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

May 15, 2024

Thomas A. Conboy
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 – INTEGRATED INSPECTION REPORT 05000282/2024001 AND 05000306/2024001

Dear Thomas Conboy:

On March 31, 2024, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Prairie Island Nuclear Generating Plant. On April 9, 2024, 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.

Two findings of very low safety significance (Green) are documented in this report. One of these findings involved a violation of NRC requirements. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violation or the significance or severity of the violation documented in this inspection report, 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 Prairie Island Nuclear Generating Plant.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; and the NRC Resident Inspector at 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 Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

Signed by Skokowski, Richard
on 05/15/24

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

Docket Nos. 05000282 and 05000306
License Nos. DPR-42 and DPR-60

Enclosure:
As stated

cc w/ encl: Distribution via LISTSERV®

Letter to Thomas Conboy from Richard A. Skokowski dated May 15, 2024.

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT – INTEGRATED INSPECTION REPORT 05000282/2024001 AND 05000306/2024001

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers:	05000282 and 05000306
License Numbers:	DPR-42 and DPR-60
Report Numbers:	05000282/2024001 and 05000306/2024001
Enterprise Identifier:	I-2024-001-0078
Licensee:	Northern States Power Company
Facility:	Prairie Island Nuclear Generating Plant
Location:	Welch, MN
Inspection Dates:	January 01, 2024 to April 10, 2024
Inspectors:	M. Abuhamdan, Reactor Inspector T. Ospino, Resident Inspector K. Pusateri, Resident Inspector D. Tesar, Senior Resident Inspector
Approved By:	Richard A. Skokowski, Chief Reactor Projects Branch 3 Division of Operating Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at Prairie Island Nuclear Generating Plant, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information.

List of Findings and Violations

Failure to Adequately Implement the Requirements of 10 CFR 50, Appendix B, Criterion XVI			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000282,05000306/2024001-02 Open/Closed	[P.3] - Resolution	71111.20
The inspectors identified a Green finding and associated non-cited violation of Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Appendix B, Criterion XVI, "Corrective Action," associated with the licensee's failure to correct conditions adverse to quality (CAQ). Specifically, the inspectors identified that the licensee failed to take adequate corrective actions to correct a CAQ. Consequently, this failure would have allowed a CAQ associated with safety related structures, systems, and components (SSC's) to remain uncorrected absent inspector intervention.			

Failure to Provide Adequate Oversight to Supplementary Personnel Resulting in a Reactor Trip			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green FIN 05000282,05000306/2024001-03 Open/Closed	[H.2] - Field Presence	71153
The inspectors identified a Green finding when the licensee failed to meet the standards of procedure FP-MA-COM-02, "Oversight and Control of Supplementary Personnel." Specifically, the licensee failed to provide supplemental workers with an appropriate level of oversight and engagement to ensure performance was commensurate with station standards and expectations, resulting in a loss of all non-safeguards busses and a Unit 1 turbine and reactor trip.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
URI	05000306/2024001-01	Unresolved Item Associated with Modifications to Motor-Operated Valve Limit Switch	71111.18	Open
LER	05000282,05000306/2023-001-01	LER 2023-001-01 for Prairie Island Nuclear Generating Plant, Units 1 and 2, Reactor Trip, Auxiliary Feedwater	71153	Closed

		and Emergency Service Water System Actuation due to Electrical Transient in DC Control Power Cables		
LER	05000282,05000306/2023-001-00	LER 2023-001-00 for Prairie Island Nuclear Generating Plant, Units 1 and 2, Reactor Trip, Auxiliary Feedwater and Emergency Service Water System Actuation due to Electrical Transient in DC Control Power Cables	71153	Closed

PLANT STATUS

Unit 1 entered the inspection period shut down in Mode 3 (hot standby). Unit 1 went critical on January 24, 2024, entered Mode 1 (power operation) on January 27, 2024, and reached full-rated thermal power on January 29, 2024. Unit 1 was then shut down to Mode 3 to facilitate repairs on a main feed pump discharge line on February 8, 2024. Unit 1 returned to critical on February 11, 2024, entered Mode 1 on February 12, 2024, and reached full-rated thermal power on February 14, 2024. Unit 1 maintained at or near full-rated thermal power for the remainder of the inspection period.

