



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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February 14, 2017

Mr. Scott Northard
Site Vice President
Prairie Island Nuclear Generating Plant
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1717 Wakonade Drive East
Welch, MN 55089-9642

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2—NRC
INTEGRATED INSPECTION REPORT 05000282/2016004; 05000306/2016004;
05000282/2016501; AND 05000306/2016501

Dear Mr. Northard:

On December 31, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at Prairie Island Nuclear Generating Plant, Units 1 and 2. On January 12, 2017, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report. The NRC also completed its annual inspection of the Emergency Preparedness Program. This inspection began on January 1, 2016, and issuance of this letter closes Inspection Report Number 2016501.

Based on the results of this inspection, the NRC has identified two issues that were evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has also determined that two violations are associated with these issues. Because the licensee entered the issues into the corrective action program, these violations are being treated as Non-Cited Violations (NCVs), consistent with Section 2.3.2 of the Enforcement Policy. These NCVs are described in the subject inspection report. Further, the inspectors documented two licensee-identified violations that were determined to be of very low safety significance in this report. The NRC is also treating these violations as NCVs consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or significance of these NCVs, 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 copies to: (1) the Regional Administrator, Region III; (2) the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and (3) the NRC Resident Inspector Office at the Prairie Island Nuclear Generating Plant.

In addition, if you disagree with the cross-cutting aspect assignment to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector Office at the Prairie Island Nuclear Generating Plant.

S. Northard

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In accordance with 10 CFR 2.390, of the NRC's "Rules of Practice," a copy of this letter, its enclosure(s), and your response, (if any), will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary, information so that it can be made available to the Public without redaction.

Sincerely,

/RA/

Kenneth Riemer
Branch 2
Division of Reactor Projects

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

Enclosure:
IR 05000282/2016004; 05000306/2016004;
05000282/2016501; 05000306/2016501

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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 Nos: 05000282/2016004; 05000306/2016004;
05000282/2016501; 05000306/2016501

Licensee: Northern States Power Company, Minnesota

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

Location: Welch, MN

Dates: October 1 through December 31, 2016

Inspectors: L. Haeg, Senior Resident Inspector, Prairie Island
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Division of Reactor Projects

Enclosure

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SUMMARY

Inspection Report 05000282/2016004; 05000306/2016004; 05000282/2016501; and 05000306/2016501; Prairie Island Generating Plant, Units 1 and 2. Maintenance Risk Assessments and Emergent Work Control; Radiation Monitoring Instrumentation.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. One NRC-identified finding and one self-revealed finding was identified during this inspection. The significance of inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," dated July 2016.

NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

Green. A finding of very low safety significance was self-revealed, and an associated NCV of Technical Specification (TS) 5.4.1.a, "Procedures," was identified for the licensee's failure to properly implement surveillance procedure (SP) 1088B, "Train B Safety Injection Quarterly Test," Revision 24, while performing a post-maintenance valve stroke test. Specifically, on November 14, 2016, while cycling a safety injection (SI) system pump suction valve, operators exposed the SI suction header to reactor coolant system (RCS) pressure, causing a relief valve to lift as designed, a subsequent unexpected RCS pressure drop below 240 pounds per square inch (psig), and requiring operators to trip both reactor coolant pumps (RCPs). The licensee entered the issue into the Corrective Action Program (CAP) as CAP 1541821.

The inspectors determined that the licensee's failure to properly implement procedure SP 1088B as required by TS 5.4.1.a was a performance deficiency (PD). The PD was determined to be more than minor and a finding in accordance with IMC 0612, Appendix B, "Issue Screening," because it was associated with the Initiating Events Cornerstone attribute of Configuration Control and affected the associated Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors applied IMC 0609, Attachment 4, "Initial Characterization of Findings," to this finding. Since the finding pertained to an event while the plant was shut down, the inspectors transitioned to IMC 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings." Since the inspectors answered "No" to all questions within IMC 0609, Appendix G, Attachment 1, Exhibit 2, "Initiating Events Screening Questions," the finding screened as very low safety significance (Green). The inspectors determined that the performance characteristic of the finding that was the most significant causal factor of the PD was associated with the cross-cutting aspect of Teamwork in the Human Performance cross-cutting area, and involved individuals and work groups not communicating and coordinating their activities within and across organizational boundaries to ensure nuclear safety was maintained. [H.4] (Section 1R13)

Cornerstone: Occupational Radiation Safety

Green. A finding of very low safety significance, and an associated NCV of Title 10 of the *Code of Federal Regulations* (10 CFR) 20.1501(c) was identified by the inspectors for the failure to adequately calibrate the electrometer utilized in the validation of a JL Shepherd Calibrator. Specifically on November 30, 2015, the licensee performed a validation of a JL Shepherd Calibrator to ensure its correct operation. The electrometer used was incorrectly calibrated. The electronics and the detectors were required to be calibrated as a set, and this was not performed. The licensee entered this issue into their CAP as CAP 1543432.

The inspectors determined that the licensee's failure to properly calibrate the electrometer was a PD. The PD was more than minor and a finding in accordance with IMC 0612, Appendix B, "Issue Screening," because it was associated with the Occupational Radiation Safety Cornerstone attribute of Program and Process and affected the Cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. The inspectors applied IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," to this finding. Since the finding was not associated with as-low-as-reasonably-achievable (ALARA) planning or work controls, nor was there an overexposure or a substantial potential for an over exposure and the ability to assess dose was not compromised, the finding screened as very low safety significance (Green). The inspectors determined that the performance characteristic of the finding that was the most significant causal factor of the PD was associated with the cross-cutting aspect of Challenge the Unknown in the Human Performance cross-cutting area, and involved the licensee not challenging an unauthorized substitution for part of the electrometer that was damaged during shipment. [H.11] (Section 2RS5.2)

Licensee Identified Violations

Violations of very low safety or security significance or Severity Level IV that were identified by the licensee have been reviewed by the NRC. Corrective actions taken or planned by the licensee have been entered into the licensee's CAP. The violations and CAP tracking numbers are documented in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at full power at the beginning of the inspection period. On October 15, 2016, Unit 1 was taken offline to begin refueling outage (RFO) 30 (1R30). On November 20, 2016, Unit 1 was placed on line and remained at full power for the remainder of the inspection period, with the exception of brief down-power maneuvers to accomplish planned surveillance testing or troubleshooting activities.

Unit 2 operated at full power for the entirety of the inspection period, with the exception of brief down-power maneuvers to accomplish planned surveillance testing or troubleshooting activities.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity and Emergency Preparedness

1R01 Adverse Weather Protection (71111.01)

.1 Winter Seasonal Readiness Preparations

a. Inspection Scope

The inspectors conducted a review of the licensee's preparations for winter conditions to verify that the plant's design features and implementation of procedures were sufficient to protect mitigating systems from the effects of adverse weather. Documentation for selected risk-significant systems was reviewed to ensure that these systems would remain functional when challenged by inclement weather. During the inspection, the inspectors focused on plant specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Safety Analysis Report (USAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant specific procedures. Cold weather protection, such as heat tracing and area heaters, was verified to be in operation where applicable. The inspectors also reviewed CAP items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures. Documents reviewed are listed in the Attachment to this report. The inspectors' reviews focused specifically on the following plant systems due to their risk significance or susceptibility to cold weather issues:

- Cooling water (CL) system during replacement of 121 motor-driven cooling water pump (MDCLP) motor, and D5/D6 emergency diesel generators (EDGs).

This inspection constituted one winter seasonal readiness preparations sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04Q)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- Bus 112M 480 volt (V) electrical distribution system;
- Spent fuel pool inventory makeup system; and
- 21 motor driven auxiliary feed water (AFW) subsystem.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the systems and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, the Updated Safety Analysis Report (USAR), TS requirements, outstanding work orders (WOs), CAP documents, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment 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 or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These inspections constituted three quarterly partial system walkdown samples as defined in IP 71111.04–05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- Fire Zone 30; Unit 1 fuel handling, spent fuel areas;
- Fire Zone 2; Unit 1 and 2 AFW pump rooms;
- Fire Area 5 (Zones 19 & 108) Unit 1 auxiliary building mezzanine area; and
- Fire Area 79 & 80 (Zones 26 & 43) buses 112 & 111 areas.

The inspectors reviewed these 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 implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment to this report, 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. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

These inspections constituted four quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On December 7, 2016, the inspectors observed an announced fire drill and fire brigade activation for a simulated fire near the Unit 1 hydrogen seal oil skid. Based on this observation, the inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies, openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were:

- proper wearing of turnout gear and self-contained breathing apparatus;
- proper use and layout of fire hoses;
- employment of appropriate firefighting techniques;
- sufficient firefighting equipment brought to the scene;
- effectiveness of fire brigade leader communications, command, and control;
- search for victims and propagation of the fire into other plant areas;
- smoke removal operations;
- utilization of pre-planned strategies;
- adherence to the pre-planned drill scenario; and
- drill objectives.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted one annual fire protection drill observation sample as defined in IP 71111.05-05.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

.1 Annual Heat Sink Performance (71111.07A)

a. Inspection Scope

The inspectors reviewed the licensee's testing of the D1 and D2 EDG jacket water (JW) heat exchangers to verify that potential deficiencies did not mask the licensee's ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure that the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. The inspectors reviewed the licensee's observations as compared against acceptance criteria, the correlation of scheduled testing and the frequency of testing, and the impact of instrument inaccuracies on test results. The inspectors also verified that test acceptance criteria considered differences between testing and design conditions. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one annual heat sink performance sample as defined in IP 71111.07-05.

b. Findings

No findings were identified.

.2 Triennial Review of Heat Sink Performance (71111.07T)

a. Inspection Scope

The inspectors reviewed operability determinations, completed surveillances, vendor manual information, associated calculations, performance test results and cooler inspection results associated with the 21 component cooling (CC) heat exchanger and the D1 EDG JW heat exchanger. These heat exchangers were chosen based on their risk significance in the licensee's Probabilistic Safety Analysis, their important safety-related mitigating system support functions, their operating history, and their relatively low margin.

For the 21 CC heat exchanger, the inspectors reviewed the testing, inspection, maintenance, and monitoring of biotic fouling and macrofouling programs to assess the heat transfer capability of the heat exchanger. This was accomplished by reviewing whether: (1) the test methods used were consistent with accepted industry practices; (2) the test conditions were consistent with the selected methodology; (3) the test acceptance criteria were consistent with the design basis values; and (4) the results of the heat exchanger performance tests met established acceptance criteria. The inspectors also reviewed whether: (1) the test results considered differences between testing conditions and design conditions; (2) the frequency for testing considered previous test result trends; and (3) test results considered test instrument inaccuracies and differences.

For the 21 CC heat exchanger heat exchanger and the D1 EDG JW heat exchanger, the inspectors reviewed the testing, inspection, maintenance, and monitoring of biotic fouling and macrofouling programs to assess the heat transfer capability of the heat exchanger. The inspectors reviewed whether: (1) the methods used to inspect and clean the heat exchanger(s) were consistent with as-found conditions identified, expected degradation trends, and industry standards; (2) the licensee's inspection and cleaning activities had established acceptance criteria consistent with industry standards; and (3) the as-found results were recorded, evaluated, and dispositioned such that the as-left condition was consistent with the established criteria.

In addition, the inspectors verified the condition and operation of the 21 CC heat exchanger and the D1 EDG JW heat exchanger were consistent with design assumptions in heat transfer calculations and as described in the USAR. This included verification that the number of plugged tubes was within pre-established limits based on capacity and heat transfer assumptions. In addition, eddy current test reports and visual inspection records were reviewed to determine the structural integrity of the heat exchangers.

The inspectors reviewed the performance of ultimate heat sink (UHS), CL system and its subcomponents such as piping, intake screens, pumps, valves, etc., by tests or other equivalent methods to ensure availability and accessibility to the inplant cooling water systems. Specifically, the inspectors reviewed the UHS in accordance with IP 71111.07, "Heat Sink Performance," Section 02.02, Sub-Sections d.2 and d.7.

The inspectors evaluated whether the licensee's inspection of the UHS was thorough and of significant depth to identify degradation of the shoreline protection or loss of structural integrity or volume. This included a review to determine whether vegetation present along the slopes was trimmed, maintained, and was not adversely impacting the embankment. In addition, the inspectors assessed the licensee's trending and removal of debris or sediment buildup in the UHS to ensure sufficient reservoir capacity.

The inspectors reviewed the results of the licensee's inspection of the UHS intake canal and approach canals. The inspectors also reviewed whether identified settlement or movement indicating loss of structural integrity and/or capacity was appropriately evaluated and dispositioned by the licensee.

The inspectors performed a walkdown of the service water intake structure to assess its structural integrity and component functionality. This included observations of the structural integrity of component mounts and an assessment of the functionality of the traveling screens and strainers. The inspectors reviewed licensee activities which monitored, trended, and maintained service water pump bay silt accumulation at acceptable levels, and those which monitored and ensured proper function of pump bay water level instruments. The inspectors also reviewed the licensee's ability to ensure functionality of the intake structure during adverse weather conditions. The inspectors assessed whether an adequate amount of water would still flow past sand-limiting underwater weir walls during periods of low river level. The inspectors also evaluated the licensee's strategy for protecting against silt intrusion during periods of low flow or low level.

In addition, the inspectors reviewed CAP documents related to heat exchangers/coolers and UHS performance issues to verify that the licensee had an appropriate threshold for identifying issues and to evaluate the effectiveness of the corrective actions. Documents reviewed are listed in the Attachment to this report.

These inspections constituted three triennial heat sink performance inspection samples as defined in IP 71111.07–05.

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08P)

From October 17–November 28, 2016, the inspectors conducted a review of the implementation of the licensee’s inservice inspection (ISI) program for monitoring degradation of the reactor coolant system (RCS), risk-significant piping and components and containment systems.

This inspection constituted one ISI sample (see Sections 1R08.1, 1R08.3 and 1R08.5 below), as defined in IP 71111.08–05.

.1 Piping Systems Inservice Inspection

a. Inspection Scope

The inspectors either observed or reviewed records of the following Non-Destructive Examinations (NDEs) mandated by the American Society of Mechanical Engineers (ASME), Section XI Code, to evaluate compliance with the ASME Code Section XI and Section V requirements, and if any indications and defects were detected, to determine if these were dispositioned in accordance with the ASME Code or an NRC-approved alternative requirement.

- Ultrasonic examination of tubesheet to shell for steam generator (SG) 11;
- Magnetic particle examination of an integral attachment support rod for SG 11;
- Visual examination of reactor vessel nuts and washers (1 through 16); and
- Unit 1 metallic containment liner visual examination in 2012.

During non-destructive surface and volumetric examinations performed since the previous refueling outage, the licensee had not identified any recordable indications. Therefore, no NRC review was completed for this inspection procedure attribute.

The inspectors either observed or reviewed the following pressure boundary welds completed for risk-significant systems since the beginning of the last refueling outage to determine if the licensee applied the preservice NDEs, and acceptance criteria required by the Construction Code and ASME Code, Section XI. Additionally, the inspectors reviewed the welding procedure specification and supporting weld procedure qualification records to determine if the weld procedures were qualified in accordance with the requirements of Construction Code and ASME Code Section IX.

