UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

August 14, 2008

Mr. Michael D. Wadley
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 INTEGRATED INSPECTION REPORT 05000282/2008003; 05000306/2008003

Dear Mr. Wadley,

On June 30, 2008, the U. S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Prairie Island Nuclear Generating Plant, Units 1 and 2. The enclosed report documents the inspection findings, which were discussed on July 1, 2008, with Mr. J. Sorenson 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.

Based on the results of this inspection, one NRC-identified finding of very low safety significance and one Severity Level IV violation were identified. The finding involved a violation of NRC requirements. However, because of the very low safety significance, and because the issues were entered into your corrective action program, the NRC treated the issues as Non-Cited Violations (NCVs) in accordance with Section VI.A.1 of the NRC Enforcement Policy. Additionally, two licensee identified violations were listed in Section 4OA7 of this report.

If you contest the subject or severity of this NCV, 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, DC 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, DC 20555-0001; and the Resident Inspector Office at the Prairie Island Nuclear Generating Plant.

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/

Richard A. Skokowski, Chief
Branch 3
Division of Reactor Projects

Docket Nos. 50-282; 50-306; 72-010
License Nos. DPR-42; DPR-60; SNM-2506

Enclosure: Inspection Report 05000282/2008003 and 05000306/2008003
w/Attachment: Supplemental Information

cc w/encl: D. Koehl, Chief Nuclear Officer
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
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of Commerce
Manager, Environmental Protection Division
Office of the Attorney General of Minnesota
Emergency Preparedness Coordinator, Dakota
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Letter to M. Wadley from R. Skokowski dated August 14, 2008

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2 NRC INTEGRATED INSPECTION REPORT 05000282/2008003 AND 05000306/2008003

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-282; 50-306; 72-010
License Nos:	DPR-42; DPR-60; SNM-2506
Report No:	05000282/2008003; 05000306/2008003
Licensee:	Nuclear Management Company, LLC
Facility:	Prairie Island Nuclear Generating Plant, Units 1 and 2
Location:	Welch, MN
Dates:	April 1 through June 30, 2008
Inspectors:	K. Stoedter, Senior Resident Inspector P. Zurawski, Resident Inspector L. Haeg, Resident Inspector – Monticello D. McNeil, Senior Operations Examiner M. Phalen, Health Physics Inspector D. Szwarc, Reactor Inspector
Approved by:	R. Skokowski, Chief Branch 3 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000282/2008003, 05000306/2008003; 04/01/2008 – 06/30/2008; Prairie Island Nuclear Generating Plant, Units 1 & 2; Other Activities.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. One Green finding and one Severity Level IV violation were identified by the inspectors. These items were both determined to be Non-Cited Violations of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 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.

1. NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

- Green. An inspector identified finding of very low safety significance and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XI, due to the licensee's failure to ensure Check Valve SI-9-5 was tested under suitable environmental conditions. Specifically, the licensee preconditioned SI-9-5 prior to testing by increasing reactor pressure and tapping on the valve with a hammer.

  The inspectors determined that this finding was more than minor because it was associated with the equipment performance attribute of the initiating events cornerstone. The finding affected the cornerstone objective of limiting the frequency of those events that upset plant stability and challenge critical safety functions. The inspectors concluded that the finding was of very low safety significance because it was not a primary system loss of coolant accident or transient initiator. Additionally, the finding did not screen as potentially risk significant due to a fire, seismic, flooding, or severe weather initiating event. The inspectors concluded that this finding affected the corrective action program component of the Problem Identification and Resolution cross-cutting area because the licensee failed to evaluate the cause of the 2008 SI-9-5 valve test failures to ensure that the resolution addressed the cause and extent of condition (P.1(c)). The corrective actions for this issue included restoring the valve to an operable but degraded condition, providing training on preconditioning, providing training on the use and implementation of the operability determination process, and improving the thorough evaluation of equipment related deficiencies. (Section 4OA5.3)

Cornerstone: Mitigating Systems

- Severity Level IV. The inspectors identified an Non-Cited Violation of 10 CFR 50.71, "Maintenance of records, making of reports," for the licensee's failure to adequately update the Prairie Island Nuclear Generating Plant Updated Safety Analysis Report (USAR) to include analyses performed in response to Generic Letter (GL) 2004-02. Title 10 CFR 50.71(e) requires, in part, that the USAR be revised to include the effects of all analyses of new safety issues performed by or on behalf of the licensee at Commission request. The Commission, through GL 2004-02, requested that licensees perform an evaluation of the Emergency Core Cooling Systems and its associated recirculation functions and, if appropriate, take additional actions to ensure system function. The licensee, in response to GL 2004-02, performed analyses of debris generation and transport, chemical effects, downstream effects, upstream effects, and strainer and other structural analysis, but did not update the safety analysis report to include those analyses.

This issue potentially impacted the NRC's ability to perform its regulatory function and therefore, it was evaluated using the traditional enforcement process. The inspectors determined that the finding was more than minor because of the potential to impact the regulatory process by using IMC 0612, Appendix B, "Issue Screening," dated September 20, 2007. Specifically, the failure to provide complete licensing and design basis information in the USAR could result in either the licensee making an inappropriate interpretation or the NRC making an inappropriate regulatory decision based on incomplete information in the USAR. This finding has a cross-cutting aspect in the area of human performance, work practices (H.4(c)) because the licensee did not ensure supervisory and management oversight of work activities such that nuclear safety was supported. Corrective actions included revising the USAR to reflect the analyses and submitting the updated information to the NRC. (Section 4OA5.1.c)

2. 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 were listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Operations personnel operated Unit 1 at or near full power until April 7, 2008, when a slight power reduction was required to account for inaccuracies in the calorimetric calculation program. Operations personnel conducted an additional power reduction of five percent on June 4, 2008, to allow the 11 heater drain tank pump to be removed from service. Power levels were restored later the same day. Unit 1 operated near the full power for the remainder of the inspection period.

Unit 2 was also operated at or near full power until April 7, 2008, when a slight power reduction was required to account for inaccuracies in the calorimetric calculation program. Unit 2 remained at this power level throughout the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Summer Seasonal Readiness Preparations

a. Inspection Scope

The inspectors performed a review of selected systems to assess the licensee's preparations for summer weather, including high temperatures. During the inspection, the inspectors reviewed the Updated Safety Analysis Report (USAR) and performance requirements for the systems selected and verified that operator actions were appropriate as specified by procedures. Specific documents reviewed during this inspection were listed in the Attachment. The inspectors also reviewed corrective action program documents (CAPs) to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program. The inspectors' review focused on the following plant systems:

- Circulating Water, and
- Screenhouse Ventilation.

This inspection constituted one seasonal adverse weather sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings of significance were identified.

.2 Offsite and Onsite Electrical Power System Readiness Review

a. Inspection Scope

The inspectors reviewed the licensee's procedures regarding the availability of the offsite and onsite electrical power systems. As part of this inspection, the inspectors reviewed the communications protocols between the transmission system operator (TSO) and the licensee to verify that the appropriate information was being exchanged when issues arose that could impact the offsite power system. The inspectors also conducted a tour of Xcel Energy's System Control Center and discussed specific information regarding coordination activities between the control center and the Prairie Island control room operators. Aspects considered during the inspectors' review and tour included:

- the coordination between the TSO and the control room operators during off-normal or emergency events;
- the explanations for the events;
- the estimates of when the offsite power system would be returned to a normal state; and
- the notifications from the TSO to the licensee when the offsite power system was returned to normal.

During the inspection, the inspectors also focused on plant specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions that impacted the electrical grid. The inspectors reviewed the USAR and performance requirements for the offsite and onsite electrical power systems to gain an understanding of both systems' operating requirements. The inspectors conducted a review of the licensee's procedures and ensured that the procedures appropriately captured the operating requirements. The inspectors conducted a review of the corrective action system and performed a walkdown of the offsite and onsite electrical distribution systems to verify that previously identified deficiencies were corrected and to ensure that outstanding deficiencies would not impact the operability and availability of these systems. The inspectors also discussed switchyard operations with a substation engineer to gain any additional insights regarding the material condition of breakers and transformers located in the switchyard. The documents reviewed during this inspection were listed in the Attachment.

This inspection constituted one offsite and onsite electrical power system review as defined in IP 71111.01-05.

b. Findings

No findings of significance were identified.

.3 External Flooding

a. Inspection Scope

On May 3, 2008, operations personnel entered Abnormal Procedure AB-4, "Flood," due to the predicted Mississippi River level being greater than or equal to 678 feet within the next three days. The inspectors reviewed AB-4 to ensure it could be implemented as written. The inspectors also evaluated the design requirements and material condition of equipment used to mitigate an external flood by reviewing information contained in the USAR and by inspecting flooding related equipment located within the plant. As part of this evaluation, the inspectors also checked for water intrusion in low lying plant areas, verified that operations personnel were performing increased monitoring of plant equipment susceptible to flooding, and that barriers required to mitigate a flood were in place and operable. Lastly, the inspectors reviewed CAPs to ensure that issues related to external flooding were being identified and entered into the corrective action system as required by procedure. Specific documents reviewed during this inspection were listed in the Attachment.

This inspection constituted one external flooding sample as defined in IP 71111.01-05.

b. Findings

No findings of significance were identified.

.4 Readiness for Impending Adverse Weather Condition – High Winds

a. Inspection Scope

On April 21, 2008, the inspectors walked down the switchyard and all outside plant areas to assess whether the offsite power lines could be affected by missiles generated as a result of a high wind condition. This walkdown was initiated due to high winds being forecasted for the area. During the inspection, the inspectors focused on plant specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors also reviewed a sample of CAPs to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the corrective action program in accordance with procedures. Specific documents reviewed during this inspection were listed in the Attachment.

This inspection constituted one impending adverse weather sample as defined in IP 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems during times when redundant equipment was inoperable due to maintenance or testing:

- Emergency Diesel Generator D5;
- Emergency Diesel Generator D2; and
- Emergency Diesel Generator D6.

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones. The inspectors reviewed applicable operating procedures, system diagrams, the USAR, Technical Specification (TS) requirements, outstanding work orders, CAPs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems listed above incapable of performing their safety functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed equipment operating parameters to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems as part of their corrective action program. Documents reviewed were listed in the Attachment.

These activities constituted three partial system walkdown samples as defined by IP 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on the availability, accessibility, and condition of firefighting equipment in the following risk-significant plant areas:

- D5/D6 Building (Fire Zone 97);
- Unit 1 Turbine Building Ground and Mezzanine Floors (Fire Zones 3, 4, 15, and 107);
- Unit 2 Turbine Building Ground and Mezzanine Floors (Fire Zones 36, 37, and 44);
- 11/12 Battery Room (Fire Zone 1); and
- 21/22 Battery Room (Fire Zone 35).

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features in accordance with the fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the licensee's Individual Plant Examination of External Events and their potential to impact equipment which could initiate or mitigate a plant transient. Using the documents listed in the Attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition.

These activities constituted five quarterly fire protection inspection samples as defined by IP 71111.05-05.

b. Findings

No findings of significance were identified.

.2 Annual Fire Drill Observation (71111.05A)

a. Inspection Scope

On June 18, 2008, the inspectors observed the fire brigade respond to a simulated fire in the Instrumentation and Control Annex located on the 735 foot elevation of the turbine building. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient firefighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) utilization of pre planned strategies; (8) adherence to the pre planned drill scenario; and (9) drill objectives. The inspectors also attended the licensee's critique to verify that the licensee's staff identified deficiencies, openly discussed the deficiencies in a self-critical manner, and took appropriate corrective actions.

These activities constituted one annual fire drill inspection sample as defined by IP 71111.05-05.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On May 13, 2008, the inspectors observed a crew of licensed operators in the simulator during requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance items, and that training was being conducted in accordance with procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;

- oversight and direction from supervisors; and
- identification and implementation of appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements.

This inspection constituted one quarterly licensed operator requalification program sample as defined in IP 71111.11.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

The inspectors evaluated performance issues involving the following risk significant systems:

- Safety Injection System with emphasis on the performance of Check Valve SI-9-5;
- Auxiliary Feedwater System with emphasis on the 11 turbine-driven auxiliary feedwater pump;
- Circulating Water System; and
- Screenhouse Ventilation System.

The inspectors reviewed events where ineffective maintenance had resulted in functional failures and independently verified the licensee's actions to address system performance in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b);
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components/functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors also verified maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Documents reviewed were listed in the Attachment.

This inspection constituted four quarterly maintenance effectiveness samples as defined in IP 71111.12-05.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's risk evaluation for the maintenance and emergent work activities listed below to verify that risk assessments were performed and that risk was managed prior to removing equipment from service:

- Work Week 0813 including planned maintenance on the 12 diesel-driven cooling water pump; the 11 safeguards exhaust fan, the 13 charging pump and the 23 charging pump;
- Work Week 0814 including planned maintenance on the D6 emergency diesel generator and the 23 charging pump;
- Work Week 0817 including planned maintenance on the 123 instrument air compressor, Cooling Water Valve 95-1, the 23 charging pump and the D1 emergency diesel generator;
- Work Week 0819 including planned maintenance on the 124 service air compressor, the 122 control room chiller, the 121 instrument air compressor, the 13 charging pump and routine testing of the 12 containment spray pump and the D2 emergency diesel generator;
- Work Week 0821 including planned maintenance on the 124 service air compressor and the 13 charging pump and routine testing of the D1 emergency diesel generator;
- Emergent maintenance on the 121 control room chiller;
- Work Week 0824 including planned maintenance on the 121 and 124 air compressors, the 11 cooling water pump and the 21 charging pump; and
- Work Week 0825 including emergent maintenance on the Red Rock #1 offsite power line, planned maintenance on the 124 air compressor, the 12 charging pump, the 21 reactor makeup pump, and the 22 charging pump, and routine testing on the D1 emergency diesel generator and the 11 containment spray pump.