Unit 2 entered the inspection period shut down for refueling outage 2R33. Unit 2 went critical on February 29, 2024, reached Mode 1 on March 1, 2024, and reached 50 percent power on March 2, 2024. Unit 2 subsequently tripped from 50 percent power and entered Mode 3 on March 3, 2024. Unit 2 returned to critical on March 7, 2024, Mode 1 on March 8, 2024, and reached full-rated thermal power on March 18, 2024. Unit 2 remained at or near full-rated thermal power for the remainder of the inspection period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, “Light-Water Reactor Inspection Program - Operations Phase.” The inspectors performed activities described in IMC 2515, Appendix D, “Plant Status,” observed risk significant activities, and completed on-site portions of IPs. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Seasonal Extreme Weather Sample (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of a winter storm for the following systems:

AB-2 entry for winter storm warning on January 11, 2024

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

(1) D6 emergency diesel generator on January 3, 2024
(2) C1.1.38 common fuel system status on January 4, 2024

(3) D1/D2 diesel generators on March 11, 2024
(4) Unit 2 auxiliary feedwater system on March 13, 2024

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

(1) door 43 fire impairment and fire areas 8 and 32 on February 20, 2024
(2) fire zone 82, D1 diesel room on March 11, 2024
(3) fire zone 35, battery rooms 21 and 22 on March 13, 2024
(4) fire zone 2, auxiliary feed pump room, elevation 695' on March 13, 2024
(5) fire zone 1, battery rooms 11 and 12 on March 13, 2024

Fire Brigade Drill Performance Sample (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated the onsite fire brigade training and performance during an unannounced fire drill for crew 5 on March 19, 2024.

71111.06 - Flood Protection Measures

Flooding Sample (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated internal flooding mitigation protections following failure of door 43 to close on February 28, 2024.

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (7 Samples)

(1) The inspectors observed and evaluated licensed operator performance in the control room during Unit 1 reactor startup on January 24, 2024.
(2) The inspectors observed and evaluated licensed operator performance in the control room during Unit 1 reactor shutdown for a steam leak on February 8, 2024.
(3) The inspectors observed and evaluated licensed operator performance in the control room during Unit 1 reactor startup from a forced outage on February 11, 2024.
(4) The inspectors observed and evaluated licensed operator performance in the control room during Unit 2 reactor startup from a refueling outage with source range NI failure on February 20, 2024.
(5) The inspectors observed and evaluated licensed operator performance in the control room during Unit 2 reactor startup from a refueling outage on February 29, 2024.
(6) The inspectors observed and evaluated licensed operator performance in the control room during Unit 2 trip response on March 3, 2024.
(7) The inspectors observed and evaluated licensed operator performance in the control room during Unit 2 reactor startup from a forced outage on March 7, 2024.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

(1) The inspectors observed and evaluated licensed operator requalification training as-found testing on March 18, 2024.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (6 Samples)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components (SSCs) remain capable of performing their intended function:

(1) 21 cooling water pump replacement on January 17, 2024
(2) multiple trips CB401 breaker on 28 inverter on January 17, 2024
(3) Corrective Action Plan (CAP) 501000079768, "ISI [inservice inspection] Indication Evaluation for SP2168.13," on January 17, 2024
(4) MV-32019 21 turbine driven auxiliary feedwater (TDAFW) pump steam inlet isolation valve on January 18, 2024
(5) Work Order (WO) 700087060, "22 TDAFW Pump Maintenance," on February 22, 2024
(6) condensate demineralizer review following Unit 2 reactor trip on March 4, 2024

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (6 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

(1) operational decision-making instruction (ODMI) for Unit 1 startup on January 8, 2024
(2) risk evaluation for transition from shutdown risk to online risk on January 15, 2024
(3) risk associated with emergent issues on Unit 1 circulating water and impact on Unit 1 startup on January 18, 2024
(4) extended operation in lowered inventory risk evaluation on February 6, 2024
(5) ODMI & adverse condition monitoring plan for Unit 2 startup with 22 reactor coolant pump (RCP) second seal degraded on February 29, 2024
(6) risk management following Unit 2 trip and subsequent startup on March 4, 2024

