not provide the adequate level of safety required per 10 CFR Part 50, Appendix R to ensure SSD capability.

Since, the finding was a circuit-related finding and the licensee was in transition to NFPA 805, the licensee completed a quantitative risk assessment evaluation for this issue using the methodology contained in IMC0609 Appendix F. The licensee's evaluation concluded that the finding was not associated with a finding of high safety significance based on the number of the ignition sources and the effectiveness of the automatic/manual suppression in the area. The inspectors reviewed the evaluation and concluded it was appropriate.

Enforcement: Title 10 CFR Part 50, Section 48, "Fire Protection," and 10 CFR Part 50, Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," established specific FP features required to satisfy 10 CFR Part 50, Appendix A, General Design Criterion 3, "Fire Protection." Title 10 CFR Part 50, Appendix R applies to licensed nuclear power electric generating stations that were operating prior to January 1, 1979, which included PINGP. Section III.G.2 of Appendix R to 10 CFR Part 50 required, in part, that where cables or the equipment of a redundant train of systems necessary to achieve and maintain HSD conditions are located within the same fire area outside of primary containment, one of the three specified means of ensuring that one of the redundant trains was free of fire damage shall be provided. For Fire Areas 31 and 32, the licensee implemented Section III.G.2.c of Appendix R to 10 CFR Part 50, which specified, in part, enclosure of cable and equipment and associated non-safety circuits of one redundant train in a fire-rated barrier having a one-hour rating.

Contrary to the above, prior to August 17, 2006, in the event of a fire in either one of the AFW pump rooms, the licensee failed to ensure that one redundant train of systems would remain free of fire damage. Specifically, the licensee failed to protect the cables and/or circuits associated with the AFW system in Fire Areas 31 and 32. Cable 2CA-115 associated with valve MV-32383 (i.e., 21 MDAFW pump discharge to the 21 SG) was protected by a one-hour fire-rated wrap throughout Fire Area 31, except where it entered the HSD panel via the unprotected junction box. A similar configuration existed in Fire Area 32 for cable 2CB-163 associated with valve MV-32247 (i.e., 22 TDAFW pump discharge to the 22 SG). In addition, cable 1CA-115 associated with valve MV-32238 (i.e., 11 TDAFW pump discharge to the 11 SG) and cable 1CB-55 associated with valve MV-32382 (i.e., 12 MDAFW pump discharge to the 12 SG) were protected by a one-hour fire-rated wrap throughout Fire Areas 31 and 32, except where each cable entered through the top of its associated HSD panel. Once identified, the licensee entered the finding into the PINGP's CAP as 01045012, "Appendix R Compliance Issues with Fire Area 31 and 32," dated August 17, 2006.

Because the NRC identified violation was a circuit-related finding that was not associated with a finding of high safety significance, the inspectors evaluated the violation in accordance with the four criteria established by Section A of the NRC's Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48) for a licensee in NFPA 805 transition. The inspectors determined that for this violation; (1) the licensee would have identified the violation

during the scheduled transition to 10 CFR 50.48(c); (2) the licensee had established adequate compensatory measures within a reasonable time frame following identification and would correct the violation as a result of completing the NFPA 805 transition; (3) the violation was not likely to have been previously identified by routine licensee efforts; and (4) the violation was not willful. As a result, the inspectors concluded that the violation met all four criteria established by Section A and the NRC was exercising enforcement discretion to not cite this violation in accordance with the NRC's Enforcement Policy (Other 05000282/2006009-01(DRS); 05000306/2006009-01(DRS)).

.3 Passive Fire Protection

Branch Technical Position APCS 9.5-1, Section IV.B.1, "General Guidelines for Plant Protection Building Design," Section IV.B.3, "Cable Construction, Cable Trays and Penetrations," and Section IV.D.2, "Control Room," identified the requirements for the licensee's FP passive features.

a. Inspection Scope

For the selected fire areas, the inspectors evaluated the adequacy of fire area barriers, penetration seals, fire doors, electrical raceway fire barriers, and fire rated electrical cables. The inspectors observed the material condition and configuration of the installed barriers, seals, doors, and cables. The inspectors compared the as-installed configurations to the approved construction details and supporting fire tests. In addition, the inspectors reviewed license documentation, such as NRC SERs, and deviations from NRC regulations and the NFPA codes to verify that FP features met license commitments.

The inspectors walked down accessible portions of the selected fire areas to observe material condition and the adequacy of design of fire area boundaries (including walls, fire doors, and fire dampers) to ensure they were appropriate for the fire hazards in the area.