These activities were selected based on their potential risk significance relative to the reactor safety cornerstones. The inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the shift supervisor or shift manager, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

Documents reviewed were listed in the Attachment.

These activities constituted eight samples as defined by IP 71111.13-05.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- Unit 1 reactor coolant pump seals have greater than 2.3 gallons per minute (gpm) leakoff flow;
- undocumented modification discovered on 22 steam generator main steam isolation valve CV-31117-22;
- loss of coolant accident (LOCA) analysis deficiencies;
- potential blockage within the 21 component cooling water heat exchanger;
- loss of cooling to the 12 and 22 residual heat removal (RHR) pits; and
- operability of the 11 turbine-driven auxiliary feedwater pump prior to the discovery of high outboard bearing temperatures.

The inspectors selected these potential operability issues for review based on the risk-significance of the associated components and systems. When operability determinations and evaluations were performed, the inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria specified in various design and licensing basis documents to the licensee's evaluations to determine whether the components or systems were operable. During the review of the 11 turbine-driven auxiliary feedwater pump issue, the inspectors reviewed previous surveillance testing results and CAPs to determine whether the pump had been inoperable for a time period longer than considered by the licensee. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors also reviewed a sampling of CAPs to verify that the licensee was identifying and correcting deficiencies associated with operability evaluations. Documents reviewed were listed in the Attachment.

This inspection constituted six samples as defined in IP 71111.15-05

b. Findings

Introduction: One unresolved item (URI) was identified regarding the 11 turbine-driven auxiliary feedwater (TDAFW) pump being potentially inoperable from March 15 through March 24, 2008. As a result, this item remained unresolved pending the inspector's evaluation of whether the high bearing temperature condition experienced by the 11 TDAFW in March of 2008 caused the pump to be inoperable.

Description: On March 23, 2008, the licensee tested the auxiliary feedwater system using Surveillance Procedure (SP) 1103, “11 Turbine-Driven Auxiliary Feedwater Pump Once Every Refueling Shutdown Flow Test.” During the test, the 11 TDAFW pump was secured due to the turbine outboard bearing temperature reaching 220 degrees Fahrenheit (^{o}F). Operations personnel declared the 11 TDAFW pump inoperable. The licensee conducted troubleshooting efforts and determined that the high bearing temperature was due to improper installation of the turbine insulation following maintenance. The licensee properly re-installed the insulation and the pump was restored to an operable status on March 24, 2008.

The inspectors reviewed the Unit 1 operator logs and the results of multiple auxiliary feedwater system tests conducted between March 16 and March 23, 2008, to determine whether the licensee had a prior opportunity to identify the outboard bearing temperature issue. This review included an assessment of turbine outboard bearing temperature trends captured by the Emergency Response Computer System (ERCS) system. The inspectors ascertained that on March 16, 2008, operations personnel performed the following tests concurrently:

- SP 1102 – 11 Turbine-Driven Auxiliary Feedwater Pump Monthly Test;
- SP 1330 – 11 Turbine-Driven Auxiliary Feedwater Turbine/Pump Bearing Temperature Test; and
- SP 1376 – Auxiliary Feedwater Flow Path Verification Test After Each Cold Shutdown.

Operations personnel began the series of tests by performing SP 1102. This test was performed with the 11 TDAFW pump operating and supplying approximately 35 gpm of water to the steam generators. Once this condition was established, the operators transitioned into SP 1376 which required that the 11 TDAFW pump supply 70 gpm of water to the steam generators for approximately 20 minutes. The inspectors performed a detailed review of the turbine outboard bearing temperature data provided by ERCS and identified that the bearing temperature reached approximately 216^{o}F and was continuing to increase when the 20 minutes had elapsed. Operations personnel considered the results of SP 1376 satisfactory even though the bearing temperature was within 4 degrees of the vendor specified limit. Operations personnel then reduced the 11 TDAFW pump flow rate to establish the conditions needed to perform SP 1330. The reduction in feedwater pump flow resulted in a corresponding reduction in bearing temperature.

The inspectors reviewed SP 1330 and found that the procedure could be considered satisfactory when three successive turbine outboard bearing temperature readings taken ten minutes apart varied by less than 3 degrees. The inspectors reviewed the ERCS data attached to SP 1330 and found that the operators concluded that the 11 TDAFW pump outboard bearing temperature was stabilized at 211^{o}F. The inspectors questioned this conclusion because the outboard bearing temperature recorded during SP 1376 was approximately 5 degrees higher. The operators also initiated CAP 1131305 to document that the outboard bearing temperature exceeded the alert limit of 203^{o}F. However, no further actions were taken to address or evaluate whether the 11 TDAFW pump outboard bearing temperature would remain less than 220^{o}F during post-accident conditions.

The inspectors sampled the licensee's corrective action system to determine whether any previous bearing issues had occurred due to the improper installation of insulation following maintenance. The inspectors found that the 11 TDAFW pump outboard turbine bearing failed during the performance of SP 1103 on June 6, 2006. The licensee determined that the bearing failed due to improper bearing installation during maintenance. However, improper insulation installation following maintenance contributed to the increased bearing temperatures. Corrective actions for this event consisted of replacing the bearing, installing the insulation correctly, and providing additional oversight of maintenance activities conducted on the 22 TDAFW pump in 2007. The inspectors questioned engineering and maintenance personnel to determine if written procedural guidance regarding the installation of the turbine insulation following maintenance had been provided to the insulators. The inspectors were informed that written procedural guidance had not been provided because insulation installation was considered to be a skill of the craft activity.

At the conclusion of the inspection period, based upon the information known to date, the inspectors have not concluded whether the high temperatures experienced by the 11 TDAFW bearings caused the pump to be inoperable. As a result, the inspectors were unable to fully evaluate this issue for potential performance deficiencies and safety significance. Therefore, this issue was considered an unresolved item **(URI 05000282/2008003-01)** pending further review by the inspectors. The inspectors needed to evaluate how the operability of the 11 TDAFW was impacted by: (1) opportunities for the licensee to have identified the high bearing temperatures during the testing completed March 16 though 23, 2008, and (2) the timeliness and adequacy of corrective actions taken for past issues related to the improper installation of the TDAFW insulation following maintenance, specifically, whether or not the insulation installation was skill of the craft.

1R18 Plant Modifications (71111.18)

.1 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the following temporary modification:

- Engineering Change (EC) 12617 – Temporary air compressor for the service air system.

The inspectors compared the temporary configuration change and associated 10 CFR 50.59 screening and evaluation information against the design basis, the USAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of the affected system. The inspectors also compared the licensee's information to operating experience information to ensure that lessons learned from other utilities had been incorporated into the licensee's decision to implement the temporary modification. The inspectors performed field verifications to ensure that the modification was installed as directed; the modification operated as expected; modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modification did not impact the operability of any interfacing system.

Documents reviewed were listed in the Attachment.

This inspection constituted one temporary modification sample as defined in IP 71111.18-05.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

.1 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following post-maintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability of the following systems or components:

- 12 diesel-driven cooling water pump;
- D6 emergency diesel generator;
- Technical Support Center ventilation;
- D1 emergency diesel generator;
- 122 control room chiller; and
- 21 containment spray pump.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities to ensure the following: the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; tests were performed as written and in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing; and test documentation was properly evaluated. The inspectors evaluated the testing activities against TS, the USAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed CAPs associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the corrective action program and that the problems were being corrected commensurate with their importance to safety. Documents reviewed were listed in the Attachment.

This inspection constituted six samples as defined in IP 71111.19-05.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 Routine Surveillance Testing

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- D2 Emergency Diesel Generator Monthly Slow Start;
- D5 Emergency Diesel Generator Monthly Slow Start;
- D1 Emergency Diesel Generator Monthly Slow Start;
- 22 Turbine-Driven Auxiliary Feedwater Pump Monthly Test; and
- 12 Diesel-Driven Cooling Water Pump Monthly Test.

The inspectors observed in-plant activities and reviewed procedures and associated records to determine whether any preconditioning occurred prior to the testing; acceptance criteria were clearly stated within the test procedure; test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied; test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used; test data and results were accurate, complete, within limits, and valid; test equipment was removed after testing. Documents reviewed were listed in the Attachment.

This inspection constituted five routine surveillance testing samples as defined in IP 71111.22, sections -02 and -05.

b. Findings

No findings of significance were identified.

.2 Inservice Testing Surveillance

a. Inspection Scope

The inspectors reviewed the test results for the following activity to determine whether the risk-significant system was capable of performing its intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- Train A RHR Pump and Suction Valve from the Refueling Water Storage Tank Quarterly Test.

The inspectors observed activities and reviewed procedures and associated records to determine whether: any preconditioning occurred; effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing; acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis; measuring and test equipment calibration was current; test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied; test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; test data and results were accurate, complete, within limits, and valid; reference values were consistent with the system design basis; equipment was returned to a position or status required to support the performance of its safety function; and all problems identified during the testing were appropriately documented and dispositioned in the corrective action program. Documents reviewed were listed in the Attachment.

This inspection constituted one inservice inspection sample as defined in IP 71111.22-05.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

2PS3 Radiological Environmental Monitoring Program and Radioactive Material Control Program (71122.03)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the most current Annual Environmental Monitoring Report and licensee assessment results to verify that the Radiological Environmental Monitoring Program (REMP) was implemented as required by TS and the Offsite Dose Calculation Manual (ODCM). The inspectors reviewed the report for changes to the ODCM with respect to environmental monitoring commitments, in terms of sampling locations, monitoring and measurement frequencies, land use census, inter-laboratory comparison program, and analysis of data. The inspectors reviewed the ODCM to identify environmental monitoring stations and reviewed licensee self-assessments, audits, licensee event reports, and inter-laboratory comparison program results. The inspectors reviewed the USAR for information regarding the environmental monitoring program and meteorological monitoring instrumentation. The inspectors reviewed the scope of the licensee’s audit program to verify that it met the requirements of 10 CFR 20.1101(c).

Documents reviewed were listed in the Attachment.

This inspection constituted one sample as defined in IP 71122.03-5.

b. Findings

No findings of significance were identified.

.2 Onsite Inspection

a. Inspection Scope

The inspectors walked-down greater than 30 percent of the air sampling stations and greater than 10 percent of the thermoluminescence dosimeter (TLD) monitoring stations to determine whether they are located as described in the ODCM and to determine the equipment material condition.

This inspection constituted one required sample as defined in IP 71122.03-5.

The inspectors observed the collection and preparation of a variety of environmental samples (e.g., water and milk) and verified that environmental sampling was representative of the release pathways (as specified in the ODCM) and that sampling techniques were in accordance with procedures.

This inspection constituted one required sample as defined in IP 71122.03-5.

The inspectors verified that the meteorological instruments were operable, calibrated, and maintained in accordance with guidance contained in the USAR, NRC Safety Guide 23, and licensee procedures. The inspectors verified that the meteorological data readout and recording instruments in the control room and at the tower were operable. The inspectors compared readout data (i.e., wind speed, wind direction, and delta temperature) in the control room and at the meteorological tower to identify if there were any line loss differences.

This inspection constituted one required sample as defined in IP 71122.03-5.

The inspectors reviewed each event documented in the Annual Environmental Monitoring Report which involved a missed sample, inoperable sampler, lost TLD, or anomalous measurement for the cause and corrective actions. The inspectors also conducted a review of the licensee’s assessment of any positive sample results (i.e., licensed radioactive material detected above the lower limits of detection and established background levels). The inspectors reviewed the associated radioactive effluent release data that was the likely source of the released material.

This inspection constituted one required sample as defined in IP 71122.03-5.

The inspectors reviewed significant changes made by the licensee to the ODCM as the result of changes to the land census or sampler station modifications since the last inspection. The inspectors reviewed technical justifications for changed sampling locations, as applicable. The inspectors verified that the licensee performed the reviews required to ensure that the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment.

This inspection constituted one required sample as defined in IP 71122.03-5.

The inspectors reviewed the calibration and maintenance records for air samplers and composite water samplers, as applicable. The inspectors reviewed calibration records for the environmental sample radiation measurement instrumentation (i.e., count room). The inspectors verified that the appropriate detection sensitivities with respect to

TS/ODCM were utilized for counting samples (i.e., the samples met the TS/ODCM required lower limits of detection). The inspectors reviewed quality control charts for maintaining radiation measurement instrument status and actions taken for degrading detector performance.

The inspectors reviewed the results of the REMP sample vendor's quality control program including the inter-laboratory comparison program to verify the adequacy of the vendor's program and the corrective actions for any identified deficiencies. The inspectors reviewed audits and technical evaluations that the licensee performed on the vendor's program. The inspectors reviewed quality assurance audit results of the program to determine whether the licensee met the TS/ODCM requirements.

This inspection constituted six required samples as defined in IP 71122.03-5.

b. Findings

No findings of significance were identified.