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (8 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

(1) reactor coolant system evaluation for Technical Specification 3.4.3 on October 25, 2023
(2) source range nuclear instrument seismic qualification on December 5, 2023
(3) CAP 501000080389, "D6 Fuel Oil Leak Getting Worse," on January 3, 2024

(4) past operability review MV-32019 21 TDAWF pump on January 11, 2024
(5) application of Technical Specification Limiting Condition for Operation (LCO) 3.0.4.b for mode change on January 25, 2024
(6) bus 25/26 and bus 27 circuit breaker sequencing on February 6, 2024
(7) prompt operability determination for D1/D2 HELP question on February 29, 2024
(8) CAP 501000082220, "POD 50000327699 Unit 1 HELB," on March 6, 2024

71111.20 - Refueling and Other Outage Activities

Refueling/Other Outage Sample (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated refueling outage activities from January 1, 2024, to March 1, 2024.

71111.24 - Testing and Maintenance of Equipment Important to Risk

The inspectors evaluated the following testing and maintenance activities to verify system operability and/or functionality:

Post-Maintenance Testing (PMT) (IP Section 03.01) (8 Samples)

(1) WO 700133040, "CV-31321 Diaphragm Leaking (PMT/LLRT [local leak rate test])," on January 11, 2024
(2) 22 reactor coolant pump seal replacement PMT on January 17, 2024
(3) 22 turbine driven auxiliary feedwater pump PMT on January 31, 2024
(4) WO 700087060, "22 Turbine Driven AFW [auxiliary feedwater] Pump Quarterly Test - PMT," on February 18, 2024
(5) WO 700127367, "MV-32016," on March 13, 2024
(6) WO 700135613, "SP 2406 MSIV [main steam isolation valve] In Service Test," on March 21, 2024
(7) SP 1073B, "Monthly Train B Shield Building Ventilation System Test," on March 25, 2024
(8) WO 700133173, "SP 1106B 22 DDCL [diesel-driven cooling water] Pump Comprehensive Test," on March 25, 2024

Surveillance Testing (IP Section 03.01) (4 Samples)

(1) WO 700044983, "SP 1070 Rx Coolant Sys Integrity Test," on January 11, 2024
(2) SP 2750, "Containment Close-out," on January 29, 2024
(3) SP 2750, "Containment Close-out," on February 16, 2024
(4) WO 700125323, "SP 1155B 12 Component Cooling Water Quarterly Surveillance," on March 20, 2024

Inservice Testing (IST) (IP Section 03.01) (1 Sample)

(1) WO 700125737, "SP 1106C 121 Cooling Water Pump Quarterly Test," on February 22, 2024

Reactor Coolant System Leakage Detection Testing (IP Section 03.01) (2 Samples)

(1) LLRT total leak rate for Unit 2 2R33 refueling outage on October 6, 2023
(2) SP 2070, "RCS Integrity Test Unit 2," on January 1, 2024

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

IE01: Unplanned Scrams per 7000 Critical Hours Sample (IP Section 02.01) (2 Samples)

(1) Unit 1 (January 1, 2023, through December 31, 2023)
(2) Unit 2 (January 1, 2023, through December 31, 2023)

IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02) (2 Samples)

(1) Unit 1 (January 1, 2023, through December 31, 2023)
(2) Unit 2 (January 1, 2023, through December 31, 2023)

IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 02.03) (2 Samples)

(1) Unit 1 (January 1, 2023, through December 31, 2023)
(2) Unit 2 (January 1, 2023, through December 31, 2023)

71153 - Follow Up of Events and Notices of Enforcement Discretion

Event Follow up (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated site response to the Unit 1 trip on January 25, 2024.

