



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
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January 26, 2018

Mr. Scott Sharp
Site Vice President
Prairie Island Nuclear Generating Plant
Northern States Power Company, Minnesota
1717 Wakonade Drive East
Welch, MN 55089-9642

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2—NRC
INTEGRATED INSPECTION REPORT 05000282/2017004; 05000306/2017004;
05000282/2017501 AND 05000306/2017501

Dear Mr. Sharp:

On December 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Prairie Island Nuclear Generating Plant, Units 1 and 2. On January 17, 2018, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report. The NRC also completed its annual inspection of the Emergency Preparedness Program. This inspection began on January 1, 2017, and issuance of this letter closes Inspection Report Number 2017501.

No NRC-identified or self-revealed findings were identified during this inspection.

However, the inspectors documented four licensee-identified violations that were determined to be of very low safety significance in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the NRC Enforcement Policy

If you contest the violations or significance of the 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 the Regional Administrator, Region III; the Director, Office of Enforcement; and the NRC Resident Inspector at the Prairie Island Nuclear Generating Plant.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

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 05000282/2017004; 05000306/2017004;
05000282/2017501; 05000306/2017501

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Letter to Scott Sharp from Kenneth Riemer dated January 26, 2018

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2—NRC
INTEGRATED INSPECTION REPORT 05000282/2017004; 05000306/2017004;
05000282/2017501 AND 05000306/2017501

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000282/2017004; 05000306/2017004;
05000282/2017501; 05000306/2017501

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, 2017

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Division of Reactor Projects

Enclosure

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SUMMARY

Inspection Report 05000282/2017004; 05000306/2017004; 10/1/2017 – 12/31/2017; 05000282/201750; 05000306/2017501; 01/01/2017 – 12/31/2017; Prairie Island Nuclear Generating Plant, Units 1 and 2.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. No NRC-identified or self-revealed findings were 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," July 2016.

Licensee Identified Violations

Violations of very low safety significance 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 corrective action program (CAP). These violations and CAP tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 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.

Unit 2 operated at full power at the beginning of the inspection period. On October 13, 2017, Unit 2 was taken offline to begin refueling outage (RFO) 30 (2R30). On November 21, 2017, Unit 2 was placed online 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.

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:

- Screenhouse Ventilation and Cooling Water.

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 (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

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

- Unit 1 Relay Room Unit Coolers;
- 22 Safeguards Battery; and
- Unit 2 Component Cooling Water (CCW).

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 system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, the USAR, Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports, 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 partial quarterly 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 which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Fire Area 80; 480 VAC Safeguards Switchgear Room (Bus 111);
- Fire Area 18; Relay and Cable Spreading Room Unit 1 and 2;
- Fire Zone 8; Auxiliary Building Ground Floor; and
- Fire Zone 2; Auxiliary Feedwater Pump Rooms, Elevation 695’.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and 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 11, 2017, the inspectors observed a fire brigade drill activation in response to a turbine building fire alarm located adjacent to the plant heating boiler on the 695' elevation of Unit 1. 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 Annual Heat Sink Performance (71111.07)

.1 Annual Heat Sink Performance (71111.07A)

a. Inspection Scope

The inspectors reviewed the licensee's testing of the 21 CCW Heat Exchanger 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 test conditions, design conditions, and testing 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.

1R08 Inservice Inspection Activities (71111.08)

From October 16-26, 2017, the inspectors conducted a review of the implementation of the licensee's Inservice Inspection (ISI) program for monitoring degradation of the Unit 2 reactor coolant system (RCS), emergency feedwater systems, risk-significant piping and components, and containment systems. Documents reviewed are listed in the Attachment to this report.

The inspections described in Sections 1R08.1 through 1R08.5 below constituted one ISI sample as defined in IP 71111.08-05.

.1 Piping Systems Inservice Inspection

a. Inspection Scope

The inspectors observed the following non-destructive examinations 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 NRC approved alternative requirement:

- Magnetic Particle Testing of the Feedwater Nozzle to Shell Weld of SG21 Component ID N-1 S/T001;
- Ultrasonic Testing (UT) of the Feedwater Nozzle to Shell Weld of SG21 Component ID N-1 S/T001;

- UT of Upper Shell to Elliptical Head weld of SG21 Component ID W-8 S/C008;
- Enhanced Visuals of the bare metal surface of the Reactor Vessel Head; and
- Liquid Penetrant Testing for the pre-service exam of the replacement Isolation Valve 2RC-8-37.

The inspectors reviewed the following examination records with recordable indications accepted for continued service to determine if acceptance was in accordance with the ASME Code Section XI or an NRC-approved alternative.

- UT of Reactor Vessel Shell-Shell welds W-2 in the RCS system;
- UT of Reactor Vessel Nozzle Inlet Loop A N-6 welds in the RCS system; and
- UT of Reactor Vessel Nozzle Outlet Loop A N-7 welds in the RCS system.

The inspectors observed the following pressure boundary welds completed for risk-significant systems during 2R30 to determine if the licensee applied the pre-service non-destructive examinations and acceptance criteria required by ASME Code Section XI. Additionally, the inspectors reviewed the welding procedure specification and supporting weld procedure qualification records to determine if the weld procedure was qualified in accordance with the requirements of the Construction Code and the ASME Code Section IX:

- ASME Code Category Class 1: Installation of Replacement Isolation Valve 2RC-8-37 for the Loss of Offsite Power RCS Shutdown Communication Line Vent (Work Order 700028252).

b. Findings

No findings were identified.

.2 Reactor Pressure Vessel Upper Head Penetration Inspection Activities

a. Inspection Scope

For the Unit 2 reactor vessel head, a bare metal visual examination was required this outage pursuant to Title 10 of the *Code of Federal Regulations* (CFR) Part 50.55a(g)(6)(ii)(D).

The inspectors observed portions of the examination and reviewed the final record for the bare metal visual examination conducted on the Unit 2 reactor vessel head to determine if the activities were conducted in accordance with the requirements of ASME Code Case N 729-1 and 10 CFR 50.55a(g)(6)(ii)(D). In particular, the inspectors confirmed for a sample of penetration locations that: the required visual examination scope/coverage was achieved and limitations (if applicable) were recorded in accordance with the licensee procedures;

- The licensee criteria for visual examination quality and instructions for resolving interference and masking issues were adequate;
- If indications of potential through-wall leakage were identified, the licensee entered the condition into the CAP and implemented appropriate corrective actions; and

- Based upon the licensee's examination, no new relevant indications were accepted for continued service. Therefore, no NRC review was completed for these inspection procedure attributes.

The licensee did not conduct UT on the Unit 2 reactor vessel head penetrations. The inspectors verified the NRC-approved licensee request for use of alternative ISI, Request L-PI-14-095 associated with reactor vessel closure head volumetric/surface examination frequency, met the requirements of the ISI Program. The alternative allowed deferral of the volumetric/surface examinations of each unit's reactor vessel closure head for an additional 5 years beyond the nominal 10-year ISI interval. The required volumetric/surface exams for Unit 2 was scheduled to occur in the fall of 2015. By letter dated June 4, 2015, the NRC staff authorized the one-time use of alternative L-PI-14-095 at Prairie Island Nuclear Generating Plant for the duration up to the fall of 2019 for Unit 2.

b. Findings

No findings were identified.

.3 Boric Acid Corrosion Control

a. Inspection Scope

On October 14, 2017, the inspectors performed visual examinations on portions of the Unit 2 RCS and connected systems within containment to determine if these visual examinations emphasized locations where boric acid leaks could 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 and for degraded components that the planned or completed corrective actions met the Construction Code, ASME Section XI Code, and/or an NRC-approved alternative.