The inspectors reviewed the installation, repair, and qualification records for a sample of penetration seals to ensure the fill material was of the appropriate fire rating and that the installation met the engineering design.

b. Findings

b.1 No Fire-Rated Damper in Ventilation Return Duct

Introduction: The inspectors identified a NCV of the PINGP's Facility Operating License, Section 2.C.(4) and 10 CFR 50.48(b)(1)(i) having very low safety significance (Green) for the licensee's failure to install a fire-rated damper. Specifically, the licensee failed to install a three-hour fire-rated damper in the ventilation return duct between the AFW pump room (Fire Area 31) and the 480V normal switchgear room (Fire Area 37) in accordance with the licensee's SER dated September 6, 1979. The SER stated, in Section 5.10.6, that all ventilation return ducts that penetrate room boundaries will have fire-rated dampers (three-hour or equivalent) installed.



Description: The inspectors' review of the licensee's code compliance review report, NFPA 90A, "Air Conditioning and Ventilation Systems," dated July 10, 2000, indicated that a three-hour fire-rated damper was not installed in the ventilation return duct that penetrated the barrier of the AFW pump room (Fire Area 31). The licensee had taken credit for an engineering calculation, ENG-ME-437, "Evaluation for Ventilation Duct with No Fire Damper," dated May 2, 2000, which concluded that the installed configuration of the ventilation duct assembly without the three-hour fire-rated damper was acceptable for the ventilation return between Fire Area 31 and Fire Area 37 (480V Normal Switchgear Room).

The licensee's evaluation stated that the construction features of the duct assembly and the defense-in-depth elements would provide more than sufficient protection to prevent the propagation of a fire. The defense-in-depth elements included the fire endurance capabilities of the un-dampened duct, the limited fire exposure to the assembly, the FP features in the areas and the expected response by the fire brigade. The un-dampened duct assembly was constructed of heavy gauge sheet metal. A fire in Fire Area 37 would involve a small amount of cables and plastic in electrical cabinets. Automatic smoke detection was provided in both fire areas involved. In addition, heat detection was provided in Fire Area 31. Also, Fire Area 31 was provided with area wide automatic wet-pipe sprinklers.

Sections 2.C.(4) of the PINGP's Facility Operating License DPR-42 and DPR-60 for Units 1 and 2, respectively, stated that "NMC shall implement and maintain in effect all provisions of the approved fire protection program as described and referenced in the UFSAR for the Prairie Island Nuclear Generating Plant, Units 1 and 2, and as approved in safety evaluation reports dated February 14, 1978, September 8, 1979, April 4, 1980, December 29, 1980, July 28, 1981, September 12, 1984, June 25, 1985, October 27, 1989, and October 6, 1995, subject to following provisions: NMC may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire."

In a letter dated April 18, 1978, NSP committed to ". . . install fire dampers in vent ducts penetrating walls in the auxiliary feedwater pump room." This commitment, identified in the SER dated September 6, 1979, was documented in Amendment Number 39 to the Facility Operating License DPR-42 and Amendment No. 33 to Facility Operating License DPR-60 for the PINGP's AFW pump rooms. In these documents, Paragraph 5.10.6 stated that ". . . the licensee has committed to the following modifications: . . ." and ". . . (2) Fire-rated dampers (three-hour or equivalent) will be installed in all return ventilation ducts that penetrate the boundaries of the rooms." In addition, PINGP was committed to comply with the requirements of Section D.1 (j) of Appendix A to the Branch Technical Position (BTP) APCSB 9.5-1 for fire barriers. This document stated, ". . . floors, walls, and ceilings enclosing separate fire areas should have a minimum fire rating of three-hours." Furthermore, ". . . penetrations in these fire barriers, including conduits and piping, should be sealed or closed to provide a fire resistance rating at least equal to that of the fire barrier itself."

The inspectors reviewed engineering calculation ENG-ME-437, "Evaluation for Ventilation Duct with No Fire Damper," dated May 2, 2000. The inspectors determined

that the evaluation did not support the licensee's conclusion that the installed configuration of the ventilation duct assembly without the three-hour fire-rated damper was acceptable. The purpose of the three-hour fire-rated damper was to preclude fire propagation through the ventilation system. The evaluation provided no supporting calculations and/or evidence to show that the three-hour fire-rated barrier was no longer required. To support the licensee's conclusion, the evaluation relied on the FPP's defense-in-depth elements, which were stated, in part, as the fire endurance capabilities of the un-dampered duct, the limited fire exposure to the assembly, the FP features in the areas and the expected response by the fire brigade. The FP defense-in-depth elements, identified in ENG-ME-437, were previously considered during the NRC Staff's review and approval as documented in the SER dated September 6, 1979, and did not provide any additional information that justified not installing the fire-rated damper. As a result, the inspectors determined that the evaluation failed to provide adequate engineering justification to support the change to the FPP (i.e., failure to install the three-hour fire-rated damper could adversely affect the ability to achieve and maintain safe shutdown in the event of a fire). Therefore, the inspectors concluded that the licensee could not take credit for engineering calculation ENG-ME-437 and failed to meet the SER commitment to install a fire-rated damper in the ventilation return duct between the AFW pump room (Fire Area 31) and the 480V normal switchgear room (Fire Area 37).

