



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2443 WARRENVILLE ROAD, SUITE 210
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May 28, 2009

Mr. Michael D. Wadley
Site Vice President
Prairie Island Nuclear Generating Plant
Northern States Power Company, Minnesota
1717 Wakonade Drive East
Welch, MN 55089

**SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2,
TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000282/2009007;
05000306/2009007**

Dear Mr. Wadley:

On April 24, 2009, the U. S. Nuclear Regulatory Commission (NRC) completed a Triennial Fire Protection inspection at your Prairie Island Nuclear Generating Plant, Units 1 and 2. The enclosed report documents the inspection results, which were discussed on April 24, 2009, with you and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and 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.

The report documents two NRC-identified findings of very low safety significance (Green). One of these findings was determined to involve a violation of NRC requirements. Additionally, a licensee-identified violation is listed in this report. However, because of the very low safety significance and because it is entered into your corrective action program, the NRC is treating the finding as a Non-Cited Violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Prairie Island Nuclear Generating Plant. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Prairie Island Nuclear Generating Plant. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS)

M. Wadley

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Sincerely,

/RA/

Robert C. Daley, Chief
Engineering Branch 3
Division of Reactor Safety

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

Enclosure: Inspection Report 05000282/2009007;
05000306/2009007
w/Attachment: Supplemental Information

cc w/encl: D. Koehl, Chief Nuclear Officer
J. Anderson, Regulatory Affairs Manager
P. Glass, Assistant General Counsel
Nuclear Asset Manager
J. Stine, 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
Emergency Preparedness Coordinator, Dakota
County Law Enforcement Center

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Letter to Michael D. Wadley from Robert C. Daley dated May 28, 2009.

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2,
TRIENNIAL FIRE PROTECTION INSPECTION, REPORT 05000282/2009007;
05000306/2009007

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-282; 50-306

License Nos: DPR-42; DPR-60

Report No: 05000282/2009007 and 05000306/20092007

Licensee: Northern States Power Company, Minnesota

Facility: Prairie Island Nuclear Generating Plant, Units 1 and 2

Location: Welch, MN

Dates: April 6, 2009 through April 24, 2009

Inspectors: R. Langstaff, Senior Reactor Inspector, Lead
M. Munir, Reactor Inspector
R. Winter, Reactor Inspector

Approved by: Robert C. Daley, Chief
Engineering Branch 3
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000282/2009007, 05000306/20009007; 04/06/2009 - 04/24/2009; Prairie Island Nuclear Generating Plant, Units 1 and 2; Routine Triennial Fire Protection Baseline Inspection.

This report covers an announced triennial fire protection baseline inspection. The inspection was conducted by Region III inspectors. Two Green findings were identified by the inspectors. One finding was considered a Non-Cited Violation (NCV) of NRC regulations. 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 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

- Green. A finding of very low safety significance and associated NCV of License Condition 2.C.(4) was identified by the inspectors for the failure to minimize the use of combustible materials in a safety-related area. Specifically, the inspectors identified wooden tables in two diesel generator control rooms. The licensee entered the issue into their corrective action program and planned to replace the wood tables with metal tables.

The finding was determined to be more than minor because the inspectors' finding was similar to IMC 0612, Appendix E, Example 4.k. The combustible materials created a credible fire scenario that could affect equipment important to safety. The issue was of very low safety significance because the identified materials had a low likelihood of causing a fire from existing sources of heat or electrical energy. (1R05.2(b)(1))

Cornerstone: Mitigating Systems

- Green. A finding of very low safety significance was identified by the inspectors for the failure to ensure a fire door would consistently close. The licensee entered the issue into their corrective action program. This finding has a cross-cutting aspect in the area of problem identification and resolution because the licensee failed to take appropriate corrective action to assure that the fire door would close and latch or equivalent corrective action.

The finding was determined to be more than minor because failure of the fire door to close could have allowed the propagation of a fire from one fire area to another fire area. The issue was of very low safety significance because mitigating systems for initiating events associated with a fire in the two areas would not be impacted. (1R05.3(b)(1))

B. Licensee-Identified Violations

Violations of very low safety significance that were identified by the licensee have been reviewed by inspectors. Corrective actions planned or taken by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstone: Initiating Events and Mitigating Systems

1R05 Fire Protection (71111.05TTP)

The purpose of the fire protection triennial baseline inspection was to conduct a design-based, plant specific, risk-informed, onsite inspection of the licensee's fire protection program's defense-in-depth elements used to mitigate the consequences of a fire. The fire protection program shall extend the concept of defense-in-depth to fire protection in plant areas important to safety by:

- preventing fires from starting;
- rapidly detecting, controlling and extinguishing fires that do occur; and
- providing protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by fire suppression activities will not prevent the safe shutdown of the reactor plant.