Event Report (IP Section 03.02) (2 Samples)

The inspectors evaluated the following licensee event reports (LERs):

(1) LER 05000282, 05000306/2023-001-00 for Prairie Island Nuclear Generating Plant, Units 1 and 2, "Reactor Trip, Auxiliary Feedwater and Emergency Service Water System Actuation due to Electrical Transient in DC Control Power Cables" (ADAMS Accession No. ML23338A277). The inspection conclusions associated with this LER are documented in this report under Inspection Results Section 71153. This LER is closed.
(2) LER 05000282, 05000306/2023-001-01 for Prairie Island Nuclear Generating Plant, Units 1 and 2, "Reactor Trip, Auxiliary Feedwater and Emergency Service Water System Actuation due to Electrical Transient in DC Control Power Cables" (ADAMS Accession No. ML24081A153). The inspectors reviewed the updated LER submittal. The previous LER submittal was also reviewed in this inspection report under Inspection Results Section 71153. This LER is closed.

INSPECTION RESULTS

Unresolved Item (Open)	Unresolved Item Associated with Modifications to Motor-Operated Valve Limit Switch URI 05000306/2024001-01	71111.18

Description:

During the 2R33 refueling outage, modifications were made to the safety related limit switch installed on motor-operated valve, MV-32019, 21 steam generator main steam supply to the 22 turbine driven auxiliary feedwater pump. Specifically, the gears inside the replacement switch were stainless steel rather than bronze (not like for like), the intermittent shaft had an additional hole drilled through it perpendicular to the manufacturer provided hole, and the orientation of the rotor was changed from that provided by the vendor.

Planned Closure Actions: Review licensee evaluation of the changes in material and the modifications made to the limit switch, their impact on seismic qualification, and the potential impact to operability.

Licensee Actions: Evaluate the impact of the differences in material and the impact of the modifications made as well as the resultant impact on seismic qualification and potential operability impacts.

Corrective Action References: 501000079553, "Bkr 211J-13 Tripped During PMT/RTS"
501000079667, "Manually Operated MV-32019 per COO-17"
501000081027, "MOV Limit Switch Grease Related Failures"
501000081105, "MV-32019 Thermals Tripped D"
501000083170, "LEGACY: MV-32019 Limit Switch Material"
501000083626, "MV-32019 Limit Switch"

Failure to Adequately Implement the Requirements of 10 CFR 50, Appendix B, Criterion XVI			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000282,05000306/2024001-02 Open/Closed	[P.3] - Resolution	71111.20

The inspectors identified a Green finding and associated non-cited violation of Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Appendix B, Criterion XVI, “Corrective Action,” associated with the licensee’s failure to correct conditions adverse to quality (CAQ). Specifically, the inspectors identified that the licensee failed to take adequate corrective actions to correct a CAQ. Consequently, this failure would have allowed a CAQ associated with safety related structures, systems, and components)SSC's) to remain uncorrected absent inspector intervention.

Description:

During the Prairie Island Unit 2 refueling outage, inspectors identified an example where the licensee failed to take corrective actions adequate to resolve the condition adverse to quality absent inspector intervention:

Preventive maintenance (PM) procedure, "PM 3132-1-22: 22 TDAFWP [Turbine Driven Auxiliary Feedwater Pump] Minor Insp [Inspection]" step 7.10.2 specifies to Measure and

Document "As-Found" data in the corresponding table. The step is followed by the following note: "RCE 01132098 indicates that proper coupling alignment is critical in preventing turbine bearing failure. Deviations from the values listed in the Reference table must be evaluated by the system engineer. The most critical dimension is the vertical offset value due to predicted thermal expansion which would occur during turbine operation." The "As-Found" data recorded in the table was outside of the values listed in the Reference table in both the horizontal and vertical directions. Despite the note indicating that the values must be evaluated by the system engineer, no CAP was written, and the PM was documented as having been completed satisfactorily. Inspectors determined that this was a condition adverse to quality, and the requisite corrective action to perform an engineering evaluation was not performed, as required by procedure PM 3132-1-22.

Corrective Actions: The licensee has entered the item into the corrective action program and completed the required actions to address the condition adverse to quality.