- Unit 1 reactor coolant pump (RCP) seal replacements.

b. Findings

No findings were identified.

.2 Reactor Pressure Vessel Upper Head Penetration Inspection Activities

a. Inspection Scope

The licensee did not perform any welded repairs to vessel head penetrations since the beginning of the preceding outage for Unit 1. Therefore, no NRC review was completed for this inspection procedure attribute.

For the Unit 1 vessel head, no examination was required pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50.55a(g)(6)(ii)(D) for the current refueling outage. Therefore, no NRC review was completed for this inspection attribute.

b. Findings

No findings were identified.

.3 Boric Acid Corrosion Control

a. Inspection Scope

The inspectors performed an independent walkdown of the RCS and related lines in the containment, which had received a recent licensee boric acid walkdown, and verified whether the licensee's boric acid corrosion control visual examinations emphasized locations where boric acid leaks can cause degradation of safety significant components.

The inspectors reviewed the following licensee evaluations of RCS components with boric acid deposits to determine if degraded components were documented in the CAP. The inspectors also evaluated corrective actions for any degraded RCS components to determine if they met the ASME Section XI Code.

- 11 RCP seal bowl.

The inspectors reviewed the following corrective actions related to evidence of boric acid leakage to determine if the corrective actions completed were consistent with the requirements of the ASME Code Section XI and 10 CFR Part 50, Appendix B, Criterion XVI.

- CAP 1465567; "12 RCP Seal Leakage".

b. Findings

No findings were identified.

.4 Steam Generator Tube Inspection Activities

a. Inspection Scope

The licensee did not perform in-situ pressure testing of SG tubes. Therefore, no NRC review was completed for this inspection attribute.

For the Unit 1 SGs, no examination was required pursuant to the TSs during the current refueling outage. Therefore, no NRC review was completed for this inspection procedure attribute.

b. Findings

No findings were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

The inspectors performed a review of ISI/SG-related problems entered into the licensee's CAP, and conducted interviews with licensee staff to determine if:

- the licensee had established an appropriate threshold for identifying ISI/SG-related problems;
- the licensee had performed a root cause evaluation (if applicable) and taken appropriate corrective actions; and
- the licensee had evaluated operating experience and industry generic issues related to ISI and pressure boundary integrity.

The inspectors performed these reviews to evaluate compliance with 10 CFR Part 50, Appendix B, Criterion XVI requirements. Documents reviewed are listed in the Attachment to this report.

b. Findings

(1) Baffle Former Bolting Analysis Acceptance Criteria

Introduction: The inspectors identified an Unresolved Item (URI) concerning the analysis that demonstrated the design adequacy of the baffle former bolting under design and licensing basis loading conditions.

Description: The inspectors reviewed WCAP 17586-P, "Determination of Acceptable Baffle-Barrel Bolting for Prairie Island Units 1 and 2," Revision 0; WCAP-15030-NP-A, "Westinghouse Methodology for Evaluating the Acceptability of Baffle-Former-Barrel Bolting Distributions under Faulted Load Conditions," dated March 2, 1999; and Safety Evaluation by the Office of Nuclear Reactor Regulation of WCAP-15029, "Westinghouse Methodology for Evaluating the Acceptability of Baffle-Former-Barrel Bolting Distributions Under Faulted Load Conditions," dated November 10, 1998.

The inspectors were concerned that the licensee had evaluated the baffle former bolting using acceptance criteria different than what was reviewed and approved by the Office of Nuclear Reactor Regulation. In WCAP-15030-NP-A, Section 4.3.2 stated that the stress allowable for primary membrane and bending of irradiated bolt material is

taken to 0.9 times S_y (yield stress of baffle bolt material) for the faulted load condition. The stress allowable used in WCAP 17586–P was based on ASME, Section III, Appendix F, specifically: (minimum of (0.9 times S_u) ultimate stress of baffle bolt material), maximum of (0.67 times S_u , $S_y + 1/3 (S_u - S_y)$)).

The inspectors also reviewed 10 CFR 50.59 Screening No. 4443, "Determination of Acceptable Baffle-Barrel Bolting," dated January 24, 2013, to determine whether the licensee performed a 50.59 evaluation for the use of ASME, Section III, Appendix F acceptance criteria. However, the inspectors identified that the change for the use of ASME, Section III, Appendix F acceptance criteria in lieu of the acceptance criteria contained in Section 4.3.2 of WCAP–15030–NP–A was not explicitly reviewed in 50.59 Screening No. 4443.

In response to the inspectors concern, the licensee initiated CAP 1539487, "Documentation Missing in 50.59 Screening 4443," dated October 26, 2016.

This issue is an URI pending evaluation of these concerns by the licensee, subsequent inspector review, and discussion with the licensee and Office of Nuclear Reactor Regulation (**URI 05000282/2016004–01; 05000306/2016004–01; Baffle Former Bolting Analysis Acceptance Criteria**).

1R11 Licensed Operator Requalification Program (71111.11)

.1 Annual Operating Test Results (71111.11A)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the Annual Operating Test, administered by the licensee from August 18, 2016, through September 29, 2016, required by Title 10 CFR, Part 55.59(a). The results were compared to the thresholds established in Inspection Manual Chapter (IMC) 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process," to assess the overall adequacy of the licensee's Licensed Operator Requalification Training Program to meet the requirements of 10 CFR 55.59. (Section 02.02).

This inspection constituted one annual operating test results sample as defined in IP 71111.11–05.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Review of Licensed Operator Requalification (71111.11Q)

a. Inspection Scope

On December 5, 2016, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training. The inspectors verified that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and that training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement 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. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly resident inspector quarterly review of licensed operator requalification sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

.3 Resident Inspector Quarterly Observation during Periods of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On October 14 and 15, 2016, the inspectors observed portions of the Unit 1 planned shutdown for the refueling outage from the control room. Activities included power reduction, removing the main generator from service, main turbine over-speed testing and entry into Mode 3. Additionally, on November 19 and 20, 2016, the inspectors observed portions of the Unit 1 startup activities following completion of the refueling outage. These activities required heightened awareness and were related to increased risk. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms (if applicable);
- correct use and implementation of procedures;
- control board (or equipment) manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications (if applicable).

The performance in these areas was compared to pre-established operator action expectations, procedural compliance and task completion requirements. Documents reviewed are listed in the Attachment to this report.

These inspections constituted two resident inspector quarterly observations during periods of heightened activity or risk samples as defined in IP 71111.11-05.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

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

- Unit 1 RCS; and
- 12 safety injection (SI) system.

The inspectors reviewed events such as where ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems 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) of the maintenance rule;
- 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 (SSCs)/functions classified as (a)(2), or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These inspections constituted two routine quarterly evaluation samples as defined in IP 71111.12-05.

b. Findings

No findings 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 evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- 11 battery discharge test emergent issues;
- Unit 1 shutdown risk following core offload to the spent fuel pool;
- Licensee analysis and walkdown of the Unit 1 SI system following over-pressurization and suction relief valve actuation due to a configuration control event;
- Troubleshooting and repairs of 12 and 22 SG feedwater regulating valves due to flow oscillations;
- Bus 15 ventilation ductwork inspection door latch failure and subsequent repairs; and
- Substation breaker 8H8 failure.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, 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 licensee's probabilistic risk analyst or shift technical advisor, 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 are listed in the Attachment to this report.

These inspections constituted six maintenance risk assessments and emergent work control activities samples as defined in IP 71111.13-05.

b. Findings

(1) Failure to Properly Implement a Post-Maintenance Test Procedure during Safety Injection System Valve Testing

Introduction: A finding of very low safety significance (Green) was self-revealed, and an associated Non-Cited Violation (NCV) of TS 5.4.1.a, "Procedures," was identified for the licensee's failure to properly implement Surveillance Procedure (SP) 1088B, "Train B Safety Injection Quarterly Test," Revision 24, while performing a post-maintenance valve stroke test. Specifically, on November 14, 2016, while cycling an SI system pump suction valve, operators exposed the SI suction header to RCS pressure, causing a relief valve to lift as designed, a subsequent unexpected RCS pressure drop below 240 pounds per square inch (psig), and requiring operators to trip both RCPs.

Description: On November 14, 2016, Unit 1 was in Mode 5 with both RCPs in service and RCS pressure being maintained at approximately 345 psig. As part of planned ascension to Mode 4, the pressurizer was being maintained solid with the residual heat removal (RHR) system in service controlling pressure in combination with normal letdown. As part of completing required Mode 5 to 4 work activities, control room operators were provided a marked-up copy of SP 1088B to be completed as a post-maintenance test (PMT) prior to transitioning to Mode 4. The PMT required stroking motor valve (MV) 32207, "12 RHR supply to 12 SI pump suction". When the operators proceeded to open MV 32207 per Step 7.1.10 of the marked-up SP 1088B, the 12 SI pump suction header relief valve, SI-4-2, lifted and resulted in an unanticipated drop in RCS pressure. Because the RCS system was being maintained solid in Mode 5, the associated loss of water through the relief valve resulted in a sudden decrease in RCS pressure below 240 psig, requiring operators to trip both RCPs per procedural requirements. To mitigate the loss of RCS inventory, the operators quickly closed MV 32207; isolating the relief valve and stabilizing RCS pressure at approximately 350 psig. In response, the licensee generated CAP 1541821, completed a human performance evaluation, and performed a stress analysis to evaluate the impact of momentarily exposing the 12 SI suction header to RCS pressure.

As part of the inspector's initial review, they noted that cycling MV 32207 under the plant conditions at the time would expose the 12 SI pump suction header to full RCS pressure which was approximately 345 psig during the test. In addition, the inspectors noted that SI-4-2, located on the 12 SI suction header, had a lift set point of 210 psig. The inspectors reviewed the associated CAP, human performance evaluation, SP 1088B, the stress analysis results, and interviewed the associated operations personnel involved in the transient. In their review, the inspectors noted the following contributing performance weaknesses:

- The senior reactor operator (SRO) from the previous night shift who had marked-up SP 1088B had marked prerequisite Step 6.6 not-applicable (N/A). This step required verification of current plant conditions and was therefore not verified prior to the test;
- The SRO on duty at the time of the test did not adequately review the marked-up SP 1088B prior to cycling MV 32207;
- The pre-job brief and panel walk-downs did not adequately address current plant conditions;
- System flow diagrams were not utilized to verify the lineup or identify that SI-4-2 would lift; and
- The operators involved did not recognize that SI-4-2 would lift above 210 psig upon opening MV 32207.

Based on the above information and subsequent conversations with operations management, the inspectors concluded that the operators failed as a team to implement SP 1088B, Step 6.6 as written and required. Specifically, Step 6.6 directed operators to verify that the RCS was depressurized prior to opening MV 32207. Consequently, the initial mark-up, pre-job brief and execution of SP 1088B were all performed without verifying initial plant conditions prior to opening MV 32207.

Analysis: The inspectors determined that the licensee's failure to properly implement procedure SP 1088B as required by TS 5.4.1.a. was a performance deficiency (PD). The PD was determined to be more than minor and a finding in accordance with IMC 0612, Appendix B, "Issue Screening," because it was associated with the Initiating Events Cornerstone attribute of Configuration Control and affected the associated Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the licensee failed to properly verify initial plant conditions prior to opening MV 32207, resulting in over-pressurization of the 12 SI system, subsequent lifting of an SI relief valve, loss of RCS inventory, and consequential depressurization of the RCS requiring operators to manually trip both RCPs.

The inspectors applied IMC 0609, Attachment 4, "Initial Characterization of Findings," to this finding. Since the finding pertained to an event while the plant was shut down, the inspectors transitioned to IMC 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings." Per Exhibit 2, "Initiating Events Screening Questions," the PD did not require a detailed Phase 2 analysis because it was self-limiting. Specifically, the SI relief valve resealed as designed without operator assistance and therefore would not have resulted in a loss of the RHR system. Since the inspectors answered "No" to all of the other questions within IMC 0609, Appendix G, Attachment 1, Exhibit 2, the finding screened as very low safety significance (Green).

The inspectors determined that the performance characteristic of the finding that was the most significant causal factor of the PD was associated with the cross-cutting aspect of Teamwork in the Human Performance cross-cutting area, and involved individuals and work groups not communicating and coordinating their activities within and across organizational boundaries to ensure nuclear safety was maintained. Specifically, the night shift SRO, day shift SRO, and operators performing the PMT for MV 32207 failed to communicate, coordinate and verify that initial plant conditions were adequate to perform the associated PMT. [H.4]

Enforcement: Technical Specification 5.4.1.a, "Procedures," required, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Rev. 2, Appendix A, February 1978. Regulatory Guide 1.33, Appendix A, Section 9.a. states, in part, that maintenance that can affect the performance of safety-related equipment should be properly pre-planned and performed in accordance with written procedures appropriate to the circumstance.

Contrary to the above, on November 14, 2016, the licensee failed to properly implement SP 1088B, "Train B Safety Injection Quarterly Test," Revision 24, that required verification of appropriate plant conditions prior to performing the PMT.

Immediate corrective actions included closure of MV 32207, verification that SI-4-2 had re-seated, stabilization of RCS pressure, and initiation of a causal evaluation. Because this violation was of very low safety significance and was entered into the licensee's corrective action program as CAP 1541821, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (**NCV 05000282/2016004-02, "Failure to Properly Implement a Post-Maintenance Test Procedure during Safety Injection System Valve Testing"**).

1R15 Operability Determinations and Functionality Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- CAP 1536176, "121 Motor-Driven Cooling Water Pump Loss of Bearing Water Pressure," September 30, 2016;
- CAP 1544831, "Through Wall Leak on 4-CL-28 Piping," December 13, 2016;
- CAP 1540462, "MV-32266, 11/12 Reactor Coolant Pump Component Cooling Water Inlet Valve Prompt Operability Determination," November 8, 2016; and
- CAP 1540467, "CV-31411, 12 Component Cooling Heat Exchanger Return Valve Failed IST Evaluation," November 3, 2016.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and Updated Safety Analysis Report (USAR) to the licensee's evaluations to determine whether the components or systems were operable. 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 determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

These inspections constituted four operability evaluation samples as defined in IP 71111.15-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following post-maintenance (PM) activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- D2 emergency diesel generator (EDG) air cooler heat exchanger testing following replacement;
- D1 EDG JW heat exchanger testing following repair;
- 21 containment spray (CS) pump testing following supply breaker replacement;

- D1 slow and fast speed start testing following exciter circuitry replacement;
- Integrated safety injection testing following various outage maintenance work on the D2 EDG and B train emergency core cooling system components;
- Testing of 11 CS pump following outage activities; and
- Steam exclusion boundary testing following repairs to inspection door latch.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): 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; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TSs, 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 corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

These inspections constituted seven post-maintenance testing samples as defined in IP 71111.19–05.

b. Findings

No findings were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

The inspectors reviewed the Outage Safety Plan (OSP) and contingency plans for 1R30, conducted October 15 through November 20, 2016, to confirm that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. During the refueling outage (RFO), the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below:

- licensee configuration management, including maintenance of defense-in-depth commensurate with the OSP for key safety functions and compliance with the applicable TSs when taking equipment out of service;
- implementation of clearance activities and confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing;

- installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error;
- controls over the status and configuration of electrical systems to ensure that TSs and OSP requirements were met, and controls over switchyard activities;
- monitoring of decay heat removal processes, systems, and components;
- controls to ensure that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system;
- reactor water inventory controls including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss;
- controls over activities that could affect reactivity;
- maintenance of secondary containment as required by TS;
- licensee fatigue management, as required by 10 CFR 26, Subpart I;
- refueling activities, including fuel handling and sipping to detect fuel assembly leakage;
- startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing; and
- licensee identification and resolution of problems related to RFO activities.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted one refueling outage activities sample as defined in IP 71111.20-05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 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:

- SP 1853; 4kV Bus 15 Undervoltage Relay Calibration (OMICRON); Revision 2 (Routine);
- SP 1169; Reactor Coolant System Flow Verification; Revision 21 (Routine);
- SP 1305; D2 Diesel Generator Monthly Slow Start Test; Revision 56 (Routine); and
- SP 1072.35; Local Leakage Rate Test of Penetration 35 SI Test Line; Revision 2 (ISO Valve).