The inspectors' evaluation focused on the design, operational status, and material condition of the reactor plant's fire protection program and post-fire safe shutdown systems. The objectives of the inspection were to assess whether the licensee had implemented a fire protection program that: (1) provided adequate controls for combustibles and ignition sources inside the plant; (2) provided adequate fire detection and suppression capability; (3) maintained passive fire protection features in good material condition; (4) established adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems or features; (5) ensured that procedures, equipment, fire barriers and systems exist so that the post-fire capability to safely shut down the plant was ensured; (6) included feasible and reliable operator manual actions when appropriate to achieve safe shutdown; and (7) identified fire protection issues at an appropriate threshold and ensured these issues were entered into the licensee's problem identification and resolution program.

In addition, the inspectors' review and assessment focused on the licensee's post-fire safe shutdown systems for selected risk-significant fire areas. Inspector emphasis was placed on determining that the post-fire safe shutdown capability and the fire protection features were maintained free of fire damage to ensure that at least one post-fire safe shutdown success path was available. The inspection was performed in accordance with U. S. Nuclear Regulatory Commission (NRC) Inspection Procedure (IP) 71111.05TTP, "Fire Protection-NFPA 805 Transition Period (Triennial)," dated May 9, 2006. The NRC regulatory oversight process IP used a risk-informed approach for selecting the fire areas and/or fire zones and attributes to be inspected. The inspectors with assistance from a senior reactor analyst used the licensee's Individual Plant Examination for External Events (IPEEE) to select several risk-significant areas for detailed inspection and review. Documents reviewed are listed in the Attachment to this report.

The fire areas and/or fire zones selected for review during this inspection are listed below and constituted three inspection samples as defined in IP 71111.05TTP.

Fire Areas 98 through 130 (even) constituted one Appendix R safe shutdown analysis area. No alternative fire areas were selected for review because both alternative fire areas had been previously inspected. However, the non-alternative fire areas selected for review did have numerous local safe shutdown manual actions as temporary compensatory actions in lieu of compliance with 10 CFR Part 50, Appendix R, Section III.G.2. As such, the inspectors considered the requirement to inspect an alternative safe shutdown area to be satisfied.

Due to the number of operator manual actions required for fire areas listed below, the inspectors considered the areas selected to satisfy the IP 71111.05TTP requirement to inspect alternative safe shutdown capability even though the licensee did not classify these fire zones as alternative shutdown areas.

<u>Fire Area</u>	<u>Description</u>
59	Mezzanine EL. 715', Unit 1 Auxiliary Building
74	Mezzanine EL. 715', Unit 2 Auxiliary Building
98-130 (even)	D6 Emergency Diesel Generator, Division B, D5/D6 Building

.1 Shutdown from Outside Main Control Room

a. Inspection Scope

The inspectors reviewed the functional requirements identified by the licensee as necessary for achieving and maintaining hot shutdown conditions to ensure that at least one post-fire safe shutdown success path was available in the event of fire in each of the selected fire areas and for alternative shutdown in the case of control room evacuation. The inspectors reviewed the plant systems required to achieve and maintain post-fire safe shutdown to determine if the licensee had properly identified the components and systems necessary to achieve and maintain safe shutdown 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 fire safe shutdown analysis to ensure that all required components in the selected systems were included in the licensee's safe shutdown analysis.

The inspectors reviewed the licensee's post-fire safe shutdown analysis, normal and abnormal operating procedures, piping and instrumentation drawings, electrical drawings, their updated final safety analysis report, and other supporting documents to verify that hot and cold shutdown could be achieved and maintained from outside the control room for fires that rely on shutdown from outside the control room. This review included verification that shutdown from outside the control room could be performed both with and without the availability of offsite power.

The inspectors also examined the operators' ability to perform the necessary manual actions for achieving safe shutdown by reviewing post-fire shutdown procedures, the accessibility of safe shutdown equipment, and the available time for performing the actions.

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

b. Findings

No findings of significance were identified.

.2 Protection of Safe Shutdown Capabilities

a. Inspection Scope

For each of the selected fire areas, the inspectors reviewed the fire hazards analysis, safe shutdown analysis, and supporting drawings and documentation to verify that safe shutdown capabilities were properly protected.

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 fire hazards analysis. The inspectors performed plant walkdowns 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 fire protection program and/or post-fire safe shutdown analysis and procedures.

b. Findings

(1) Combustibles Materials Present within Safety-Related Fire Area:

Introduction: A finding of very low safety significance and associated NCV of License Condition 2.C.(4) was identified by the inspectors for the failure to minimize the use of combustible materials in a safety-related area. Specifically, the inspectors identified wooden tables in two diesel generator control rooms.

Description: The inspectors identified an example where combustibles materials were not being minimized within fire areas 103 and 104, the Station Blackout (SBO) D5 and D6 diesel control rooms. The inspectors identified that wooden tables were used as computer desks in each control room. USAR Section 10.3.1.1, "Design Basis," stated NRC's basic criterion for fire protection as set forth in General Design Criterion (GDC) 3, Appendix A to 10 CFR Part 50 became applicable to the Prairie Island Nuclear Generating Plant on October 29, 1980. GDC 3 stated, in part, noncombustible and heat resistant materials shall be used wherever practical throughout the unit, particularly in locations such as the containment and control room.