.3 Unrestricted Release of Material from the Radiologically Controlled Area

a. Inspection Scope

The inspectors observed several locations where the licensee monitored potentially contaminated material leaving the radiologically controlled area and inspected the methods used for control, survey, and release from these areas. The inspectors observed the performance of personnel surveying and releasing material for unrestricted use to verify that the work was performed in accordance with plant procedures.

This inspection constituted two required samples as defined in IP 71122.03-5.

The inspectors verified that the radiation monitoring instrumentation was appropriate for the radiation types present and was calibrated with appropriate radiation sources. The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material and verified that there was guidance on how to respond to an alarm which indicated the presence of licensed radioactive material. The inspectors reviewed the licensee's equipment to ensure the radiation detection sensitivities were consistent with the NRC guidance contained in IE Circular 81-07 and IE Information Notice 85-92 for surface contamination and HPPOS-221 for volumetrically contaminated material. The inspectors verified that the licensee performed radiation surveys to detect radionuclides that decay via electron capture. The inspectors reviewed the licensee's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters (i.e., counting times and background radiation levels). The inspectors verified that the licensee had not established a "release limit" by altering the instrument's typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high radiation background area.

This inspection constituted one sample as defined in IP 71122.03-5.

b. Findings

No findings of significance were identified.

.4 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed the licensee's self assessments, audits, Licensee Event Reports, and Special Reports related to the radiological environmental monitoring program since the last inspection to determine if identified problems were entered into the corrective action program for resolution. The inspectors also verified that the licensee's self-assessment program was capable of identifying repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

The inspectors also reviewed corrective action reports from the REMP since the previous inspection, interviewed staff and reviewed documents to determine if the following activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of effective corrective actions;
- Resolution of NCVs tracked in the corrective action system; and
- Implementation/consideration of risk significant operational experience feedback.

This inspection constituted one required sample as defined in IP 71122.03-5.

a. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151-05)

.1 Safety System Functional Failures

a. Inspection Scope

The inspectors sampled licensee submittals for the Safety System Functional Failures performance indicator (PI) for Units 1 and 2 for the period from the second quarter of 2007 through the first quarter of 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73," definitions and guidance were used. The inspectors reviewed the licensee's operator narrative logs, operability assessments, corrective action reports, event reports and NRC Integrated Inspection reports for the time period discussed above to validate the accuracy of the submittals. The inspectors also reviewed the licensee's corrective action database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. Specific documents reviewed were listed in the Attachment to this report.

This inspection constituted two safety system functional failure samples as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.2 Reactor Coolant System Leakage

a. Inspection Scope

The inspectors sampled licensee submittals for the Reactor Coolant System Leakage PI for Units 1 and 2 for the period from the second quarter of 2007 through the second quarter of 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator logs, reactor coolant system leakage tracking data, and CAPs for the time period discussed to validate the accuracy of the submittals. The inspectors also reviewed the licensee's corrective action database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. Specific documents reviewed were listed in the Attachment to this report.

This inspection constituted two reactor coolant system leakage samples as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.3 Public Radiation Safety

a. Inspection Scope

The inspectors sampled licensee submittals for the Public Radiation Safety performance indicator for the period from the second quarter 2007 through the first quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's effluent samples, TS requirements, issue reports, event reports and NRC Integrated Inspection reports to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Specific documents reviewed were described in the Attachment to this report.

This inspection constituted one public radiation safety sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.1 Routine Review of Items Entered Into the Corrective Action Program

a. Scope

As part of the baseline IPs discussed in previous sections of this report, the inspectors routinely reviewed issues during their inspection activities, plant status reviews and during their daily review of the licensee's CAPs. These reviews were performed to verify that issues were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: the complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrence reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, they were considered an integral part of the inspections performed during the quarter.

b. Findings

See Section 4OA2.2 and 4OA2.3 for additional details.

.2 Selected Issue Follow-Up Inspection: Equipment Related Bolting Deficiencies

a. Inspection Scope

On April 14, 2008, the inspectors walked down the D2 emergency diesel generator and identified that two air cooler flange bolts were loose and one was missing. Over the next two weeks, the inspectors identified other emergency diesel generator bolting issues and a through-wall air cooler piping crack. Although the licensee corrected the specific bolting issues identified by the inspectors, actions to address the extent of condition and potential generic implications were not taken until the inspectors identified two through-wall cracks on an emergency diesel generator air supply line. Due to the number of inspector identified bolting issues discovered during the inspection period, the inspectors selected the licensee's resolution of these issues for review as an in-depth problem identification and resolution sample.

This review constituted one in depth Problem Identification and Resolution sample as defined in IP 71152-05.

b. Observations

On April 19, 2008, the licensee implemented Work Order 358690 to correct the D2 bolting issues identified previously. As part of this work, the licensee identified that the bolting was loose on the same air cooler located on the D1 emergency diesel generator. The licensee initiated CAP 1135001 to document this condition. Operations reviewed this condition and determined that the loose bolting did not impact D1 operability. Corrective actions for this issue included replacing one bolt and tightening the remaining thirteen flange bolts. No other actions were taken to evaluate the existence of additional loose bolting on the emergency diesel generators or other safety-related equipment.

On April 22, 2008, the licensee identified loose or missing screws on the Unit 1 and 2 neutron flux monitor displays. The licensee initiated CAP 1135305 to document this condition. Also, Work Requests 34893 and 34895 were issued to address the issue of the unsecured displays on Unit 1 and 2, respectively. The inspectors reviewed the CAP and identified that the licensee had not evaluated the continued operability of the monitors during a seismic event. The inspectors discussed this issue with operations personnel. Following these discussions, the operators performed a prompt operability assessment and concluded that the missing or loose screws did not affect the operation of the monitors. The inspectors reviewed the prompt operability assessment and considered it to be appropriate.

During observation of D1 emergency diesel generator surveillance testing on April 28, 2008, the inspectors identified a loose bolt on a different air cooler flange located approximately eight feet from the flange where corrective maintenance had been performed 13 days earlier. Further investigation revealed another flange on the air cooler also had a missing bolt. The licensee documented these conditions in CAP 1135922. Operations personnel reviewed the CAP and determined that D1 remained operable because the flange was not leaking. Although this was the third time the inspectors had identified a bolting issue associated with the emergency diesel generators, immediate actions were not taken to inspect other equipment. The licensee initiated work requests to install new bolts and check the tightness of the remaining D1 and D2 bolts. A subsequent walkdown of the emergency diesel generators identified twelve D1 bolting deficiencies, eight D2 bolting deficiencies, and six D1/D2 fuel oil system bolting deficiencies. The licensee conducted a condition evaluation to determine the cause of the loose bolting. The licensee concluded that a considerable amount of bolting on the diesel generators and their associated components did not have “grade identification” markings. As a result, the licensee recommended that this type of bolting be replaced each time it was removed. The inspectors considered the licensee’s actions in this case to be improved. However, the licensee still failed to recognize the need to review bolting practices on other equipment important to safety.

On May 1, 2008, the licensee checked the tightness of multiple D1 emergency diesel generator bolts in accordance with Work Request 35033. The licensee found that several bolts and nuts needed replacement due to the condition of the bolting. Specifically, one bolt required replacement when it broke and several were found to have no identifiable markings to verify the type and grade. Operations performed a prompt operability assessment and concluded the degraded bolting did not impact the ability of the D1 emergency diesel generator to perform its safety function. The inspectors reviewed the prompt operability assessment and considered it to be appropriate.

That same day, the inspectors performed a routine inspection of the D2 emergency diesel generator and identified cracks in the air intake pipe near two support welds. The inspectors informed the control room of this condition. The licensee conducted non-destructive testing on the cracks and determined that both cracks were through-wall. Operations performed an additional prompt operability assessment and concluded the cracks did not impact the ability of the D2 emergency diesel generator to perform its safety function. Subsequently, a formal operability recommendation was completed and concluded that the D2 emergency diesel generator was operable but degraded until the cracks were repaired. The licensee initiated Work Request 35099 to repair the cracks in December 2009. The licensee also established compensatory measures to monitor crack growth after each monthly emergency diesel generator run until the repairs were completed. Following the inspectors discovery of the cracks, the licensee initiated actions to inspect multiple pieces of equipment important to safety in an effort to identify other bolting issues. This action was also considered an improvement by the inspectors; however, 32 emergency diesel generator bolting concerns were identified prior to the licensee performing an extent of condition review.

Between May 2 and 4, 2008, the licensee conducted their bolting extent of condition review. The results of this review were as follows:

- three loose bolts were identified on the D1 emergency diesel generator jacket coolant upper cooler flange and another loose bolt was identified on a bracket;
- a stripped bolt was identified on a 12 diesel-driven cooling water pump mounting bracket;
- a missing bolt was identified on a 22 diesel-driven cooling water pump mounting bracket;
- all four retaining screws on the D5 emergency diesel generator engine 1 pressure switch connection were loose;

- five minor equipment issues were identified on the 22 auxiliary feedwater pump;
- four material condition issues were identified on each of the three remaining auxiliary feedwater pumps;
- four issues were identified on the D6 emergency diesel generator;
- three issues were identified on the D5 emergency diesel generator;
- three minor equipment issues were identified on the 11 cooling water backwash strainer motor; and
- two issues were identified on the 21 cooling water backwash strainer motor.

In general, the issues related to thread engagement, lack of drainage line or channel mounting, and loose swivel connections. The licensee initiated CAP 1136634 to document these conditions. Five separate CAPs were initiated to specifically address seismic concerns due to equipment mounting issues. Operations performed a prompt operability assessment of each of these issues and concluded there was no operability impact. The high number of CAPs initiated during this effort indicated that improvement in the ability to identify equipment issues during routine operator rounds and system engineering walkdowns needed improvement. Corrective actions for this issue included tightening the loose bolting, developing and implementing a formal system engineering walkdown schedule, documentation of the walkdown results in the System Health Report, the implementation of focused walkdowns within the operations department during the routine rounds, and performing informal benchmarking against industry standards. The inspectors considered these corrective actions to be an improvement. However on May 15, 2008, Nuclear Oversight Department personnel identified that workers failed to use the Procedure D63, "Installation Guidelines for Threaded Fasteners," when tightening several of the bolts listed above. This licensee-identified NCV is discussed in Section 4OA7 of this report.

The licensee initiated CAP 1136726 to document the adverse trend on loose fasteners in the plant. The licensee performed a cause evaluation for this issue and determined that the fasteners were loosening due to vibration, gasket relaxation, and worker practices. To resolve this issue, the licensee planned to provide additional training on bolting practices. Although multiple deficiencies were identified during this review, no violations of NRC requirements were identified. This conclusion was based upon the fact that the licensee corrected each specific deficiency in a timely manner and because none of the deficiencies adversely impacted equipment operability.

.3 Semi-Annual Trend Review

a. Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily screening discussed in Sections 4OA2.1, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the six month period of January 2008 through June 2008, although some examples expanded beyond those dates where the scope of the trend warranted.

This review also included issues documented in major equipment problem lists, repetitive maintenance lists, system health reports, quality assurance audit/surveillance reports, and self assessment reports.

This review constituted a single semi-annual trend inspection sample as defined in IP 71152-05.

b. Observations

Over the last six months, the inspectors have identified an adverse trend in the licensee's ability to promptly and/or thoroughly evaluate problems due to the acceptance of low equipment performance and personnel performance standards. The specific examples are as follows:

- In February 2008 the inspectors identified concerns regarding the functionality of the Technical Support Center ventilation system. These concerns were discussed multiple times with the licensee's staff and documented in NRC Inspection Report 05000282/2008002; 05000306/2008002. Following these discussions, the licensee's staff conducted an evaluation of the issue and inappropriately determined that the ventilation system remained fully functional. The inspectors determined that the licensee's evaluation was faulty because they failed to fully understand all of the ventilation system's functions. The inspectors met with the licensee's staff to fully explain the three functions provided by the ventilation system. In addition, the inspectors used actual plant test data to prove that the ventilation system was unable to prevent the introduction of potentially contaminated outside air into the Technical Support Center following a radiological release. Following these discussions, the licensee fully recognized the degraded state of the Technical Support Center ventilation system. Since that time, the licensee has performed multiple maintenance activities to ensure that the Technical Support Center ventilation system was restored to a fully functional condition.

- While observing surveillance testing on the D5 emergency diesel generator on February 28, 2008, the inspectors identified multiple examples where the fuel pump supply/return lines were rubbing on the injection covers. This rubbing was resulting in slight wear and degradation of the lines. Although the rubbing did not result in D5 being inoperable, the inspectors informed operations personnel of the rubbing conditions. Operations personnel communicated this information to the engineering staff. Engineering personnel inspected the D5 emergency diesel generator and documented all of the areas where rubbing was occurring in CAP 1129043. Later the same day, the inspectors performed an inspection of the D6 emergency diesel generator. The inspectors determined that the rubbing condition also existed on D6 and was of a greater magnitude. This information was shared with senior licensee management during a meeting on the afternoon of February 28. The following day, the inspectors reviewed CAP 1129043 to determine the actions the licensee planned to take to evaluate and address this NRC identified condition. The inspectors found that the CAP was closed to a work request that requested that the distance between the injection covers and the supply lines on D5 be increased. No other actions were initiated to evaluate the condition of the D6 diesel generator. After additional NRC prompting on multiple occasions, the licensee generated CAP 1130614 to document the D6 fuel line rubbing condition on March 10, 2008. The licensee determined that the fuel line rubbing did not adversely impact the operability of the D6 emergency diesel generator. The licensee planned to correct the condition in the future.