Analysis: The inspectors determined that failure to have a fire damper available to a significant fire area needed for SSD was a performance deficiency warranting a significance evaluation. The technical requirements for a three-hour fire-rated barrier were not met because the ventilation duct did not contain a fire rated damper. The inspectors concluded that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," issued on September 30, 2005. The finding involved the attribute of protection against external factors (i.e., fires), where the failure to have a fire damper could potentially allow the propagation of a fire that could potentially impact the ability of the plant to achieve and maintain SSD. The potential for this fire could have affected the mitigating systems cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage).

The inspectors completed a significance determination of this finding using IMC 0609, "Significance Determination Process," dated November 22, 2005, Appendix F, "Fire Protection Significance Determination Process," dated February 28, 2005. The finding affected the Fire Prevention and Administrative Controls Category in the area of compliance documentation. The inspectors assigned a degradation rating of low safety significance because the fire areas have smoke detectors that would alarm in the CR. In addition, other defense-in-depth FP elements remained unaffected and a fire in these areas would not result in a loss of dedicated SSD systems. The inspectors review of the "Initial Qualitative Screening" concluded that this finding was considered to be of very low safety significance (Green).

Enforcement: The PINGP's Facility Operating License, Section 2.C.(4) and 10 CFR 50.48 stated, in part, that each operating nuclear power plant must have a FPP that satisfies Criterion 3 of Appendix A. This FPP must meet the requirements of 10 CFR 50.48(b)(1)(i), where the FP features proposed or implemented by the licensee have been accepted by

the NRC staff as satisfying the provision of Appendix A to Branch Technical Position APCS 9.5-1 reflected in the NRC's FP SERs issued before the effective date of February 19, 1981.

Contrary to the above, from September 6, 1979, to August 15, 2006, the licensee's FPP failed to meet the requirements for FP features proposed or implemented by the licensee that had been accepted by the NRC staff as satisfying the provision of Appendix A to Branch Technical Position APCS 9.5-1. Specifically, the licensee failed to install a three-hour fire-rated damper between the AFW pump room (Fire Area 31) and the 480V normal switchgear room (Fire Area 37) in accordance with the licensee's SER dated September 6, 1979, which stated in Section 5.10.6, that all ventilation return ducts that penetrate room boundaries will have fire-rated dampers (three-hour or equivalent) installed. Once identified, the licensee entered the finding into the PINGP's CAP as 01044959, "SER Committed Damper Not Installed in AFWP Return Duct," dated August 17, 2006. Because this violation was of very low safety significance and it was entered into the licensee's CAP, this violation is being treated as a NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000282/2006009-02(DRS); 05000306/2006009-02(DRS)).

#### b.2 Surveillance Did Not Include TS Requirements

Introduction: The inspectors identified a NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," having very low safety significance (Green) for the licensee's failure to include TS requirements in the Surveillance Procedure (SP)-1266, "Fire Damper - 18-Month Inspection," dated June 2, 2004. Specifically, the licensee failed to include instructions in SP-1266 to ensure that the administrative controls required per PINGP's TS Section 3.7.10 were in place when opening the control room special ventilation system (CRSVS) chiller room doors to inspect the fire dampers.

Description: Section 7.2 of SP-1266 provided guidance for the inspection of fire dampers 20, 21, 22, and 23 to assure cleanliness of the vent path and proper position of the damper curtain. This section directed the opening of the fire damper access doors for the CR chiller rooms to gain access to these dampers for inspection and cleaning. The SP-1266 did not specify any administrative controls when the access doors were opened and this action resulted in breaching the CRSVS boundary. The CRSVS boundary provided protection against events that could result in smoke-filled or toxic atmospheres.

The TS Bases B 3.7.10 stated, in part, that the CR boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors. The TS Limiting Condition of Operation (LCO) 3.7.10, included a note allowing the CR boundary to be opened intermittently under administrative controls. These controls consisted of stationing a dedicated individual at the opening who was in continuous communication with the CR. This individual would have a method to rapidly close the opening when a need for CR isolation was indicated.

When this issue was identified during the inspection, the licensee response indicated that Section 7.2 of SP-1266 required a security guard to unlock the fire damper access

doors. The security implementing procedures required the security guard to be continuously present while the doors were opened. The CR had continuous communication with the security guard by the use of security radios. However, the wording in SP-1266 was not explicit that communication between the CR and the dedicated individual at the access doors shall be maintained. The licensee also indicated that the damper access doors were hinged and not dismantled during inspections, this would allowed for rapid closure of the opening if needed. The inspectors reviewed the licensee response and determined that although the security implementing procedures required that the security guard to be continuously present while the CRSVS ventilation access doors were opened, the TS requirements were not communicated with the CR staff and the security guard. In addition, a review of the historical performance of SP-1266 and CR logs did not reveal that these requirements were communicated with the CR staff.