The wooden tables each had a computer, a monitor, and a printer set on them. The inspectors identified that electrical relay panels which supported diesel generator operation were located across equipment aisles approximately 3.5 feet from the edge of the tables. The licensee placed the issue in their corrective action program under

Action Request (AR) 01174999 and planned to replace the two wooden tables with two metal tables. By the end of the inspection, the replacement tables had arrived on site, but had not yet been installed.

Analysis: The inspectors determined that failing to minimize combustible materials in areas of the plant important to safety was contrary to GDC 3 and was a performance deficiency. The finding was determined to be more than minor because the finding was similar to IMC 0612, Appendix E, Example 4.k. The combustible materials created credible fire scenarios that could affect equipment important to safety (such as the electrical relay panel and cables and/or wiring within the panel required for safe shutdown if the SBO diesel generators D5 and D6 were required). The inspectors noted that the wooden tables, in conjunction with the computers, monitors, and printers set on them presented a hazard with a peak heat release rate in excess of 200 kilowatts (kW), but less than 650 kW. In addition, the wooden tables were located in corners of their respective diesel generator control rooms. As such, equipment important to safety, such as electrical relay panels across the aisles, were located within the zones of influence for the desks as outlined by Table 2.3.4, "Calculated Values (in feet) for Use in the Ball and Column Zone of Influence Chart for Fires Adjacent to a Corner," of IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated February 28, 2005, Table 2.3.4. Therefore, this performance deficiency also impacted the Initiating Events Cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the presence of combustible materials beyond what was necessary increased the likelihood of a fire affecting equipment important to safety.

In accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 3b the inspectors determined the finding degraded the fire protection defense-in-depth strategies. Therefore, screening under IMC 0609, Appendix F, "Fire Protection Significance Determination Process," was required. The inspectors completed a significance determination of this issue using IMC 0609, Appendix F, Attachment 2, "Degradation Rating Guidance Specific to Various Fire Protection Program Elements," dated February 28, 2005. The inspectors determined that the presence of combustible materials was a low degradation finding against the fire protection program because the identified materials had a low likelihood of causing a fire from existing sources of heat or electrical energy. Question 1 of IMC 0609, Appendix F, Task 1.3.1, "Qualitative Screening for All Finding Categories," showed that the finding was of very low safety significance (Green) due to the low degradation rating.

The inspectors did not identify a cross-cutting aspect associated with this finding because this issue did not reflect current performance. The wooden desks had been in the SBO building since original construction of the building.

Enforcement: License condition 2.C.(4), for both Units 1 and 2, required the licensee to implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Safety Analysis Report (USAR). Updated Safety Analysis Report Section 10.3.1.1, "Design Basis," stated NRC's basic criterion for fire protection as set forth in GDC 3, Appendix A to 10 CFR Part 50 became applicable to the Prairie Island Nuclear Generating Plant on October 29, 1980. General Design Criterion 3 stated, in part, noncombustible and heat resistant materials shall be used wherever

practical throughout the unit, particularly in locations such as the containment and control room.

Contrary to the above, as of March 26, 2009, the licensee failed to use noncombustible and heat resistant materials wherever practical throughout the unit. Specifically, the licensee failed to use noncombustible materials in the SBO D5 and D6 diesel generator control rooms in that desks comprised of combustible materials (i.e., wood) were used for computers, monitors, and printers where it was practical to use noncombustible materials such as metal for the desks. The licensee was in transition to National Fire Protection Association (NFPA) 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," and therefore the NRC identified violation was evaluated in accordance with the criteria established by Section A of the NRC's Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR Part 50.48) for a licensee in NFPA 805 transition. The inspectors determined that, for this violation, the criterion that the licensee would have identified the violation during the scheduled transition to 10 CFR Part 50, Section 48(c) was not met. Specifically, none of the scheduled NFPA 805 transition activities were focused on the identification of inappropriate combustible materials used within the facility. The licensee agreed that the inappropriate use of combustible materials, such as the wooden desks, would not likely have been identified as part of the NFPA 805 transition. As such, discretion associated with the transition to NFPA 805 is not being granted for this violation. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program as AR 01174999, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000282/2009007-01; 05000306/2009007-01).

.3 Passive Fire Protection

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 reviewed approved construction details and supporting fire tests. In addition, the inspectors reviewed license documentation, such as NRC safety evaluation reports, and deviations from NRC regulations and the National Fire Protection Association codes to verify that fire protection 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

(1) Failure to Ensure Fire Door Would Consistently Close

Introduction: The inspectors identified a finding having very low safety significance (Green) for the licensee's failure to ensure a fire door would consistently close.