- In March 2008 Safety Injection Check Valve SI-9-5 failed its leakage test. The inspectors conducted their routine plant status activities and determined that the licensee had unsuccessfully re-tested the check valve seven additional times as part of their troubleshooting efforts (see Section 1R22 of NRC Inspection Report 05000282/2008002; 05000306/2008002 and Section 4OA5.3 of this report for additional details). The inspectors reviewed the details associated with each of the re-test efforts. The inspectors determined that the licensee failed to thoroughly evaluate the possible conditions that may have led to the valve's test failure. Instead, the licensee inappropriately raised reactor pressure and tapped on the valve with a hammer to aid in closing the valve. The licensee viewed these actions as acceptable because they had been used to resolve previous testing issues with SI-9-5. Significant NRC involvement was needed to ensure that the licensee recognized that the actions discussed above unacceptably preconditioned the check valve prior to testing. In addition, the licensee failed to recognize that their actions also constituted a change in the valve's test methodology that needed to be evaluated using the operability determination program. Following these discussions, the licensee accepted that the actions discussed above constituted unacceptable preconditioning, that an operability evaluation was needed to evaluate the change in test methodology, and that an item needed to be placed in the Unit 1 forced outage list so that SI-9-5 was tested if Unit 1 was shut down prior to the next scheduled refueling outage. Following the discussions with the NRC, the licensee returned the valve to an operable status.

- As discussed in Section 1R15 of this report, the licensee discovered that the 11 TDAFW pump was inoperable during testing performed on March 23, 2008. The licensee evaluated this condition and determined that the pump had become inoperable due to inadequate re-installation of the turbine insulation following maintenance (a repeat issue). The inspectors reviewed the licensee's evaluation and subsequent actions and identified several weaknesses. These weaknesses included: the failure to identify why the insulation was not installed correctly, the failure to determine why previous corrective actions failed to prevent recurrence of this issue, and the failure to identify that a prior opportunity existed to identify that the 11 TDAFW pump was inoperable approximately seven days earlier. The licensee was conducting an additional review of the inspector identified weaknesses at the conclusion of the inspection period.

- On April 2, 2008, the inspectors observed two non-licensed operators perform a return to service test on the 12 diesel-driven cooling water pump. During the test, the inspectors identified a fuel oil leak on one of the engine cylinders. The inspectors notified the non-licensed operators of the leak. The inspectors pointed out that the leak was spraying on various diesel components and atomizing into the air. Following these discussions, the inspectors expected the operators to communicate this information to the control room and to shut down the cooling water pump to prevent further fuel oil spraying and minimize the potential for a fire. This was not done. Instead, the operators continued to let the pump run because they believed the leak would stop as the engine heated up.

The operators also failed to notify the control room of the leak. The pump was subsequently shut down after a maintenance supervisor saw the leak and communicated the presence of the leak to the control room.

The licensee conducted a review of this issue. The inspectors evaluated the licensee's results and determined that the licensee had not thoroughly reviewed this issue due to being narrowly focused. Specifically, the licensee handled this situation as an isolated human performance issue. As a result, the licensee's evaluation failed to identify and address issues regarding the potential for equipment damage and personnel injury due to the fuel oil igniting. The inspectors discussed this weakness with operations management. Following this discussion, operations management documented this issue as a human performance department clock reset which focused on the potential for equipment damage and personnel injury issues. The inspectors reviewed the department clock reset summary and had no further questions. No violations of NRC requirements were noted.

- On April 14, 2008, the inspectors observed surveillance testing of the D2 emergency diesel generator. During this observation, the inspectors identified two loose bolts and one missing bolt on an air cooler flange. The inspectors notified the operator in the diesel room of the loose bolts. The operator communicated this information to the control room and the system engineer. Following these discussions, mechanical maintenance personnel reported to the diesel room and concluded that it was safe to continue operation of the diesel with the loose and missing bolts. After the diesel test, the two bolts were tightened and the missing bolt was replaced. While this corrected the specific condition identified by the inspectors, no actions were taken to inspect the remaining D2 or the D1 emergency diesel generators for the presence of additional loose bolting.

On April 18 the licensee identified that bolting was loose on the D1 emergency diesel generator air cooler. The location of the loose bolting was in the exact location as the loose bolting identified by the NRC four days previously. Although the licensee was now aware of two examples of loose bolting on two of the four emergency diesel generators, no actions were taken to assess the overall bolting condition of the generators or other safety related equipment. Ten days later, the inspectors performed an inspection of the D1 emergency diesel generator room. The inspectors identified a loose bolt approximately eight feet away from the bolt that was found to be loose on April 14. In response to this example, the licensee checked the tightness of the remaining D1 air supply ductwork bolting and inspected the similar D2 bolting. No other inspections or evaluations were performed.

On May 1, 2008, the inspectors performed a routine inspection of the D2 emergency diesel generator and identified cracks in the air intake pipe. The licensee conducted non-destructive testing on the cracks and determined that the cracks were all the way through the pipe. The cracks did not impact the ability of the emergency diesel generator to perform its safety function. Following the identification of this issue, the licensee conducted a full extent of condition review regarding the condition of the emergency diesel generators and several other pieces of safety related equipment. Multiple examples of loose or missing bolting and minor material condition issues were identified. None of the issues found impacted equipment operability. In response to this issue, the licensee was developing plans to improve the identification of equipment issues through the performance of routine operator rounds and system walkdowns. Throughout the remainder of the inspection period, the inspectors noted a marked increase in the number of CAPs initiated to document equipment related deficiencies. Although none of the issues identified, not the cumulative effect of the issue, caused the diesel to become inoperable, the inspectors considered the need to identify multiple material condition examples prior to the licensee taking action to be a weakness in the licensee's overall ability to thoroughly evaluate problems.

The regulatory aspects of the applicable issues discussed in this section were addressed in the locations noted and no other violations of NRC requirements were identified. The licensee initiated CAP 1141755 to document the weaknesses and the adverse trend discussed above. The licensee planned to implement additional corrective actions following the completion of a root cause evaluation on this issue.

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

.1 (Closed) Licensee Event Report (LER) 05000282/2007-005-01; 05000306/2007-005-01: One Train of Safeguards Chilled Water System Inoperable Longer than Allowed by TSs

This issue was initially discussed in Inspection Report 05000282/2008002; 05000306/2008002, Section 4OA3.3, and was dispositioned as a licensee-identified finding of very low safety significance (Green) and a Non-Cited Violation (NCV). This LER was a supplement to the original LER. This supplement added information regarding the licensee's root cause and associated corrective actions. The inspectors had no new questions related to this issue. This LER is closed.

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

.2 (Closed) LER 05000306/2007-002-01: Emergency Diesel Generator Inoperable Longer than Allowed by TSs Due to Loose Switch

This issue was initially discussed in Inspection Report 05000282/2007005; 05000306/2007005, Section 4OA3.3, and was dispositioned as a licensee-identified finding of very low safety significance (Green) and an NCV. This LER was a supplement to the original LER. This supplement added information regarding the licensee's final cause evaluation and the proposed corrective actions. The inspectors had no new questions related to this issue. This LER is closed.

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

.3 (Closed) LER 05000282/2008-001-00: One Train of Auxiliary Feedwater System Inoperable Longer than Allowed by TSs

This event was discussed in Section 1R15 of this inspection report and dispositioned as a URI due to its potential safety significance. The inspectors reviewed the LER and determined that no new information had been provided. This LER is closed.

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

4OA5 Other Activities

.1 (Closed) NRC Temporary Instruction 2515/166: Pressurized Water Reactor Containment Sump Blockage (NRC Generic Letter 2004-02); Units 1 and 2

a. Inspection Scope

The inspectors reviewed the licensee's implementation of commitments documented in their August 31, 2005 (ML052440054), February 28, 2008 (ML080590629), and March 31, 2008 (ML080920532), responses to Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized Water Reactors." The inspectors reviewed the Engineering Change Package associated with the sump strainer modifications and the 10 CFR 50.59 screenings for the engineering change. The inspectors also reviewed documentation from the licensee and vendor pertaining to the strainer assembly specifications.

The NRC conducted an audit of the corrective actions to address GL 2004-02 at Prairie Island and issued a letter (ML071370498) dated May 18, 2007, summarizing the results. During that audit the NRC identified several open items that the licensee would need to resolve as part of their corrective actions to address GL 2004-02. The licensee submitted their proposed resolution to the open items in their February 28, 2008, and March 31, 2008, letters. The open items and the licensee's responses to the items are listed in the following section.

The documents reviewed were listed in the Attachment to this report. The inspection was conducted in accordance with Temporary Instruction (TI) 2515/166, "Pressurized Water Reactor Containment Sump Blockage."

b. Inspection Documentation

The inspectors determined the following answers to the Reporting Requirements detailed in the TI:

1. Did the licensee implement the plant modifications and procedure changes committed to in their GL 2004-02 responses?

    - Commitment: Evaluate and modify as appropriate the Emergency Core Cooling Systems (ECCS).

      The licensee installed the Unit 1 Sure-Flow strainer during a refueling outage (1R24) in the spring of 2006. The installation was previously reviewed by the resident inspectors and documented in Inspection Report (IR) 05000282/2006003. The Unit 2 Sure-Flow strainer was installed during a refueling outage (2R24) in the fall of 2006. This installation was previously reviewed by the resident inspectors and documented in IR 05000306/2006005. The modifications were performed under Engineering Change 0378 (04RH04), "Containment Sump B Screen Replacement (GL 2004-02)." In addition, the licensee performed a detailed structural analysis of the sump strainers (PCI-5343-S01, "Structural Evaluation of Containment Sump Strainers").

- Commitment: Perform evaluation of downstream effects.

  The licensee evaluated downstream effects in Calculations ENG-ME-654, "Evaluation of Downstream Effects – ECCS," and ENG-ME-653, "Evaluation of Downstream Effects – Reactor Vessel Internals and Nuclear Fuel."

- Commitment: Submit a license amendment request to change the TS Surveillance Requirement 3.5.2.8 to reflect the new design.

  The licensee submitted the license amendment to the NRC on December 14, 2006 (ML063480462).

- Commitment: Perform measurements to estimate the amount of latent dirt and dust inside containment.

  The licensee measured the amount of latent debris in Calculation ENG-ME-625, "Unit 2 Containment Walkdown Results for GSI [Generic Safety Issue]-191." The licensee also developed additional procedures and a calculation to monitor the amount of latent debris inside of containment. The licensee established Procedure H56, "GSI-191 Debris Monitoring Program," and a Periodic Test Procedure TP 1420, "Containment Debris Inventory," to monitor the debris inside of containment. The licensee also calculated the allowable amount of latent debris inside of containment in Calculation ENG-ME-692, "Determination of Allowable Latent Debris Inside Containment."

- Commitment: Develop and administer training on sump clogging.

  The licensee developed and administered several training courses on sump clogging issues. Training Course P9104L-01-01, "NRC Bulletin 2003-01 and F3-17.2 Cycle 04-01," was given to the operators during re-qualification cycle 04-01. Specific training on post-LOCA cooldown and depressurization was provided via Training Course P9106L-0401, "E-1 Series Review." The operators also received training on the modification of the new sump strainers via P9150L-029, "Outage Training."

  In addition, the licensee added GSI-191 related issues to their continuing training program by updating or creating several simulator exercise guides: P96160S-001 ATT. 06-24, "Rod Withdrawal, Loss of Core Cooling FR-C.1, 2, 3, SI Recirc, and Loss of Recirc"; P9160S-001 ATT. 04-04, "CVCS Controller Training/LOCA Long-term Cooling Procedure"; and P9160S-001 ATT. 04-23, "Loss of Seal Oil/Sump B Blockage/Degraded Core Cooling."

- Commitment: Determine an appropriate minimum Refueling Water Storage Tank (RWST) level to secure Containment Spray.

  Technical Specification Surveillance Requirement 3.5.4.1 for the Refueling Water Storage Tank was updated to increase the required level to 265,000 gallons, which corresponded to approximately 90 percent instrumentation level indication.

- Commitment: Revise plant emergency operating procedures to provide long-term core cooling.

  Guidance for providing long-term core cooling is provided in Procedure F3-17.2, “Long-term Core Cooling.”

- Commitment: Implement a procedure to enhance operator guidance for refilling the RWST from alternative water sources.

  Guidance for operators for refilling the RWST is provided in Procedure F3 -17.2, “Long-term Core Cooling.”

- Commitment: Enhance containment closeout and foreign material controls.

  The licensee developed Prairie Island Nuclear Generating Plant (PINGP) 1550, “Containment FME Material Control and Accountability Log” to control foreign material that is brought inside containment.

- Commitment: Implement a procedure to address potential debris ingestion.

  The licensee addressed potential debris ingestion in Procedure F3-17.2, “Long-term Core Cooling.”

- Open Item 3.4-1: Latent debris sampling, quantification, and monitoring were not covered and documented in a formalized program. The program was informal and lacked tracking, trending, and appropriate acceptance criteria.

  The licensee established Procedure H56, “GSI-191 Debris Monitoring Program,” and a Periodic Test Procedure TP 1420, “Containment Debris Inventory,” to monitor the debris inside of containment. The licensee also calculated the allowable amount of latent debris inside of containment in Calculation ENG-ME-692, “Determination of Allowable Latent Debris Inside Containment.”