- Boric acid evaluation for CAP 501000004953, "Boric Acid Leaks on Reactor Coolant System found under SP2405 (2R29)"; and
- Boric acid evaluation for CAP 1510389, "Inactive Packing Leakage on RC Manual Valves U2 CNMT 715".

The inspectors reviewed the following CAP 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 1510398, "MV-32233, Inactive Packing Leak on Motor Valve MV-32233".

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 steam generator tubes. Therefore, no NRC review was completed for this inspection attribute.

For the Unit 2 steam generators, no examination was required pursuant to the TS 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, "Corrective Action," requirements. Documents reviewed are listed in the Attachment to this report.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program and Licensed Operator Performance (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 8, 2017, through September 22, 2017, required by 10 CFR Part 55.59(a). The results were compared to the thresholds established in IMC 0609, Appendix I, "Licensed Operator Regualification Significance Determination Process," to assess the overall adequacy of the licensee's Licensed Operator Regualification Training Program to meet the requirements of 10 CFR 55.59. (Section 02.02)

This inspection constituted one annual licensed operator requalification examination 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 14, 2017, 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 Preparedness 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 licensed operator requalification program simulator 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 17, 2017, the inspectors observed Unit 2 Mode 5/6 Operations during Lowered RCS Inventory. This was an activity that required heightened awareness or was 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;
- correct use and implementation of procedures;
- control board manipulations;

- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions.

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.

This inspection constituted one quarterly licensed operator heightened activity/risk sample as defined in IP 71111.11–05.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

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

- Unit 1 and 2 Safeguards 480 VAC Electrical; and
- D1 and D2 Emergency Diesel Generators (EDGs).

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/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 quarterly maintenance effectiveness 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:

- Safety Injection (SI) System Slave Relay Inadvertent Actuations; and
- D6 and 122 Safeguards Travelling Screen Out-of-Service.

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 two maintenance risk assessments and emergent work control samples as defined in IP 71111.13–05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- CAP 501000003186, Post Loss of Offsite Power Relay Room Ventilation Operability Evaluation;
- CAP 501000003394, Unit 1 and Unit 2 Relay Room Unit Cooler Past Operability Evaluation;
- Operating Experience Evaluation 501000001209, NSAL 17–3;

- CAP 501000004183, D2 EDG Lube Oil Heat Exchanger Cooling Water Leak Operability Evaluation;
- CAP 501000002690, Event Monitoring Instrumentation and Safeguards 480V Operability Evaluation;
- CAP 501000004884, Unit 1 and 2 B Train 125 VDC Operability Evaluation; and
- CAP 501000005894, 122 Diesel Driven Cooling Water Pump Fuel Oil Service Tank Vent Line.

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 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 seven 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 activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- Unit 1 and 2 Relay Room Safeguards Room Cooling Motor Replacement;
- D5 EDG Testing Following Refueling Outage Maintenance;
- 21 CCW Motor Replacement Activities;
- Unit 2 Integrated SI Test Train A;
- Unit 2 Integrated SI Test Train B;
- MV–32153 and MV–32150 Following Wedge Pin Replacement;
- D2 EDG Testing Following Corrective Maintenance;
- 22 Turbine-Driven Auxiliary Feed Water Testing Following Governor Work; and
- D6 EDG Work Window.

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 nine 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 the Unit 2 RFO, conducted October 14, 2017 through November 20, 2017, 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 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 TS 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 TS 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 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 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 2282, Unit 2 MOD–25 Verification and Data Reporting of Generator and Reactive Power Capacity Test; (Routine);
- SP 2098, 21 Battery Refueling Outage Discharge Test (Routine);
- SP 2083B, Unit 2 Integrated SI Test Train B (Routine);
- SP 2083A, Unit 2 Integrated SI Test Train A (Routine); and
- SP 2366, Charging Pump Suction Valve Refueling Test (Containment Isolation 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 Section XI, ASME code, 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 four routine surveillance testing samples and one containment isolation valve 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

Regional inspectors performed an in-office review of the latest revisions to the Emergency Plan, Emergency Action Levels (EALs), and EAL Bases document to determine if these changes decreased the effectiveness of the Emergency Plan. The inspectors also performed a review of the licensee's 10 CFR Part 50.54(q) change process, and Emergency Plan change documentation to ensure proper implementation for maintaining EP integrity.

The NRC review was not documented in a safety evaluation report, and did not constitute approval of licensee-generated changes; therefore, this revision is 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

Cornerstones: Occupational and Public 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 a 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 that had the potential to become airborne.

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

b. Findings

No findings were identified.

.2 Instructions to Workers (02.03)

a. Inspection Scope

The inspectors reviewed select radiation work permits 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 methodology. 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 follow-up investigations.

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

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

This inspection constituted one complete 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 bases 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 complete 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, radiation work permits, 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 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 radiation work permits, 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 TS 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 radiation work permit 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 radiation work permit 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.

2RS2 Occupational As-Low-As-Reasonably-Achievable Planning and Controls (71124.02)

.1 Radiological Work Planning (02.02)

a. Inspection Scope

The inspectors selected three to five work activities of the highest exposure significance or involved work in high dose rate areas.

The inspectors reviewed radiological work planning as-low-as-reasonably-achievable (ALARA) evaluations, initial and revised exposure estimates, and exposure mitigation requirements. The inspectors determined if the licensee had reasonably grouped the radiological work into work activities.

The inspectors assessed whether the licensee's planning identified appropriate dose reduction techniques; appropriately considered alternate reduction features; and defined reasonable dose goals. The inspectors evaluated whether the licensee's ALARA assessments had taken into account decreased worker efficiency from use of respiratory protective devices and/or heat stress mitigation equipment. The inspectors determined if the licensee's work planning considered the use of remote technologies and dose reduction insights from industry and plant-specific operating experience. The inspectors assessed whether these ALARA requirements were integrated into work procedure and/or radiation work permit documents.

The inspectors compared the results achieved with the intended dose established in the ALARA planning. The inspectors compared the person-hour estimates provided by work groups to the radiation protection group with the actual work activity time results, and evaluated the accuracy of these time estimates. The inspectors evaluated the reasons for any inconsistencies between intended and actual work activity doses.

The inspectors evaluated whether post-job reviews were conducted to identify lessons learned and entered into the licensee's CAP program.

This inspection constituted one ALARA sample as defined in IP 71124.02–05.

b. Findings

No findings were identified.

.2 Verification of Dose Estimates and Exposure Tracking Systems (02.03)

a. Inspection Scope

The inspectors assessed whether the assumptions and basis for the current annual collective exposure estimate were reasonably accurate. The inspectors assessed source term reduction effectiveness and reviewed applicable procedures for estimating exposures from specific work activities.

The inspectors reviewed the assumptions and bases in ALARA work planning documents for selected activities and verified that the licensee had established measures to track, trend, and if necessary to reduce, occupational doses for ongoing work activities.

The inspectors determined whether a dose threshold criteria was established to prompt additional reviews and/or additional ALARA planning and controls and evaluated the licensee's method of adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered. The inspectors determined if adjustments to exposure estimates were based on sound radiation protection and ALARA principles or if they were simply adjusted to account for failures to control the work. The inspectors evaluated whether there was sufficient station management review and approval of adjustments to exposure estimates and that the reasons for the adjustments were justifiable.

The inspectors reviewed selected occasions with inconsistent or incongruent results from the licensee's intended radiological outcomes to determine whether the causes were attributed to a failure to adequately plan work activities, failure to provide sufficient management oversight of in-plant work activities, failure to conduct the work activity without significant rework, or failure to implement radiological controls as planned.