The inspectors observed in-plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- the 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;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency was in accordance with TSs, the USAR, procedures, and applicable commitments;
- 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; 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;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of American Society of Mechanical Engineers (ASME) Code, Section XI, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

These inspections constituted three routine surveillance testing samples and one containment isolation valve surveillance testing sample as defined in IP 71111.22, Sections–02 and–05.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

A region-based inspector performed an in-office review of the latest revisions to the licensee's Emergency Plan, Emergency Action Levels (EALs), and EAL Bases document to determine if any changes decreased the effectiveness of the Emergency Plan.

The inspector also performed a review of the licensee's Title 10 CFR Part 50.54(q) change process, and Emergency Plan change documentation to ensure proper implementation for maintaining Emergency Plan integrity.

The U.S. NRC review was not documented in a safety evaluation report, and did not constitute approval of licensee-generated changes; therefore, this revision may be subject to future inspection. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one EAL and Emergency Plan Changes sample as defined in IP 71114.04-06.

b. Findings

No findings were identified

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

.1 Radiological Hazard Assessment (02.02)

a. Inspection Scope

The inspectors assessed the licensee's current and historic isotopic mix, including alpha emitters and other hard-to-detect radionuclides. The inspectors evaluated whether survey protocols were reasonable to identify the magnitude and extent of the radiological hazards.

The inspectors determined if there had been changes to plant operations since the last inspection that may have resulted in any significant new radiological hazard for onsite individuals. The inspectors evaluated whether the licensee assessed the potential impact of these changes and implemented periodic monitoring, as appropriate, to detect and quantify the radiological hazard. The inspectors reviewed the last two radiological surveys from selected plant areas and evaluated whether the thoroughness and frequency of the surveys were appropriate for the given radiological hazard.

The inspectors conducted walkdowns of the facility, including radioactive waste processing, storage, and handling areas to evaluate material conditions and performed independent radiation measurements as needed to verify conditions were consistent with documented radiation surveys.

The inspectors assessed the adequacy of pre-work surveys for select radiologically risk-significant work activities.

The inspectors evaluated the radiological survey program to determine if hazards were properly identified. The inspectors discussed procedures, equipment, and performance of surveys with radiation protection staff and assessed whether technicians were knowledgeable about when and how to survey areas for various types of radiological hazards.

The inspectors reviewed work in potential airborne areas to assess whether air samples were being taken appropriately for their intended purpose and reviewed various survey records to assess whether the samples were collected and analyzed appropriately. The inspectors also reviewed the licensee's program for monitoring contamination which has the potential to become airborne.

This inspection constituted one radiological hazard assessment and exposure controls sample as defined in IP 71124.0–05.

b. Findings

No findings were identified.

.2 Instructions to Workers (02.03)

a. Inspection Scope

The inspectors reviewed select radiation work permits (RWPs) used to access high radiation areas and evaluated the specified work control instructions or control barriers. The inspectors also assessed whether workers were made aware of the work instructions and area dose rates.

The inspectors reviewed electronic alarming dosimeter dose and dose rate alarm setpoint methodologies. For selected electronic alarming dosimeter occurrences, the inspectors assessed the worker's response to the alarm, the licensee's evaluation of the alarm, and any followup investigations.

The inspectors reviewed the licensee's methods for informing workers of changes in plant operations or radiological conditions that could have significantly impacted their occupational dose.

The inspectors reviewed the labeling of select containers of licensed radioactive material that could have caused unplanned or inadvertent exposure to workers.

This inspection constituted one radiological hazard assessment and exposure controls sample as defined in IP 71124.01–05.

b. Findings

No findings were identified.

.3 Contamination and Radioactive Material Control (02.04)

a. Inspection Scope

The inspectors observed locations where the licensee monitored material leaving the radiologically controlled area and assessed the methods used for control, survey, and release of material from these areas. As available, the inspectors observed health physics personnel surveying and releasing material for unrestricted use.

The inspectors observed workers leaving the radiologically controlled area and assessed their use of tool and personal contamination monitors and reviewed the licensee's criteria for use of the monitors.

The inspectors assessed whether instrumentation was used at its typical sensitivity levels based on appropriate counting parameters or whether the licensee had established a de facto release limit.

The inspectors selected several sealed sources from the licensee's inventory records and assessed whether the sources were accounted for and verified to be intact. The inspectors also evaluated whether any transactions, since the last inspection, involving nationally tracked sources were reported in accordance with Title 10 CFR, Part 20.2207.

This inspection constituted one radiological hazard assessment and exposure controls sample as defined in IP 71124.01–05.

b. Findings

No findings were identified.

.4 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

The inspectors evaluated ambient radiological conditions during tours of the facility. The inspectors assessed whether the conditions were consistent with applicable posted surveys, RWPs, and worker briefings.

The inspectors evaluated the adequacy of radiological controls, such as required surveys, radiation protection job coverage, and contamination controls. The inspectors evaluated the licensee's use of electronic alarming dosimeters in high noise areas as high radiation area monitoring devices.

The inspectors assessed whether radiation monitoring devices were placed on the individual's body consistent with licensee procedures. The inspectors assessed whether the dosimeter was placed in the location of highest expected dose or that the licensee properly employed an U.S. NRC-approved method of determining effective dose equivalent.

The inspectors reviewed the application of dosimetry to effectively monitor exposure to personnel in work areas with significant dose rate gradients.

For select airborne area RWPs, the inspectors reviewed airborne radioactivity controls and monitoring, the potential for significant airborne levels, containment barrier integrity, and temporary filtered ventilation system operation.

The inspectors examined the licensee's physical and programmatic controls for highly activated or contaminated materials stored within pools and assessed whether appropriate controls were in place to preclude inadvertent removal of these materials from the pool.

This inspection constituted one radiological hazard assessment and exposure controls sample as defined in IP 71124.01–05.

b. Findings

No findings were identified.

.5 High Radiation Area and Very High Radiation Area Controls (02.06)

a. Inspection Scope

The inspectors observed posting and physical controls for high radiation areas and very high radiation areas to assess adequacy.

The inspectors conducted a selective inspection of posting and physical controls for high radiation areas and very high radiation areas to assess conformance with performance indicators.

The inspectors reviewed procedural changes to assess the adequacy of access controls for high and very high radiation areas to determine whether procedural changes substantially reduced the effectiveness and level of worker protection.

The inspectors assessed the controls the high radiation areas greater than 1 rem/hour and areas with the potential to become high radiation areas greater than 1 rem/hour for compliance with TSs and procedures.

The inspectors assessed the controls for very high radiation areas and areas with the potential to become very high radiation areas. The inspectors also assessed whether individuals were unable to gain unauthorized access to these areas.

This inspection constituted one radiological hazard assessment and exposure controls sample as defined in IP 71124.01–05.

b. Findings

No findings were identified.

.6 Radiation Worker Performance and Radiation Protection Technician Proficiency (02.07)

a. Inspection Scope

The inspectors observed radiation worker performance and assessed their performance with respect to radiation protection work requirements, the level of radiological hazards present, and RWP controls.

The inspectors assessed worker awareness of electronic alarming dosimeter set points, stay times, or permissible dose for radiologically significant work as well as expected response to alarms.

The inspectors observed radiation protection technician performance and assessed whether the technicians were aware of the radiological conditions and RWP controls and whether their performance was consistent with training and qualifications for the given radiological hazards.

The inspectors observed radiation protection technician performance of radiation surveys and assessed the appropriateness of the instruments being used, including calibration and source checks.

This inspection constituted one radiological hazard assessment and exposure controls sample as defined in IP 71124.01–05.

b. Findings

No findings were identified.

.7 Problem Identification and Resolution (02.08)

a. Inspection Scope

The inspectors assessed whether problems associated with radiological hazard assessment and exposure controls were being identified at an appropriate threshold and were properly addressed for resolution. For select problems, the inspectors assessed the appropriateness of the corrective actions. The inspectors also assessed the licensee's program for reviewing and incorporating operating experience.

The inspectors reviewed select problems related to human performance errors and assessed whether there was a similar cause and whether corrective actions taken resolve the problems.

The inspectors reviewed select problems related to radiation protection technician error and assessed whether there was a similar cause and whether corrective actions taken resolve the problems.

This inspection constituted one radiological hazard assessment and exposure controls sample as defined in IP 71124.01–05.

b. Findings

No findings were identified.

2RS5 Radiation Monitoring Instrumentation (71124.05)

.1 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors assessed select portable survey instruments that were available for use for current calibration and source check stickers, and instrument material condition and operability.

The inspectors observed licensee staff demonstrate performance checks of various types of portable survey instruments. The inspectors assessed whether high-range instruments responded to radiation on all appropriate scales.

The inspectors walked down area radiation monitors and continuous air monitors to determine whether they were appropriately positioned relative to the radiation sources or areas they were intended to monitor. The inspectors compared monitor response with actual area conditions for selected monitors.

The inspectors assessed the functional checks for select personnel contamination monitors, portal monitors, and small article monitors to verify they were performed in accordance with the manufacturer's recommendations and licensee procedures.

This inspection constituted one radiation monitoring instrumentation sample as defined in IP 71124.05-05.

b. Findings

No findings were identified.

.2 Calibration and Testing Program (02.03)

a. Inspection Scope

The inspectors assessed laboratory analytical instruments used for radiological analyses to determine whether daily performance checks and calibration data indicated that the frequency of the calibrations was adequate and there were no indications of degraded instrument performance. The inspectors assessed whether appropriate corrective actions were implemented in response to indications of degraded instrument performance.

The inspectors reviewed the methods and sources used to perform whole body count functional checks before daily use and assessed whether check sources were appropriate and aligned with the plant's isotopic mix. The inspectors reviewed whole body count calibration records since the last inspection and evaluated whether calibration sources were representative of the plant source term and that appropriate calibration phantoms were used. The inspectors looked for anomalous results or other indications of instrument performance problems.

Inspectors reviewed select containment high-range monitor calibration and assessed whether an electronic calibration was completed for all range decades, with at least one decade at or below 10 rem/hour calibrated using an appropriate radiation source, and calibration acceptance criteria was reasonable.

The inspectors reviewed select monitors used to survey personnel and equipment for unrestricted release to assess whether the alarm setpoints were reasonable under the circumstances to ensure that licensed material was not released from the site. The inspectors reviewed the calibration documentation for each instrument selected and discussed the calibration methods with the licensee to determine consistency with the manufacturer's recommendations.

The inspectors reviewed calibration documentation for select portable survey instruments, area radiation monitors, and air samplers. The inspectors reviewed detector measurement geometry and calibration methods for portable survey instruments and area radiation monitors calibrated onsite and observed the licensee demonstrate use of the instrument calibrator. The inspectors assessed whether appropriate corrective actions were taken for instruments that failed performance checks or were found significantly out of calibration, and that the licensee had evaluated the possible consequences of instrument use since the last successful calibration or performance check.

The inspectors reviewed the current output values for instrument calibrators. The inspectors assessed whether the licensee periodically measured calibrator output over the range of the instruments used with measuring devices that have been calibrated by a facility using National Institute of Standards and Technology (NIST) traceable sources and corrective factors for these measuring devices were properly applied in its output verification.

The inspectors reviewed the licensee's Title 10 CFR, Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," source term to assess whether calibration sources used were representative of the types and energies of radiation encountered in the plant.

This inspection constituted one radiation monitoring instrumentation sample as defined in IP 71124.05-05.

b. Findings

(1) Failure to Adequately Calibrate an Electrometer

Introduction: A finding of very-low safety significance (Green), and an associated Non-Cited Violation (NCV) of 10 CFR 20.1501(c) was identified by the inspectors for the failure to adequately calibrate the electrometer utilized in the validation of a JL Shepherd Calibrator. Specifically, on November 30, 2015, the licensee performed a validation of a JL Shepherd Calibrator to ensure its correct operation. The electronics and the detectors were required to be calibrated as a set, and this was not performed.

Description: Most of the radiation protection radiological survey instrumentation at Prairie Island are calibrated onsite by licensee personnel using a radiation source that was characterized annually using a sensitive instrument called an electrometer. The electrometer is comprised of multiple pieces that act as a unit to measure the amount of radiation emitted from a source. The electrometer and associated radiation sensitive detectors are tested and if the unit's response meets the precision and reproducibility standards specified by NIST, then the electrometer can act as a transfer standard. This transfer standard is then used to characterize the radiation source(s) at the facility to identify the amount of radiation emitted over a known period of time at a measured

distance from the radiation source. This characterization is repeated at different distances and plotted to develop calibration curves. These calibration curves are then used to adjust the plant's radiation protection radiological survey instrumentation to a known dose rate emitted from the radiation source in a process called instrumentation calibration.

On June 30, 2015, a licensee vendor off-site tested the Prairie Island electrometer and its associated detectors as a set and determined that the performance satisfied the requirements established by NIST. During transit back to the licensee, the electrometer was found to be damaged. Rather than fixing the electrometer for the set, the licensee obtained a different electrometer from a different facility. On November 30, 2015, the licensee used this combination to perform the annual characterization of the radiation sources in their JL Shepherd Calibrator. The JL Shepherd Calibrator is then used to calibrate numerous radiation detecting devices such as ion chambers and telescoping dose rate GM devices.

The inspectors questioned the adequacy of calibration curves generated for the JL Shepherd Calibrator radiation sources using the combination of an electrometer and detectors which were not tested as a set. The licensee contacted the vendor that subsequently determined that the components must be tested as a set to ensure correct operation.

The licensee then entered this issue into its corrective action program (CAP) on November 29, 2016, as CAP 1543432. Licensee procedure RPIP 1530, "Victoreen R Meter," Revision 6, did not specify that the calibration was required to be performed as a set.