The licensee entered the finding into the PINGP's CAP as 01042855, "SP1266 Does Not Ref TS When Damper Room Door Open," dated August 3, 2006. The licensee also initiated procedure change request PCR01042837, "Add TS Ref 3.7.10 to SP1266," dated August 3, 2006, to revise SP-1266 to reference the TS requirements.

Analysis: The inspectors determined that the failure to include administrative controls required per TS 3.7.10 in SP-1266 was a performance deficiency warranting a significance evaluation. The inspectors concluded that the finding was more than minor in accordance with IMC 0612, Appendix B. The inspectors determined that the finding, if left uncorrected, could have become a more significant safety concern. Specifically, while performing SP-1266, CR habitability could have been adversely impacted if the CR ventilation access doors were not immediately closed by an individual dedicated to maintain the CR boundary during certain events.

The inspectors completed a significance determination of this issue using IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," dated November 22, 2005. In accordance with IMC 0609, Appendix A, the inspectors performed an SDP Phase 1 screening and determined that the finding affected the containment barriers cornerstone because the finding affected the configuration control attribute and represented a degradation of the barrier function of the CR against smoke-filled or toxic atmospheres. This finding screened to a Phase 3 analysis in accordance with the SDP Phase 1 worksheet. A Region III Senior Reactor Analyst reviewed the finding and assumed that the completed surveillance activities took approximately 30-minutes for each damper and that all were completed in the same year. Based on this assumption, there would have been less than two-hours out of an entire year where the CR barrier may have been susceptible to a smoke or toxic gas event and, as such, would represent an extremely small exposure period. This small exposure period combined with the low initiating event frequency of a smoke or toxic gas event resulted in the determination that the finding was much less than the  $1 \times 10^{-6}$  per year core damage frequency threshold and was of very low safety significance (Green).

Enforcement: Criterion V of 10 CFR Part 50, Appendix B, requires, in part, that activities affecting quality shall be prescribed by procedures of a type appropriate to the circumstances. The PINGP's TS 3.7.10, "Control Room Special Ventilation System

(CRSVS),” stated that the CR boundary may be opened intermittently under administrative control. The TS Bases B.3.7.10, stated that these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the CR. This individual will have a method to rapidly close the opening when a need for CR isolation is indicated.

Contrary to the above, prior to August 3, 2006, SP-1266, “Fire Damper - 18-Month Inspection,” dated June 2, 2004, did not include the administrative controls required per TS 3.7.10. Specifically, Section 7.2 of SP-1266 provided guidance for the inspection of fire dampers 20, 21, 22, and 23, and directed the opening of the fire damper access doors for the CR chiller rooms to gain access to these dampers. The SP did not specify any administrative controls for when the access doors were opened and resulted in breaching the CRSVS boundary. Once identified, the licensee entered the finding into the PINGP’s CAP as 01042855, “SP1266 Does Not Ref TS When Damper Room Door Open,” dated August 3, 2006. Because this violation was of very low safety significance and it was entered into the licensee’s CAP, this violation is being treated as a NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy. (NCV 05000282/2006009-03(DRS); 05000306/2006009-03(DRS))

.4 Active Fire Protection

Branch Technical Position APCSB 9.5-1, Section IV.C.1, “Fire Detection,” Section IV.C.3, “Water Sprinkler and Hose Standpipe Systems,” Section IV.C.5, “Carbon Dioxide Suppression Systems,” and Section IV.D.2, “Control Room,” identified the requirements for the licensee’s FP active features.

a. Inspection Scope

For the selected fire areas, the inspectors evaluated the adequacy of fire suppression and detection systems. The inspectors observed the material condition and configuration of the installed fire detection and suppression systems. The inspectors reviewed design documents and supporting calculations. In addition, the inspectors reviewed license basis documentation, such as NRC SERs, and deviations from NRC regulations and the NFPA codes to verify that fire suppression and detection systems met license commitments.

b. Findings

b.1 Lack of Smoke Detectors

Introduction: The inspectors identified a NCV of the PINGP’s Facility Operating License having very low safety significance (Green) for failure to have adequate fire detection capability in accordance with NFPA 72E, “Standard on Automatic Fire Detectors,” 1974 Edition. Specifically, the licensee failed to install smoke detectors in beam pockets in the mezzanine areas located in the Unit 1 and Unit 2 AFW pump rooms.