This inspection constituted one verification of dose estimates and exposure tracking systems sample as defined in IP 71124.02–05.

b. Findings

No findings were identified.

.3 Implementation of ALARA and Radiological Work Controls (02.04)

a. Inspection Scope

The inspectors reviewed the radiological administrative, operational, and engineering controls planned for selected radiologically significant work activities and evaluated the integration of these controls and ALARA requirements into work packages, work procedures and/or radiation work permits.

The inspectors conducted observations of in-plant work activities and assessed whether the licensee had effectively integrated the planned administrative, operational, and engineering controls into the actual field work to maintain occupational exposure ALARA. The inspectors observed pre-job briefings, and determined if the planned controls were discussed with workers. The inspectors evaluated the placement and use of shielding, contamination controls, airborne controls, radiation work permit controls, and other engineering work controls against the ALARA plans.

The inspectors assessed licensee activities associated with work-in-progress to ensure the licensee was tracking doses, performed timely in-progress reviews, and, when jobs did not trend as expected, appropriately communicated additional methods to be used to reduce dose. The inspectors evaluated whether health physics and ALARA staff were involved with the management of radiological work control when in-field activities deviated from the planned controls. The inspectors assessed whether the Outage Control Center and station management provided sufficient support for ALARA re-planning.

The inspectors assessed the involvement of ALARA staff with emergent work activities during maintenance and when possible, attended in-progress review discussions, outage status meetings, and/or ALARA committee meetings.

The inspectors compared the radiological results achieved with the intended radiological outcomes and verified that the licensee captured lessons learned for use in the next outage.

This inspection constituted one ALARA and radiological work controls sample as defined in IP 71124.02-05.

b. Findings

No findings were identified.

.4 Radiation Worker Performance (02.05)

a. Inspection Scope

The inspectors observed radiation worker and radiation protection technician performance during work activities being performed in radiation areas, airborne radioactivity areas, or high radiation areas to assess whether workers demonstrated the ALARA philosophy in practice and followed procedures. The inspectors observed radiation worker performance to evaluate whether the training and skill level was sufficient with respect to the radiological hazards and the work involved.

The inspectors interviewed individuals from selected work groups to assess their knowledge and awareness of planned and/or implemented radiological and ALARA work controls.

This inspection constituted one radiological hazard assessment and exposure controls sample as defined in IP 71124.02–05.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution (02.06)

a. Inspection Scope

The inspectors reviewed self-assessments and/or audits performed of the ALARA Program and determined if these reviews identified problems or areas for improvement.

The inspectors assessed whether problems associated with ALARA planning and controls were being identified by the licensee at an appropriate threshold and properly addressed for resolution.

This inspection constituted one problem identification and resolution sample as defined in IP 71124.02–05.

b. Findings

No findings were identified.

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

.1 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors walked down selected components of the gaseous and liquid discharge systems to evaluate whether equipment configuration and flow paths align with plant documentation and to assess equipment material condition. The inspectors also assessed whether there were potential unmonitored release points, building alterations which could impact effluent controls, and ventilation system leakage that communicated directly with the environment.

This inspection supplemented those documented in Inspection Report 5000282/2016003; 5000306/2016003 and constituted one Radioactive Gaseous and Liquid Effluent Treatment complete 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, Occupational Radiation Safety, Public Radiation Safety, and Security

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index—Emergency AC Power System

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index (MSPI)-Emergency AC Power System Performance Indicator (PI), Units 1 and 2, for the period from the fourth quarter 2016 through the third quarter 2017. To determine the accuracy of the PI data reported during those 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, issue reports, event reports and NRC Integrated Inspection Reports for the period of October 1, 2016, through September 30, 2017, 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 issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI-emergency AC power system PI 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-Residual Heat Removal (RHR) System PI, Units 1 and 2, for the period from the fourth quarter of 2016 through the third quarter of 2017. To determine the accuracy of the PI data reported during those 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, issue reports, MSPI derivation reports, event reports and NRC Integrated Inspection Reports for the period of October 1, 2016, through September 30, 2017, 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 issue report database to determine if any problems had been

identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI-RHR system PI samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index-Cooling Water Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI-Cooling Water Systems PI, Units 1 and 2, for the period from the fourth quarter 2016 through the third quarter of 2017. To determine the accuracy of the PI data reported during those 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, issue reports, MSPI derivation reports, event reports and NRC Integrated Inspection Reports for the period of October 1, 2016, through September 30, 2017, 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 issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI-cooling water systems PI 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 2016 through the third quarter 2017. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's assessment of the Performance Indicator for occupational radiation safety to determine if indicator related data was adequately assessed and reported. To assess the adequacy of the licensee's Performance Indicator 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 PI 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 corrective action program 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 are 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 corrective action program 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, 2017 through December 31, 2017, although some examples expanded beyond those dates where the scope of the trend warranted.

The review also included issues documented outside the corrective action program 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 CAP 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. Observations and Assessments

The inspectors reviewed adverse trends identified by the licensee in the area of operations department behaviors, and engineering department preparation of quality in prompt and past operability evaluations. Although the licensee had not completed all corrective actions at the end of the inspection period, the interim and planned measures to address these performance issues appeared reasonable to reverse the adverse trend. The inspectors planned on continued inspection and oversight as the measures were taken to determine sustainability of the actions.

c. Findings

No findings were identified.

.3 Annual Follow-up of Selected Issues: D2 Emergency Diesel Generator Jacket Water Coolant Leak

a. Inspection Scope

The inspectors selected the following for in-depth review:

- Root Cause Evaluation (RCE), D2 emergency diesel generator (EDG) Jacket Water Coolant Leak.

The inspectors selected this CAP and RCE for in-depth review due to the risk significance of the safety-related equipment, potential for improper past practices in addressing leaks, potential for inadequate use of operating experience, and potential for extent of condition and/or extent of cause.

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

- 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; and
- 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;

- 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 inspection sample as defined in IP 71152-05.

b. Observations and Assessments

The inspectors reviewed the RCE which contained identification of the root cause, contributing causes, analyses of the failure mechanisms, applicability of operating experience, and corrective actions. Overall, the inspectors determined that the licensee was thorough in their investigation, identified several actions to preclude leaks on this and other safety-related equipment in the plant, and took the initiative to share their learnings with other licensees with similar emergency diesel generators.

c. Findings

Based on the inspector's review and assessment of the licensee's RCE, the inspectors determined that the cause of this issue of concern (insufficient original vendor instructions to avoid thermal and vibration-induced failure of the D2 EDG jacket water gasket) was not reasonably within the licensee's ability to foresee and correct and could not have been prevented. Therefore, no findings were identified.

.4 Annual Follow-Up of Selected Issues: Thermally-Induced Current Issue Affecting R-48 and R-49 Containment High Radiation Monitors

a. Inspection Scope

The inspectors selected the following for in-depth review:

- CAP 501000001861; R-48/R-49 Concerns; August 22, 2017

The inspectors selected this CAP for in-depth review due to the potential for impacting the licensee's EAL classifications; because upon discovery of the thermally-induced current (TIC) issue by the licensee, all four (Unit 1 1R-48 & 1R-49 & Unit 2 2R-48 & 2R-49) containment high range radiation monitors were declared inoperable per TS 3.3.3, "Event Monitoring Instrumentation", and because of the potential for prior inadequate CAP disposition associated with the TIC phenomena at the station.