Description: The inspectors identified that Fire Door 428 would not consistently close due to ventilation pressure against the door. Specifically, on one occasion, the inspectors observed that, with the ventilation system in operation, Fire Door 428 would almost close from a fully open position, but would not latch and would reopen approximately 2 inches due to differential pressure from the ventilation system. However, on one other occasion, the inspectors did observe Fire Door 428 close properly, when released from the fully open position. Fire Door 428 separated the Station Blackout diesel D6 control room (fire area 104) from a designated future battery room (fire area 106) which, at the time of the inspection, was used as a room to store spare electrical breakers. The inspectors noted that each breaker stored within fire area 106 had a cover to minimize foreign material entering into the operating mechanism. The inspectors noted that, directly above the fire door, a ventilation supply register provided a large air flow which prevented the door from closing when the ventilation system was operating. Although the door was not required to maintain an Appendix R analysis area boundary, the door was credited in the licensee's fire protection program as a 3-hour fire barrier door. Specifically, Table 6-1, "Fire Hazards Analysis Matrix," of Operations Manual F5 Appendix F, "Fire Hazard Analysis," took credit for Fire Door 428 as providing a 3-hour fire barrier between Fire Areas 104 and 106. Additionally, Section 2.3 of F5 Appendix F stated that fire doors had been evaluated for compliance with NFPA 80, "Standard for Fire Doors and Windows."

Section 1101 of NFPA 80 – 1968 required that a closing device be installed on every fire door, except elevator and power-operated dumb waiter doors equipped with electric contacts or interlocks. Section 1101.a of NFPA 80 - 1968 defined a closing device as a mechanism which, if kept in good working condition, would ensure that fire doors are kept in a closed position and latched or, if normally open, would close and latch the door at time of fire. National Fire Protection Association 80, 1968, Section 1203, required that automatic closing devices be kept in proper working condition at all times.

Procedure PM 3122-4, "Fire and Security Door Mechanical Inspection (Non-Safety-Related Areas)," required that Fire Door 428 be inspected annually. Section 7.1.4 of procedure PM 3122-4 required, in part, that the closing device have proper tension to close and latch the door and be adjusted so the door will not stay open on its own. Fire Door 428 had been verified to be acceptable using procedure PM 3122-4 on April 18, 2008. The inspectors were not able to determine whether the door closed properly at the time procedure PM 3122-4 was performed or whether procedure PM 3122-4 had been performed incorrectly.

The licensee had previously determined that Fire Door 428 did not consistently close and latch because of interaction with the ventilation system hindering door closing. Specifically, the licensee had initiated the following corrective action documents on Fire Door 428:

AR 01011169; Code Compliant Doors in the SBO Bldg; dated January 20, 2006
AR 01012013; Doors in D5/D6 Bldg will not close on their own; dated
January 26, 2006
AR 01012910; Previous CAP on D5/D6 Building Doors Closed without Action;
dated January 31, 2006
AR 01053527; Door 428 (D6 future batt rm) Does not close properly per
TP-1542; dated October 3, 2006
AR 01070855; Doors not Closing due to Air Pressure; in D5/D6 Bldg will not
close on their own; dated January 9, 2007
AR 01102907; Code Compliant Doors in the SBO Building; dated July 23, 2007
AR 01103848; Ventilation/Door Closure Issues not Resolved – Safety Issue;
dated July 27, 2007

Corrective action for the door primarily involved raising site awareness of the need to close fire doors and placing a placard on the door stating, "Please Verify Door 'Closed' After Passing Through!" During the inspection, the licensee had expressed concerns with adjusting the automatic closing device to close the doors with greater force citing personnel safety concerns for excessive force being applied for when the ventilation system was not operating. The inspectors acknowledged the licensee's concerns associated with adjustment of the automatic closing device. However, the inspectors considered the licensee's corrective actions to be inadequate because the actions to train and remind the staff to close fire doors were not equivalent to the active means of ensuring the door was closed as required by NFPA 80 – 1968. After the inspectors questioned the adequacy of the fire door, the issue was entered into the licensee's corrective action program as AR 01179070, "Door 428 does not meet NFPA 80 Requirements," dated April 21, 2009.

Analysis: The inspectors determined that the failure to ensure that Fire Door 428 would close and latch, or equivalent corrective action, was contrary to NFPA 80 – 1968 and a performance deficiency. The inspectors determined that the failure to ensure the fire door met NFPA 80 requirements, or equivalent corrective action, was a performance deficiency warranting a significance evaluation. The finding was determined to be more than minor because the inspectors concluded that this finding was associated with the Mitigating Systems Cornerstone attribute of Protection Against External Factors (Fire) and objective of ensuring the availability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failure of Fire Door 428 to close could have allowed the propagation of a fire from one fire area to another fire area.

In accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1-Initial Screening and Characterization of Findings," Table 3b, the inspectors determined the finding degraded the fire protection defense-in-depth strategies. Therefore, screening under IMC 0609, Appendix F, "Fire Protection Significance Determination Process," was required. Based on Table 1.1-1 in Appendix F, the finding was determined to affect the element of fire confinement. The finding was assigned a Moderate B degradation rating in accordance with Table A2.2 in Attachment 2 of Appendix F because the door would not have functioned in the as-found condition. Since the finding was related to fire confinement and was assigned a Moderate B degradation rating, Step 1.7, Task 1.3.2 of Appendix F was performed. The inspectors noted that a fire involving both fire zones (fire zones 104 and 106) would,

at most, affect one division of emergency alternating current power provided by an emergency diesel generator for Unit 2. Off-site power sources would not be affected by a fire. Consequently, mitigating systems for initiating events associated with a fire in the two areas would not be impacted and the conditional core damage probability would be negligible. Using the formula outlined in Step 2.9 of IMC 609, Appendix F, the inspectors determined that this finding was of very low safety significance (i.e., Green).

This finding has a cross-cutting aspect in the area of problem identification and resolution because the licensee failed to take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, the licensee failed to take appropriate corrective action to assure that the fire door would close and latch in accordance with NFPA 80 or equivalent corrective action. (P.1(d))

Enforcement: Section 1101 of NFPA 80 – 1968 required that a closing device be installed on every fire door, except elevator and power-operated dumb waiter doors equipped with electric contacts or interlocks. Section 1101.a of NFPA 80 - 1968 defined a closing device as a mechanism which, if kept in good working condition, would ensure that fire doors are kept in a closed position and latched or, if normally open, would close and latch the door at time of fire. National Fire Protection Association 80, 1968, Section 1203, required that automatic closing devices be kept in proper working condition at all times. Contrary to the above, as of April 21, 2009, the licensee failed to ensure that the closing device for Fire Door 428 was in good working condition which would keep Fire Door 428 closed and latched. Specifically, from January 20, 2006 through April 21, 2009, the licensee had knowledge that that Fire Door 428 did not have the capability to close and latch in that it had been identified that ventilation system differential pressure prevented the automatic closing device for Fire Door 428 from fully closing. The inspectors observed, on one occasion, that the Fire Door 428 would not close due to ventilation system differential pressure. Although NFPA 80 was referenced by Operations Manual F5 Appendix F (which was incorporated by reference to the USAR), and the licensee confirmed that NFPA 80 was their accepted standard for the closing device, the licensee was not specifically committed to this standard in their Fire Protection Program. (FIN 05000282/2009007-02; 05000306/2009007-02).

.4 Active Fire Protection

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 safety evaluation reports, deviations from NRC regulations, and the National Fire Protection Association codes to verify that fire suppression and detection systems met license commitments.

b. Findings

(1) Sequential Starting of Fire Pumps

Introduction: An unresolved item (URI) concerning the starting sequence for the fire pumps was identified by the inspectors.

Description: The Prairie Island Nuclear Generating Plant fire pumps were arranged to start sequentially upon decreasing pressure in the fire protection system. Specifically, the electric driven screen wash pump would provide water to the fire protection system at 102 pounds per square inch gauge (psig), the electric driven fire pump would start at 95 psig, and the diesel driven fire pump would start at 90 psig. No time delays were incorporated into the pump starting circuits.

The code of record for the fire pumps was National Fire Protection Association (NFPA) 20 – 1969, “Standard for the Installation of Stationary Pumps for Fire Protection:” Section 515.d.3 (applicable to electric driven pump controllers) and Section 715.d.3 (applicable to engine driven pump controllers) of NFPA 20 – 1969 both stated: “Controllers for multiple pump units shall incorporate a sequential timing device to prevent any one pump starting simultaneously with any other pump.” The inspectors noted that the explanatory language from Section 12.5.2.4 of the NFPA “Handbook for Stationary Fire Pumps,” second edition, stated, “The sequence-starting requirement prevents excessive hydraulic stress to piping, control valves, and other system components during pump startup.”

The licensee did not believe that Sections 515.d.3 and 717.d.3 were applicable to their installation because the additional pumps were provided for redundancy as opposed to demand. Additionally, the licensee considered the starting of pumps using different pressure settings sufficient for sequential starting. The inspectors and the licensee mutually agreed to seek a formal code interpretation from NFPA with the following language concerning the current standard, NFPA 20 – 2007:

Section 10.5.2.5 and Section 12.5.2.4 state, “Sequence Starting of Pumps” states “The controller for each unit of multiple units shall incorporate a sequential timing device to prevent any one driver from starting simultaneously with any other driver.”

Background: A fire pump arrangement consists of redundant pumps connected in parallel. Each pump is designed to supply 100 percent of the required flow and pressure. The controllers for each pump are arranged to start at different pressure settings.

Question 1: Is this configuration considered a multiple unit configuration covered by “Sequential Starting of pumps” in Section 10.5.2.5?

Question 2: Is having controllers for each unit of multiple pump units set to actuate at different pressures considered sufficient to meet the requirement of Section 10.5.2.5 without incorporation of an additional sequential timing device?