Description: During a walkdown of the Unit 1 and Unit 2 AFW pump rooms (i.e., Fire Areas 32 and 31, respectively), the inspectors identified a lack of smoke detection capability in beam pockets that were located in the AFW pump rooms’

mezzanine areas. The mezzanine area floors were located above the battery rooms 12 (Fire Area 34) and 22 (Fire Area 36), Unit 1 and 2, respectively. Each mezzanine area was approximately 27-feet wide by 64-feet long by 5-feet high, consisted of three solid walls with a large opening oriented toward its associated AFW pump room and contained four beam pockets, where the beams were 30-inches in depth and approximately 10-feet apart (i.e., on center). Each mezzanine area had two ionization type smoke detectors. The Unit 1 side had one detector (83-1) mounted on the bottom of the beam and one detector (83-2) hanging from unistrut. The Unit 2 side had a similar configuration with detector (85-2) on the bottom of the beam and detector (85-1) hanging from the unistrut. The inspectors' review of the licensee's 10 CFR Part 50, Appendix R analysis and plant cable tray drawings, along with observations made during field walk-downs, indicated that several SSD cables were routed in both mezzanine areas.

The PINGP's code-of-record for smoke detectors was NFPA 72E-1974, Section 4-4.6, which stated, "In beam construction over eight-inches in depth, movement of heated air and smoke may be slowed by the pocket or bay formed by the beams. In this case, spacing shall be reduced. If the beams exceed 18-inches in depth and are more than eight-feet on centers, each bay shall be treated as a separate area requiring at least one detector." Based on this requirement and the structural configuration of the mezzanine areas in the AFW pump rooms, the inspectors determined that the locations of the installed detectors did not meet the NFPA requirements.

Prior to this inspection, the licensee completed a NFPA 72E code compliance deviations review (i.e., report issued July 25, 2006). The licensee's review identified the lack of detectors in the AFW pump rooms (Fire Area 31 and 32). The evaluation indicated that beams were three-feet deep forming four beam pockets in each room. Only three beam pockets were provided with detection in each AFW pump room and per the NFPA code, all pockets shall be individually protected. The licensee's review concluded that a modification was required to install additional detectors to provide the required coverage of all beam pockets. However, the review did not discuss the adequacy of the detectors' coverage in the AFW pump rooms' mezzanine areas which were part of the AFW pump rooms' fire areas.

Analysis: The inspectors determined that the failure to install adequate detection in the beam pockets at the mezzanine areas located in the Unit 1 and Unit 2 AFW pump rooms (i.e., Fire Areas 32 and 31, respectively) was a performance deficiency warranting a significance evaluation. The inspectors concluded that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," issued on September 30, 2005, in that the finding involved the attribute of protection against external factors (i.e., fire), which affected the mitigating systems cornerstone objective of ensuring the availability of systems that respond to initiating events. Smoke from a fire in the mezzanine areas could have accumulated in the ceiling areas in the beam pockets and delayed detection of a postulated fire. This delay in detection would also have delayed any subsequent manual fire suppression activities. The inspectors determined that the cause of this finding was related to the self- and independent assessments aspect of the problem identification and resolution (PI and R) cross-cutting area because the licensee failed to ensure that issues potentially impacting nuclear safety were identified. The licensee

failed to identify the lack of detectors in the mezzanine areas during their evaluation of the NFPA 72E code compliance deviations for Fire Areas 31 and 32 completed in July 2006.

The inspectors completed a significance determination of this issue using IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated February 28, 2005. The inspectors assigned a degradation rating of moderate because the lack of smoke detectors would have impacted the performance of fire detection in these locations. However, the FP element impacted by the finding was still expected to provide some substantial defense-in-depth benefit due to two fire detectors located in each mezzanine area. The inspectors considered the mezzanine as best described as a cable vault with cables only. Considering the duration factor (DF) of greater than 30-days (DF=1.0) and generic fire area fire frequencies in the cable mezzanine area ( $F_{\text{area}} = 2E-3$ ), the inspectors determined that a Phase 2 evaluation was necessary to determine the significance of this issue. The inspectors determined that because other defense-in-depth FP elements remained unaffected, the availability of a SSD train which would not be impacted by a fire in each of the mezzanine areas and because of the low number of ignition sources in the mezzanine, the change in core damage frequency value as a result of a fire in this fire zone was very low. The inspectors' conclusion was consistent with Task 2.3.5, "Screening Check," of IMC 0609 Appendix F, which stated "If no such fire ignition source scenarios have been identified, then the finding screens to Green and the analysis is complete." Therefore, the inspectors considered this finding to be of very low safety significance (Green).

Enforcement: The PINGP's Facility Operating License, Condition 2.C.(4) stated, in part, that the licensee shall implement and maintain in effect all provisions of the approved FPP as described in its UFSAR and as approved in SERs dated February 14, 1978, September 6, 1979, April 21, 1980, December 29, 1980, July 28, 1981, October 27, 1989, and October 6, 1995.