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

- 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 inspection sample as defined in IP 71152.

b. Observations and Assessments

The inspectors reviewed the licensee's response to this issue with respect to declaration of the containment high range radiation monitors as inoperable; subsequent submission of a letter to the NRC within 14 days; interim Emergency Plan measures; adequacy of technical evaluation regarding the TIC impacts to the monitors; and performance of an apparent cause evaluation to understand the apparent and contributing causes of the issue.

Overall, the inspectors determined that the licensee's response and review of the issue was appropriate for the circumstances. Interim measures and final corrective actions appeared appropriate to address the EALs and affected equipment issue.

c. Findings

No NRC-identified or self-revealed findings were identified; however, one licensee-identified NCV of very low safety significance (Green) was identified and is documented in Section 4OA7 below.

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

.1 (Closed) Licensee Event Report 5000306/2017001-00: 23 Containment Fan Coil Unit Operability

a. Inspection Scope

This condition prohibited by TS, which occurred between May 4 and May 5, 2016, involved operators not recognizing that with the ongoing unplanned inoperability of the 122 control room chiller due to an oil temperature issue, and the subsequent unplanned inoperability of the A train #23 containment fan coil unit (CFCU) due to discharge damper issues on May 4, 2016, that the 122 control room chiller was a required support system for the B train #22 and #24 CFCUs. Therefore, with both of the Unit 2 CFCU trains inoperable, Limiting Condition of Operation (LCO) 3.0.3 was required to be entered to place Unit 2 in Mode 3 within 7 hours. Because the supported system TS applicability was not recognized, LCO 3.0.3 was not entered as required and both trains of Unit 2 CFCUs were inoperable for approximately 35.6 hours. This TS violation was identified by the licensee under CAP 501000002726 during an extent of condition/cause

review following a licensee-identified NCV TS 3.0.6 miss-application issue discussed in NRC Inspection Report 05000263/2017003, 05000306/2017003.

The inspectors reviewed this licensee event report (LER), the licensee's extent of condition/cause and causal evaluation, and corrective actions associated with this issue and determined that the actions were appropriate. Documents reviewed are listed in the Attachment to this report. This LER is closed.

This inspection constituted one LER follow-up sample as defined in IP 71153-05.

b. Findings

One licensee-identified NCV of very low safety significance (Green) was identified during the review of this LER and is documented in Section 4OA7 below.

4OA6 Management Meetings

.1 Exit Meeting Summary

On January 17, 2018, the inspectors presented the overall inspection results to Mr. S. Sharp, 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 25, 2017, the inspectors presented the results of the ISI inspection to members of the licensee staff. The licensee acknowledged the issues presented.
- On November 7, 2017, the inspectors presented the results of the overall pass/fail of the Annual Operating Test to Mr. F. Collins, Senior Operations Instructor. The licensee acknowledged the issues presented.
- On November 16, 2017, inspectors presented the inspection results for the Radiation Safety Program review to Mr. H. Butterworth, Business Support Director. The licensee acknowledged the issues presented.
- On December 22, 2017, the inspectors presented by telephone, the results of the Emergency Preparedness Program inspection to Mr. S. Northard, Site Vice President. 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.

4OA7 Licensee-Identified Violations

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

- Technical Specification 5.7.1 states, “High Radiation Areas accessible to personnel in which radiation levels could result in an individual receiving a deep dose equivalent less than 1.0 rem in one hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.” Technical Specification 5.7.1, further requires in part, that each entryway to such an area shall be barricaded and conspicuously posted as a high radiation area.

Contrary to the above, on October 19, 2017, a licensee system engineer identified during the performance of a maintenance and engineering inspection that a chain that functioned as the barricade for the 22 reactor coolant pump vault, a posted high radiation area, was not installed. The licensee documented this issue in CAP 50100004026. The inspectors determined that this issue was of very-low safety significance (Green) after reviewing IMC 0609, Appendix C, “Occupational Radiation Safety Significance Determination Process”. The inspectors determined that this finding was not an ALARA Planning or Work Control issue; was not an overexposure; was not a substantial potential for overexposure; and the ability to assess dose was not compromised.

- Title 10 CFR 50.54(q)(2) requires, in part, that a holder of a nuclear power reactor operating license shall follow and maintain the effectiveness of an emergency plan that meets the requirements in Title 10 CFR Part 50, Appendix E and the planning standards of Title 10 CFR 50.47(b). Title 10 CFR 50.47(b)(4) requires, in part, that the onsite emergency response plans for nuclear power reactors must meet the following standard: a standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

Contrary to the above, between November 22, 2000 and September 22, 2017, the licensee failed to maintain the effectiveness of an emergency plan that met the requirements of the planning standards of 10 CFR 50.47(b). Specifically, on September 22, 2017, the licensee identified that prior assessments of NRC Information Notice 97-45, Supplement 1, “Environmental Qualification Deficiency for Cables and Containment Penetration Pigtails“, and a subsequent industry-initiated study to determine signal errors for Prairie Island’s Unit 1 & 2 containment high range radiation monitors 1R-48, 1R-49, 2R-48 & 2R-49 (used in the licensee’s emergency classification and action level scheme) that impacted operability of the monitors, failed to restore capability to classify EALs during certain design basis accidents.

The violation was more than minor because it was associated with the Facilities and Equipment attribute of the Emergency Preparedness Cornerstone and adversely affected the cornerstone objective of ensuring capability of implementing adequate measures to protect the health and safety of the public in

the event of a radiological emergency. The inspectors referenced IMC 0609, Attachment 4, "Initial Characterization of Findings," and IMC 0609, Appendix B, Emergency Preparedness Significance Determination Process," Table 5.4–1 and Figure 5.4–1. The finding was determined to be of very low safety significance (Green) because timely and accurate EAL classification capability for an event at the General Emergency level was unaffected due to redundant and diverse indications.

In response, the licensee entered the issue into the CAP as CAP 501000001861, declared the containment high range radiation monitors inoperable per TS 3.3.3, "Event Monitoring Instrumentation", implemented Emergency Plan interim measures to make the emergency response organization aware of the issue, performed an extent-of-condition review, and submitted a letter to the U.S. NRC within 14 days as required by TS. Final corrective actions included the addition of a note to the Prairie Island EAL matrix to acknowledge the potential for TIC errors for the containment high range radiation monitors during the first 5 minutes for post-loss of coolant accident (LOCA) or main steam line break events inside containment.

- Prairie Island TS LCO 3.0.3 requires, in part, that when an LCO is not met and an associated ACTION is not provided, action shall be initiated within 1 hour to place the unit in MODE 3 within 7 hours.

Contrary to the above, at 1556 hours on May 4, 2016, the licensee failed to place Unit 2 in MODE 3 within 7 hours due to no associated ACTION provided within TS 3.6.5, "Containment Spray and Cooling Systems" for two containment cooling trains not OPERABLE. Specifically, between May 4 and May 5, 2016, operators failed to recognize that with the ongoing unplanned inoperability of the 122 control room chiller, and the subsequent unplanned inoperability of the A train #23 CFCU, the 122 control room chiller was a required support system for the B train #22 and #24 CFCUs. Therefore, with both of the Unit 2 CFCU trains inoperable, LCO 3.0.3 was required to be entered to place Unit 2 in Mode 3 within 7 hours. Because the supported system TS applicability was not recognized, LCO 3.0.3 was not entered as required and both trains of Unit 2 CFCUs were inoperable for approximately 35 hours.

Because the inspectors answered "No" to questions B.1 and B.2 under Exhibit 3, "Barrier Integrity Screening Questions" of IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power," the finding screened as very low safety significance (Green). The issue was entered into the licensee's CAP as CAP 501000002726. Corrective actions included re-assessing shared system LCOs between Units 1 and 2, revising the LCO tracking database, implementing new standards for LCO 3.0.6 applications, and revisions to the Safety Function Determination Program.

- Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these procedures.

Contrary to the above, on October 17, 2017, with Unit 2 in Mode 5, Cold Shutdown, the licensee failed to accomplish procedure 2C12.2, Purification and Chemical Addition – Unit 2; Revision 34. Specifically, control room operators signed off steps as completed without validating that the procedure actions were performed in the field. These procedure steps that intended to close letdown valves and open purification valves, resulted in unintended transfer of primary coolant from the RCS to the chemical and volume control system hold-up tank instead of back to the RCS. In turn, this resulted in a reduction in RCS inventory with reactor vessel level at approximately 1 foot below the flange (reduced inventory operations). Due to operators quickly recognizing a lack of letdown flow as discussed during a pre-job brief, the purification evolution was halted and actions were taken to restore reactor vessel level.

Because the inspectors answered “No” to questions B.2 and B.3 under Exhibit 2, “Initiating Events Screening Questions” of IMC 0609, Appendix G, Attachment 1, “Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings,” the finding screened as very low safety significance (Green). Specifically, the loss of inventory event was self-limiting such that the leakage would have stopped before impacting the operating method of decay heat removal (shutdown cooling via RHR in this case). The issue was entered into the licensee’s CAP as CAP 501000003923. Corrective actions included an operations department human performance clock reset to share the lessons learned from the event.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

S. Sharp, Site Vice President
T. Conboy, Director of Site Operations
H. Hanson, Plant Manager
J. Bjorseth, Engineering Director
H. Butterworth, Business Support Director
O. Aarness, Maintenance Manager
J. Kivi, Regulatory Affairs Manager
T. Borgen, Operations Manager
B. Boyer, Radiation Protection Manager
B. Carberry, Emergency Preparedness Manager
B. Truckenmiller, Chemistry & Environmental Manager
D. Lapcinski, Assistant Operations Manager
S. Martin, Human and Organizational Performance Manager
S. Lappegaard, Production Planning Manager
R. Gardner, Outage Manager
P. Johnson, Regulatory Affairs Analyst
F. Sienczak, Senior Licensing Engineer
P. Wildenborg, Health Physicist
T. Downing, Inservice Inspection Lead
J. Wren, NDE Level III
H. Bourgoin, Boric Acid Program Owner
S. Redner, Steam Generators Lead
A. Jensen, ISI Vendor Lead
D. Shields, Chemistry General Supervisor
F. Collins, Senior Operations Instructor

U.S. Nuclear Regulatory Commission

K. Riemer, Chief, Reactor Projects Branch 2
B. Dickson, Chief, Reactor Projects Branch 5
R. Kuntz, Project Manager, Office of Nuclear Reactor Regulation

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

5000306/2017-001-00	LER	23 Containment Fan Coil Unit Operability (Section 4OA3.1)
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Closed

5000306/2017-001-00	LER	23 Containment Fan Coil Unit Operability (Section 4OA3.1)
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Discussed

None.

LIST OF DOCUMENTS REVIEWED

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

1R01 Adverse Weather Protection

- C37.5; Screenhouse Normal Ventilation; Revision 9
- C37.5-1; Screenhouse Normal Ventilation; Revision 5
- TP 1637; Winter Plant Operation; Revision 53

1R04 Equipment Alignment

- C1.1.14-2; Unit 2 Component Cooling System; Revision 38
- C18.1; Engineered Safeguards Equipment Support Systems; Revision 46
- Wiring Diagram 230V AC DISTR PANELS-5 Train; Revision 1
- NF-40877-3; External Wiring Diagram 230V AC Auxiliaries; Revision C
- NF-40761-1; Interlock Logic Diagram Control Relay and Computer Room Ventilation System Units 1 and 2; Revision 12
- NE-40008; Control Room Clean-Up Fan; Revision 76
- B20.6; B20.6 480V Station Auxiliary System; Revision 7
- CAP 501000006388; Re-Evaluate ACE Corrective Actions; December 12, 2017
- CAP 501000003299; Inaccuracy in Statement Given to NRC Resident Inspector; October 3, 2017
- CAP 501000004573; 274-032, Bus 111 SWGR Fan Noise; October 28, 2017
- CAP 501000003732; 8-Spare 21 BATT Cells Out of Spec; October 13, 2017
- CAP 501000004884; Adequacy of the Adverse Condition Monitoring Plan; December 1, 2017

1R05 Fire Protection

- Fire Detection Zone 8; Fire Area 58 and Part of 73; FS Appendix A-Revision 32
- D80; Scaffolding, Ladders and Cable Trays Platforms; Revision 36
- Door Transaction History; REA042_IN; November 25-27, 2017
- Door Transaction History; REA043_IN; November 25-27, 2017
- F5 Appendix A; Fire Detection Zone 2, Auxiliary Feedwater Pump Rooms, Elevation 695'; Revision 30
- F5 Appendix K; Fire Protection Systems Functional Requirements; Revision 24
- FP-PE-CC-01; Combustible Control; Revision 4
- PM 3122-3; Shield Building Category 1 Vent Zone, Fire and Security Door Inspection; Revision 38
- WO 00531099-01; SP 1266 18 Month Fire Damper Inspection; January 11, 2017
- December 11, 2017 Fire Drill Critique Report, Revision 0
- CAP 501000003589; Spurious Fire Alarm in Zone 94; October 12, 2017
- CAP 501000005842; Scaffold Within 18" of Sprinkler Head; November 27, 2017

1R07 Heat Sink Performance

- System Report-U2-Component Cooling; October 25, 2017
- SP 1617; Component Cooling Heat Exchanger Quarterly Test; February 11, 2017

- SP 1617; Component Cooling Heat Exchanger Quarterly Test; May 13, 2017
- SP 1617; Component Cooling Heat Exchanger Quarterly Test; August 12, 2017
- Prairie Island Maintenance Rule Bases Document—CC Component Cooling; September 14, 2017
- 2R30; Component Cooling Heat Exchanger Performance Test; October 17, 2017
- H21; Generic Letter 89–13 Implementing Program; Revision 24
- GMP–YUBA–001; CC Heat Exchanger Periodic Maintenance—Revision 7; October 21, 2017
- GMP GOUL–002; Component Cooling Pump Internals Inspection; Revision 7
- CAP 501000004366; GL 89–13 Annual Report; October 25, 2017
- CAP 501000004173; Weak Restoration Guidance in 0M–CL–21 ; October 22, 2017
- CAP 501000004323; Final Eddy Current Report on 21 CC HX; October 25, 2017
- CAP 1400816; AT–0175—Action Request Record Report; October 9, 2013
- CAP 500001152289; Increase in Fouling Noted in 21 CCHX Per; March 14, 2017
- CAP 500001332433; Excessive Silting Found in North Side of 21 CCHX; March 14, 2017
- CAP 500001400816; 21 CCHX Shell Waste Prevents Acceptable; March 15, 2017