The inspectors noted that formal code interpretations posed to NFPA were required to be posed in the form of “Yes” or “No” questions and based on the current version of the NFPA code. This issue is considered an URI pending a formal interpretation from NFPA and NRC review. (URI 05000282/2009007-03; 05000306/2009007-03)

.5 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

For the selected fire areas, the inspectors verified that redundant trains of systems required for hot shutdown 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

a. Inspection Scope

The inspectors reviewed the licensee’s systems required to achieve alternative safe shutdown to determine if the licensee had properly identified the components and systems necessary to achieve and maintain safe shutdown conditions. The inspectors also focused on the adequacy of the systems to perform reactor pressure control, reactivity control, reactor coolant makeup, decay heat removal, process monitoring, and support system functions.

The inspectors conducted selected area walkdowns to determine if operators could reasonably be expected to perform the alternate safe shutdown procedure actions and that equipment labeling was consistent with the alternate safe shutdown procedure. The review also looked at operator training as well as consistency between the operations shutdown procedures and any associated administrative controls.

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

a. Inspection Scope

The inspectors reviewed, on a sample basis, the adequacy of the communication system to support plant personnel in the performance of alternative safe shutdown functions and fire brigade duties. The inspectors verified that plant telephones, page systems, sound powered phones, and radios were available for use and maintained in working order. The inspectors reviewed the electrical power supplies and cable routing for these systems to verify that either the telephones or the radios would remain functional following a fire.

b. Findings

No findings of significance were identified.

.9 Emergency Lighting

a. Inspection Scope

The inspectors performed a plant walkdown of selected areas in which a sample of operator actions would be performed in the performance of alternative safe shutdown functions. As part of the walkdowns, the inspectors focused on the existence of sufficient emergency lighting for access and egress to areas and for performing necessary equipment operations. The locations and positioning of the emergency lights were observed during the walkdown and during review of manual actions implemented for the selected fire areas.

b. Findings

No findings of significance were identified.

.10 Cold Shutdown Repairs

a. Inspection Scope

The inspectors reviewed the licensee's procedures to determine whether repairs were required to achieve cold shutdown and to verify that dedicated repair procedures, equipment, and material to accomplish those repairs were available onsite. The inspectors also evaluated whether cold shutdown could be achieved within the required time using the licensee's procedures and repair methods. The inspectors also verified that equipment necessary to perform cold shutdown repairs was available onsite and properly staged.

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 fire protection and post-fire safe shutdown equipment, systems, or features (e.g., detection and suppression systems, and equipment, passive fire barriers, pumps, valves or electrical devices providing safe shutdown 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

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report (LER) 05000282/2009-001-00: Unanalyzed Condition Due to Manual Actions that Do Not Comply with 10 CFR Part 50, Appendix R

This event, which occurred on January 14, 2009, involved the licensee's identification that a fire in either of the auxiliary pump rooms, fire areas 31 and 32, could cause the loss of the instrument air system (IA) which was credited with providing compressed air to the safeguards chiller units which, in turn, were required to achieve and maintain hot shutdown for compliance with 10 CFR Part 50, Appendix R. During a safe shutdown compliance assessment, the licensee identified that manual actions were necessary for ensuring that an IA supply would be available in the event of a fire. The IA supply was necessary to support operation of the safeguards chillers which, in turn, supported control room ventilation. Although safe shutdown procedures for fire did not provide guidance for maintaining operability of safeguards chillers, other procedural guidance existed for replacing back-up compressed air cylinders, as necessary, to maintain IA capability. However, the use of the manual actions did not meet the requirements of 10 CFR Part 50, Appendix R, for non-alternative shutdown areas as discussed in Regulatory Issue Summary 2006-10, "Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions." The licensee entered this issue into their corrective action program under AR 01165361, "10 CFR Part 50 Appendix R non-compliance in fire area 31 and 32," and took credit for the existing procedural guidance compliance as a compensatory measure for the 10 CFR Part 50, Appendix R non-compliance. The licensee planned to upgrade their instrument air capability which would address the non-compliance. In addition, the licensee planned to assess the issue as part of their transition to NFPA 805. The inspectors concluded that the licensee's corrective actions, both taken and planned, were appropriate and reasonable. Enforcement aspects of this LER are discussed in Section 4OA7. Documents reviewed as part of this inspection are listed in the attachment. This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153-05.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 24 the inspectors presented the inspection results to Mr. M. Wadley, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

4OA7 Licensee-Identified Violations

The following violation of very low significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

- Title 10 CFR Part 50, Appendix R, requires, in part, that one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station is free of fire damage. On January 14, 2009, the licensee identified an Appendix R non-compliance in that IA would not be free of fire damage to support safe-shutdown (see Section 4OA3.2). However, existing procedures provided guidance to operators for replacing back-up compressed air cylinders, as necessary, to maintain IA capability. The licensee performed a safety significance evaluation and determined that the issue was not of high safety significance based on the ignition sources and the effectiveness of the automatic and manual suppression in the area. The inspectors concurred with the overall results of the licensee's evaluation for safety significance. This issue met criteria for enforcement discretion under "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)" published in Federal Register Notices dated June 16, 2004; January 14, 2005; and April 18, 2006. (FIN 05000282/2009007-04; 05000306/2009007-04)