Analysis: The inspectors determined that the failure to properly calibrate the electrometer as specified by the manufacturer was within the licensee's ability to foresee and correct and should have been prevented; therefore a performance deficiency (PD) existed. The PD was more than minor and a finding in accordance with Inspection Manual Chapter (IMC) 0612, Appendix B, "Issue Screening," because it was associated with the Occupational Radiation Safety Cornerstone attribute of Program and Process and affected the Cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Specifically, the correct usage of the electrometer and its associated detectors was used to verify that the JL Shepherd Calibrators' radioactive sources and shields along with its other components correctly operate. This was necessary because the JL Shepherd Calibrator was then used to calibrate numerous radiation detecting instruments.

The inspectors applied IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," to this finding. Since the finding was not associated with as-low-as-reasonably-achievable (ALARA) planning or work controls, nor was there an overexposure or a substantial potential for an overexposure and the ability to assess dose was not compromised, the finding screened as very low safety significance (Green).

The inspectors determined that the performance characteristic of the finding that was the most significant causal factor of the PD was associated with the cross-cutting aspect of Challenge the Unknown in the Human Performance cross-cutting area, and involved the

licensee not challenging an unauthorized substitution for part of the electrometer that was damaged during shipment. [H.11]

Enforcement: Title 10 CFR 20.1501(c) requires, “the licensee shall ensure that instruments and equipment used for quantitative radiation measurements (e.g., dose rate and effluent monitoring) are calibrated periodically for the radiation measured.”

Contrary to this requirement, on November 30, 2015, the licensee used an electrometer which was not correctly calibrated. The licensee performed an evaluation using an alternative method to ensure the JL Shepherd Calibrator was operating satisfactorily. Because this violation was of very-low safety significance and was entered into the licensee’s CAP as CAP 1543432, this violation is being treated as a NCV consistent with Section 2.3.2 of NRC Enforcement Policy (**NCV 05000282/2016004-03; 05000306/2016004-03; Failure to Adequately Calibrate an Electrometer**).

.3 Problem Identification and Resolution (02.04)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring instrumentation were being identified by the licensee at an appropriate threshold and were properly addressed for resolution. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involve radiation monitoring instrumentation.

This inspection activity constituted one complete sample as defined in IP 71124.05-05.

b. Findings

No findings were identified.

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

.1 Sampling and Analyses (02.04)

a. Inspection Scope

The inspectors reviewed select effluent sampling activities and assessed whether adequate controls had been implemented to ensure representative samples were obtained.

This inspection activity supplemented those documented in Inspection Report (IR) 05000282/2016003; 05000306/2016003 and constituted one sample as defined in IP 71124.06-05.

b. Findings

No findings were identified.

.2 Instrumentation and Equipment (02.05)

a. Inspection Scope

The inspectors assessed whether surveillance test results for TS required ventilation effluent discharge systems met TS acceptance criteria.

This inspection activity supplemented those documented in IR 05000282/2016003; 05000306/2016003 and constituted one sample as defined in IP 71124.06–05.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

40A1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index—Emergency Alternating Current Power System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI)—Emergency Alternating Current (AC) Power System performance indicator (PI), Units 1 and 2, for the period from the fourth quarter of 2015 through the third quarter of 2016. To determine the accuracy of the PI data reported during these periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99–02, “Regulatory Assessment Performance Indicator Guideline,” Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee’s operator narrative logs, MSPI derivation reports, CAP documents, event reports and NRC Integrated IRs for the period of October 1, 2015, through September 30, 2016, to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee’s CAP database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

These inspections constituted two MSPI—Emergency AC Power System samples as defined in IP 71151–05.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index—Residual Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI–RHR System PI, Units 1 and 2, for the period from the fourth quarter of 2015 through the third quarter of 2016. To determine the accuracy of the PI data reported during these periods, PI definitions and guidance contained in the NEI Document 99–2, “Regulatory Assessment Performance Indicator Guideline,” Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee’s operator narrative logs, CAP documents, MSPI derivation reports, event reports and NRC Integrated IRs for the period of October 1, 2015, through September 30, 2016, to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance.

The inspectors also reviewed the licensee’s CAP database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

These inspections constituted two MSPI–RHR system samples as defined in IP 71151–05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index—Cooling Water System

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI—Cooling Water System PI, Units 1 and 2, for the period from the fourth quarter of 2015 through the third quarter of 2016. To determine the accuracy of the PI data reported during these periods, PI definitions and guidance contained in the NEI Document 99–02, “Regulatory Assessment Performance Indicator Guideline,” Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee’s operator narrative logs, CAP documents, MSPI derivation reports, event reports and NRC Integrated IRs for the period of October 1, 2015, through September 30, 2016, to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee’s CAP database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

These inspections constituted two MSPI—Cooling Water System samples as defined in IP 71151–05.

b. Findings

No findings were identified.

.4 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the Occupational Exposure Control Effectiveness PI for the period from the fourth quarter of 2015 through the third quarter of 2016. To determine the accuracy of the PI data reported during these periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's assessment of the PI for occupational radiation safety to determine if the indicator related data was adequately assessed and reported. To assess the adequacy of the licensee's PI data collection and analyses, the inspectors discussed with radiation protection staff the scope and breadth of its data review and the results of those reviews. The inspectors independently reviewed electronic personal dosimetry dose rate and accumulated dose alarms and dose reports and the dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized occurrences. The inspectors also conducted walkdowns of numerous locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one occupational exposure control effectiveness sample as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

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

a. Inspection Scope

As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify they were being entered into the licensee's CAP at an appropriate threshold, adequate attention was being given to timely corrective actions, and adverse trends were identified and addressed. Some minor issues were entered into the licensee's corrective action program as a result of the inspectors' observations; however, they not discussed in this report.

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

b. Findings

No findings were identified.

.2 Semiannual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's CAP 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 inspector CAP item screening discussed in Section 4OA2.1 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the 6-month period of July 1, 2016, through December 31, 2016, although some examples expanded beyond those dates where the scope of the trend warranted.

The review also included issues documented outside the CAP in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments.

The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

This inspection constituted one semiannual trend review sample as defined in IP 71152.

b. Findings

No findings were identified.

.3 Annual Followup of Selected Issues: 21 Safeguards Exhaust Fan Past Operability Review Revision

a. Inspection Scope

The inspectors selected the following CAP for in-depth review:

- Revision to past operability review (POR) 1517613, "21 Safeguards Exhaust Fan Failure to Start," following inspector review of CAP 1517613 during the 2016 Biennial Problem Identification and Resolution Inspection at Prairie Island IR 05000282/2016007; 05000306/2016007 and documentation of NCV 05000282/2016007; 05000306/2016007.

As appropriate, the inspectors verified the following attributes during their review of the licensee's corrective actions for the above condition reports and other related condition reports:

- complete and accurate identification of the problem in a timely manner commensurate with its safety significance and ease of discovery;
- consideration of the extent of condition, generic implications, common cause, and previous occurrences;
- evaluation and disposition of operability/functionality/reportability issues;

- classification and prioritization of the resolution of the problem commensurate with safety significance;
- identification of the root and contributing causes of the problem;
- identification of corrective actions, which were appropriately focused to correct the problem;
- completion of corrective actions in a timely manner commensurate with the safety significance of the issue;
- effectiveness of corrective actions taken to preclude repetition; and
- evaluate applicability for operating experience and communicate applicable lessons learned to appropriate organizations.

The inspectors discussed the corrective actions and associated evaluations with licensee personnel.

This inspection constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Findings

No findings were identified.

.4 Annual Followup of Selected Issues: Reactor Vessel Head and Upper Internals Lift Rig Examination Methods

a. Inspection Scope

The inspectors selected the following for in-depth review:

- The licensee's 50.59 evaluation which established the basis to change the type of non-destructive examination method used to inspect the reactor vessel head lift rig and reactor internals lift rig.

As appropriate, the inspectors verified the following attributes during their review of the licensee's corrective actions for the above condition reports and other related condition reports:

- complete and accurate identification of the problem in a timely manner commensurate with its safety significance and ease of discovery;
- consideration of the extent of condition, generic implications, common cause, and previous occurrences;
- evaluation and disposition of operability/functionality/reportability issues;
- classification and prioritization of the resolution of the problem commensurate with safety significance;
- identification of the root and contributing causes of the problem;
- identification of corrective actions, which were appropriately focused to correct the problem;
- completion of corrective actions in a timely manner commensurate with the safety significance of the issue;
- effectiveness of corrective actions taken to preclude repetition; and
- evaluate applicability for operating experience and communicate applicable lessons learned to appropriate organizations.

The inspectors discussed the corrective actions and associated evaluations with licensee personnel.

This inspection constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Findings

No findings were identified.

.5 Annual Followup of Selected Issues: Review of Enforcement Discretion Non-Cited Violations Identified During the Prairie Island 2014 Cyber Security Inspection and Associated Corrective Action Program Documents

a. Inspection Scope

The inspector performed a review of the licensee's CAP and associated documents:

- CAP 1432550, "Media Retained In Chart Recorders Not Documented In Program";
- CAP 1432729, "NRC Asked If SD Cards/Dongles Are In Portable Media Program";
- CAP 1433064, "Consider Proceduralizing Cyber Comp. Device Scanning Process";
- CAP 1433246, "NRC Cybersecurity - Target Set CDA [Critical Digital Asset] Protection Issue";
- CAP 1433432, "Cyber Milestone 2 - Digital Equipment Not Identified"; and
- CAP 1433467, "CDAs Not Identified As Target Set CDAs".

The inspector interviewed personnel, verified the completion of and assessed the adequacy of the corrective actions taken in response to four NRC-identified NCVs given enforcement discretion.

The inspector's review and evaluation was focused on the NRC identified NCVs to ensure corrective actions were: complete, accurate, and timely; considered extent of condition; provided appropriate classification and prioritization; provided identification of root and contributing causes; appropriately focused; action taken resulted in the correction of the identified problem; identified negative trends; operating experience was adequately evaluated for applicability; and applicable lessons learned were communicated to appropriate organizations.

This inspection constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Background

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 73, Section 54, "Protection of Digital Computer and Communication Systems and Networks (i.e., the Cyber-Security Rule), each nuclear power plant (NPP) licensee was required to submit to the NRC for review and approval a cyber-security plan and an associated implementation schedule by November 23, 2009. A Temporary Instruction (TI) 2201/004, "Inspection of Implementation of Interim Cyber Security Milestones 1 - 7"

was developed to evaluate and verify each NPP licensee's ability to meet the interim milestone requirements of the Cyber Security Rule. On June 6, 2014, the NRC completed an inspection at the Prairie Island Nuclear Generating Plant, Units 1 and 2, which evaluated the interim cyber security Milestones 1 – 7. During performance of the TI, four NRC identified NCVs were identified and incorporated into the licensee's CAP. The four NCVs were subsequently given enforcement discretion following the Security Issues Forum Meeting conducted on June 18, 2014. During the week of November 14, 2016, the inspector reviewed the Cyber Security Milestones 1 – 7 Inspection NCVs as a PI&R sample. The CAP documents were evaluated to determine the effectiveness of the licensee's corrective actions.

c. Observations

As discussed in the "Inspection Scope" section above, the inspector's review was focused on the licensee's actions to ensure the corrective actions for the NCVs were appropriately focused to correct the identified problems. During the inspector's review of the cyber-security inspection's CAP documents, the following observation was made:

- Due to the number of cross-referencing within CAPs, verification of all corrective actions by the inspector was cumbersome. The inspector also made this observation during the licensee's Monticello PI&R Inspection, where CAP 1531267, "NRC INSP: OBS - Use of Cross-References," dated August 11, 2016, was issued to evaluate the utilization of cross references. This CAP remained open at the end of the inspection period for the licensee's Fleet Performance Assessment Group to determine the appropriate use of cross-references in the Performance Assessment procedures.

d. Findings

No findings were identified.

40A3 Followup of Events and Notices of Enforcement Discretion (71153)

- .1 (Closed) Licensee Event Report 05000282/2015005-00: Possible Misapplication of C18.1, Engineered Safeguards Equipment Support Systems and LER 05000282/2015005-01: Condition Prohibited by Technical Specifications

a. Inspection Scope

The inspectors reviewed information regarding the September 11, 2015, identification by the licensee of several instances where technical specification (TS) 3.8.9, "Distribution Systems—Operating," Condition A, was not entered as required per procedure C18.1, "Engineered Safeguards Equipment Support Systems". Specifically, on seven separate occasions over the prior three years from the date of discovery, when a train of the safeguards chilled water system (SCWS) was removed from service, TS 3.8.9 required actions to declare safeguards buses 15 or 16 inoperable, were not performed within the required completion time. The licensee documented the issue in CAP 1488482 and performed an apparent cause evaluation that determined that C18.1 was not accurate nor properly usable - leading to the conditions prohibited by TS. The licensee also determined that validation reviews were not properly conducted as required by FP-G-DOC-04, "Procedure Processing," during two prior changes to C18.1. Corrective actions included changes to C18.1 to implement the Safety Function Determination

Program (SFDP) for future SCWS removals from service, and revisions to the FP–G–DOC–04 job familiarization guide to ensure validation reviews are properly performed.

The inspectors reviewed Revision–00 to this Licensee Event Report (LER) (submitted November 9, 2015), as well as the apparent cause evaluation and identified several concerns. This led to the licensee supplementing the LER (same reportable issue, different LER titles) on October 10, 2016. The concerns and resolutions of the concerns via the supplement were:

- The “event” date of the LER appeared incorrect based on questions being raised in the CAP on September 4, 2016. This was resolved in Revision–01 to the LER to state that the latest removal from service of a SCWS train occurred on September 4, 2016, but that the C18.1 misapplication issue (reportable condition) was recognized on September 11, 2016;
- A discussion regarding the extent of conditions prohibited by TS appeared to be lacking considering a Note within Condition A of TS 3.8.9 that required Limiting Condition for Operation (LCO) 3.8.4, “DC Sources—Operating,” to also be entered during the SCWS removals from service. Title 10 CFR 50.73(b)(2)(ii)(G) required, in part, “for failures of components with multiple functions, include a list of systems or secondary functions that were also affected.” Since Revision–00 only discussed AC subsystems, there appeared to be a lack of detail and an inadequate POR to ensure that safety function was not impacted for direct current (DC) sources. The licensee re-performed the POR, did not identify any past losses of safety function for DC sources, and discussed this in the LER supplement; and
- Title 10 CFR 50.73(b)(2)(ii)(J) required, in part, “for each human performance related root cause, the licensee shall discuss the cause(s) and circumstances.” The inspectors noted that the cause was unclear and the circumstances were not discussed in Revision–00 of the LER. The licensee revised the apparent cause evaluation to specify that although the cause human performance related, the individual involved no longer worked at the station and therefore, the circumstances could not be determined.

The inspectors determined that the clarifications contained within Revision–01 to this LER were, in the end, minor in nature and did not represent a failure to report as required by 10 CFR 50.73. Documents reviewed are listed in the Attachment to this report. These LERs are closed.