- Open Item 3.6-1: The majority of coating debris in PINGP tests was in chip form. This is potentially inconsistent with approved guidance to use fine particulate unless there is insufficient fiber to form a thin bed. The licensee was planning to perform additional latent debris assessment to justify that there was insufficient latent fiber debris to form a thin bed. Otherwise, the licensee needed to justify use of coating chips during the head loss testing.

  The licensee measured the amount of latent debris in Calculation ENG-ME-625, “Unit 2 Containment Walkdown Results for GSI-191.” Additionally, the licensee has obtained strainer prototype testing that is documented in Calculation ENG-ME-657, “Sump B Strainer Head Loss Determinations.”

- Open Item 3.6-2: The licensee did not fully justify that the clean strainer head loss correlation is conservative. The justification provided was based on testing of the Performance Contracting, Inc. (PCI) Prototype II testing module. Differences between aspects of the PINGP strainer array compared with the PCI Prototype II testing module included (1) significantly different diameter/length and core tube area/slot open area ratios; (2) an annular flow region in the PCI strainer array; and (3) a different number of slots and slot's open area.

The licensee developed clean strainer head loss correlations in Calculation ENG-ME-657, "Sump B Strainer Head Loss Determinations" with additional information available in Technical Document SFSS-TD-2007-002, "Sure-Flow Suction Strainer – Suction Flow Control Device Principles and Clean Strainer Head Loss Design Procedures."

- Open Item 3.6-3: The licensee has not performed an adequate scaling analysis to demonstrate the that fluid conditions above the testing module would bound the actual fluid condition relevant to preventing vortex formation on top of the PCI strainer arrays.

  The licensee documented their scaling analysis in Technical Document SFSS-TD-2007-002, "Sure-Flow Suction Strainer – Suction Flow Control Device Principles and Clean Strainer Head Loss Design Procedures."

- Open Item 3.7-1: The licensee's Net Positive Suction Head (NPSH) calculations did not consider the effect of cavitation induced by dissolved air and the related issue of air ingestion on pump performance.

  The licensee evaluated the effects of cavitation in Calculations ENG-ME-005, "Analysis of Available NPSH to the RHR Pumps from Containment Sump" and ENG-ME-657, "Sump B Strainer Head Loss Determinations."

- Open Item 3.8-1: The licensee has not completed an assessment of qualified coatings to remain adhered during a design basis accident, stating PINGP will rely on the results of an ongoing test program conducted by Electric Power Research Institute and the Nuclear Utilities Coatings Council to validate their assessment techniques.

  The 1R25 Coatings Assessment Report was generated by PINGP for the most recent Unit 1 refueling outage and 2R24 Coatings Assessment Report was generated for the most recent Unit 2 refueling outage.

  Also, licensee has SP 1834, "Unit 1 Containment Coating Inspection," and SP 2834, "Unit 2 Containment Coating Inspection," that are used to perform coating inspections.

- Open Item 5.2-1: The upstream debris accumulation evaluation was not comprehensive and had not been formalized under the normal calculation/verification process. In particular, the potential for debris accumulation to result in blockage or partial obstruction of the refueling cavity drain line was not fully addressed.

The licensee evaluated upstream effects to assess the potential for debris accumulation and water hold-up in Calculation ENG-ME-668, "Evaluation of Potential Hold-Up Regions in Containment."

- Open Item 5.3-1: The licensee's evaluations of downstream component effects are preliminary; based in part on the generic methodology of WCAP-16406-P, currently under review by the NRC staff. Conclusions and findings need to be applied to the evaluation of post-LOCA downstream effects for PINGP.

  The licensee reviewed WCAP-16793 for applicability to PINGP and determined that the PINGP design is bounded by its analyses. This was documented in Calculation ENG-ME-654, "Evaluation of Downstream Effects – ECCS."

- Open Item 5.3-2: The licensee had not completed in-vessel downstream evaluations, including the effect on core heat transfer of plate-out of material on the surface of fuel rods during long-term boiling and the effect of any debris trapped between the fuel element spacer grids and the adjacent fuel rod in the production of local hot spots.

  The licensee performed a site-specific plate-out analysis using the LOCA-DM model in Calculation ENG-ME-653, "Evaluation of Downstream Effects – Reactor Vessel Internals and Nuclear Fuel."

- Open Item 5.3-3: The licensee did not document a basis for the assumption of 95 percent efficiency in system depletion calculations.

  The licensee revised Calculation ENG-ME-654, "Evaluation of Downstream Effects – ECCS," to address this issue.

- Open Item 5.3-4: The licensee did not evaluate pump hydraulic degradation due to RHR pump internal wear.

  The licensee evaluated pump hydraulic degradation in Calculation ENG-ME-654, "Evaluation of Downstream Effects – ECCS."

- Open Item 5.3-5: PINGP did not provide an evaluation supporting using the criterion contained in American Petroleum Institute Standard 610 for pump vibration, which applied to new pumps.

  The licensee evaluated pump vibration criteria in Calculation ENG-ME-654, "Evaluation of Downstream Effects – ECCS."

- Open Item 5.3-6: PINGP did not justify use of a three-body, erosive wear model for pump internals. The industry standard model was to consider internal wear mechanism for internal, non-impeller wear, as two-body.

  The licensee revised their analyses to use erosive and abrasive wear models. This analysis is contained in Calculation ENG-ME-654, "Evaluation of Downstream Effects – ECCS."

- Open Item 5.3-7: The licensee did not quantify seal leakage associated with downstream effects into the auxiliary building, nor evaluate the affects on equipment qualification, sumps and drains operation or room habitability.

  The licensee evaluated the potential for RHR pump seal leakage and the resultant effects in Calculation ENG-ME-654, "Evaluation of Downstream Effects – ECCS."

- Open Item 5.4-1: The chemical effects evaluation was still in progress. The licensee has not resolved the chemical effects issue at PINGP.

  The licensee evaluated the chemical effects in Calculation ENG-ME-695, "Evaluation of Chemical Effects on Sump B Strainer Head Loss."

2. Has the licensee updated its licensing bases to reflect the corrective actions taken in response to GL 2004-02?

   The licensee, in a letter to the NRC dated May 7, 2007 (ML071290624), provided Revision 29 to the USAR that included the physical changes made at the plant in support of GL 2004-02. However, the inspectors noted during the inspection that the licensee did not revise the USAR to include the analyses that they had performed as part of their commitments in support of GL 2004-02. See Section 4OA5.1(c) for additional discussion of this issue.

3. If the licensee or plant has obtained an extension past the completion date of this TI, document what actions have been completed, what actions are outstanding, and close the TI for the plant that has the extension.

   The licensee has completed their physical modifications for both units and analyses and put in place programmatic controls. The licensee had not obtained an extension past the completion date of this TI.

Documentation of TI-2515/166 completion, as well as any results of sampling audits of licensee actions, will be reviewed by the NRC Office of Nuclear Reactor Regulation staff as input along with the GL 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," responses to support closure of GL 2004-02 and GSI-191 "Assessment of Debris Accumulation on Pressurized-Water Reactor Sump Performance." The NRC will notify each licensee by letter of the results of the overall assessment as to whether GSI-191 and GL 2004-02 have been satisfactorily addressed at that licensee's plant(s). Completion of TI-2515/166 does not necessarily indicate that a licensee has finished all testing and analyses needed to demonstrate the adequacy of their modifications and procedure changes. Licensees may also have obtained approval of plant-specific extensions that allow for later implementation of plant modifications. Licensees will confirm completion of all corrective actions to the NRC. The NRC will track all such yet-to-be-performed items identified in the TI-2515/166 inspection reports to completion and may choose to inspect implementation of some or all of them.

This TI was closed for both units at the Prairie Island Nuclear Generating Plant.

c. Findings

Introduction: The inspectors identified an NCV of 10 CFR 50.71, "Maintenance of records, making of reports," for the licensee's failure to adequately update the Prairie Island Nuclear Generating Plant USAR. Specifically, the inspectors identified that the licensee had not updated the USAR to reflect the analyses that were performed in response to GL 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors."

Description: The licensee provided an update of their USAR to the NRC on May 7, 2007 (ML071290624), to reflect the physical modifications that were incorporated at the plant as part of their commitments to address GL 2004-02. That update was documented in CAP 1059000, "USAR Change Per Containment Sump B Strainer Mod EC 0378." However, the licensee did not include in the update several analyses that were performed. These analyses were performed in support of commitments that PINGP had made to the NRC as part of their response to GL 2004-02. The GL requested licensees to perform an evaluation of the emergency core cooling system and containment spray system recirculation functions and required licensees to provide a written response. The inspectors noted that the analyses performed for the ECCS and recirculation functions were considered part of an analysis of a new safety issue performed at NRC request as discussed in 10 CFR 50.71(e).

Analysis: The inspectors determined that the failure to update the USAR to include analyses performed in response to GL 2004-02 was contrary to 10 CFR 50.71(e) and was a performance deficiency.

Violations of 10 CFR 50.71(e) are dispositioned using the traditional enforcement process instead of the SDP because they potentially impede or impact the regulatory process. Typically, the Severity Level would be assigned after consideration of appropriate factors for the particular regulatory process violation in accordance with the NRC Enforcement Policy. The inspectors determined that the finding was more than minor because of the potential to impact the regulatory process by using IMC 0612, Appendix B, "Issue Screening," dated September 20, 2007. Specifically, the failure to provide complete licensing and design basis information in the USAR could result in either the licensee making an inappropriate interpretation or the NRC making an inappropriate regulatory decision based on incomplete information. The inspectors determined that the finding was most closely associated with the Mitigating Systems cornerstone of the Reactor Safety strategic performance area because the analyses performed in response to GL 2004-02 were focused on the availability, reliability, and capability of systems responding to initiating events. The inspectors reviewed Supplement I to the Enforcement Policy and determined that the violation should be classified as a Severity Level IV.

This finding was also determined to have a cross-cutting aspect in the area of human performance, work practices because the licensee failed to ensure supervisory and management oversight of work activities such that nuclear safety was supported (H.4(c)). Specifically, the failure to update the USAR to include analyses performed in response to GL 2004-02 should have been identified by the supervisor reviewing the 10 CFR 50.59 screenings. The determination as to whether to include analyses in the USAR was made in the 10 CFR 50.59 screenings.

Enforcement: Title 10 CFR 50.71(e) requires, in part, that licensees periodically update the USAR originally submitted as part of the application for the operating license to assure that the information included in the USAR contains the latest material developed. Title 10 CFR 50.71(e) required that the submittal contain all changes made in the facility and all the changes necessary to reflect information and analyses submitted to the Commission by the licensee or prepared by the licensee pursuant to Commission requirements since the submission of the original USAR or, as appropriate, the last updated USAR. Title 10 CFR 50.71(e) further required, in part, that the updated USAR be revised to include the effects of all analyses of new safety issues performed by or on behalf of the licensee at Commission request. The Commission, through GL 2004-02, requested that licensees perform an evaluation of the ECCS and recirculation functions and, if appropriate, take additional actions to ensure system function. The licensee, in response to GL 2004-02, performed analyses of debris generation and transport, chemical effects, downstream effects, upstream effects, and strainer and other structural analysis.

Contrary to the above, as of June 20, 2008, the licensee failed to adequately update the USAR to reflect analyses performed in response to GL 2004-02. Specifically, the licensee failed to update the USAR to include analyses performed of debris generation and transport, chemical effects, downstream effects, upstream effects, and strainer and other structural analysis. Because this was a Severity Level IV violation that was not willful and it was entered into the licensee's corrective action program as CAP 1141183, this violation was treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy **(NCV 05000282/2008003-02; 05000306/2008003-02).** Corrective actions included revising the USAR to reflect the analyses and submitting the updated information to the NRC.

.2 Resident Inspectors Periodic Observations of Security Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

.3 (Closed) URI 05000282/2008002-02: Concerns Regarding Testing of Check Valve SI-9-5

a. Inspection Scope

The inspectors initiated the URI discussed above in NRC Inspection Report 05000282/2008002; 05000306/2008002, Section 1R22, to document concerns about the testing methodology used for and the past operability of Safety Injection Check Valve SI-9-5. The inspectors reviewed the licensee's CAPs to determine whether a performance deficiency occurred.

b. Findings

Introduction: The inspectors identified a finding of very low safety significance (Green) and an NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," due to the licensee's failure to ensure testing was performed under suitable environmental conditions. Specifically, the licensee preconditioned SI-9-5 prior to testing by increasing reactor pressure and tapping on the valve with a hammer.

Description: During surveillance testing on March 16, 2008, Safety Injection Check Valve SI-9-5 did not seat. The failure of the check valve to properly seat resulted in bypass flow greater than the 3 gpm allowed by the TS. The licensee initiated CAP 1131266 to document the surveillance test failure. When open, Check Valve SI-9-5 provided a flow path for low pressure safety injection and long-term low pressure recirculation. When closed, this valve prevented over-pressurization of the RHR system from the reactor coolant system.

Although the licensee's initial surveillance testing resulted in a flow measurement that failed to meet the TS requirements, the licensee proceeded to re-test the check valve seven additional times. Each time the measured flow rate failed to meet the TS requirements with the highest measured flow rate being approximately 19 gpm. After the seventh test failure, the licensee stopped the testing and developed a trouble shooting plan, which included raising reactor pressure above the pressure band specified in the test procedure and hitting the valve with a hammer. The licensee developed the troubleshooting plan based on the assumption that the check valve was unable to pass the surveillance test due to the inability to establish enough differential pressure across the valve to ensure the valve was closed.