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Wadley, Site Vice-President
J. Anderson, Manager, Regulatory Affairs
K. Balakrishanan, Fire Protection Program Engineer, Regulatory Programs
M. Brossart, Supervisor, Regulatory Programs
R. Calzaretta, Engineer, Regulatory Programs
J. Harrison, Engineer, Engineering and Plant Systems
G. Kvamme, Appendix R Program Engineer, Regulatory Programs
J. O’Farrill, Licensing Engineer, Regulatory Affairs
R. Rohrer, Manager, Fleet Programs Engineering
S. Skoyen, Manager, Engineering Programs
F. Sperlak, Fire Protection Coordinator, Operations

Nuclear Regulatory Commission

S. West, Director, Division of Reactor Safety
K. Stoedter, Senior Resident Inspector

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000282/2009007-01; 05000306/2009007-01	NCV	Combustibles Materials Present Within Safety-Related Fire Area
05000282/2009007-02; 05000306/2009007-02	FIN	Failure to Ensure Fire Door Would Consistently Close
05000282/2009007-03; 05000306/2009007-03	URI	Sequential Starting of Fire Pumps
05000282/2009007-04; 05000306/2009007-04	FIN	Unanalyzed Condition Due to Manual Actions that Do Not Comply with 10 CFR Part 50, Appendix R

Closed

05000282/2009001-00	LER	Unanalyzed Condition Due to Manual Actions that Do Not Comply with 10 CFR Part 50, Appendix R
05000282/2009007-01; 05000306/2009007-01	NCV	Combustibles Materials Present within Safety-Related Fire Area
05000282/2009007-02; 05000306/2009007-02	FIN	Failure to Ensure Fire Door Would Consistently Close
05000282/2009007-04; 05000306/2009007-04	FIN	Unanalyzed Condition Due to Manual Actions that Do Not Comply with 10 CFR Part 50, Appendix R

Discussed

None

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 or 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.

Analyses, Calculations, and Evaluations

1291.6249-E-002; MCC 120 V Control Circuit Voltage Drop Calculation for Fire Area 59; dated November 17, 1999

ENG-CS-197; Evaluation of Large Wall Openings with Fire Barrier Seals; dated October 5, 2000

ENG-ME-006; Hydraulic Calc for D5/D6 Fuel Oil and Lube Oil Day Tank Rooms; Revision 0

ENG-ME-09, Attachment 9.2; Combustible Loading Manager Fire Area Details; Revision 4

F5 Appendix F; Fire Hazards Analysis; Revision 21

F5 Appendix E; Fire Protection Safe Shutdown Summary; Revision 13

FPEE-05-01; App R Compliance in the Units 1 and 2, 715' Aux. Building, Fire Areas 59 and 74; dated May 24, 2005

FPEE-09-001; Evaluation of Pearlweave as a Non-Combustible Material; dated January 15, 2009

GEN-PI-026; Appendix C59, Part I – Compliance Assessment Summary for Analysis Area 59; Revision 4

GEN-PI-026; Appendix C59 Part II – Compliance assessment Report for Analysis Area 59; Revision 4

GEN-PI-026; Appendix B – Safe Shutdown Cable Protection Summary for Fire Area 59; Revision 5B

GEN-PI-026; Appendix C98 Part II- Compliance Assessment Report for Analysis Area D6-D6 Building; Revision 5

GEN-PI-052; Safe Shutdown Equipment for Compliance with 10 CFR Part 50, Appendix R for Fire Areas 59 and D6; Revision 3

M-376-ZG-008; Fire Suppression Calculations; Revision 1

M-376-ZG-008; Fire Suppression Calculation, Addendum 1; Revision 1

PI-NSP-05-002; Ampacity of Conductors in Wrapped Conduits for Fire Area 59; Revision 3

S-05ZE01; Aux. Building ZE Unit Cooler and Piping Degradation Study; dated November 8, 2005

Audits and Self-Assessments

AR 01129453; Fire Protection/Appendix R Focused Self-Assessment; dated August 2008