1R08 Inservice Inspection Activities

- CAP 501000004953, Boric Acid Leaks on RC System Found Under SP2405 (2R29)
- CAP 1510389; Inactive Packing Leakage on RC Manual Valves U2 CNTM 715
- CAP 1510398; MV–32233, Inactive Packing Leak on Motor Valve MV–32233
- FR–PE–NDE–300; Dry Magnetic Examination-Yoke/Coil; Revision 2
- FP–PE–NDE–406; Ultrasonic Examination of Reactor Pressure Vessel Welds; Revision 2
- FP–PE–NDE–407; Manual Ultrasonic Through Wall and Length Sizing of Reactor Pressure Vessel Welds; Revision 0
- FP–PE–NDE–200; Solvent Removable Visible Dye Penetrant Examination; Revision 1
- FP–PE–NDE–520; Visual Examination for Leakage, VT–1; Revision 7
- SWI NDE–VT–6.0; Visual Examination for leakage on RV Penetration (VT–2); Revision 2
- SWI NDE–FE–1; Inservice Inspection Flaw Evaluation; Revision 5
- WPS Record Number B31–P1P1–SM–003; General Welding Specification; Revision 4
- WPS Record Number III–P1P1–GTSM–060; General Welding Specification; Revision 3
- WPS Record Number B31–P8P8–GTSM–003; General Welding Specification; Revision 5

1R11 Licensed Operator Regualification Program

- Simulator Exercise Guide P9118ST-0104; Cycle 18A Simulator Session #3; Revision 0

1R12 Maintenance Effectiveness

- Maintenance Rule Unavailability Log, December of 2014 through November of 2017
- Prairie Island Maintenance Rule Bases Document; December 14, 2017
- Maintenance Rule Expert Panel Meeting Minutes; December 14, 2017
- Maintenance Rule (a)(1) Status; August 18, 2017
- SAR 1500537; Attachment 13 (a)(2) Performance Review and Assessment of Balancing Availability and Reliability; May 26, 2016
- CAP 501000004566; 23 CFCU Exceeded MRule Unavailability; October 28, 2017
- MSPI Derivation Report; MSPI Emergency AC Power System—Unavailability Index (UAI); September 2017
- Maintenance Rule Expert Panel Meeting Minutes; August 31, 2017
- CAP 501000004265; 27 Inverter Does Not Pass Initial Voltage; October 24, 2017

1R13 Maintenance Risk Assessment and Emergent Work Control

- FP-OP-RSK-01; Risk Monitoring and Risk Management; Revision 9
- Prairie Island 72 Hour Look-Ahead Report By Department; November 27, 2017
- Phoenix Current Risk Summary Report; November 28, 2017
- Phoenix Plant Configuration Report; November 28, 2017
- CAP 501000004358; Relay Work Stoppage; October 25, 2017
- CAP 501000004236; Relay 2SI-20X Cause D6 Auto-Start; October 23, 2017

1R15 Operability Determinations and Functionality Assessments

- Westinghouse Nuclear Safety Advisory Letter (NSAL) 17-3; Westinghouse Model 93A Reactor Coolant Pump (RCP) Casing and Support Foot Structural Analyses; July 24, 2017
- Prairie Island Operating Experience Evaluation No. 501000001209; Westinghouse Nuclear Safety Advisory Letter (NSAL) 17-3; Westinghouse Model 93A Reactor Coolant Pump Casing and Support Foot Structural Analyses; September 7, 2017
- C37.11 AOP1; Loss of Safeguards Chilled Water; Revision 13
- C37.9 AOP2; Loss of Relay Room Cooling; Revision 9
- CAP 501000003462; POD 500000280471 Requires Update; October 6, 2017
- EC Number 24427; FAN, 4 Blade, 2120 CFM, 18 in, 5/8 in Bore; Revision 02
- WO 700003859; 234-031 Perform Voltage Regulator Cal; October 29, 2017
- WO 9609170; Replace Bus 16 Unit Cooler Fan Motors; October 2, 1996
- WO 479516-02; Repair or Replace Fan MTR 11E-47; March 16, 2015
- WO 700027998; Replace MTR 112G-15 and MTR 112G-23; October 20, 2017
- EC 24427; Fan Blade Seismic Evaluation; Revision 02
- WO 541489; 22 AFW to 21 SG MV Stem Lube; August 23, 2017
- CAP 501000004209; EC 21175 and EC 24427 Quality LTA; October 24, 2017
- EC Number: 000002175; Equivalency: Safeguards SWGR Room Unit Cooler ¼ Motor Replacement; Revision 000
- ENG-ME-278; Loss of Safeguards Chilled Water Room Heat-Up Calculation
- CAP 501000002690; Potential Loss of ZH UC Motors in a LOOP; September 14, 2017
- 2EC28114; Evaluation for Heat Up in Steam Exclusion Areas During Design Basis Accidents; June 12, 2017
- Adverse Condition Monitoring Plan; ZH Unit Cooler Motors; October 12, 2017
- 601000000195; Design Equivalent Change—EC 21175 Update and Revision; October 18, 2017
- CAP 501000004003; 2LT-428 Found OOT; October 19, 2017
- POD 500000280690; Safeguards Bus 112 Insulation Prompt Operability Determination; Revision 0
- CAP 501000003757; MV-32150 Yoke Corrosion; October 14, 2017
- ENG-ME-187; Relay RM Ventilation System Design; May 29, 2009
- CAP 501000003394; NRC Q: POR needed for Relay Room U/C Fans; October 5, 2017

1R19 Post-Maintenance Testing

- SP2083A; Unit 2 Integrated SI Test With a Simulated Loss of Offsite Power Train A; Revision 9
- 2M-AF-3132-1-22; Isolation, Restoration and Testing of 11 Aux Feed Pump; Revision 12
- SP 1202; 22 Turbine-Driven AFW Pump Monthly Test; Revision 103
- SP 2083B; Unit 2 Integrated SI Test with a Simulated Loss of Offsite Power Train B; Revision 8

- 2C20.7; D5/D6 Diesel Generators; Revision 43
- Design Equivalent Change; EC 28614; D5/D6 Field Flash Circuit Breaker Replacement; June 29, 2017
- Drawing NE-116757; Sheet 7; D6 Emergency Generator Speed Governor
- Drawing NE-116757; Sheet 2; D6 Emergency Generator Start Sequences
- Drawing NE-116757; Sheet 8; D6 Emergency Generator Speed Governor
- Drawing NF-156981-3; Internal Wiring Diagram D6 DG Vertical Panel
- Prairie Island T-00 High Level Summary Report; November 27, 2017
- SP 2307; D6 Diesel Generator 6 Month Fast Start Test; Revision 41
- WO 700003253-0010; D6-Replace Relays That Were Not Replaced; November 29, 2017
- WO 700003253-0120; OPS: RTS For Reinstalled Bases and Relays; November 30, 2017
- WO 700016193-0010; 2PSH-6669 REPL DPHGM-D6 CRNKCSE HI PS; November 29, 2017
- WO 700016193-0020; OPS: PMT/RTS Testing 2PSH-6669; November 29, 2017
- WO 700017756-0010; Replace D6 Field Flash Breaker 8/FF/D6; November 28, 2017
- WO 700019516-0010; GPS/D6; Replace/Refurbish PWR SPLY; November 29, 2017
- WO 700019516-0030; PMT GPS/D6 PS; November 29, 2017
- WO 700023348-0030; Contingency: During D6 Outage Replace Screws; November 29, 2017
- WO 700023349-0020; 2PSH-6669 Install Longer Screws/LocTite; November 29, 2017
- WO 481659-07; D70 Testing and Inspection; October 10, 2017
- WO 471435-01; Replace MTR 111E-46 In Accordance with EC 21175; June 5, 2013
- WO 314410-02; 121 SWGR RM Unit CLR, One Motor Rattling, Other Does Not Run; April 23, 2008
- WO 301079; 122 SWGR RM Unit CLR Fan Motor is Noisy; June 27, 2003
- WO 380332-02; Install New Motor For TRN B Cooler's Fans Oscillating; April 29, 2009
- WO 9600807; Repair Unit Cooler Fan; February 7, 1996
- WO 9610910; Replace Fan Motors for Train A Event Monitoring Room East Unit Cooler; October 24, 1996
- CAP 501000006567; D2 Air Compressor PMT; December 20, 2017
- CAP 501000004290; D1 EDG—Flange Leak Walkdown; October 24, 2017
- CAP 501000004361; Relay PMT Lacks Information; October 25, 2017
- CAP 501000004326; Inadequate Reliability of Electric Power System; October 25, 2017
- CAP 501000004363; 2SI-25-1 Failed Second Seat Leakage Test; October 25, 2017
- CAP 501000004270; D2 EDG—Flange Leak Walkdown; October 24, 2017
- CAP 501000004361; Relay PMT Lacks Information; October 25, 2017
- CAP 501000004585; 21 CC Pump High Vibration During PMT; October 28, 2017