Once approved, licensee personnel implemented the troubleshooting plan by raising reactor pressure, opening the drain path, tapping on the valve with a 1 pound hammer and monitoring leakage for a few minutes. After tapping on the valve, leakage decreased to within the surveillance and TS requirements. Operations personnel then lowered reactor pressure within the pressure band specified in the surveillance procedure. Licensee personnel observed that the check valve leakage remained within the specified requirements. Following these actions, the licensee re-performed the surveillance test and documented that there was zero leakage past the check valve. Operations personnel then concluded that the valve was operable based on the test methodology implemented and results achieved.

On March 17, 2008, the inspectors became aware that the licensee had trouble with the check valve passing its surveillance test through communications conveyed during the licensee's morning plant status meeting. The inspectors had discussions with several levels of licensee management to acquire an understanding of the problems experienced with the check valve during the surveillance testing.

Concurrently, the inspectors reviewed the maintenance history for Check Valve SI-9-5. The inspectors determined that the licensee had trouble getting SI-9-5 to pass the same surveillance test during the 2006, Unit 1 refueling outage. The licensee documented this condition in CAP 1033504. After several additional surveillance test attempts, the licensee again tapped on the valve body with a hammer to get the valve to seat. Following this action, SI-9-5 passed the surveillance test. Corrective actions for CAP 1033504 included developing an improved test procedure to resolve the previous test difficulties; however this task was not completed. The licensee also added a task to open and inspect SI-9-5 during the 2008 Unit 1 refueling outage (1R25). The inspectors discussed this action with licensee personnel and found that this task was removed from the outage scope to improve resource utilization and reduce overall outage duration.

Based upon the review of recent surveillance testing and information acquired from the historical review, the inspectors were concerned about operability of SI-9-5. When these concerns were brought to the licensee's attention, the licensee concluded that the valve was operable based on the successful completion of the surveillance test. The inspectors then questioned the relationship between the check valve's operability and the methods used to achieve the satisfactory test results.

On March 19, 2008, the inspectors attended the licensee's Plant Operations Review Committee meeting. This meeting was held to discuss the licensee's readiness for reactor startup following the 1R25 refueling outage. Upon the conclusion of this meeting, the inspectors determined that the licensee failed to address the potential test control inadequacies and operability concerns with Check Valve SI-9-5. The inspectors discussed this concern with the Committee. Through this discussion, the licensee concluded that an operability determination was needed to address the test control and operability concerns. The inspectors reviewed the licensee's operability concern and found that the licensee had concluded that the valve was operable even though the highest leak rate seen during the unsuccessful tests was approximately 19 gpm and the final leak rate after raising reactor pressure and hammering was zero. Additionally, the operability determination stated that since the check valve had zero leakage and normal reactor pressure would act on the valve disc to maintain the valve closed, the valve should remain closed during the entire operating cycle.

On March 20, 2008, the Resident Inspectors, NRC Region III Management, and members of the Office of Nuclear Reactor Regulation held a conference call with the licensee to discuss the issues described above. Based upon this conference call, the licensee established a compensatory measure to ensure that SI-9-5 would be tested if the valve was disturbed or Unit 1 was shut down during the next operating cycle.

Analysis: The inspectors determined that the licensee's failure to test Check Valve SI-9-5 under suitable environmental conditions was a performance deficiency that required further evaluation. The inspectors determined that this finding was more than minor because it was associated with the equipment performance attribute of the initiating events cornerstone. In addition, the finding affected the cornerstone objective of limiting the frequency of those events that upset plant stability and challenge critical safety functions. The inspectors performance a Phase 1 SDP Screening and concluded that the finding was of very low safety significance (Green) because it was not considered to be a primary system loss of coolant accident or transient initiator. Additionally, the finding did not screen as potentially risk significant due to a fire, seismic, flooding, or severe weather initiating event. The inspectors concluded that this finding also affected the corrective action program component of the Problem Identification and Resolution cross-cutting area because the licensee failed to evaluate the cause of the

2008 SI-9-5 valve test failures to ensure that the resolution addressed the cause and extent of condition (P.1(c)).

Enforcement: 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," requires, in part, that testing be performed under suitable environmental conditions. Contrary to this, on March 16, 2008, the licensee failed to assure that testing of Check Valve SI-9-5 was performed under suitable environmental conditions. Specifically, the valve was tested for leakage after raising reactor pressure and tapping on the valve body with a hammer. However, because this violation was of very low safety significance and was entered into the licensee's corrective action program as CAPs 1131266, 1132288, and 1132717, it was treated as a Non-Cited Violation consistent with Section VI.A of the Enforcement Policy **(NCV 05000282/2008003-03)**. Corrective actions for this issue included providing additional training on preconditioning, providing additional training on the use and implementation of the operability determination process, and improving the thorough evaluation of equipment related deficiencies.

.4 (Closed) URI 05000282/2007005-01; 05000306/2007005-01: Potential Failure to Follow Appropriate Procedures Involving Examinations Required by 10 CFR 55

This licensee identified issue was initially discussed in NRC Inspection Report 05000282/2007005; 05000306/2007005, Section 1R11.1, "Examination Security." This issue was considered unresolved pending a review of this issue by regional management and completion of an NRC investigation concerning a related issue.

Upon completion of the investigation, the inspectors reviewed four occasions of possible examination compromise that occurred between September 3 and October 19, 2007, during examination preparation for the 2007 NRC required examinations. The licensee entered all four occurrences of the examination material exposure into their corrective action program as CAP 1115230. During preparations for the NRC-required annual operating test and biennial written examination, a station trainer potentially exposed examination material to unauthorized personnel. The examination material was replaced on three of these occasions before being used in an examination. Because the examination material was replaced in these three cases, it was not considered a violation of NRC requirements. On the fourth occasion, the trainer directed an operator to validate a biennial written examination intended for use later in the examination cycle. The examination validated by the operator contained questions that appeared on the operator's own biennial written examination. Because the operator saw three questions that were included in his own examination, a violation of 10 CFR 55.49 requirements occurred. However, the inspectors determined that this example met the requirements for being considered a licensee identified violation. The enforcement aspects of this issue were discussed in Section 4OA7 of this report. This URI was closed.

4OA6 Management Meetings

.1 Exit Meeting Summary

On July 1, 2008, the inspectors presented the inspection results to Mr. J. Sorenson 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.

.2 Interim Exit Meetings

Interim exits were conducted for:

- On May 29, 2008, the inspectors, via telephone, presented URI 05000282/2007005-01; 05000306/2007005-01 inspection results with the Training Manager, Mr. J. Sternisha;

- On June 27, 2008, the inspectors presented the preliminary results of the licensee's radiological environmental monitoring and radioactive material control program, and verification of the performance indicator for public radiation safety with the Chemistry and Radiation Protection Department Manager, Mr. R. Hite; and

- On June 20 and July 10, 2008, the inspectors presented the inspection results for the TI 2515/166, "PWR Containment Sump Blockage (NRC GL 2004-02)," to Michael D. 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 violations of very low significance (Green) were identified by the licensee and are violations of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as NCVs.

Cornerstone: Mitigating Systems

- Title 10 CFR Part 50, Appendix B, Criterion V, required, in part, that activities affecting quality be accomplished in accordance with instructions, procedures, and drawings appropriate to the circumstance. Procedure D63, "Installation Guidelines for Threaded Fasteners," Section 1.0 stated that this procedure was to be employed by maintenance personnel when removing and installing threaded fasteners. Procedure D63, Step 7.3.7 required that bolts/studs be torqued to the proper stress value. Contrary to the above, on May 15, 2008, licensee personnel tightened safety related fasteners without employing the proper stress values included in Procedure D63. This violation was of very low safety significance because the failure to torque the fasteners to the required value did not impact the operability of the specific components. The licensee initiated CAP 1137836 to document this issue. Corrective actions included a review of the torquing practices to ensure that the fasteners are appropriately installed.

- Title 10 CFR Part 55.49, stated, in part, that station personnel shall not engage in any activity that compromises the integrity of any application, test, or examination required by this part. The integrity of a test or examination was considered compromised if any activity, regardless of intent, affected, or, but for detection, would have affected the equitable and consistent administration of the test or examination. This included activities related to the preparation and certification of license applications and all activities related to the preparation, administration, and grading of the tests and examinations required by this part. Contrary to this, on one occasion, a trainer directed an operator to validate a biennial written examination required by 10 CFR 55.59(a)(2) that was intended for use later in the examination cycle. The examination contained three questions that appeared on the operator's own biennial written examination. Because the operator saw questions that he was administered on his own examination, a violation of 10 CFR 55.49 requirements occurred. The violation was of very low safety significance because the operator correctly answered the questions both times the operator encountered them, if the questions were removed from the examination, the examination was still a valid examination, and the operator's grade on the examination was still a passing grade.

Immediate actions were taken by the licensee's training department included verifying that no other examination compromise situations occurred during the examination validations. The licensee entered this condition into the corrective action program as CAPs 1115206 and 1115320. The licensee's training personnel were briefed concerning examination security requirements and the need to comply with examination security procedures.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Wadley, Site Vice President
J. Sorensen, Director Site Operations
S. Northard, Plant Manager
T. Allen, Nuclear Safety Assurance Manager
J. Anderson, Regulatory Affairs Manager
L. Clewett, Operations Manager
M. Davis, Regulatory Affairs Analyst
R. Hite, Radiation Protection and Chemistry Manager
J. Kivi, Compliance Engineer
J. Muth, Nuclear Oversight Manager
C. Sansome, Acting Mechanical Design Supervisor
M. Schimmel, Engineering Director
M. Schmidt, Maintenance Manager
B. Slack, Design Engineer
J. Sternisha, Training Manager
M. Walter, Superintend Operations Training

Nuclear Regulatory Commission

A. M. Stone, Engineering Branch 2 Chief

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000282/2008003-01	URI	11 Turbine-Driven Auxiliary Feedwater Pump Inoperable During Startup from Outage 1R25 (Section 1R15)
05000282/2008003-02; 05000306/2008003-02	NCV	USAR Not Updated to Include Analyses (Section 4OA5.1)
05000282/2008003-03	NCV	Failure to Test Check Valve SI-9-5 Under Suitable Environmental Conditions (Section 4OA5.2)

Closed

05000306/2007-002-01	LER	Emergency Diesel Generator Inoperable Longer than Allowed by TSs Due to Loose Switch (Section 4OA3.2)
05000282/2007-005-01; 05000306/2007-005-01	LER	One Train of Safeguards Chilled Water System Inoperable for Longer than Allowed by TSs (Section 4OA3.1)
05000282/2008-001-00	LER	One Train of Auxiliary Feedwater System Inoperable for Longer than Allowed by TSs (Section 4OA3.3)
05000282/2007005-01; 05000306/2007005-01	URI	Potential Failure to Follow Appropriate Procedures Involving Examinations Required by 10 CFR 55 (Section 4OA5.3)
05000282/2008002-02	URI	Concerns Regarding Testing of Check Valve SI-9-5 (Section 4OA5.2)

05000282/2008003-02; 05000306/2008003-02	NCV	USAR Not Updated to Include Analyses (Section 4OA5.1)
05000282/2008003-03	NCV	Failure to Test Check Valve SI-9-5 Under Suitable Environmental Conditions (Section 4OA5.2)

Discussed

None

LIST OF DOCUMENTS REVIEWED

The following lists 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.