This inspection constituted one event followup sample as defined in IP 71153–05.

b. Findings

The inspectors determined that a licensee-identified NCV of Prairie Island TS 5.4.1.a, “Procedures,” had occurred associated with the circumstances surrounding these LERs. Refer to Section 4OA7 of this inspection report for details regarding the licensee-identified NCV.

.2 (Closed) Licensee Event Report 05000282/2016005-00: 121 Motor Driven Cooling Water Pump Auto Start

a. Inspection Scope

The inspectors reviewed information provided by the licensee regarding the August 21, 2016, loss of power and automatic actuation on low discharge pressure of the 121 motor-driven cooling water pump (MDCLP). Following an unexpected lockout of the 2RY transformer with the 121 MDCLP in service, the 121 MDCLP stopped as designed, but then restarted automatically based on low discharge pressure. Since low pressure actually existed in the cooling water (CL) header (valid actuation signal) the licensee submitted an LER for this event/condition based on 10 CFR 50.73(a)(2)(iv)(A) as an event or condition that resulted in automatic actuation of an emergency service water system that does not normally run and serves as an ultimate heat sink.

The inspectors reviewed licensee CAP 1532318 that was generated as a result of the 2RY lockout, the causal evaluation, and corrective actions. No issues were identified. Documents reviewed are listed in the Attachment to this report. This LER is closed.

This inspection constituted one event followup sample as defined in IP 71153-05.

b. Findings

No findings were identified.

4OA5 Other Activities

.1 (Closed) Notice of Violation 05000306/2015008-01: Failure to Correct a Non-Cited Violation Associated with Inadequate Gas Monitoring of Inaccessible Residual Heat Removal Gas Susceptible Locations

On April 11, 2011, the inspectors identified that the licensee had not developed alternative methods to monitor the potential for gas accumulation at five inaccessible gas susceptible locations that required periodic monitoring. This issue was captured by the licensee in their CAP as CAP 1271826, and was documented by the inspectors as NCV 05000282/2011003-09; 05000306/2011003-09, "Alternative Methods Were Not Developed for Monitoring Inaccessible Susceptible Locations," in Prairie Island IR 05000282/2011003; 05000306/2011003, dated August 1, 2011.

On October 22, 2015, the inspectors identified that the licensee had not corrected this NCV for two of the five locations. This issue was captured by the licensee in the CAP as CAP 1498169, and was documented by the inspectors as Notice of Violation (VIO) 05000306/2015008-01, "Failure to Correct an NCV Associated with Inadequate Gas Monitoring of Inaccessible RHR Gas Susceptible Locations," in IR 05000282/2015008; IR 05000306/2015008, dated January 5, 2016. This violation was cited consistent with the NRC Enforcement Policy, Section 2.3.2.a.2, because the licensee had not restored compliance and did not have objective plans to restore compliance in a reasonable time period following the identification of the NCV. On February 4, 2016, the licensee replied to the VIO in a letter titled "Reply to Notice of Violation; VIO 5000306/2015008-01." The letter included: (1) the reason for the violation; (2) the corrective steps taken and the results achieved; (3) the corrective steps that would be taken; and (4) the date that full compliance would be achieved.

On October 14, 2016, the licensee documented in their CAP that the corrective actions associated with this VIO were verified to be complete. Subsequently, the inspectors reviewed the licensee's letter of reply to the VIO, the corrective action documentation, and supporting reference information to assess the causal evaluation and corrective actions. The inspectors also reviewed recent inspection results for the affected gas susceptible locations to assess the implementation of the corrective actions. No new issues were identified. This review did not constitute an inspection sample. This violation is closed.

.2. (Closed) Unresolved Item 05000282/2014003-04; 05000306/2014003-04: Failure to Meet Alternate Source Term Amendment Implementing Requirement

a. Inspection Scope

The inspectors documented Unresolved Item (URI) 05000282/2014003-04; 05000306/2014003-04 in Prairie Island IR 05000282/2014003; 05000306/2014003 associated with the failure to meet an implementing requirement associated with an alternate source term (AST) license amendment issued in January of 2013.

Specifically, the licensee notified the NRC on March 26, 2014, that they would not be able to "revise the plant design and licensing bases to indicate that the steam generator water level narrow range instrumentation meet Regulatory Guide 1.97, Revision 2, requirements" within 90 days from implementation of the AST amendment that occurred on December 27, 2013. Because the licensee's course of action and NRC acceptance of the actions were unclear at the end of the IR 2014003 inspection period, the URI was opened at that time.

Following the licensee's identification of the above compliance issue, the licensee generated CAP 1424460, performed a root cause evaluation, and submitted a new license amendment request on December 11, 2014, to separate steam generator narrow range (SGNR) water level instrumentation compliance with Regulatory Guide 1.97 from AST implementation. On November 30, 2015, NRC issued license amendments that revised, in part, TS Table 3.3.3-1, "Event Monitoring Instrumentation," adding Function 17 for SGNR instrumentation, and notes that required instrumentation compliance with Regulatory Guide 1.97 no later than Cycle 30 for both Units 1 and 2 (fall of 2016 and fall of 2017, respectively). The NRC staff also determined, as part of issuance of the amendment, that existing instrumentation was adequately qualified to remain capable of providing indication during a postulated steam generator tube rupture event until modifications were accomplished. The licensee successfully replaced instrumentation with Regulatory Guide 1.97 compliant equipment, during the fall of 2015 refueling outage for Unit 2 and fall of 2016 refueling outage for Unit 1.

The inspectors reviewed the root cause evaluation for the above issues and determined that the licensee properly identified root and contributing causes, and corrective actions. This review did not constitute an inspection sample. This URI is closed.

b. Findings

The inspectors determined that a licensee-identified NCV of the Prairie Island Operating License had occurred. Refer to Section 4OA7 of this inspection report for details regarding the licensee-identified NCV.

4OA6 Management Meetings

.1 Exit Meeting Summary

On January 12, 2017, the inspectors presented the overall inspection results to Mr. S. Northard, Site Vice President, 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 the following:

- On October 31, 2016, the inspectors presented the inspection results of the Annual Operating Test Results inspection to Mr. F. Collins, Senior Operations Instructor. The licensee acknowledged the issues presented;
- On November 4, 2016, the inspectors presented the inspection results of the Radiological Hazard Assessment and Exposure Controls inspection to Mr. H. Butterworth, Director, Business Support, and other members of the licensee staff. The licensee acknowledged the issues presented;
- On November 4, 2016, the inspectors presented the inspection results of the Radiological Hazard Assessment and Exposure Controls inspection to Mr. H. Butterworth, Director, Business Support, and other members of the licensee staff. The licensee acknowledged the issues presented;
- On November 17, 2016, the inspectors presented the inspection results of the Triennial Heat Sink Performance inspection to Mr. S. Northard, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented;
- On November 17, 2016, the inspectors presented the inspection results of the review of cyber security inspection enforcement discretion NCVs to Mr. S. Northard, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented;
- On November 28, 2016, the inspectors presented the results of the inservice inspection (ISI) to Mr. S. Northard, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented;
- On December 2, 2016, the inspectors presented, by telephone, the inspection results of the Emergency Action Level and Emergency Plan Changes inspection to Mr. B. Carberry, Emergency Preparedness Manager. The licensee acknowledged the issues presented; and
- On December 2, 2016, the inspectors presented the results of the Radiation Monitoring Instrumentation and Radioactive Gaseous and Liquid Effluent Treatment inspection with Mr. J. Boesch, Maintenance Manager, 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. Proprietary material received during the inspection was returned to the licensee.

40A7 Licensee-Identified Violations

The following violations of very low significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as NCVs.

- Prairie Island Technical Specification 5.4.1, "Procedures," required, in part, that "written procedures shall be implemented covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978." Regulatory Guide 1.33, Revision 2, Appendix A contains, in part under Section 1, "Administrative Procedures," Subsection e., Procedure Review and Approval.

Contrary to the above, on December 12, 2013, and June 11, 2013, the licensee failed to properly implement FP-G-DOC-04, "Procedure Processing," Revision 19, to ensure that validation reviews were performed to ensure usability of C18.1, "Engineered Safeguards Equipment Support Systems," following revisions to the procedure. Specifically, validation reviews were not performed during procedure revisions of C18.1 which lead to inadequate instructions to ensure that SCWS-supported system operability was properly addressed when SCWS functions were affected. This led to seven instances of conditions prohibited by TS for safeguards buses 15 and 16 between January of 2013 and May of 2015. The licensee later determined that although conditions prohibited by TS did occur based on the inadequate C18.1 instructions, an equally correct application of TS would have been to enter a 30-day action statement for one SCWS inoperable per TS 3.7.11 and apply Surveillance Requirement 3.0.6 by performing a SFDP evaluation. This would not have resulted in conditions prohibited by TS for the supported AC or DC systems.

Because the inspectors answered "No" to all questions under Exhibit 2 of Inspection Manual Chapter (IMC) 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the finding screened as very low safety significance (Green). The above issue was documented in the licensee's CAP as CAP 1488482. Corrective actions included changes to C18.1 to implement the SFDP for future SCWS removals from service, and revisions to the FP-G-DOC-04 job familiarization guide to ensure validation reviews are properly performed.

- Northern States Power Company—Minnesota (NSPM), Prairie Island Nuclear Generating Plant Renewed Facility Operating License, Appendix B, Additional Conditions, Facility Operating License No. DPR-42 and DPR-60 (Amendment Nos. 206 and 193, respectively), required, in part, that "The Alternate Source Term (AST) License Amendments 206/193 will be implemented after installation of the Unit 2 Replacement Steam Generators (RSGs) within 90 days after the completion of the outage in which the Unit 2 RSGs are installed." Further, implementation requirements incorporated within License Amendment 206/193 stated, in part, that "prior to implementation of the AST license amendment, NSPM will revise the Prairie Island Nuclear Generating Plant design and licensing bases to indicate that the Steam Generator Water Level—Narrow Range Instruments are required to meet Regulatory Guide 1.97, Revision 2 requirements."

Contrary to the above, on March 27, 2014, the licensee failed to revise the Prairie Island Nuclear Generating Plant design and licensing bases to indicate that the SGNR instruments were required to meet Regulatory Guide 1.97, Revision 2 requirements.

Because the inspectors answered "Yes" to Question 1 under Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the finding screened as very low safety significance (Green). The above issue was documented in the licensee's CAP as CAP 1424460. Corrective actions included replacement of the SGNR instrumentation with Regulatory Guide 1.97 compliant equipment.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Prairie Island Nuclear Generating Plant

S. Northard, Site Vice President
T. Conboy, Director of Site Operations
W. Paulhardt, Plant Manager
S. Sharp, Director of Performance Improvement
J. Bjorseth, Engineering Director
H. Butterworth, Business Support Manager
J. Boesch, Maintenance Manager
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J. Hamilton, Cyber Change Manager
J. Hill, Manager Site Information Technology
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L. Drenth, Principle Engineer
L. Jenson, Performance Improvement
M. Minard, GL 89-13 Program Engineer
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R. Bader, Cooling Water System Engineer
S. Greenslit, Cyber Security
T. Downing, ISI Principle Engineer

U.S. Nuclear Regulatory Commission

K. Riemer, Chief, Reactor Projects Branch 2
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LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000282/2016004-01; 05000306/2016004-01	URI	Baffle Former Bolting Acceptance Criteria (Section 1R08.5)
05000282/2016004-02	NCV	Failure to Properly Implement a Post-Maintenance Test Procedure during Safety Injection System Valve Testing (Section 1R13)
05000282/2016004-03; 05000306/2016004-03	NCV	Failure to Adequately Calibrate an Electrometer (Section 2RS5.2)

Closed

05000282/2015005-00	LER	Possible Misapplication of C18.1, Engineered Safeguards Equipment Support Systems (Section 4OA3.1)
05000282/2015005-01	LER	Condition Prohibited by Technical Specifications (Section 4OA3.1)
05000282/2014003-04; 05000306/2014003-04	URI	Failure to Meet Alternate Source Term Amendment Implementing Requirement (Section 4OA5.2)
05000282/2016005-00	LER	121 Motor Driven Cooling Water Pump Auto Start (Section 4OA3.2)
05000306/2015008-01	VIO	Failure to Correct an NCV Associated with Inadequate Gas Monitoring of Inaccessible RHR Gas Susceptible Locations (Section 4OA5.1)
05000282/2016004-02	NCV	Failure to Properly Implement a Post-Maintenance Test Procedure during Safety Injection System Valve Testing (Section 1R13)
05000282/2016004-03; 05000306/2016004-03	NCV	Failure to Adequately Calibrate an Electrometer (Section 2RS5.2)

Discussed

None.

LIST OF DOCUMENTS REVIEWED

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

1R01 Adverse Weather Protection

- TP 1637; Winter Plant Operation; Revision 52
- 2C37.10; D5/D6 Generator Building HVAC; Revision 11
- C37.8-1; Screenhouse Safeguard Ventilation System; Revision 5

1R04 Equipment Alignment

- CAP 1541039; 14 Inverter As-Found; November 8, 2016
- CAP 1541034; 12 MDAFWP MOTOR 16–3 Base Feet Not Welded Like UNIT 2’s; November 8, 2016
- CAP 1541325; Unable to Complete SP 1193A Due to CL–113–1 Leak By; November 10, 2016
- CAP 1542614; 121 MD CLG WTR PMP BRG/SL WTR FLTR A Vent; November 20, 2016
- CAP 1540585; Missed LCO 3.5.2 Action A Entry with New Online Task; November 3, 2016
- SP 1121; 11 Component Cooling Pump Low Pressure/Auto Start Pressure Switch Calibration; Revision 15
- WO 527941–03; Off Line Test–MTR 25–9 21 CS Pmp Mtr; October 7, 2016
- PE 25–52S; 4.16KV BUS 25 Electrical Maintenance 52S Check; Revision 2
- TP 1617D; 480 Volt Breaker 112M Functional Test; Revision 5
- CAP 1536964; OE: Degradation Observed During CRGT Guide Card Inspections; October 6, 2016
- EC 9076; Internal Flooding Evaluation of BUS 112 [122] & Train A [B] EM Rooms; September 18, 2014
- CAP 1540309; NRC Identified-Poor Housekeeping 755’ Drop Area Aux; November 1, 2016
- CAP 1540577; Evaluate Why MV32266 is in the MOV and IST Programs; November 3, 2016
- C16; Spent Fuel Cooling System; Revision 59
- CAP 1540288; Timely Communication to the NRC; November 1, 2016
- CAP 1540316; Failure to Promptly Address a Housekeeping Concern from NRC; November 1, 2016
- CAP 1540291; Temporary Lift Frame and Hoist Above Protected SFP Pumps; November 1, 2016
- B16; Spent Fuel Pool Cooling; Revision 7
- EC 23555; Fukushima Response Spent Fuel Pool Instrumentation; Revision 0
- CAP 1541118; D80 Step 4.2.6 Seismic Clearance Variance Notation PINGP 1198; November 9, 2016