1R20 Outage Activities

- CAP 501000004262; Peeling Paint on 21 Vault Wall; October 24, 2017
- H56; GSI-191 Debris Monitoring Program; Revision 6
- CAP 1501813; Degraded Coating in Unit 2 Containment; November 14, 2015
- 2R29; Coatings Assessment Report—Inspections performed October 21, 2015 to November 12, 2015
- CAP 501000004657; Addition Error in 2R29 As Left Coatings; October 30, 2017
- SP 2834; Unit 2 Containment Coating Inspection; Revision 5
- SP 2834; Coatings Exceeding Administration Limits; November 6, 2017
- SP 2750; Post Outage Containment Close-Out Inspection; Revision 43
- 2R30 Prairie Island—Refueling Outage October 2017 Shutdown Safety Assessment
- 2C1.3-M4; Unit 2 Shutdown to Mode 4; Revision 7
- 2C1.3-M3; Unit 2 Shutdown to Mode 3; Revision 5
- 2C1.3-BOP; Unit 2 Balance of Plant Systems Shutdown; Revision 5

- SP 2070; Reactor Coolant System Integrity Test; Revision 48
- 2C1.2–M2; Unit 2 Startup to Mod 2; Revision 7
- 2C1.2–M1; Unit 2 Startup to Mod 1; Revision 6
- 2C12.2; Purification and Chemical Addition—Unit 2; Revision 34
- CAP 501000004208; Unknown Substance on U2 Rx Cavity Floor; October 24, 2017
- CAP 501000004262; Peeling Paint on 21 Vault Wall; October 24, 2017
- CAP 501000003932; Increase in 21 RCP Motor Oil Level; October 17, 2017
- CAP 501000003931; Broken Tabs on 22 RCP Lock Ring; October 17, 2017
- CAP 501000003889; Potential Pre-Conditioning of SV–37096; October 17, 2017
- CAP 501000004260; Air Leak on D2 Air Compressor; October 24, 2017
- CAP 501000004246; 22 DDCLP—Flange Leak Walkdown; October 24, 2017
- CAP 501000003923; Unexpected Response When Initiating Purification; October 17, 2017
- 5AWI 15.6.1; Shutdown Safety Assessment; Revision 40
- CAP 501000004815; Containment Opening During Maintenance; November 2, 2017
- CAP 501000004579; RHR RTD's Are Not Complying With EEQ; October 29, 2017
- CAP 501000004483; U2 Equipment Hatch Gasket; October 27, 2017
- CAP 501000004510; Multiple Factors Cause Issues During PMT; October 27, 2017
- CAP 501000004420; NOS ID: NDE Indications on Shield Hatch; October 26, 2017
- CAP 501000004168; D6 EDG—Flange Leak Walkdown; October 23, 2017
- CAP 501000003773; Potential Rusted Bolts on 23 CFU; October 14, 2017
- WO 469039–02; Replace 3 Motors For 122 Air Compressor Unit CLR (MTR121E–43);
March 11, 2013
- WO 471435–02; Replace Meter 111E–46 in Accordance With ED 21175; March 1, 2013
- EC 219084; Equivalency: IA Unit Cooler and MD AFW Unit Cooler Replacement; Revision 2
- POD 500000280471; Safeguards Bus 112 and 122 4kV Prompt Operability Determination;
Revision 0
- CAP 501000003625; POR Expectation Requires Verification; October 11, 2017
- EEC 1470; ¼ HP Electric Motors for Unit Coolers—Equivalent Engineering Change (EEC);
April 14, 2004
- WO 700027997–0010; Replace MTR 112G–25; October 9, 2017
- ME–0216; ¼ HP Electric Motors for Unit Coolers Equivalency Evaluation; March 5, 1998
- CAP 501000004747; 21 CC Pump Operability Call; November 1, 2017
- CAP 501000003951; MV–32172, 2 SI to RX Vessel TRN A MV, Would Become Submerged
Following a Loss of Coolant Accident (LOCA); October 18, 2017
- CAP 501000004080; Unusual Wear on 21 FCU Coupling; October 19, 2017
- CAP 501000003698; NRC Identified Ladder Improperly Stored; October 13, 2017
- CAP 501000003684; D6 E1—Hi Crankcase Press at Surv Run; October 13, 2017
- CAP 501000003497; Roll Up of ZH SR Unit Clr Mtr Walkdowns; October 9, 2017
- CAP 501000003790; MV–32150 Stem Corrosion; October 14, 2017
- CAP 501000003862; Through Wall Leakage 2RC–8–37; October 16, 2017
- CAP 501000003738; BACC: 2RC–8–37 Indication of Leakage; October 15, 2017
- CAP 501000003764; Potential Crack in Polar Crane Stub Shaft; October 14, 2017
- CAP 501000003753; Possible Cracked Weld on U2 Polar Crane; October 14, 2017
- CAP 501000003566; SP 2132 Criteria Exceeded for M–Airlock; October 10, 2017
- CAP 501000003923; Unexpected Response When Initiating Purification;
October 17, 2017

1R22 Surveillance Testing

- SP 2366; Charging Pump Suction Valve Refueling Test; Revision 20
- CAP 501000004372; SP 2072.14 Failed As-Found LLRT; October 25, 2017

- CAP 501000004304; SP 2072.34 Failed As-Found LLRT; October 25, 2017
- CAP 501000004400; Not Performing Valve Portion of AOV PM; October 26, 2017
- WO 541489-01; MOCV Lubrication PM; April 14, 2017
- WO 524070-01; 21 CC Pump Seal Replacement; October 23, 2017
- SP 2155A; CC System Quarterly Test Train A; Revision 36
- D70.1; Motor Operated Valve Testing; Revision 23
- SP 2098; 21 Battery Refueling Outage Discharge Test; Revision 38
- CAP 501000004734; SP-2092A Aborted for 21 SI Pump; November 1, 2017
- CAP 501000004490; D5 Gov. Act. Replacement Test Plan Rev; October 26, 2017
- ST 2093; D5 Diesel Generator Voltage Regulator Calibration; Revision 3
- 2C20.7; D5/D6 Diesel Generators; Revision 43
- SP 2334; D5 Diesel Generator 18 Month 24 Hour Load Test; Revision 21
- SP 2295; D5 Diesel Generator 6 Month Fast Start Test; October 30, 2017
- CAP 501000006541; 2 DC-6 D2 DSL Generator Jacket CLNT Thermo B-P Valve Bypass—Valve has a Drip; December 19, 2017
- NE-116757; D6 Emergency Generator Speed Governor; Revision 76
- SP 2282; U2 Mod-025 Verification and Data Reporting of Generator Real and Reactive Power Capability (NERC); Revision 0
- CAP 501000004326; Inadequate Reliability of Electric Power System; October 25, 2017
- CAP 501000003965; 21 Battery Refueling Outage Test; October 18, 2017