In NMC's PINGP report "FPP-5, NFPA Code Compliance Review," Revision 2, NMC stated that Northern States Power Company (NSP), in a letter to the NRC dated April 18, 1978, provided a response to the NRC Staff's PF-2 position, which identified the degree and intent of NSP's commitment to the NFPA 72E code. In response to the NRC's PF-2 position, NSP stated that, "The original layout of the fire detection system by Flour Pioneer, Incorporated was based on NFPA 72E, Detector Spacing. . . The FPP-5 report also stated that since NSP's letter referenced the NFPA 72E-1974 code as the basis for ". . . the original layout of the fire detection system . . .", the NFPA 72E-1974 code was the applicable code-of-record for PINGP. Following the NSP letter response (i.e., to PF-2) dated April 18, 1978, the NRC's SER dated September 6, 1979, which referenced the NSP letter response to PF-2, accepted the PINGP's fire detection system. Section 4-4.6 of NFPA 72E-1974, stated "If the beams exceed 18-inches in depth and are more than eight-feet on centers, each bay shall be treated as a separate area requiring at least one detector."

Contrary to the above, from April 18, 1978, to August 18, 2006, the fire detection system installed in the mezzanine areas located in the Unit 1 and Unit 2 AFW pump rooms (Fire Areas 32 and 31, respectively) did not meet the applicable NFPA 72E-1974 requirements. Specifically, each beam pocket located in the mezzanine areas did not

have a detector. Consequently, detection of a fire in these locations would have been delayed. The licensee entered the finding into the PINGP's CAP as 01044917, "Fire Area 34 and 36 Smoke Detectors Not Code Compliant," dated August 16, 2006, and planned to evaluate the existing configuration in order to either justify the existing configuration as-is or implement a modification to correct the deficiency. Because this violation was of very low safety significance (Green) and was entered into the licensee's CAP, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000282/2006009-04(DRS); 05000306/2006009-04(DRS)).

.5 Protection from Damage from Fire Suppression Activities

Title 10 CFR Part 50, Appendix A, Criterion 3, "Fire Protection," required that firefighting systems shall be designed to minimize the adverse effects of fires on SSCs important to safety and to assure that their rupture or inadvertent operation does not significantly impair the safety capability of these SSCs.

a. Inspection Scope

For the selected fire areas, the inspectors verified that redundant trains of systems required for HSD would not be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems including the effects of flooding. The inspectors conducted walkdowns of each of the selected fire areas to assess conditions, such as the adequacy and condition of floor drains, equipment elevations and spray protection.

b. Findings

No findings of significance were identified.

.6 Alternative Shutdown Capability

Title 10 CFR Part 50, Appendix R, Section III.G.1, required that SSCs important to SSD be provided with FP features capable of limiting fire damage to ensure that one train of systems necessary to achieve and maintain HSD conditions was free of fire damage. Options for providing this level of FP were delineated in 10 CFR Part 50, Appendix R, Section III.G.2. Where the protection of systems whose function was required for HSD did not satisfy 10 CFR Part 50, Appendix R, Section III.G.2, an alternative or dedicated SD capability independent of the area under consideration was required to be provided. Additionally, alternative or dedicated SD capability must be able to achieve and maintain hot standby conditions and achieve CSD conditions within 72-hours and maintain CSD conditions thereafter. During the post-fire SSD, the reactor coolant process variables must remain within those predicted for a loss of normal ac power, and the fission product boundary integrity must not be affected (i.e., no fuel clad damage, rupture of any primary coolant boundary, or rupture of the containment boundary).

a. Inspection Scope

The inspectors reviewed the licensee's alternative SD methodology to determine if the licensee properly identified the components, systems, and instrumentation necessary to



achieve and maintain SSD conditions from the auxiliary SD panel and/or alternative SD locations. The inspectors focused on the adequacy of the systems selected for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring and support system functions. The inspectors verified that hot and cold SD from outside the CR could be achieved and maintained with offsite power available or not available. The inspectors verified that the transfer of control from the CR to the alternative locations was not affected by fire-induced circuit faults by reviewing the provision of separate fuses for alternative SD control circuits.

The inspectors also reviewed the operational implementation of the licensee's alternative SD methodology. The inspectors verified that the minimum number of available operators, exclusive of those required for the fire brigade, could reasonably be expected to perform the procedural actions within the applicable plant SD time requirements and that equipment labeling was consistent with the procedure. Also, the inspectors verified that procedures, tools, dosimetry, keys, lighting, and communications equipment were available and adequate to support successfully performing the procedure as intended. The inspectors also reviewed records for operator training conducted on this procedure.

b. Findings

No findings of significance were identified.

.7 Circuit Analyses

a. Inspection Scope

In accordance with IP 71111.05TTP, "Fire Protection - NFPA 805 Transition Period (Triennial)," dated May 9, 2006, this section of the IP was suspended for facilities in NFPA 805 transition.

b. Findings

No findings of significance were identified.