1R01 Adverse Weather

- AB-4; Flood; Revision 32
- Alarm Response Procedure C47501; 21 Circulating Water Pump Locked Out; Revision 25
- C20.3 AOP 1; Evaluating System Operating Conditions When Security Analysis is Out of Service; Revision 7
- C20.3 AOP 12; Grid Voltage or Frequency Disturbances; Revision 4
- C20.3; Electrical Power System Security Analysis; Revision 14
- CAP 1042173; 11 Circulating Water Pump Motor Stator High Temperature; dated July 31, 2006
- CAP 1045455; USAR and EAL HA1.6 Flood Level
- CAP 1083312; Performance of SP 1293 Inspection of Flood Control Measures
- CAP 1085115; Flood Door Maintenance
- CAP 1087971; Site Electrical Analyses Have Not Been Maintained Up to Date
- CAP 1089428; Plant and Operations Management Unaware of Changes to Xcel Energy Policies
- CAP 1089449; Knowledge Level of Communications Protocol with Xcel TSO
- CAP 1129639; Tornado Hazards Per SP 1039 – Area 1
- CAP 1129641; Tornado Hazards Per SP 1039 – Area 2
- CAP 1129645; Tornado Hazards Per SP 1039 – Area 3
- CAP 1129647; Tornado Hazards Per SP 1039 – Area 4
- CAP 1133533; Unit 0 Tornado Hazard Inspection Areas Per SP 1039
- CAP 1133536; Tornado Hazard Site Inspection
- ESO-OP06.150; Xcel Energy Power Plant Operator Communication and Response Policy; Revision 3.1
- ESO-OP-6.140P; Xcel Energy System Operating Code Response; Revision 3a
- Maintenance Rule Basis Document
- Maintenance Work History for Circulating Water and Screenhouse Ventilation Systems
- Northern States Power Drawing NE-119871-G; Prairie Island Substation Operating One Line Diagram
- Oil Analysis, Thermography Data, and Vibration Information Associated with the Circulating Water and Screenhouse Ventilation Systems
- SP 1039; Tornado Hazard Site Inspection; Revision 13
- SP 1293; Inspection of Flood Control Measures; Revision 16
- SP 1690; Approach, Intake, and Discharge Canal Hydrographic Survey; Revision 0
- TP 1636; Summer Plant Operation; Revision 21
- USAR Section 8.2; Transmission System

1R04 Equipment Alignment

- C1.1.20.7-10; D5 Diesel Generator Auxiliaries and Local Panels and Switches; Revision 11
- C1.1.20.7-11; D5 Diesel Generator Main Control Room Switch and Indicating Light Status; Revision 5

- C1.1.20.7-12; D5 Diesel Generator Circuit Breakers and Panel Switches; Revision 9
- C1.1.20.7-13; D6 Diesel Generator Valve Status; Revision 14
- C1.1.20.7-14; D6 Diesel Generator Auxiliaries and Local Panels and Switches; Revision 12
- C1.1.20.7-15; D6 Diesel Generator Main Control Room Switch and Indicating Light Status; Revision 6
- C1.1.20.7-16; D6 Diesel Generator Circuit Breakers and Panel Switches; Revision 8
- C1.1.20.7-5; D2 Diesel Generator Valve Status; Revision 20
- C1.1.20.7-6; D2 Diesel Generator Auxiliaries and Room Cooling Local Panels; Revision 10
- C1.1.20.7-7; Diesel Generator D2 Main Control Room Switch and Indicating Light Status; Revision 13
- C1.1.20.7-8; D2 Diesel Generator Circuit Breakers and Panel Switches; Revision 16
- C1.1.20.7-9; D5 Diesel Generator Valve Status; Revision 11

1R05 Fire Protection

- NSPLMI – 96001; Prairie Island Individual Plant Examination of External Events; Revision 1
- Plant Safety Procedure F5, Appendix A; Fire Strategies; Revision 24
- Plant Safety Procedure F5, Appendix F; Fire Hazard Analysis; Revision 21

1R12 Maintenance Effectiveness

- ARP C47010; 11 TD AFWP Oil Hi Temp; Revision 39
- CAP 1033486; 11 TDAFW Pump Outboard Bearing Temperature High at 205 Degrees
- CAP 1034748; Temperature Limits for Turbine Bearings in SP 1330/2330
- CAP 1035010; 11 TDAFW Stopped During SP 1103 Due to High Bearing Temperature
- CAP 1035012; 11 TDAFW Shutdown Due to 220 Degree Outboard Bearing Temperature
- CAP 1042173; 11 Circulating Water Pump Motor Stator High Temperature; dated July 1, 2006
- CAP 1047847; 11 TDAFW Pump Outboard Turbine Bearing Oil Sample Milky
- CAP 1089285; 11 AFW Pump High Bearing Temperature
- CAP 1089641; 11 AFW Pump High Bearing Temperature
- CAP 1131266; SI-9-5 Did Not Seat During SP 1071
- CAP 1132098; 11 AFW Pump Stopped Due to Outboard Bearing High Temperature
- CAP 1132125; 11 TD AFW Pump LCO Could Have Been Prevented
- CE 1033504; SI-9-5 Did Not Meet Close Criteria During SP 1070
- Control Room Operating Logs
- Engineering Evaluation of Acceptability of SI-9-5 During SP 1070 for 1R25
- ERCS Data Associated with the Auxiliary Feedwater System
- Evaluation of Velan Check Valve Potential to Hang Open
- LER 1-06-002; 11 TDAFW Pump Failure Due to Bearing Installation Error
- Maintenance Rule System Risk Significant Equipment Performance Monitoring Data
- Maintenance Rule System Specific Basis Document
- Maintenance Work History for Circulating Water and Screenhouse Ventilation Systems
- Maintenance Rule Evaluation (MRE) 1034270-06; 11 TDAFW Pump Has a High Bearing Temperature
- MRE 1035010-04; 11 TDAFW Pump Stopped During SP 1103
- Oil Analysis, Thermography Data, and Vibration Information Associated with the Circulating Water and Screenhouse Ventilation Systems
- Operability Review (OPR) 1035010; 11 TDAFW High Bearing Temperature
- Outage Scope Change Request Number 251
- Root Cause Evaluation (RCE) 1034270-09; 11 TDAFW Pump Turbine Bearing Failure
- SP 1102; 11 Turbine-Driven AFW Pump Monthly Test; Revision 88

- SP 1103; 11 Turbine-Driven AFW Pump Once Every Refueling Shutdown Flow Test; Revision 41
- SP 1330; 11 Turbine-Driven AFW Turbine/Pump Bearing Temperature; Revision 17
- SP 1376; AFW Flow Path Verification Post Cold Shutdown; Revision 10
- Troubleshooting Log for Work Request 357419

1R13 Maintenance Risk Assessment and Emergent Work

- Risk Assessments for Proposed Work for Weeks of 0813, 0814, 0817, 0819, 0821, 0822, 0824, and 0825

1R15 Operability Evaluations

- Annunciator Response Procedure C47010; 11 TDAFW Pump Oil Hi Temp; Revision 39
- CAP 1033486; 11 TDAFW Pump Outboard Bearing Temperature High at 205 Degrees
- CAP 1034748; Temperature Limits for Turbine Bearings in SP 1330/2330
- CAP 1035010; 11 TDAFW Stopped During SP 1103 Due to High Bearing Temperature
- CAP 1035012; 11 TDAFW Shutdown Due to 220 Degree Outboard Bearing Temperature
- CAP 1047847; 11 TDAFW Pump Outboard Turbine Bearing Oil Sample Milky
- CAP 1089285; 11 AFW Pump High Bearing Temperature
- CAP 1089641; 11 AFW Pump High Bearing Temperature
- CAP 1114840; RCP loss of all Seal Cooling Timing Concern
- CAP 1131436; Unit 1 RCP #1 Seal Leakage >2.3 gpm
- CAP 1132098; 11 AFW Pump Stopped Due to Outboard Bearing High Temperature
- CAP 1132125; 11 TD AFW Pump LCO Could Have Been Prevented
- CAP 1132474; Undocumented Modification of CV-31117 Actuators
- Control Room Operating Logs
- Drawing NF-40774-1; Interlock Logic Diagram Main Steam System Unit 2
- Drawing X-HIAW 1112-13; Piping Diagram for Isolation Valve with Air Cylinders and Air Tanks
- Drawing X-HIAW 1112-19-1; Schematic Arrangement of Piping for 30” Isolation Valve
- ERCS Data Associated with the Auxiliary Feedwater System
- LER 1-06-002; 11 TDAFW Pump Failure Due to Bearing Installation Error
- MRE 1034270-06; 11 TDAFW Pump Has a High Bearing Temperature
- MRE 1035010-04; 11 TDAFW Pump Stopped During SP 1103
- OPR 1035010; 11 TDAFW High Bearing Temperature
- OPR 1131436; 11 RCP (145-051) and 12 RCP (145-052)
- OPR 1132474; CV-31117 (22 SG MSIV)
- RCE 1034270-09; 11 TDAFW Pump Turbine Bearing Failure
- SP 1102; 11 Turbine-Driven AFW Pump Monthly Test; Revision 88
- SP 1103; 11 Turbine-Driven AFW Pump Once Every Refueling Shutdown Flow Test; Revision 41
- SP 1330; 11 Turbine-Driven AFW Turbine/Pump Bearing Temperature; Revision 17
- SP 1376; AFW Flow Path Verification Post Cold Shutdown; Revision 10
- Troubleshooting Log for Work Request 357419

1R18 Modifications

- Operating Procedure C34; Station Air System; Revision 34
- Plant Safety Procedure F5 – Appendix E; Fire Protection Safe Shutdown Analysis Summary; Revision 13

- Prairie Island Design Basis Document DBD SYS-34; Station and Instrument Air System; Revision 4

1R19 Post Maintenance Testing

- CAP 1133130; 12 DDCLP Fuel Oil Leak, Entry Into D14.3 AOP1
- CAP 1133131; 12 DDCLP Fuel Oil Leak During RTS Requires Engine Shutdown
- CAP 1133196; Fuel Line Leak on 12 DDCLP
- FP-G-DOC-03; Procedure Use and Adherence; Revision 4
- FP-G-DOC-04; Procedure Processing; Revision 5
- Markup of SP 2335; D6 Diesel Generator 18 Month 24 Hour Load Test; Revision 12
- PM 3001-2-D6; D6 Diesel Generator 18 Month Inspection – Mechanical; Revision 14
- PM 3138-3; 122 Control Room Chiller Annual Inspection; Revision 21
- SP 1093; D1 Diesel Generator Monthly Slow Start Test; Revision 80
- SP 1106A; 12 Diesel-Driven Cooling Water Pump Monthly Test; Revision 74
- SP 1738; Technical Support Center HVAC System Cleanup Filter Removal Efficiency Test; Revision 11
- SP 2090A; Containment Spray Pump Quarterly Test; Revision 10
- TP 1806; 122 Control Room Chiller Inspection; Revision 7
- WO 339760; SP1093 – D1 Diesel Generator Monthly Slow Start
- WO 342896; SP 2090A 21 Containment Spray Pump Quarterly Test
- WO 349189; SP1106A - 12 Diesel Cooling Water Pump Monthly
- WO 362608; Replace the Oil Pump on 122 Control Room Chiller

1R22 Surveillance Test

- CAP 1119048; D1 Inlet Air Check Valve Oscillating At Full Load
- CAP 1134411; U1 034-021 D2 DG Loose Bolts on Air Cooler
- CAP 1135001; D1 Bolting Found Loose On Air Cooler
- CAP 1135922; Bolts Are Loose/Missing On D1 Air Supply Ductwork to Coolers
- CAP 1136337; Dual Indication Stayed in On MV-32145 When Closing
- SP 1089A; Train A RHR Pump and Suction Valve from RWST Quarterly Test; Revision 13
- SP 1093; D1 Diesel Generator Monthly Slow Start Test; Revision 80
- SP 1106A; 12 Diesel Cooling Water Pump Monthly Test
- SP 1305; D2 Diesel Generator Monthly Slow Start Test; Revision 36
- SP 2093; D5 Diesel Generator Monthly Slow Start Test; Revision 85
- WO 335931; SP 1093 D1 Diesel Generator Monthly Slow Start
- WO 336027; SP 1089A Train A RHR Pump and Suction Valve from RWST Quarterly
- WO 336080; SP 2093 D5 Diesel Generator Monthly Slow Start
- WO 349191; SP 1106A Diesel Cooling Water Pump Monthly
- WO 350402; U1 Overhaul Dashpot On Inlet Air Check Valve for D1 EDG
- WO 353123; SP 1305 D2 Diesel Generator Monthly Slow Start Test
- WO 360746; MV-32145, Adjust Limit Switches
- WR 34644; U1 034-021 D2 DG Loose Bolts on Air Cooler
- WR 35095; Getting Dual Indication On MV-32145 When Closed
- XH-28-44; Vendor Technical Manual – Diesel Generator Set

2PS3 Radiological Environmental Monitoring and Radioactive Material Control Program

- CAP 1100099; Lost REMP TLD; dated July 2007
- CAP 1106352; USAR Not Updated for Site Met Program; dated August 2007

- CAP 1121615; Snapshot Evaluation for RP Annual Program Review; dated December 2007
- CAP 1129482; Two Bags of Radioactive Trash Left in Equipment Hatch; dated March 2008
- CAP 1135667; REMP Air Sample Radioactivity Results Show an Increase in Gross Beta Activity; dated April 2008
- 5AWI 8.8.0; Environmental Monitoring Program; Revisions 04 and 05
- 2006 Annual Radiological Environmental Monitoring Report; dated May 2007
- 2007 Annual Radiological Environmental Monitoring Report; dated May 2008
- 2007 Land Use Census at Prairie Island; dated October 2007
- RP and Chemistry Department Quarterly Roll-Up Meeting Results; Various dates 2007 and 2008
- NUPIC [Nuclear Utilities Procurement Issues Committee] Audit Number 19238; NUPIC Joint Audit of Environmental, Inc. Northbrook, IL; dated March 1, 2006
- Offsite Dose Calculation Manual (ODCM); Revision 21
- PINGP 1117; REMP Calibration/Maintenance Form, Air Samplers; Selected Records; Various Dates (2008)
- PINGP 1288; Bulk Material Batch Release; Revision 02
- RPIP 1302; Unconditional Release of Materials; Revision 19
- RPIP 1304; Conditional Release of Equipment to Outside the Radiological Controlled Area; Revision 09
- RPIP 1615; E-120 Operation and Calibration; Revision 09
- RPIP 1677; SAM-11 Operation and Calibration; Revision 03
- RPIP 3538; Calibration Check of Volume Delivery Devises; Revision 11
- RPIP 4102; Tritium Sampling; Revision 18
- RPIP 4501; Spectrum Analysis Efficiency Calibration; Revision 8
- RPIP 4700; Radiological Environmental Monitoring Program; Revision 12
- RPIP 4715; REMP Calibration of Rotameter; Revision 05
- RPIP 4730; REMP Sampling Procedure; Revision 05
- RPIP 4731; REMP Air Sampling; Revision 11
- RPIP 4732; REMP Water Sampling; Revision 12
- RPIP 4733; REMP Milk Sampling; Revision 08
- RPIP 4734; REMP Cultivated Crops Sampling; Revision 06
- RPIP 4735; REMP Miscellaneous Sampling; Revision 04
- RPIP 4736; REMP Measurement of Direct Radiation by TLDs; Revision 05
- RPIP 4741; Onsite Groundwater Tritium Sampling; Revision 06
- RPIP 4742; Prairie Island Indian Community Water Tritium Sampling; Revision 04
- Nuclear Oversight Observation Report No. 2007-03-019; Prairie Island Radiation Protection; dated August 2007
- Nuclear Oversight Observation Report No. 2008-01-007; Radiation Protection; dated March 2008