Corrective Actions

AR 01095071; Non-compliant Manual Actions in FA 29; dated June 4, 2007

AR 01095174; Non-compliant Manual Actions in FA 10, 2, 59; dated June 5, 2007

AR 01095265; Non-compliant Manual Actions for DDCLP; dated June 5, 2007

AR 01095274; Non-compliant Manual Actions for FA 58/73; dated June 5, 2007

AR 01095279; Non-compliant Manual Actions for FA 20; dated June 5, 2007

AR 01095282; Non-compliant Manual Actions for FA 23; dated June 5, 2007

AR 01095417; Non-compliant Manual Actions for FA 31; dated June 6, 2007

AR 01095434; Non-compliant Manual Actions for FA 32; dated June 6, 2007

AR 01095449; Non-compliant Manual Actions for FA 39 & 4; dated June 6, 2007

AR 01095460; Non-compliant Manual Actions for FA 46; dated June 6, 2007

AR 01095463; Non-compliant Manual Actions for FA 69; dated June 6, 2007

AR 01095466; Non-compliant Manual Actions for FA 70; dated June 6, 2007

AR 01095468; Non-compliant Manual Actions for FA 71 and 72; dated June 6, 2007

AR 01095469; Non-compliant Manual Actions for FA 74; dated June 6, 2007

AR 01165361; 10 CFR Part 50, Appendix R Non-compliance in Fire Area 31 and 32; dated January 14, 2009

AR 01178591; Automatic Start of 121 Motor Driven Fire and Screenwash Pumps; dated April 17, 2009

Corrective Actions Identified as a Result of Inspection

AR 01174982; Editorial Typo in F5 Appendix K; dated March 26

AR 01174999; Unnecessary Combustible Material Stored in D5/D6 Building; dated March 26; 2009

AR 01176973; NFPA 13 Code of Record Discrepancy; dated April 6, 2009

AR 01177177; Evaluate D5/D6 Stairwell Hydraulic Calc; dated April 7, 2009

AR 01177131; Minor Typo Identified in F5 Appendix F; dated April 7, 2009

AR 01177171; F5 Appendix D Missing Procedure Step; dated April 7, 2009

AR 01178446; Storage of Pearlweave in Aux Building 715'; dated April 16, 2009

AR 01178981; Process Used to Relocate Fire Brigade Not Per FP-E-MOD-02; dated April 21, 2009

AR 01179070; Door 428 Does Not Meet NFPA 80 Requirements; dated April 22, 2009

AR 01179216; Error Found in F5 App K Reference; dated April 23, 2009

AR 01179279; Typographical Errors in F5 Appendix D, Zone 19; dated April 23, 2009

AR 01179341; Fire Protection Hydraulic Calc Inputs; dated April 23, 2009

AR 01179416; Distribution of Extinguishers in D5/D6 Building Questions; dated April 24, 2009

AR 01179423; Temp Rating of Sprinklers above Pen Cabinet's Questioned; dated April 24, 2009

Drawings

NF-40093-4; Plant Fire Detection System Mezzanine Floor Plan Unit 1 and 2; Revision M

NF-40500-2; Plant Fire Detection System Mezzanine Floor Plan Unit 2; Revision G

NF-116701; Fire Detection Plan D5/D6 Building Ground Floor and Upper Deck; Revision B

NF-116702; Fire Detection Plan D5/D6 Building Mezzanine Floor; Revision 4

Procedures

5AWI 3.13.0; Fire Protection Program; Revision 19

5AWI 3.13.2; Fire Prevention; Revision 15

F5 Appendix A; Auxiliary Building and Hot Lab Unit 1, Fire Detection Zone 19; Revision 17

F5 Appendix A; Auxiliary Building Unit 2, Fire Detection Zone 46; Revision 7

F5 Appendix A; D5/D6 Building, Fire Detection Zone 97; Revision 14

F5 Appendix D; Impact of Fire outside Control/Relay Room; Revision 25

SP 1183.5; Annual Fire Extinguisher Inspection; Revision 12

SP 1196; Fire Protection Safety-Related Sprinkler System Test; Revision 19

SP 1275; 18 Month Safe Shutdown Fire Barrier Inspection of Cable Trays/Conduit; Revision 11

SP 2107A; D5/D6 Fire Detection Test of Deluge Trip Devices; Revision 6

Surveillances

PM 3122-4; Fire and Security Door Mechanical Inspection (Non-Safety-Related Areas); performed April 18, 2008

SP 1196; Fire Protection Safety-Related Sprinkler System Test; performed October 17, 2007

SP 1192; SFGDS Electrical and Mechanical Penetrations Survey Test; performed August 3, 2007

SP 1192; SFGDS Electrical and Mechanical Penetrations Survey Test; performed April 25, 2006

SP 1202; Fire Protection System, Fire Pumps 18-Month Test; performed May 12, 2007

SP 1208; Fire Pump and Hose Flow, 3-Year Test; performed June 22, 2006

SP 1785; Safe Shutdown Emergency Lighting Monthly Test; performed March 27, 2009

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
AR	Action Request
CFR	Code of Federal Regulations
GDC	General Design Criterion
IA	Instrument Air
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IPEEE	Individual Plant Examination of External Events
IR	Inspection Report
kW	kiloWatt
LER	Licensee Event Report
NCV	Non-Cited Violation
NFPA	National Fire Protection Association
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records
PSIG	Pounds per Square Inch Gauge
SBO	Station Blackout
URI	Unresolved Item