.8 Communications

Branch Technical Position APCSB 9.5-1, required that emergency communication equipment be provided. For a fire in an alternative SD fire area, CR evacuation may be required and a shutdown is performed from outside the CR. Radio communications are relied upon to coordinate the SD of both units and for fire fighting.

a. Inspection Scope

The inspectors reviewed, on a sample bases, the adequacy of the communication system to support plant personnel in the performance of alternative SSD functions and fire brigade duties.

b. Findings

No findings of significance were identified.

.9 Emergency Lighting

Title 10 CFR Part 50, Appendix R, Section III.J., required that emergency lighting units with at least an eight-hour battery power supply be provided in all areas needed for operation of SSD equipment and in access and egress routes thereto.

a. Inspection Scope

The inspectors observed the placement of eight-hour emergency lights throughout the selected fire areas to evaluate their adequacy for illuminating access and egress pathways and any equipment requiring local operation and/or instrumentation monitoring for post-fire SSD. As part of the walk-downs, the inspectors focused on the existence of sufficient emergency lighting for access and egress to areas and for performing necessary equipment operations.

b. Findings

No findings of significance were identified.

.10 Cold Shutdown Repairs

Title 10 CFR Part 50, Appendix R, Section III.G.1.b, required that equipment and systems comprising the means to achieve and maintain CSD conditions should not be damaged by fire; or the fire damage to such equipment and systems should be limited so that the systems can be made operable and CSD achieved within 72-hours. Materials for such repairs shall be readily available onsite and procedures shall be in effect to implement such repairs.

a. Inspection Scope

The inspectors reviewed the licensee's procedures to determine whether repairs were required to achieve CSD and to verify that dedicated repair procedures, equipment, and material to accomplish those repairs were available on-site. The inspectors also evaluated whether CSD could be achieved within the required time using the licensee's procedures and repair methods.

b. Findings

No findings of significance were identified.

.11 Compensatory Measures

a. Inspection Scope

The inspectors conducted a review to verify that compensatory measures were in place for out-of-service, degraded or inoperable FP and post-fire SSD equipment, systems, or features (e.g., detection and suppression systems and equipment, passive fire barriers, pumps, valves or electrical devices providing SSD functions or capabilities). The inspectors also conducted a review on the adequacy of short term compensatory measures to compensate for a degraded function or feature until appropriate corrective actions were taken.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed the CAP procedures and samples of corrective action documents to verify that the licensee was identifying issues related to the FPP at an appropriate threshold and entering them in the CAP. The inspectors reviewed these issues to verify an appropriate threshold for identifying issues and to evaluate the effectiveness of corrective actions related to the FPP. In addition, corrective action documents written on issues identified during the inspection were reviewed to verify adequate problem identification and incorporation of the problem into the corrective action system. The specific corrective action documents that were sampled and reviewed by the inspectors are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

4OA6 Meetings

.1 Exit Meeting

On August 18, 2006, at the conclusion of the inspection, the inspectors presented the inspection results to Mr. T. Palmisano and other members of licensee management. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On October 2, 2006, at the conclusion of the inspection, a re-exit meeting conference call was held with Mr. S. McCall and other members of licensee management to present the inspection findings.

.2 Interim Exit Meetings

No interim exits were conducted.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

W. Andrews, Operations  
M. Brossart, Program Engineering Supervisor  
S. Brown, Program Engineering Manager - Monticello  
R. Calzaretta, Fire Protection Engineer  
G. Cameron, Fire Protection Program Engineer  
M. Carlson, Engineering Director  
M. Davis, Regulatory Assurance  
S. Einbinder, Fire Protection Engineer  
F. Forrest, Operations Manager  
R. Justice, Fire Protection Coordinator  
M. Kelly, Program Engineering Supervisor - Monticello  
J. Kivi, Regulatory Assurance  
S. McCall, Program Engineering Manager  
S. Northard, Nuclear Safety Assurance Manager  
T. Palmisano, Site Vice President  
R. Parazin, Appendix R Program Engineer  
R. Seipel, Nuclear Oversight Assessor  
T. Vue, Fire Protection Engineer  
M. Wadley, Vice President Operations Support

#### NRC

L. Kozak, RIII Senior Reactor Analyst  
D. Karjala, Resident Inspector  
J. Lara, RIII Engineering Branch 3 Chief  
M. Miller, Senior Resident Inspector (Acting)

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

05000282/2006009-01(DRS); 05000306/2006009-01(DRS)	Other*	Redundant Circuit Not Entirely Protected (Section 1R05.2b.1)
05000282/2006009-02(DRS); 05000306/2006009-02(DRS)	NCV	No Fire-Rated Damper in Return Ventilation Duct (Section 1R05.3b.1)
05000282/2006009-03(DRS); 05000306/2006009-03(DRS)	NCV	Surveillance Did Not Include TS Requirements (Section 1R05.3b.2)
05000282/2006009-04(DRS); 05000306/2006009-04(DRS)	NCV	Lack of Smoke Detectors (Section 1R05.4b.1)