1R05 Fire Protection

- F5 Appendix A; Fire Detection Zone 19; Revision 32
- F5 Appendix A; Fire Detection Zone 26; Revision 34
- F5 Appendix F; Fire Hazard Analysis; Revision 32
- CAP 1541167; NRC Question About Abandoned Armored Cable in Penetration; November 8, 2016

- PINGP 1676; Fire Drill Critique Report for December 7, 2016
- CAP 1544314; Crew #1 Fire Drill Documented as Fail; December 7, 2016

IR07 Heat Sink Performance

- Calculation 99–131; Determination of CC HX Design Basis; Revision 0
- Snapshot Self-Assessment Report (CAP 1523807) of GL–89–13 and IP 71111–07 for NRC IP 71111–07 Triennial Heat Sink Inspection; September 23, 2016
- C39.5; Corrosion Monitoring; Revision 9
- C47041; Alarm Response Procedure; Revision 26
- C47520; Alarm Response Procedure; Revision 40
- Calculation 99–131; Determination of the Component Cooling Water Heat Exchanger Design Basis; Revision 0A
- CAP 1453519; CL Analysis Does Not Provide Required Flow to CC HXs; October 29, 2014
- CAP 1526168; Special Process Controls Not Previously Implemented; June 23, 2016
- CAP 1535942; D2 Emergency Diesel Generator Potential CL In-Leakage; September 28, 2016
- CAP 1459202; ENG–ME–526 Requires an Update; December 12, 2014
- CAP 1536469; D2 Diesel Generator Air Coolant Heat Exchanger Tube Leak; October 3, 2016
- CY–ADMN–003; Strategic Water Chemistry Plan Closed Cooling Water Systems; Revision 1
- ENG–ME–479; Tube Plugging Criteria for Unit 1 Diesel Generator Heat Exchangers; Revision 3
- H13; Plant Heat Exchanger Lay-Up Program; Revision 5
- H65.2.31; Open Cycle Cooling Water System Aging Management Program; Revision 6
- PINGP 1066; CL/FP Pipe or CL HX Internal Inspection; Revision 11
- RPIP 3680; D1 and D2 Jacket Coolant; Revision 8
- WO 367903; PMRQ 7929–01 GMP YUBA–001 CCHX Periodic Maintenance; February 16, 2012
- WO 410545; SP 2304—Unit 2 CC Hx Performance Test; July 16, 2013
- WO 456257; CLBR: 235–031 Perform GMP YUBA-001; October 29, 2013
- WO 456560; EPRO; Sys 2CC SP 2304—Unit 2 CC HX Performance Test; October 27, 2015
- WO 510057; PM3119–1–11: 11 CC Pump and Motor Oil Sampling; October 16, 2016
- WO 510139; SP 1334 D1 18M Diesel Generator 24 Hour Load Test; October 7, 2014
- WO 516266; D1 Heat Exchanger Eddy Current Testing; October 8, 2016
- WO 516473; PM 3001–2–D1–D1 Diesel Gen (034-011) Inspection; October 14, 2016
- WO 537136; SP 1617 Component Cooling Heat Exchanger Quarterly; April 28, 2016
- WO 537136; SP 1617 Component Cooling Heat Exchanger Quarterly; August 4, 2016
- ENG–ME–820; CL Hydraulic Analysis—LOOP, LOCA, and Seismic Response; Revision 1
- WO 458588; Task 01, PMRQ 6035–4, VNDR—Divers Inspection 12 DDCLP Portion of Safeguards Bay; Completed March 11, 2015
- WO 458588; Task 08, VNDR—Divers Inspection 121 MDCLP Portion of Safeguards Bay; Completed March 29, 2014
- WO 458588; Task 07, PQ 6035–24 VNDR—Divers Inspection 22 DDCLP Portion of Safeguards Bay; Completed March 29, 2014
- WO 525189; Task 01, SP 1690, Approach, Intake, and Discharge Canal Hydrographic Survey Revision 7; Completed June 16, 2016
- WO 460367; PM 3108–2 Cooling Water Emergency Intake Structure 5 Year Inspection; Completed June 11, 2014
- WO 462504; ESYS: Evaluate Hydrographic Maps; July 19, 2013
- WO 482731; ESYS: Evaluate Hydrographic Maps; July 21, 2014
- WO 504472; ESYS: Evaluate Hydrographic Maps; June 23, 2015
- WO 384868; PM 3108–2 Cooling Water Emerg Intake Structure (Crib) 5 YR; April 18, 2010

- WO 506914; Large Packing Leak on 11 Cooling Water Strainer; August 7, 2014
- WO 489890; 122 Sfgds Trvg Scrn, Has a Negative D/P, Not on Peg; June 24, 2015
- WO 534714; 3108-1-121-121 Sfgd Trvg Scrn (067-011) Annual Inspect; August 11, 2016
- WO 498854; 11 CL Strainer Inspection; May 5, 2015
- WO 519141; Task 1; 12 CL Strainer Inspection; March 8, 2016
- WO 512404; 121 Safegds Trvg Scrn Inspection; October 29, 2013
- WO 509688; PM 3108-1-122-122 Safegds Trvg Screen (067-012); June 26, 2016
- WO 367268; I&C: REPL-24099 (SFGDS CLG WTR PMP BAY LVL XMTR B); February 8, 2015
- WO 460141; IC OCL-2CL HDR PRESS PD SFGDS CL BAY LEVEL IND CAL; May 20, 2014
- Underwater Construction Corporation Report on Emergency Cooling Water Intake Pipeline by Remotely Operated Vehicle, Structural Inspections of Intake Crib, TWS building, and ESW Building; June 16, 2014
- EC 16944; Rev 000, Fine Screen Larvae Removal Pump Upgrade; April 21, 2014
- EC 21788; Rev 000, Safeguards Bay Level and Traveling Screen Pressure/Level Indicator Upgrades; December 9, 2013
- CAP 1378695; CDBI 2013: CL Strainer Post-Seismic Flow Rates; April 12, 2013
- CAP 1443360; SFG TRVL SCRNL Backwash Not in CL LOCA Calculation; August 18, 2014
- CAP 1476145; 21 CLG Water Strainer Has a Few Degraded Spots Inside; April 24, 2015
- CAP 1517173; Metal Debris Found in 21 CL Strainers While Cleaning; March 29, 2016
- CAP 1518170; Minor Leak from Shaft Packing of 11 CL Strainer; April 7, 2016
- CAP 1532963; Cooling Water System Chemical Injection—MIC—Summer 2016; August 26, 2016
- CAP 1523807; Readiness for Triennial Heat Sink Inspection; June 1, 2016
- CAP 1452461; OE-ICES 312020 Cooling Dike Failure Procedure Failed to Secure Pumps; December 5, 2014
- WO 552365-04; D2 DSL Gen Jacket WTR CLR Has Potential Tube Leak; October 4, 2016
- CAP 1536589; Action Level 1 Entry for D2 Coolant—Low pH; October 4, 2016
- CAP 1537409; Potential Trend D5 Expansion Tank Low Level; October 11, 2016
- WO 552365-01; D2 DSL Gen Jacket WTR CLR Has Potential Tube Leak; October 3, 2016
- PM 3001-2-D2; D2 Diesel Generator Inspection (034-021); Revision 29
- CAP 1536469; D2 Diesel Generator Air Coolant Heat Exchanger Tube Leak; October 3, 2016
- CAP 1536563; Chromated Water Spill Below D2 Diesel Generator; October 4, 2016
- CAP 1536566; Valve Found Out of Position During Restoration of D2; October 4, 2016
- CAP 1540536; Potential D2 FO Leak on Tubing for Filter Pressure Indicator; November 3, 2016
- CAP 1540532; D2 Fuel Oil Leak on Outlet Fittings of Duplex Filter; November 3, 2016
- CAP 1536331; Chemical Indication of Cooling Water In-Leakage on D2; September 30, 2016

Corrective Action Program Documents Generated as a Result of NRC Inspection

- CAP 1542166; NRC 2016 UHS Inspection Identified Oil on DDCL Pump 22; November 16, 2016
- CAP 1542171; NRC 2016 UHS Inspection Identified Oil on DDCL Pump 12; November 16, 2016
- CAP 1542201; NRC 2016 UHS Inspection Identified WO 548241 Missing Approval Signature; November 16, 2016
- CAP 1542284; 1R30 NRC UHS INSPECT: Discolored Oil in 11 CC PMP Bulb Oiler; November 17, 2016
- CAP 1542345; NRC UHS: Corrosion Data Not Considered for Pipe Inspections; November 17, 2016

1R08 Inservice Inspection Activities

- CAP 1521893; OE: NRC RIS 2016-07; May 13, 2016
- CAP 1465567; 12 RCP Seal Leakage; February 10, 2015
- CAP 1463777; BACC: Old Boric Acid Leak from 11 RCP Seal; January 27, 2015
- CAP 1452005; Preliminary Flaw Indications in U1 Baffle Former Bolts; October 20, 2014
- CAP 1408630; Preliminary Indications in Baffle to Former Bolting; November 29, 2013
- CAP 1451528; ISI Indication 1R29 Hanger 1-AFWH-62; October 17, 2014
- CAP 1451956; ISI Indication Hanger 1-RPCH-13 1R29; October 20, 2014
- CAP 1451011; ISI Indication Hanger 1-AFWH-60 1R29; October 15, 2014
- CAP 1541795; Inadequate Management of Baffle Former Bolt Aging; November 14, 2016
- 50.59 Evaluation No. 1109; Determination of Acceptable Baffle-Barrel Bolting; December 20, 2013
- 50.59 Screening No. 4443; Determination of Acceptable Baffle-Barrel Bolting; January 24, 2013
- Drawing No. ISI-43A; Steam Generator 11; Revision 3
- Drawing No. ISI-43C; Steam Generator Supports; Revision 6
- Information Notice 2014-02; Failure to Properly Pressure Test Reactor Vessel Flange Leak-Off Lines; February 25, 2014
- Regulatory Issue Summary 2016-07 Containment Shell or Liner Moisture Barrier Inspection; May 9, 2016
- Information Notice 1998-11; Cracking of Reactor Vessel Internal Baffle Former Bolts in Foreign Plants; March 25, 1998
- NDE Report No. 2016V067; Visual Examination of Pressure Retaining Bolting (VT-1) Reactor Vessel Nuts (1-16); October 26, 2016
- NDE Report No. 2016V068; Visual Examination of Pressure Retaining Bolting (VT-1) Reactor Vessel Washers (1-16); October 26, 2016
- NDE Report No. 2016U016; Ultrasonic Examination of Tubesheet to Shell for SG 11; October 25, 2016
- NDE Report No. 2016M004; Integral Attachment Support Rod for SG 11; October 25, 2016
- FP-PE-NDE-540; IWE Visual Examination; Revision 1
- FP-PE-NDE-530; Visual Examination, VT-3; Revision 8
- FP-PE-NDE-510; Visual Examination, VT-1; Revision 6
- FP-PE-NDE-300; Dry Magnetic Particle Examination—Yoke/Coil; Revision 1
- FP-PE-NDE-406; Ultrasonic Examination of Reactor Pressure Vessel Welds; Revision 2
- Safety Evaluation by the Office of Nuclear Reactor Regulation WCAP-15029, "Westinghouse Methodology for Evaluating the Acceptability of Baffle-Former-Barrel Bolting Distributions Under Faulted Load Conditions; November 10, 1998
- Updated Safety Analysis Report Section 3.6; Revision 33
Westinghouse, WCAP-15030-NP-A, Westinghouse Methodology for Evaluating the Acceptability of Baffle-Former-Barrel Bolting Distributions Under Faulted Load Conditions; March 2, 1999
- WCAP 17586-P; Determination of Acceptable Baffle-Barrel Bolting for Prairie Island Units 1 and 2; Revision 0
- WR 110886; Leak from 11 RCP Seal-Repair Seal; January 27, 2015
- WR 111214; Water Discovered on 12 RCP Seal; February 9, 2015
- WO 516959; Clean Dry Boric Acid from 11 RCP Seal/Bowl; November 6, 2015
- WO 517162; Perform Boric Acid Cleanup in Vicinity 12 RCP Seal; February 11, 2015
- WO 466019; SP 1277 Visual Examination of Containment Liner (ASME); October 23, 2012
- WO 436353; PM 3180-1 Moisture Barrier Repair; May 23, 2014
- WO 436324; SP 1123-Insp of Concrete-Steel Interface Adj Cmt; February 27, 2014

NRC–Identified Condition Reports

- CAP 1539487; Documentation Missing in 50.59 Screening 4443; October 26, 2016
- CAP 1538802; ISI NRC Inspection: PINGP Delayed Response to NRC Inspector; October 20, 2016
- CAP 1539385; ISI NRC Inspection: PINGP Delayed Response to NRC Inspector; October 25, 2016

1R11 Licensed Operator Requalification Program

- Simulator Exercise Guide P9116SE–0701; Cycle 16G As-Found Evaluation; Revision 0
- 1C1.3–M2; Unit 1 Shutdown to Mode 2; Revision 2
- CAP 1538020; Delay in Coming Off-Line for 1R30 Due to Tagged Valve; October 15, 2016
- CAP 1542574; Reset Control Rod Bank A Group Counters; November 19, 2016

1R12 Maintenance Effectiveness

- Plant Health Report—System Report; November 4, 2016
- CAP 1545743; Door Upstream From Steam Exclusion Damper Latch Broken; December 21, 2016
- CAP 1545168; Additional Details Needed to Gain Full Understanding of IOD; December 15, 2016
- SP 1118; Verifying Paths From the Grid to U–1 Buses; Revision 31
- CAP 1538214; The 12 SI Train Exceeded its MRule Unavailability Limit; October 19, 2016
- FP–E–MR–05; Maintenance Rule Expert Panel (MREP); Revision 6
- Maintenance Rule Functional, MSPI, and Equipment Reliability Clock Reset Failure Evaluation; April 14, 2016
- FP–PA–ARP–01; CAP Action Request Process; Revision 46
- FP–E–MR–04; Maintenance Rule–(A)(1) Process; Revision 4
- CAP 1545125; A1 Determination is Needed for Unavailability 121 MDCLP; December 15, 2016
- CAP 1513870; PMRQ 5516–04 Deferral, QF–0922–1R30; June 15, 2016
- CAP 1513871; PMRQ 5516–05 Deferral, QF–0922; June 15, 2016
- Maintenance Rule (a)(1) Status; December 14, 2016
- CAP 1523534; Perform (a)(1) Det. for Deferral of PMRQ 5516–04 and 05; July 22, 2016 (a)(1) Action Plan Development and Action Plan (Monitoring) Goal Setting Template; June 30, 2016
- CAP 1530452; Unit 1 RC/RV System Health Transition from White to Red; August 8, 2016
- CAP 1527011; 11 RCP Motor in Maintenance Rule (a)(1) Status; October 26, 2016