1EP4 Emergency Action Level and Emergency Plan Changes

- Prairie Island Nuclear Generating Plant Emergency Preparedness Plan; Revisions 52 and 53
- F3-2.1; EAL Technical Basis; Revision 12
- PI-2017-539; 10 CFR50.54(q) Review Form; March 29, 2017
- PI-2017-520; 10 CFR50.54(q) Review Form; March 28, 2017
- PI-2016-474; 10 CFR50.54(q) Review Form; December 16, 2016
- PI-2016-518; 10 CFR50.54(q) Review Form; January 11, 2017
- PI-2016-470; 10 CFR50.54(q) Review Form; March 27, 2017
- CAP 1551508; EP SSA-Adequacy of 50.54(q) Evaluations for E-Plan Revision; February 24, 2017

2RS1 Radiological Hazard Assessment and Exposure Controls

- Self-Assessment; Radiological Hazard Assessment and Exposure Controls; July 14, 2017
- FP-RP-CRS-01; Control, Inventory and Leak Testing of Radioactive Sources; Revision 15
- FP-RP-SEN-02; Radiological Work Planning and Controls; Revision 6
- Radioactive Source Inventory/Leak Test; July 24, 2017
- Technical Basis Document #17-003, Ni-63 Detection Capability of the Protean-WPC-9550-FC; July 3, 2017
- RPIP 1120; Posting of Restricted Areas; Revision 41
- RPIP 1120; Posting of Restricted Areas; Revision 41; Temporary Change October 13, 2017
- RWP 172082; 21 and 22 Containment Spray Pump Motor Replacement; Revision 0
- RWP 172079; 21 and 22 RHR Pump Motor Support Activities; Revision 1
- RWP 172055; Scaffold Standard Work; Revision 0
- CAP 501000003788; Individual Entered HRA; October 15, 2017
- CAP 501000004026; Unsecured HRA Boundary-22 RCP Vault; October 19, 2017
- CAP 501000004157; Lost U2 Equipment Hatch Air Sample; October 22, 2017
- CAP 501000004291; RWP Check Mark Removed RP not Notified; October 24, 2017
- CAP 501000004376; Noncompliance with RPIP 1120; October 26, 2017

- CAP 501000004617; Elevated Activity in SFP; October 30, 2017
- CAP 501000004737; LHRA Posted with Flashing Lights; November 1, 2017
- CAP 501000004962; HRA Created During Resin Sluice; November 5, 2017
- CAP 501000005078; Increase in Green Warehouse Dose Rates; November 8, 2017
- Personnel Contamination Event Logs; 2017
- 2R30 Air Sample Logs; October 20, 2017
- 2R30 Radiological Surveys; Various Records
- U1 Containment Surveys; November 15, 2017
- Resin Sluice Surveys; November 14, 2017
- 2R30 Equipment Hatch Air Sample Data; October 16–30, 2017
- Radiological Posting Verification Records; November 11–13, 2017
- 17–15; Personnel Contamination Event; November 8, 2017
- 2017 Prairie Island Isotopic Mix Evaluation; Undated
- 2017 National Tracked Radioactive Source Reconciliation; January 3, 2017

2RS2 Occupational ALARA Planning and Controls

- 2R29 Post Outage ALARA Report; April 8, 2016
- 1R30 Post Outage ALARA Report; November 24, 2017
- 1R30 12 RCP Project Dose Performance Report; March 6, 2017
- 2R30 ALARA Plans; Various Records
- 2R30 ALARA Work in Progress Evaluations
- 1R30 and 2R30 Hard Gamma Emitter Crud Burst Projection Data; Undated
- 2017 Online Dose Data
- Station ALARA Committee Minutes; Various Records
- 2R30 RWP Dose Summary Information; November 13, 2017
- CAP 1539849; 12 RHR Motor Replacement Project Exceeded Dose Estimate; October 29, 2016
- CAP 501000004617; Elevated Activity in SFP; October 30, 2017
- CAP 501000005298; Dose Rates from Trapped RHR Water Up; November 13, 2017

4OA1 Performance Indicator Verification

- Internal and External Dose Evaluation Data; Fourth Quarter 2016–Third Quarter 2017
- Electronic Dosimeter Alarm Records; Fourth Quarter 2016–Third Quarter 2017
- CAP 1547550; Dose Rate Alarm; January 15, 2017
- FP–PE–MSPI–01; Mitigating System Performance Indicator (MSPI); Revision 9
- MSPI Basis Document; Revision 23
- Prairie Island MSPI Margin Reports
- Prairie Island MSPI Tracking Table; October 17, 2017

4OA2 Identification and Resolution of Problems

- CAP 501000001851; R-48/R-49 EAL Values Not Supported; August 22, 2017
- CAP 501000001861; R-49/R-49 Concerns; August 22, 2017
- CAP 501000001939; Error in Draft Evaluation; August 25, 2017
- CAP 501000002158; Errors in Draft Evaluation for R-49 TIC; August 31, 2017
- CAP 501000003002; D2 Coolant Leak; September 24, 2017
- CAP 501000001981; Jacket Coolant Leak on D2 Diesel Generator; August 28, 2017
- WO 393025; MECH: Replace Jumper Lines Gaskets on Cylinders 1-8 and 10; May 18, 2011
- CAP 1529666; Minor Coolant Leak on D2 Diesel Generator; July 27, 2016
- FP–WM–WOI–01; Work Identification, Screening, Validation, and Cancellation; Revision 26

- FP-WM-PLA-01; Work Order Planning Process; Revision 32
- FP-WM-MMP-01; Minor Maintenance Process; Revision 5
- CAP 501000003828; Xcel Nuclear Fastener Guidance Inconsistent; October 16, 2017
- CAP 501000003838; Research the Usage & Application of RTV; October 16, 2017
- CAP 501000003712; Torque Application Practice Concerns; October 13, 2017
- CAP 501000003836; RCE D2 FP-PA-ARP-01 (CAP Process); October 16, 2017
- CAP 501000003671; D2 Recommended Torque Value Differences; October 12, 2017
- CAP 501000003690; D2 Washer Configuration Documentation; October 12, 2017
- CAP 501000004270; D2 EDG-Flange Leak Walkdown; October 24, 2017
- CAP 501000004290; D1 EDG-Flange Leak Walkdown; October 24, 2017
- CAP 501000003952; D2 Recent Fix Did Not Adhere to RTV Cure; October 18, 2017
- CAP 501000003992; Work Plan Performed Out of Sequence; October 18, 2017
- D63; Installation Guidelines for Threaded Fasteners (Studs or Bolts); Revision 22

4OA3 Follow-up of Events and Notices of Enforcement Discretion

- CAP 501000002726; 23 Fain Coil Unit Operability; September 15, 2017

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Documents Access and Management System
ALARA	As-Low-As-Reasonably-Achievable
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CCW	Component Cooling Water
CFCU	Containment Fan Coil Unit
CFR	<i>Code of Federal Regulations</i>
EAL	Emergency Action Level
EDG	Emergency Diesel Generator
IMC	Inspection Manual Chapter
IP	Inspection Procedure
ISI	Inservice Inspection
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LOCA	Loss-of-Coolant Accident
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
OSP	Outage Safety Plan
PI	Performance Indicator
RCS	Reactor Coolant System
RFO	Refueling Outage
SDP	Significance Determination Process
SI	Safety Injection
RCE	Root Cause Evaluation
RHR	Residual Heat Removal
TIC	Thermally-Induced Current
TS	Technical Specification
USAR	Updated Safety Analysis Report
UT	Ultrasonic Examination
WO	Work Order