Corrective Action References: 501000082185

Performance Assessment:

Performance Deficiency: The licensee's failure to identify and correct a condition adverse to quality, such as nonconformances and deficiencies, in accordance with 10 CFR 50, Appendix B, Criterion XVI was a performance deficiency. Specifically, the inspectors identified that during preventive maintenance procedure PM 3132-1-22: 22 "TDAFWP Minor Insp," maintenance personnel recorded data which did not meet acceptance criteria, a condition adverse to quality, and the requisite corrective action to perform an engineering evaluation was not performed. Inspectors determined that the failure of the licensee to identify and correct this CAQ was within the ability of the licensee to foresee and correct and was therefore a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Inspectors determined that the licensee's failure to identify and correct a condition adverse to quality could have result in the failure of a safety related SSCs to perform its intended safety function. Specifically, the deviation from acceptance criteria associated with the TDAFWP had the potential to cause premature bearing failure as specified in PM 3132-1-22 and Root Cause Evaluation (RCE) 1132098.

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, “The Significance Determination Process (SDP) for Findings At-Power.” The inspectors determined that the issue was of very low safety significance and screened to Green by answering "No" to all of the questions in Exhibit 2 – Mitigating Systems Screening Questions.

Cross-Cutting Aspect: P.3 - Resolution: The organization takes effective corrective actions to address issues in a timely manner commensurate with their safety significance. The licensee failed to ensure appropriate corrective actions for a condition adverse to quality were taken in a manner commensurate with its safety significance.

Enforcement:

Violation: The requirements of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," specifies in part that, "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected."

Contrary to the above, from December 5, 2023 thru January 28, 2024, the licensee failed to establish measures to assure that conditions adverse to quality are promptly identified and corrected. Specifically, the licensee failed to identify and correct deviations associated with the as-found acceptance criteria requirements for the Turbine Driven Auxiliary Feedwater Pump (TDAFWP). The as-found turbine bearing coupling alignment data were outside the acceptance criteria values.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Failure to Provide Adequate Oversight to Supplementary Personnel Resulting in a Reactor Trip

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green FIN 05000282,05000306/2024001-03 Open/Closed	[H.2] - Field Presence	71153

The inspectors identified a Green finding when the licensee failed to meet the standards of procedure FP-MA-COM-02, "Oversight and Control of Supplementary Personnel." Specifically, the licensee failed to provide supplemental workers with an appropriate level of oversight and engagement to ensure performance was commensurate with station standards and expectations, resulting in a loss of all non-safeguards busses and a Unit 1 turbine and reactor trip.

Description:

On October 19, 2023, horizontal directional drilling (HDD) activities were being performed at the Prairie Island Nuclear Generating Plant (PINGP) in support of degraded cable replacement as part of the Unit 2 refueling outage. The HDD was from the plant switchyard to just inside the protected area fence and was being conducted by the Xcel Energy Transmission & Distribution (T&D) group. At 11:10 a.m. on October 19, 2023, with Unit 1 operating at 100 percent power, multiple substation breakers unexpectedly opened and, simultaneously, multiple grounds were detected on direct current (DC) control power cabling from the plant to the substation control house. This resulted in a loss of all non-safety related busses simultaneously with a Unit 1 turbine trip and reactor trip, and the actuation of auxiliary feedwater and emergency service water. Operators responded to the event in accordance with approved plant procedures and safely placed the plant in Mode 3, hot shutdown. NRC inspectors responded to the site to provide oversight of licensee response. Unit 1 was subsequently cooled down to Mode 5, cold shutdown.

The site determined that the HDD in progress at the site damaged DC control cables resulting in the identified plant response. The licensee root cause evaluation determined the root causes were weakness in the excavation permit approval process as well as inadequate oversight of the personnel performing the work. The T&D workers were Xcel Energy

employees with authorized access to the respective areas, and little oversight was provided based upon this. However, this was not in compliance with licensee procedure FP-MA-COM-02 "Oversight and Control of Supplementary Personnel," which specifies that oversight be provided to supplemental personnel "anytime work is to be accomplished at NSPM nuclear facilities by personnel other than permanent nuclear business unit employees." The procedure further specifies that it is the responsibility of the department manager/functional area manager or designee to "provide in-field oversight, observations, and coaching to supplemental workers."

This finding is NRC-identified because the inspectors had identified a previous weakness in the licensee's oversight of work from the same workgroup (Transmission and Distribution - T&D), both in the quality of work and the oversight of the supplemental workers.