1R13 Maintenance Risk Assessment and Emergent Work Control

- CAP 1545366; Breaker 8H8 Phase a Breaker Explosion/Fire; December 18, 2016
- CAP 1545367; 1H2 Open with Closed Indication; December 18, 2016
- CAP 1545380; Breaker 1H2 Failed to Open During Bus 2 Lockout and 8H8 Fire; December 18, 2016
- H27; Control of Steam Exclusion Boundaries; Revision 16
- CAP 1545743; Door Upstream from Steam Exclusion Damper Latch Broken; December 21, 2016
- WO 555292–03; FW to 12 SG MN CV–31128 M/P CNVTR; November 22, 2016
- WO 554639–07; FW to 22 SG MN CV–31136 Cont STA; November 21, 2016
- WO 554639–06; Unit 2 Loop “B” Feedwater Flow Oscillations; November 18, 2016

- SP 1098; 11 Battery Refueling Outage Discharge Test; Revision 41
- CAP 1538497; 11 Battery Discharge Test Not Performed According to Procedure; October 19, 2016
- CAP 1538787; NRC Question Concerning 11 Battery Surveillance Procedure; October 21, 2016
- CAP 1538803; Safety-Related Battery Discharge Testing; October 21, 2016
- SP 1295; D1 Diesel Generator 6 Month Fast Start Test; Revision 57
- WO 539047-01; SP 1295 D1 Diesel Generator 6 Month Fast Start; October 13, 2016
- SP 1093; D1 Diesel Generator Monthly Slow Start Test; Revision 98
- WO 540837-01; SP 1093 D1 Diesel Generator Monthly Slow Start; October 12, 2016
- CAP 1540275; Broken Hand Wheel on CL-40-2; November 1, 2016
- C16 AOP1; Loss of SFP Inventory; Revision 18
- CAP 1540466; TriNuke Filter Requires Filter Replacement; November 3, 2016
- CAP 1541821; RCP's Stopped Due to RCS Pressure Dropping Below 240 PSIG; November 14, 2016

1R15 Operability Determinations and Functional Assessments

- POD 01536176-01; 121 MDCLP Operability—Staging Operator for Bearing Water Filter 50.59 Screening; Revision 1
- C35; Cooling Water; Revision 1
- CAP 1540462; MV-32266 11/12 RC PMP CC INLT NV A—Prompt Operability Determination; November 8, 2016
- CAP 1540467; CV-3144 12 CC HX CLG WTR CV Failed IST; November 3, 2016
- CALC 89890-34; Weak Link Calculation MV-32267; Revision 0
- WO 554231; PMT For CV-31411—12 CC HX CLG WTR Outlet CV; November 3, 2016;
- CAP 1316925; 11 Cooling Water Strainer Drain Piping Has a Pin Hole Leak; December 9, 2011

1R19 Post-Maintenance Testing

- SP 1083B; Unit 1 Integrated SI Test with a Simulated Loss of Offsite Power Train B; Revision 8
- CAP 1541481; 12 Steam Generator Sample Isolation CV-31638 Will Not Stay Open; November 11, 2016
- CAP 1541064; 11 CS Pump Air Bound; November 8, 2016
- CAP 1541220; PI-11947 Found to be Failed As-Is During SP 1090A; November 9, 2016
- SP 1090A; 11 Containment Spray Pump Quarterly Test; Revision 28
- CAP 1537222; D1 Diesel Auto Started; October 9, 2016
- CAP 1537215; D1 Field Flash Not Working Correctly; October 9, 2016
- CAP 1537340; D1 DG Availability Required Updating; October 10, 2016
- CAP 1537471; D5 Diesel Exhaust Screen Getting Ready to Fall; October 11, 2016
- CAP 1537455; SI-15-9 Extent of Condition Inspections Not Timely; October 11, 2016
- CAP 1537292; Zener Diode Across K1 Relay Found Shorted; October 10, 2016
- CAP 1536531; Over Flow of D2 Expansion Tank; October 3, 2016
- CAP 1536498; Track Resolution of D2 Lube Oil Tube Bundle; October 3, 2016
- CAP 1536495; Track Resolution of D2 Air Cooler Bundle; October 3, 2016
- DBD SYS-16; Design Bases Document for the Spent Fuel Pool Cooling System; Revision 3
- CAP 1536349; Hourly Fire Watch Not Established Per F5 App K; October 2, 2016
- CAP 1536368; 11 CTMT Sump Pump A Run Time Increased Less Than 12 Minutes in 24 Hours; October 3, 2016

- WO 556581; Door Upstream from Steam Exclusion Damper Latch Broken; December 21, 2016
- WO 516473-01; PM 3001-2-D1-D1 Diesel Gen 034-011) Inspection; October 14, 2016
- WO 516474-01; SP 1150 D1 Diesel Generator Relay Functional Test; October 9, 2016
- 5AWI 3.12.4; Post-Maintenance Testing; Revision 23

1R20 Outage Activities

- 1R30 Prairie Island Refueling Outage October 2016 Shutdown Safety Assessment
- CAP 1541840; Pressurizer PORVs Lifted and Reseated While Starting 12 RCP; November 14, 2016
- ODMI – Initial Conditions Required to Start an RCP While Solid; November 14, 2016
- CAP 1540291; Temporary Lift Frame and Hoist Above Protected SFP Pmps; November 1, 2016
- SP 1177; Core Inventory Verification; Revision 17
- CAP 1542503; Unit 1 CNTMT Pre-Closeout Walk Through with NRC; November 18, 2016
- CAP 1541635; 1R30 Reactor Vessel Bottom Head Inspection Results 157-051; November 12, 2016
- CAP 1542198; Issues Noted After Completion of SP 1750 Part B; November 16, 2016
- CAP 1541425; Covered Worker Not Entered into Workforce Database; November 10, 2016
- CAP 1541324; 12 RCP Thrust Probe Indication Incorrect for Plant Condition; November 10, 2016
- B18B; ECCS Injection from RWST; Revision 11
- CAP 1538016; Door 104 Impacted by Shipping Container; October 14, 2016
- CAP 1538014; 47013-0603, NIS PR Lower Detector Hi Flux Deviation; October 14, 2016
- CAP 1538015; 47010-0601 Received While A FW Reg Valve Partially Open; October 14, 2016
- CAP 1538045; Abnormal Trend in U2 Containment Pressure; October 15, 2016
- CAP 1538033; 1N32 is Not Indicating Counts; October 15, 2016
- CAP 1538032; 1N31 is Not Indicating Counts; October 15, 2016
- CAP 1538031; CV-31662 Failed to Open Due to SV-37669 Leakage; October 15, 2016
- CAP 1538028; CV-31173 LVDT Linkage Broke While Performing SP 1036; October 15, 2016
- CAP 1538027; SV-33089 Venting Continuously, Turbine Failed to Latch; October 15, 2016
- CAP 1539007; Loss of Communications During Fuel Handling; October 23, 2016
- CAP 1540858; 12 RCP-Boric Acid Found in 12 PCP Seal Leak Off Piping; November 6, 2016
- CAP 1542568; 3 U1 Rod Control Phase Cards Not Resetting; November 19, 2016
- CAP 1539713; Unit 2 Loop "B" Feedwater Flow Oscillations; October 28, 2016
- CAP 1540537; 12 RCP-RCP Spool Piece Came in Contact with Vent Duct; November 3, 2016
- WO 508811-01; P32266 11 CC Loop RCP Supply D70 Inspection; October 27, 2016
- CALC 89890-34; Weak Link Calculation MV-32267; Revision 0
- CAP 1540462; MV-32266, Apparent Over-Thrust Due to Wiring Error; November 4, 2016
- CAP 1539697; New 12 RCP Internal Pump Upending; October 27, 2016
- Plant Health Report-System Report, Prairie Island, PI Unit 1; November 4, 2016
- CAP 1542686; U1 Rod Control Remaining Phase Controller STA Cards DS1 Indication; November 21, 2016
- CAP 1540848; ISI Indication 1R30 Unit 1 Containment Vessel 157-061; November 6, 2016
- SP 1036; Turbine Overspeed Trip Exercise; Revision 32
- 1C1.7-M5; Unit 1 Hold in Mode 5; Revision 2
- CAP 1541693; 12 RCP Thrust Probe Reading; November 13, 2016
- CAP 1541687; 12 RHR Motor, V/V Correct Replacement Lower Bearing; November 13, 2016

- CAP 1543058; 12 RCP Reduced Flow Since 1R30 Replacement; November 23, 2016
- CAP 1542116; 12 RCP Coupling—Smudge in Shaft Vibration Probe Target Area; November 16, 2016
- CAP 1542184; NRC Question Regarding 11/12 RCP Seal Differential Temperature; November 16, 2016
- CAP 1542053; 12 RCP New Internals Do Not Have an Alignment Pin Installed; November 16, 2016

1R22 Surveillance Testing

- SP 1853; 4kV Bus 15 Undervoltage Relay Calibration (OMICRON); Revision 2
- CAP 1538162; Review of WO 545487—Bus 15 Load Sequencer PT Check; October 17, 2016
- SP 1072.35; Local Leakage Rate Test of Penetration 35 SI Test Line; Revision 2
- SP 1072; Local Leakage Rate Test of Containment Penetrations; Revision 27
- WO 508770-01; Inspect 12 PHR Pump Internals; November 13, 2016
- CAP 1541644; 12 RHR Pump Motor Lower Bearing May be Degraded; November 12, 2016
- CAP 1541561; 12RCP Coupling Stack up Measurements of the 12 RCP; November 11, 2016
- CAP 1541657; Welder ID Not Documented for CFCU Sup/Ret Welds; November 12, 2016
- CAP 1541660; 12 RCP Motor Frame Vibration Indications are Abnormally Low; November 12, 2016
- CAP 1541617; 12 RCP Labyrinth Seal dP Sensing Line May be Vulnerable to Damage
- SP 1169; Reactor Coolant System Flow Verification; Revision 21
- CAP 1543154; RCS B DELTA T Creating a Nuisance Alarm; November 27, 2016
- SP 2090A; 21 Containment Spray Pump Quarterly Test; Revision 23
- SP 1305; D2 Diesel Generator Monthly Slow Start Test; Revision 55

1EP4 Emergency Action Level and Emergency Plan Changes

- Prairie Island Nuclear Generating Plant Emergency Preparedness Plan; Revisions 51 and 52
- PINGP-1576; EAL Matrix; Revisions 8 and 9
- F3-21 EAL; Technical Bases; Revisions 10 and 11
- PI-2015-364; 10 DFR 50.54(q) Review Form; November 10, 2015
- FR-R-EP-02; 10 CRF 50.54(q) Review Process; Revision 11
- CAP 1496615; EAL Matrix Inappropriately References TS B.3.9.4; October 13, 2015
- CAP 1496863; Revise F3-2.1; Emergency Technical Basis Revision 10; October 15, 2015
- CAP 1512688; EAL Matrix is Not Included Within Emergency Plan; February 17, 2016

2RS1 Radiological Hazard Assessment and Exposure Controls

- RPIP 1126; Contamination Monitor Alarm Response and Personnel Decontamination; Revision 26
- CY-ENVR-503; Outage Control of Containment Openings; Revision 3
- FP-PA-HU-05; Decision Making; Revision 2
- FP-RP-SEN-02; Radiological Work Planning and Controls; Revision 3
- CD 9.3; Radiological Posting; Revision 5
- Bulk Material Batch Release; February 10, 2016
- Annual Radioactive Source Reconciliation; January 7, 2016
- Annual Radioactive Source Inventory/Leak Test; July 11, 2016
- Prairie Island Plant Alpha Characterization Study; June 15, 2016
- 1R30 Outage Personnel Contamination Event Reports; Various Records

- 1R30 Outage Radiological Surveys; Various Records
- 1R30 Outage Air Sample Surveys; Various Records
- RWP 161006; Valve & Pump Work—U1 Outage 1R30; Revision 1
- RWP 161070; Secondary Side Steam Generator Activities—U1 Outage—1R30; Revision 2
- RWP 161020; RCP Work—U1 Outage—1R30; Revision 5
- RWP 161022; RCP Project—12 RCP Pump Removal—1R30; Revision 1
- CAP 1496123; Survey Map Used for CTMT Briefing had Info for 29 Percent Power; October 8, 2015
- CAP 1497423; Dose Extension Performed Without Authorization; October 19, 2015
- CAP 1524067; Dose Rates in Warehouse #2; June 3, 2016
- CAP 1524608; Worker Received a Briefed Dose Rate Alarm; June 9, 2016
- CAP 1540025; Workers ED Shut Off While Working in the RCA; October 30, 2016
- CAP 1540705; Equipment Hatch Weather Curtain Open Too Long; November 4, 2016
- CAP 1540716; Source Inventory/Leak Test Documentation is Incomplete; November 4, 2016

2RS5 Radiation Monitoring Instrumentation

- C47048; Alarm Response Procedure; Revision 33
- C80001; Remote Alarm Response Procedure; Revision 4
- RPIP 1405; RD System Monitor Alarm Response; Revision 14
- RPIP 1530; Victoreen R- Meter; Revision 6
- RPIP 1531; JL Shepherd Calibrator Operation; Revision 9
- RPIP 1608; RO-2, RO-2A and RO-20 Operation and Calibration; Revision 10
- RPIP 1658; ASP-1 Neutron Meter Operation and Calibration; Revision 14
- RPIP 1660; Yearly Source Calibration; Revision 10
- RPIP 1684; AMP-100 Operation and Calibration; Revision 1
- ASP-1 Neutron Meter #293063 Calibration; Dated October 12, 2016
- AMP-100 #488550 Calibration; Dated September 5, 2016
- RADOS #479901 Calibration; Dated August 23, 2016
- CM-11 #293072 Calibration; Dated June 7, 2016
- MG Telepole #469672 Calibration; Dated September 27, 2016
- SAM-11 #538580 Calibration; Dated July 28, 2016
- Eberline PCM-1B Calibration; Dated September 29, 2016
- Eberline PM-7 Calibration #496788; Dated July 23, 2016
- Eberline E-120 Frisker Calibration #462620; Dated June 22, 2016
- Ludlum Models 9, 9-3 and 17 Calibration #480213; Dated September 12, 2016
- AMS 4 CAM #293270 Calibration; Dated September 2, 2016
- JL Shepherd Calibration; Dated November 30, 2015
- Radeco Low Volume Air Sampler #476405; Dated September 26, 2016
- Gamma Spectroscopy System Calibrations; Various Records
- Instrument Out of Tolerance Reports; Various Records
- Portable Monitor Checks; Dated November 24, 2016
- Technical Basis Document 15-002; Revision 1; RADOS TSE Daily Source Checks
- Whole Body Counter QA Report; Dated November 2016
- CAP 1429533; Micromrem #533121 Failed Source Check; May 6, 2014
- CAP 1485262; JL Shepherd Indicating Dial Found Out of Position; July 7, 2015
- CAP 1487446; ASP-1 Failed Source Check; July 26, 2015
- CAP 1543432; 2015 Annual Source Calibration Instrument Mismatch; November 29, 2016

- CAP 1543604; No Technical Basis for the Area Monitor Alarm Setpoints; November 30, 2016
- CAP 1543722; Electronic Cal of Detectors Does Not Meet NRC Expectations; December 1, 2016