### Closed

05000282/2006009-01(DRS); 05000306/2006009-01(DRS)	Other*	Redundant Circuit Not Entirely Protected (Section 1R05.2b.1)
05000282/2006009-02(DRS); 05000306/2006009-02(DRS)	NCV	No Fire-Rated Damper in Return Ventilation Duct (Section 1R05.3b.1)
05000282/2006009-03(DRS); 05000306/2006009-03(DRS)	NCV	Surveillance Did Not Include TS Requirements (Section 1R05.3b.2)
05000282/2006009-04(DRS); 05000306/2006009-04(DRS)	NCV	Lack of Smoke Detectors (Section 1R05.4b.1)

### Discussed

None.

\*Other category is being assigned based on these issues being subject to Enforcement Discretion and for NFPA 805 issue tracking purposes.

## LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

### CALCULATIONS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
ENG-ME-437	Evaluation For Ventilation Duct With No Fire Damper	0

### CORRECTIVE ACTION PROGRAM (CAP) DOCUMENTS ISSUED DURING INSPECTION

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
01042510	F5 Appendix F Section 6.1.1 Not Correct	August 2, 2006
01042603	Apparent Error in App R Compliance Database	August 2, 2006
01042855	SP1266 Does Not Ref TS When Damper Room Door Open	August 3, 2006
01044742	Error in Appendix D of GEN-PI-055	August 16, 2006
01044917	Fire Area 34 and 36 Smoke Detectors Not Code Compliant	August 16, 2006
01044959	SER Committed Damper Not Installed in AFWP Return Duct	August 17, 2006
01045012	Appendix R Compliance Issues with Fire Area 31 and 32	August 17, 2006
01045016	Issues with Regulatory Commitment Change No.03-02	August 17, 2006

### CORRECTIVE ACTION PROGRAM (CAP) DOCUMENTS ISSUED PRIOR TO INSPECTION

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
00585655	CA For App R Conduit/Tray Supports for Wrapped Raceway	March 12, 2004
01003334	NFPA Code Compliance Review	November 10, 2005

### DRAWINGS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
NF-38220-2	Turb Room - Concrete, Class I Area, Mezz Floor Plan	Q
NF-38220-3	Turb Room - Concrete, Class I Area, Elevations and Sections	U
NF-38220-4	Turb Room - Concrete, Class I Area, Elevations and Sections	AD
NF-38220-8L	Turb Room - Concrete, Class I Area, Mezz Floor Sections	L

### EVALUATIONS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
-----	NRC Staff Evaluation of FPP	January 2, 1979
-----	SER	September 8, 1978
-----	SER	April 4, 1980
-----	SER	December 29, 1980
-----	NFPA 72E Code Compliance Deviations Report	July 25, 2006

**EVALUATIONS**

---

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
FPP-5	NFPA Code Compliance Review, Revision 2	November 26, 2001
TE-NSP-027	NSPC PINGP Appendix 9 - NFPA 90A Code Compliance Review FPP-5	July 10, 2000

**PROCEDURES**

---

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
5AWI 3.13.0	FPP	15
PCR01042837	Procedure Change Request - Add TS Ref 3.7.10 to SP1266	August 3, 2006
SP-1266	Fire Damper - 18-Month Inspection, Revision 13	June 2, 2004

**REFERENCES**

---

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
-----	10 CFR 50.48	2006
-----	Comparison of Existing FP Provisions to the Guidelines Contained in Standard Review Plan 9.5-1	December 8, 1976



## LIST OF ACRONYMS USED

AC or ac	Alternating Current
ADAMS	Agency-Wide Document Access and Management System
AFW	Auxiliary Feedwater
AFWP	Auxiliary Feedwater Pump
App	Appendix
ATTN	Attention
CA	Corrective Actions
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CSD	Cold Shutdown
CR	Control Room
CRSVS	Control Room Special Ventilation System
DC	District of Columbia
DPR	Demonstration Power Reactor
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
FP	Fire Protection
FPP	Fire Protection Program
HSD	Hot Shutdown
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IPEEE	Individual Plant Examination of External Events
IR	Inspection Report
LER	Licensee Event Report
LLC	Limited Liability Company
Mezz	Mezzanine
NFPA	National Fire Protection Association
NRC	U. S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
NUREG	NRC Technical Report Designation
PARS	Publicly Available Records
PINGP	Prairie Island Nuclear Generating Plant
RIII	Region III
SD	Shutdown
SDP	Significance Determination Process
SER	Safety Evaluation Report
SP	Surveillance Procedure
SSA	Safe Shutdown Analysis
SSCs	Structures, Systems and Components
SSD	Safe Shutdown
UFSAR	Updated Final Safety Analysis Report
Volt	Volt