This issue was reviewed using Inspection Procedure 71153, "Follow up of Events and Notices of Enforcement Discretion," and was reported in Licensee Event Reports (LERs) 05000282, 05000306/2023-001-00 and 05000282, 05000306/2023-001-01 for Prairie Island Nuclear Generating Plant, Units 1 and 2, "Reactor Trip, Auxiliary Feedwater and Emergency Service Water System Actuation due to Electrical Transient in DC Control Power Cables" (ADAMS Accession Nos. ML23338A277 and ML24081A153).

Corrective Actions: The licensee replaced and tested all damaged cables. In addition, they implemented procedure changes to strengthen the requirements for excavation onsite as well as incorporating duties and responsibilities of individuals responsible for oversight of supplemental personnel.

Corrective Action References: CAP 501000077958

Performance Assessment:

Performance Deficiency: Licensee procedure FP-MA-COM-02 "Oversight and Control of Supplemental Personnel," requires that oversight be provided to supplemental personnel "anytime work is to be accomplished at NSPM nuclear facilities by personnel other than permanent nuclear business unit employees." The procedure further specifies that it is the responsibility of the department manager/functional area manager or designee to "provide in-field oversight, observations, and coaching to supplemental workers."

Contrary to the above, at 11:10 a.m. on October 19, 2023, the licensee failed to provide adequate oversight to the T&D group performing HDD onsite at the Prairie Island Nuclear Generating Plant, resulting in the drill head damaging DC control power cables, tripping the turbine generator output breakers, the turbine, and the reactor.

Inspectors determined that the licensee's failure to provide adequate oversight to supplementary workers was within the ability of the licensee to foresee and correct and was therefore a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Human Performance attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the horizontal directional drilling led to damage to the DC control power cables, resulting in a loss of all non-safeguards busses, an automatic turbine and reactor trip. The loss of all non-safeguards busses coincident with the turbine and reactor

trip resulted in a "SCRAM with Complications" in accordance with NEI 99-02, revision 7, "Regulatory Assessment Performance Indicator Guideline." Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, “The Significance Determination Process (SDP) for Findings At-Power.” The inspectors assessed the significance of the finding using Inspection Manual Chapter (IMC) 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At-Power.” The inspectors used IMC 0609.04, “Initial Characterization of Findings,” and IMC 0609, Appendix A, Exhibit 1, “Initiating Events Screening Questions.” The finding was determined to be of very low safety significance (Green) because there was no loss of mitigating equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. Cross-Cutting Aspect: H.2 - Field Presence: Leaders are commonly seen in the work areas of the plant observing, coaching, and reinforcing standards and expectations. Deviations from standards and expectations are corrected promptly. Senior managers ensure supervisory and management oversight of work activities, including contractors and supplemental personnel. Specifically, the licensee did not have nuclear business unit personnel in the field providing oversight of supplemental workers as required.
Enforcement: Inspectors did not identify a violation of regulatory requirements associated with this finding.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On April 9, 2024, the inspectors presented the integrated inspection results to Thomas Conboy and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.11Q	Procedures	2C1.2-M1	Unit 2 Startup to Mode 1	14
		2C1.2-M2	Unit 2 Startup to Mode 2	10
		C1B	Appendix - Reactor Startup	25
		Fig C1A-3	Estimated Critical Boron Concentration Based on BEACON-TSM	13
71111.12	Miscellaneous	Prairie Island Maintenance Rule Basis Document	Various Functions	Various Dates
		SP 2168.13 2R33	CE Boric Acid Indications	
	Procedures	PM 3122-3	Shield Bldg, Category 1 Vent Zone, Fire and Security Door Inspection	43
71111.13	Miscellaneous		Extended Operation in Lowered Inventory Operational Fous Protection Plan	0
71111.15	Corrective Action Documents	501000080988	Past Operability Review (POR)	02/06/2024
		501000081254	Unit 1 Use of LCO 3.0.4	01/24/2024
		501000081294	IST Review Mode Change and SP 1155 A/B	01/25/2024
		501000081411	SP 2155A Not Complete w/in Periodicity	01/28/2024
		501000081422	IST Requirements for Pumps vs 3.0.4	01/29/2024
		501000081503	AOC - Tech Spec Surveillance SP/ASME/IST	01/30/2024
	Engineering Changes	QF2702, Design Equivalent Change, 602000023965	EC 601000004330, Rev. 0, U1 NIS Drawer Replacement 1R34	12/27/2023
	Engineering Evaluations	608000001132	Evaluation of RCS for Continued Operation per Tech. Spec. 3.4.3	0
	Miscellaneous	LTR-EQ-23-35	Dynamic Similarity Evaluation of NIS Source Range Drawer Assemblies	12/14/2023
		LTR-NIS-23-020	Functional Similarity Evaluation of NIS Source Range Drawer Assemblies	12/14/2023
	Procedures	MP D27.35	MSIV Closure for Maintenance or Testing	2
71111.18	Miscellaneous	Limitorque Technical Update	Material Color Change	03/05/2001