2RS6 Radioactive Gaseous and Liquid Effluent Treatment

- CAP 1531839; NRC Question on TS Filter Testing; August 17, 2016
- CAP 1531897; Inconsistency in Recirc Mixing of Waste Liquid Tanks; August 17, 2016

4OA1 Performance Indicator Verification

- Electronic Dosimeter Alarm Data; October 1, 2015, through September 30, 2016
- Internal Dose Assessments Records; October 1, 2015, through September 30, 2016
- CAP 1536853; NOS ID: Locked High Rad Area Potential Access; October 5, 2016
- Reactor Oversight Program MSPI Basis Document; Prairie Island Nuclear Generating Plant; Revision 21

4OA2 Identification and Resolution of Problems

- CAP 1513991; Change the USAR to Clarify NDE Frequency for Special Lifting Devices; February 29, 2016
- CAP 1521758; Change USAR Required Inspection Method for Special Lifting Devices; May 12, 2016
- 50.59 Evaluation 1129; Change USAR Required Inspection Method for Special Lifting Devices; Revision 0
- MISTRAS Work Order 40243140; Prairie Island Unit 1 Acoustic Emission Examination of the U-1 Reactor Head Lifting Rig, Internals Lift Rig and Load Cell Linkage; November 1, 2016
- EPRI Report TR-107147; Acoustic Emission Monitoring of Reactor Vessel Head and Internals Lift Rigs; December 1996
- Safety Evaluation by the Office of Nuclear Reactor Regulation Alternative Testing of Reactor Vessel Head and Internals Lifting Rigs Tennessee Valley Authority Sequoyah Nuclear Plant, Units 1 and 2, Docket Nos. 50-327 and 50-328; October 1, 1991
- CAP 1533795; (NOS ID) PORs per CAP 1517613-03 & CAP 1525844-01 Deficient; September 2, 2016
- CAP 1534418; NOS ID: CAP 1525844 CEs Not Completed per FP-PA-ARP-01, Attachment 8; September 12, 2016
- CAP 1534531; Missed Opportunity to Respond to Inspector Assumption; September 13, 2016
- CAP 1544831-02; Maintenance Rule Functional Failure CL-09 Condition Monitoring Evaluation; December 13, 2016
- Function # CL-09; Cooling Water Maintenance Ruling Bases Document; December 27, 2016
- Unit 1 Auxiliary Feed Water Plant System Health Report; November 4, 2016
- CAP 1546036; Maintenance Rule Evaluation Not Initiated for 4-CL-28 Pinhole Leak; December 28, 2016
- CAP 1545997; Re-Perform MRE for AR 1316925, and Evaluate a(1) Status; December 27, 2016
- CAP 1536331-05; Chemical Indication of Cooling Water In-Leakage on D2 Maintenance Rule Evaluation; September 30, 2016
- CAP 1544831; Through Wall Leak on 4-CL-28 Piping; December 13, 2016
- CAP 1541863; Possible Pressure Locking Condition on MV-32163; November 14, 2016

- CAP 1441783; ACE NRC Identified Green NCV—MS2 Rev 10—Signed; October, 21, 2014
- CAP 1441791; ACE QF0431 NRC Identified Green NCV—MS6 Final; October 21, 2014
- CAP 1445206; ACE NRC Identified Green NCV—MS4—Signed; October 27, 2014
- CAP 1363098; Perform Reassessment of Target Set CDAs; December 13, 2012
- CAP 1416683; Incomplete Statement of CDA Applicability in Target Sets; January 29, 2014
- CAP 1422672; CDA Determination Not Made on Some Digital Plant Equipment; March 14, 2014
- CAP 1423100; FP–E–RTC–02, Equipment Classification; March 18, 2014
- CAP 1425542; FP IT CSP 07 and Revision #3; April 4, 2014
- CAP 1425545; FP IT CSP 21 and Revision #2; April 4, 2014
- CAP 1432550; Media Retained in Chart Recorders Not Documented in Program; May 29, 2014
- CAP 1432729; NRC Asked if SD Cards/Dongles are in Portable Media Program; May 30 2014
- CAP 1433028; QF 1537 Port Dev Log; June 2, 2014
- CAP 1433064; Consider Proceduralizing Cyber Comp Device Scanning Process; June 2, 2014
- CAP 1433126; Possible Gaps for Full Cyber Milestone 4 Implementation; June 3, 2014
- CAP 1433246; NRC Cybersecurity—Target Set CDA Protection Issue; June 3, 2014
- CAP 1433432; Cyber Milestone 2—Digital Equipment Not Identified; June 3, 2014
- CAP 1433458; Digital Devices in EC Process Have Not Been Assessed as CDAs; June 5, 2014
- CAP 1433467; CDAs Not Identified as Target Set CDAs; June 5, 2014
- CAP 1433658; Cybersecurity Inspection—Lack of Info on Ops Actions; June 6, 2014
- CAP 1433978; 10 CAPs Not Approved Within 3 Days of Notification; June 10, 2014
- CAP 1434089; CAP Closed Without Evaluation; June 10, 2014
- CAP 1434167; FG IT CSP 06 01, Rev 1, CDA Media Scanning; June 11, 2014
- CAP 1434297; Potential Target Set CDA Screening Issue; June 12, 2014
- CAP 1434679; OE PI NRC TI—SD Cards/Dongles in Portable Media Program; June 13, 2014
- CAP 1434680; OE PI NRC TI—CDAs Not Identified as Target Set CDAs; June 13, 2014
- CAP 1434681; OE PI NRC TI—Procedure for PCD Scanning; June 13, 2014
- CAP 1434684; OE PI NRC TI—Milestone 2 - Digital Equip Not Identified; June 13, 2014
- CAP 1434687; OE PI NRC TI—Possibly Milestone 4 Gaps; June 13, 2014
- CAP 1434688; OE PI NRC TI—Media Retained in Recorders Not in Program; June 13, 2014
- CAP 1434689; OE PI NRC TI—Target Set CDA Protection Issue; June 13, 2014
- CAP 1437188; ICPM 1–062 Revision 3; July 3, 2014
- CAP 1437189; ICPM 2–062 Revision 5; July 3, 2014
- CAP 1437875; NRC INSP Portable Media Connected to Simulator Server; July 10, 2014
- CAP 1437932; NRC INSP Unsecured CDROM and Modem Found Near Voltage Reg; July 10, 2014
- CAP 1438096; RM 3 Cyber Security 3:2:1 Tile RED; July 11, 2014
- CAP 1441783; NRC Identified Green NCV Cyber Security Milestone 2; August 5, 2014
- CAP 1441789; NRC Identified Green NCV Cyber Security Milestone 4; August 5, 2014
- CAP 1441790; NRC Identified Green NCV Cyber Security Milestone 4; August 5, 2014
- CAP 1441791; NRC Identified Green NCV Cyber Security Milestone 6; August 5, 2014
- CAP 1443004; 3 Action Quality Closure Failures—Cyber Security; August 14, 2014
- CAP 1445206; NRC Identified Green NCV Cyber Security MS4 Fleet ACE; September 3, 2014
- CAP 1451376; FP–S–FSIP–15 Revision 2; October 16, 2014
- CAP 1455236; Action 01433467–03 Failed Closure Quality Review; November 8, 2014
- CAP 1460377; Action 01433467–02 Failed Closure Quality Review; December 22, 2014

- CAP 1460429; The Process for Cyber Reviews of ECs Needs Improvement; December 23, 2014
- FG-IT-CSP-06-01; Cyber Security User Guide to Scanning Kiosks (Markup); Revision 0
- FG-IT-CSP-06-01; Cyber Security User Guide to CDA MEDIA Scanning; Revision 1
- FP G DOC 03; Procedure and Work Instruction Use and Adherence; Revision 13
- FP-IT-CSP-07; Cyber Security Portable Computing Device Procedure (Pre-Inspection); Revision 3
- FP-IT-CSP-07; Cyber Security Portable Computing Device Procedure (Post Inspection); Revision 4
- FP-IT-CSP-07; Cyber Security Portable Computing Device Procedure (Markup); Revision 4
- FP-IT-CSP-12; Critical Systems and Critical Digital Asset Identification Procedure; Revision 2
- FP-IT-CSP-12; Critical Systems and Critical Digital Asset Identification Procedure; Revision 5
- FP-IT-CSP-21; Cyber Security CDA Media Protection Procedure (Pre-Inspection); Revision 1
- FP-IT-CSP-21; Cyber Security CDA Media Protection Procedure (Post Inspection); Revision 2
- FP-IT-CSP-21; Cyber Security CDA Media Protection Procedure (Markup); Revision 2
- FP-IT-CSP-21; Cyber Security CDA Media Protection Procedure; Revision 3
- FP-PA-ARP-01; CAP Action Request Process; Revision 45
- FP-PA-ARP-01; CAP Action Request Process; Revision 46
- FP-S-FSIP-07; Access Controls; Revision 6
- FP-S-FSIP-15; Development and Maintenance of Critical Target Sets (Pre Inspection); Revision 2
- FP-S-FSIP-15; Development and Maintenance of Critical Target Sets (Markup); Revision 2
- FP-S-FSIP-15; Development and Maintenance of Critical Target Sets (Post Inspection); Revision 3
- ICPM 1-062; Unit 1 Control Room Paperless Recorder Data Transfer (Pre Inspection); Revision 3
- ICPM 1-062; Unit 1 Control Room Paperless Recorder Data Transfer (Markup); Revision 3
- ICPM 1-062; Unit 1 Control Room Paperless Recorder Data Transfer (Post Inspection); Revision 4
- ICPM 2-062; Unit 2 Control Room Paperless Recorder Manual Data Transfer (Pre Inspection); Revision 5
- ICPM 2-062; Unit 2 Control Room Paperless Recorder Manual Data Transfer (Markup); Revision 5
- ICPM 2-062; Unit 2 Control Room Paperless Recorder Manual Data Transfer (Post Inspection); Revision 6
- QF1537; Cyber Security Portable Computing Device Custody Log Form; Revision 0
- CAP 1441783; EFR NRC Identified Green NCV—MS2 Signed; December 19, 2014
- CAP 1441791; EFR NRC Identified Green NCV—MS6 Signed; December 22, 2014
- CAP 1445206; EFR NRC Identified Green NCV—MS4 Signed; December 19, 2014
- EC19784; CR Recorders Recorder Replacement EC
- L-PI-15-048; Closure Letter L-PI-15-048 (Response to Cyber Security ED); July 29, 2015

40A3 Followup of Events and Notices of Enforcements Discretion

- CAP 1532318; 2RY Transformer Locked Out; August 21, 2016
- C18.1; Engineered Safeguards Equipment Support Systems; Revision 40
- C18.1; Engineered Safeguards Equipment Support Systems; Revision 39
- 5AWI 3.15.8; Safety Function Determination Program; Revision 11
- CAP 1508154; C18.1 Revision 40; January 10, 2016
- CAP 1488482; Possible Misapplication of C18.1; August 4, 2015

- CAP 1507347; C18.1 Procedure Steps Not Supported by EC 21177; January 4, 2016
- CAP 1492899; BUS 16 Inoperable Due to Safeguards Chilled Water Isolation; September 11, 2015
- CAP 1495080; Extent of Condition—BUS 15 Inoperability; September 29, 2015
- CAP 1519106; Re-Open ACE 1488482–04 to Address HU for Cause; April 12, 2016
- CAP 1512717; NRC Concerns Re: LER & ACE for C18.1; February 13, 2016
- CAP 1520706; Past Ops Eval for BUS 15/16 Did Not Include DC System; May 2, 2016
- CAP 1516787; Downward Trend in Site Prep for LER Submittals; March 24, 2016
- CAP 1487086; DC Systems; July 23, 2015
- CAP 1507350; Evaluate Corrective Actions for ACE 1488482 and AR 1496825; January 5, 2016
- CAP 1493005; Safeguards Chilled Water Maintenance Strategies Need for Change; September 12, 2015
- PCR 1386187; C18.1 Revision 33; June 11, 2013
- FP–G–DOC–04; Procedure Processing; Revision 30

4OA5 Other Activities

- Reply to Notice of Violation VIO 05000306/2015008–01; February 4, 2016
- ACE 1498169; Apparent Cause Evaluation for VIO 05000306/2015008–01; January 18, 2016
- CAP 1498169; NRC NOV—GAMP: Legacy-Ineffective Corrective Action from 2011; October 22, 2015
- WO 537159–01; 2F2901HS GL 08–01; February 5, 2016
- WO 530413–01; Checking for Air Voids; May 18, 2016
- WO 540483–01; Checking for Air Voids; August 10, 2016
- WO 551271–01; Checking for Air Voids; October 5, 2016
- FL–WMN–CAP–007F; Corrective Action Program: Improving CAP Behaviors; May 17, 2016
- FL–WMN–CAP BEHAVIOR; LM–0616 Qualification Lookup; Revision 0
- FP–E–QRT–01; Quality Review Team; Revision 6

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Document Access Management System
AFW	Auxiliary Feed Water
ALARA	As-Low-As-Reasonably-Achievable
ASME	American Society of Mechanical Engineers
AST	Alternate Source Term
CAP	Corrective Action Program
CC	Component Cooling
CDA	Critical Digital Asset
CFR	<i>Code of Federal Regulations</i>
CL	Cooling Water
CS	Containment Spray
DC	Direct Current
EAL	Emergency Action Level
EDG	Emergency Diesel Generator
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
ISI	Inservice Inspection
JW	Jacket Water
LCO	Limiting Condition for Operation
LER	Licensee Event Report
MDCLP	Motor-Driven Cooling Water Pump
MSPI	Mitigating Systems Performance Index
MV	Motor Valve
NCV	Non-Cited Violation
NDE	Non-Destructive Examination
NEI	Nuclear Energy Institute
NIST	National Institute of Standards and Technology
NPP	Nuclear Power Plant
NRC	U.S. Nuclear Regulatory Commission
NSPM	Northern States Power - Minnesota
OSP	Outage Safety Plan
PD	Performance Deficiency
PI	Performance Indicator
PMT	Post-Maintenance Testing
POR	Past Operability Review
psig	Pounds Per Square Inch Gauge
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RFO	Refueling Outage
RHR	Residual Heat Removal
RSG	Replacement Steam Generator
RWP	Radiation Work Permit
SCWS	Safeguards Chilled Water System
SDP	Significance Determination Process
SFDP	Safety Function Determination Program
SG	Steam Generator
SGNR	Steam Generator Narrow Range

SI	Safety Injection
SP	Surveillance Procedure
SRO	Senior Reactor Operator
TI	Temporary Instruction
TS	Technical Specification
UHS	Ultimate Heat Sink
URI	Unresolved Item
USAR	Updated Safety Analysis Report
V	Volts
VIO	Notice of Violation
WO	Work Order

S. Northard

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Letter to Scott Northard from Kenneth Riemer dated February 14, 2017

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2—NRC
INTEGRATED INSPECTION REPORT 05000282/2016004; 05000306/2016004;
05000282/2016501; AND 05000306/2016501

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