4OA1 Performance Indicator Verification

- H33; Performance Indicator Reporting; Revision 09
- FP-PA-PI-02; NRC and WANO Performance Indicator Reporting; Revision 03
- RPIP 3025; Chemistry Performance Indicator Reporting Instructions; Revision 02
- RPIP 4521; Monthly Effluent Release Offsite Dose Calculations; Revision 06

4OA2 Identification and Resolution of Problems

- BOP-MT-08-022; Magnetic Particle Examination Report (for CAP 01136420)
- BOP-VE-08-001; Ultrasonic Examination Report (for CAP 01136420)

- CAP 1130888; Access Control Inspection Observation – Operations Knowledge of RP
- CAP 1133187; Evaluate Timing Of Shiftly Safe Shutdown Assessments
- CAP 1133344; Concurrent Versus Independent Verification
- CAP 1134411; U1 034-021 D2 DG Loose Bolts on Air Cooler
- CAP 1134739; Locked Wheeled Device Within 1.25 Times Height from Cable
- CAP 1134867; CDROM For License Renewal Application Rejected by NRC Document Control
- CAP 1134929; Inappropriate Change Process for SP 2307-D6 Fast Start
- CAP 1135001; D1 Bolting Found Loose On Air Cooler
- CAP 1135305; Unit 1, Unit 2 Loose or Missing Screws On Neutron Flux Monitor Displays
- CAP 1135922; Bolts Are Loose/Missing on D1 Air Supply Ductwork to Coolers
- CAP 1136206; Insufficient Scope In Extent Of Condition Assessments
- CAP 1136390; D1 Bolting
- CAP 1136420; D2 Combustion Air Intake Pipe Crack At Support Weld
- CAP 1136562; Loose Bolting on D1 Generator
- CAP 1136601; 12 Diesel-Driven Cooling Water Pump Stripped Mounting Bolt on Jacket Water Heater
- CAP 1136602; 22 Diesel-Driven Cooling Water Pump Has Missing Mounting Bolt
- CAP 1136624; Pressure Switch on D5 Engine 1 Has Loose Screws
- CAP 1136634; Potential Deficiencies for Engineering Review
- CAP 1136643; Potential Seismic Issue With Drain Channel Under 11 AFWP
- CAP 1136661; Potential Seismic Issue With Drain Channel Under 21 AFWP
- CAP 1136662; Potential Seismic Issue With Drain Channel Under 12 AFWP
- CAP 1136663; Potential Seismic Issue With Drain Channel Under 22 AFWP
- CAP 1136666; 1” Copper Drain Line Swings and Physically Contacts AF-34-4
- CAP 1136726; Adverse Trend On Loose Fasteners in the Plant
- CAP 1136759; Insufficient Focus/Detail Regarding System Walkdowns
- CAP 1136996; Potential Missed Opportunity for Evaluation of Soft Issues
- CAP 1137007; Potential Vulnerability Identified
- CAP 1137247; Evaluate Identified RCS Leak Methodology for NRC Indicator
- CAP 1137513; Numerous Fasteners On the D2 EDG Need Tightening
- CAP 1137564; EDMG Pump Performance Settings
- CAP 1137836; Required Torque Not Applied to Safety Related Equipment
- CAP 1138044; Staged Equipment Too Close to Safeguards MCC
- CAP 1138346; Seismic Concerns in the Auxiliary and Turbine Buildings
- CAP 1138350; Unresolved Issue for NRC Force on Force Exercise #1
- CAP 1138588; Specific Security Device Operation
- CAP 1139754; D58 Headlift/Set Procedures Are Not Clear on Laser Scope
- CAP 1139799; Player Movement During Administrative Timeout
- CAP 1140224; NRC Question Regarding Testing of Load Sequencers
- CAP 1141183; GSI-191 – No USAR Update for Analysis Items Of GSI-191
- CAP 1141476; Keys Left in Unattended Vehicles in Protected Area
- CAP 1141498; Security Key System Changeout
- CAP 1141500; Overgrown Vegetation in Security Zones
- CAP 1141556; Improper Evaluation for Human Performance Clock Reset
- CAP 1141755; Three NRC Find “Hits” Resulting in Cross Cutting Aspect
- CAP 1142120; Inadequate Communication with Resident Inspectors
- CAP 1142216; NRC Commitment Due Date Changed Outside Of Change Process
- CAP 1142322; NRC Inspection Comments on REMP and Radioactive Material Control
- Common Cause Evaluation 1136726; Common Cause Evaluation for CAP 01136726 (Adverse Trend on Loose Fasteners in the Plant)
- CE 1135922; Loose Bolting on D1 Air Duct Work

- H41; Control of Temporary Structures and Equipment; Revision 6
- Maintenance Rework Evaluation (CAP 01134411)
- OPR 1136420; D2 Combustion Air Intake Pipe Crack at Support Weld
- OPR 1137513; Numerous Fasteners on the D2 EDG Need Tightening
- WO 358690; U1 D2 DG Loose Bolts on Air Cooler
- WR 34644; U1 034-021 D2 DG Loose Bolts on Air Cooler
- WR 34893; U1, 1N51 & 1N52 Loose Screws Need to Be Replaced
- WR 34895; U2, 1N51 & 1N52 Loose Screws Need to Be Replaced
- WR 35033; Install and Tighten Bolts on D1 Ductwork to Air Coolers
- WR 35034; Check Bolt Tightness of Air Supply On D2 EDG
- WR 35099; D2 – Repair Cracked Welds on Combustion Air Pipe Blower
- WR 35112; Tighten Flange Bolts on Upper Cooler
- WR 35113; Tighten Loose Bracket Bolting
- WR 35142; U1 12 Diesel-Driven Cooling Water Pump Jacket Water Heater Has Stripped Bolt
- WR 35143; U2 22 Diesel-Driven Cooling Water Pump Jacket Water Heater Has Stripped Bolt
- WR 35154; 21 Cooling Water Strainer Backwash Motor Shaft Cover Loose
- WR 35155; 11 Cooling Water Strainer Backwash Motor Shaft Cover Loose
- WR 35157; Cooling Water Electrical Conduit Loose to DPS 16419
- WR 35161; U2 Loose Switch
- WR 35163; Loose Bolt on Mounting Bracket
- WR 35166; 12 Cooling Water Strainer Conduit is Loose
- WR 35167; U0 122 Safeguard Travel Screen SV Electrical Cover Loose
- WR 35317; D5 Engine 2 Generator End Turbo Housing Has a Loose Nut
- WR 35318; D6 Engine 2 Outboard End Bracket Has a Missing Nut & Bolt
- WR 35359; Tighten Numerous Fasteners on the D2 EDG

4OA5

- 2575; Containment Sump B Strainer Replacement; Revision 2
- 2634; Revisions to Procedures for Post-LOCA Transfer to Sump Recirculation; Revision 0
- 2820; Sump B Strainer Head Loss Determinations; Revision 0
- 2832; GSI 191 Debris Generation Calculation, Post-LOCA Debris Transport to Containment Sump for Resolution of GSI-191, and Containment Sump Debris Size Distribution and Filter; Revision 1
- 2852; Calculation Titles: Evaluation of Potential Hold-Up Regions in Containment, Evaluation of Downstream Effects-ECCS, Evaluation of Jet Impingement to Sump B Suction Strainers, and Determination of Allowable Latent Debris Inside Containment (respectively); Revision 1
- 2900; Evaluation of Chemical Effects on Sump B Strainer Head Loss; Revision 0
- 2935; Evaluation of Downstream Effects – Reactor Vessel Internals and Nuclear Fuel; Revision 0
- 2949; Evaluation of Downstream Effects – Emergency Core Cooling Systems (ECCS); Revision 0
- ENG-ME-005; Analysis of Available NPSH to the RHR Pumps from Containment Sump; Revision 5.
- ENG-ME-625; Unit 2 Containment Walkdown Results for GSI-191; Revision 0A
- ENG-ME-653; Evaluation of Downstream Effects – Reactor Vessel Internals and Nuclear Fuel; Revision 1
- ENG-ME-654; Evaluation of Downstream Effects – Emergency Core Cooling Systems (ECCS); Revision 2
- ENG-ME-657; Sump B Strainer Head Loss Determinations; Revision 3
- ENG-ME-668; Evaluation of Potential Hold-Up Regions in Containment; Revision 0

- ENG-ME-692; Determination of Allowable Latent Debris Inside Containment; Revision 1
- ENG-ME-695; Evaluation of Chemical Effects on Sump B Strainer Head Loss; Revision 0.
- PCI-5343-S01; Structural Evaluation of Containment Sump Strainers; Revision 1
- EC 0378 (04RH04); Containment Sump B Screen Replacement (GL 2004-02); Revision 0
- CAP 0105900; USAR Change Per Containment Sump B Strainer Mod EC 378; dated February 7, 2007
- CAP 01141183; GSI-191: No USAR Update for Analysis Items of GSI-191; dated June 17, 2008
- 1ECA-1.3; Recirculation Sump Blockage; Revision 0
- 2ECA-1.3; Recirculation Sump Blockage; Revision 0
- 1ES1.1; Post LOCA Cooldown and Depressurization; Revision 18
- 1ES-1.2; Transfer to Recirculation; Revision 20
- 1ES-1.3; Transfer to Recirculation with One Safeguard Train Out of Service; Revision 15
- 2ES1.1; Post LOCA Cooldown and Depressurization; Revision 18
- 2ES-1.2, Transfer to Recirculation; Revision 20
- 2ES-1.3; Transfer to Recirculation with One Safeguard Train Out of Service; Revision 15
- D107; Containment Foreign Material Exclusion Control; Revision 2
- F3-17.2; Long-term Core Cooling; Revision 2
- FP-E-SAR-01; USAR Changes; Revision 3
- H56, GSI-191; Debris Monitoring Program; Revision 0
- SP 1750 [2750]; Post Outage Containment Close-Out Inspection; Revision 30
- SP 1834; Unit 1 Containment Coating Inspection; Revision 4
- SP 2834; Unit 2 Containment Coating Inspection; Revision 3
- TP 1420; Containment Debris Inventory; Revision 0
- P9104L-01-01; NRC Bulletin 2003-01 and F3-17.2 Cycle 04-01; Revision 0
- P9106L-0401; E-1 Series Review; Revision 0
- P9150L-029; Outage Training; 1R24
- P9160S-001; ATT 04-04; CVCS Controller Training/LOCA Long-term Cooling Procedure; Revision 1
- P9160S-001; ATT. 04-23; Loss of Seal Oil/Sump B Blockage/Degraded Core Cooling; Revision 1
- P96160S-001; ATT. 06-24; Rod Withdrawal, Loss of Core Cooling FR-C.1,2,3, SI Recirc, and Loss of Recirc; Revision 0.
- Coatings Assessment Report; 1R25
- Coatings Assessment Report; 2R24
- 5AWI 8.7.0; Foreign Material Exclusion Program Description; Revision 11
- PINGP 1550; Containment FME Material Control and Accountability Log; Revision 2
- SFSS-TD-2007-002; Sure-Flow Suction Strainer – Suction Flow Control Device
- Principles and Clean Strainer Head Loss Design Procedures; Revision 0 [Proprietary]

4OA7 Licensee Identified Violations

- CAP 1115306: Licensed Operator Requalification Biennial Written Exam Compromise Due to an Individual Being Involved with Validating an Exam and Being Administered Exam that Contained Three Questions Previously Validated
- CAP 1115320; Adverse Trend in 2007 Licensed Operator Requalification Biennial Exam Security Issues

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
CAP	Corrective Action Program Document
CFR	Code of Federal Regulations
EC	Engineering Change
ECCS	Emergency Core Cooling Systems
ERCS	Emergency Response Computer System
GL	Generic Letter
GPM	Gallons per Minute
GSI	Generic Safety Issue
IR	Inspection Report
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
MRE	Maintenance Rule Evaluation
NCV	Non-Cited Violation
NPSH	Net Positive Suction Head
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
^{o}F	Degrees Fahrenheit
OPR	Operability Review
PARS	Publicly Available Records System
PCI	Performance Contracting, Inc.
PI	Performance Indicator
PINGP	Prairie Island Nuclear Generating Plant
RCE	Root Cause Evaluation
REMP	Radiological Environmental Monitoring Program
RHR	Residual Heat Removal
RWST	Refueling Water Storage Tank
SDP	Significance Determination Process
SP	Surveillance Procedure
TDAFW	Turbine-Driven Auxiliary Feedwater
TI	Temporary Instruction
TLD	Thermoluminescence Dosimeter
TS	Technical Specifications
TSO	Transmission System Operator
URI	Unresolved Item
USAR	Updated Safety Analysis Report
WO	Work Order
WR	Work Request