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		01-01		
71111.20	Corrective Action Documents	501000077983	11 DC Panel Ground	01/10/2024
		501000078005	12 DC Panel Ground	01/10/2024
	Procedures	EM 4.3.1-C-6	Connectors	4
		EM 4.3.1-C.7	Electrical Construction Standards Cables	6
		EQ H8-E.1.7.DG	EEQ - SPLICES RAYCHEM INLINE - CRIMP CONN PLANNERS INSTRUCTIONS	6
		H8-E.1.53.DG	EEQ - Splices EGS Compact Splice Planners Instructions	1
		H8-E.1.8.DG	EEQ - Splices Raychem Inline-Crimp Conn Installers Instructions	6
		SP 2072	Local Leakage Rate Test of Containment Penetrations	27
71111.24	Procedures	2M-AF-3132-1-22	Isolation, Restoration and Testing of 22 Aux Feed Pump	21
		D70.12	Motor-Operated Valve Steam Lubrication	6
		MP D65	Auxiliary Feedwater Overspeed TTOD Test	6
		SP 1070	Reactor Coolant System Integrity Test	57
		SP 1073B	Monthly Train B Shield Building Ventilation System Test	21
		SP 1080.2	12 Shield Building Ventilation Filter Removal Efficiency Test	28
		SP 1106B	22 Diesel Cooling Water Pump Monthly Test	109
		SP 2070	Reactor Coolant System Integrity Test	53
		SP 2070	Reactor Coolant System Integrity Test	53
		SP 2406	Main Steam Isolation Valve Inservice Test	6
	Work Orders	WO 700044935	SP 1070 Rx Coolant System Integrity Test	
		WO 700078684	Troubleshoot Bkr 211J-13 and MV-32019	
		WO 700087060	PM 3132-1-22: 22 TDAFWP MINOR INSP	09/27/2023
		WO 700100220	SP 2070 - Rx Coolant SYS Integrity TST	
		WO 700100220	SP 2070 - RX Coolant SYS Integrity TST	01/28/2024
		WO 700119857	CV-31419 Water Leak By	
		WO 700125323	SP 1155B - CC SYS QTR TEST TRN B	
		WO 700127367	MV-32016 LP A MS to 11 TDAFWP Lube	
		WO 700133040	Perform As-Found LLRT	
		WO 700133173	SP 1106B-22 DD CL PMP (245-392) 1 M Test	
		WO 700133246	Test SI NOT READY Light	
		WO 700135613	SP 2406 - MSIV Inservice TST up from CSD	03/06/2024

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71153	Engineering Evaluations	602000031728	Reactor Trip Report - Unit 2	03/03/2024
	Miscellaneous	QF0431, Rev. 21, 602000031268	Cause Evaluation Template, CAP ID# 501000077958, Unit 1 Reactor Trip	10/19/2023
		QF0565, Revision 17	Maintenance Rule Functional and MSPI Failure Evaluation, QA# 501000081105	12/01/2023
		QF1146, Revision 5, Past Operability Review	CAP 501000079553	12/01/2023
	Procedures	2C49.5	Placing Unit 2 Condensate Filter Demineralizers On Line	12
		2E-0	Reactor Trip or Safety Injection	41
		C58800	Remote Alarm Response Procedure	6
		OP 2C28.1 AOP4	Restarting Unit 2 AFWP After Low Suction/Discharge Pressure Trip	7
		OP 2C28.2	Unit 2 Feedwater System	46