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

August 3, 2021

Mr. Thomas Conboy
Site Vice President
Monticello Nuclear Generating Plant
Northern States Power Company, Minnesota
2807 West County Road 75
Monticello, MN 55362-9637

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT – INTEGRATED INSPECTION REPORT 05000263/2021002

Dear Mr. Conboy:

On June 30, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Monticello Nuclear Generating Plant. On July 27, 2021, the NRC inspectors discussed the results of this inspection with Mr. S. Hafen, Plant Manager, and other members of your staff. The results of this inspection are documented in the enclosed report.

One finding of very low safety significance (Green) is documented in this report. This finding 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.

A licensee-identified violation which was determined to be of very low safety significance is documented in this report. 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 violations or the significance or severity of the violations 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 Monticello Nuclear Generating Plant.

If you disagree with a cross-cutting aspect assignment 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 Monticello 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 Peterson, Hironori
on 08/03/21

Hironori Peterson, Chief
Branch 3
Division of Reactor Projects

Docket No. 05000263
License No. DPR-22

Enclosure:
As stated

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Letter to Thomas Conboy from Hironori Peterson dated August 3, 2021.

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT – INTEGRATED INSPECTION REPORT 05000263/2021002

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number:	05000263
License Number:	DPR-22
Report Number:	05000263/2021002
Enterprise Identifier:	I-2021-002-0096
Licensee:	Northern States Power Company, Minnesota
Facility:	Monticello Nuclear Generating Plant
Location:	Monticello, MN
Inspection Dates:	April 01, 2021 to June 30, 2021
Inspectors:	C. Norton, Senior Resident Inspector T. McGowan, Resident Inspector V. Myers, Senior Health Physicist J. Neurauter, Senior Reactor Inspector
Approved By:	Hironori Peterson, Chief Branch 3 Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at Monticello 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. A licensee-identified non-cited violation is documented in report section: 71111.08G.

List of Findings and Violations

Locked High Radiation Area Not Controlled in Accordance with Technical Specifications			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Occupational Radiation Safety	Green NCV 05000263/2021002-01 Open/Closed	[H.5] - Work Management	71124.01
The inspectors reviewed a self-revealed Green finding and associated Non-Cited Violation (NCV) of Technical Specification (TS) 5.7.2 when the licensee failed to lock or guard entryways into a High Radiation Area (HRA) with dose rates greater than 1.0 rem/hour at 30 cm and allowed subsequent entry by personnel without dose rates having been established.			

Additional Tracking Items

None.

PLANT STATUS

The unit began the inspection period in coast down at 85 percent of rated thermal power. On April 16, 2021, the unit was gradually powered down to nine percent of rated thermal power. On April 17, 2021, the unit was shut down for the start of refueling outage 30. On May 19, 2021, the unit was placed in startup. On May 20, 2021, the unit was synchronized to the grid at twelve percent of rated thermal power to end refuel outage 30. Unit power was slowly increased until rated thermal power was achieved on May 25, 2021. The unit operated at or near rated thermal power for the rest 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 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.

Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident and regional inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time, the resident inspectors performed periodic site visits each week, increasing the amount of time on site as local COVID-19 conditions permitted. As part of their onsite activities, resident inspectors conducted plant status activities as described in IMC 2515, Appendix D; observed risk significant activities; and completed on site portions of IPs. In addition, resident and regional baseline inspections were evaluated to determine if all or a portion of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In some cases, portions of an IP were completed remotely and on site. The inspections documented below met the objectives and requirements for completion of the IP.

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 extreme hot weather, to include the impact of high river and ambient temperatures on service water cooled systems on June 4, 2021

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (6 Samples)

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

(1) Residual heat removal (RHR) system 'A' following shutdown cooling hardening on April 18, 2021
(2) Fuel pool cooling system following cavity flood up on April 19, 2021
(3) Division 2 core spray system (protected train) on May 4, 2021
(4) Emergency diesel generator 12 (protected train) on May 4, 2021
(5) Control rod hydraulic system on May 5, 2021
(6) Wide range off-gas monitor system on June 23, 2021

Complete Walkdown Sample (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated system configurations during a complete walkdown of the FLEX program and associated components on June 10, 2021

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (6 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) Fire zone 30, Turbine deck on April 20, 2021
(2) Fire zone 12-C, Condenser area on April 20, 2021
(3) Fire zone 200, Drywell on April 21, 2021
(4) Fire zone 02-F, Main steam chase on April 22, 2021
(5) Fire zone 12-E, Steam jet air ejector on April 22, 2021
(6) Fire zone 2-E, TIP room on April 27, 2021

71111.08G - Inservice Inspection Activities (BWR)

BWR Inservice Inspection Activities Sample - Nondestructive Examination and Welding Activities (IP Section 03.01) (1 Sample)

(1) The inspectors verified the reactor coolant system boundary, reactor vessel internals, risk-significant piping system boundaries, and containment boundary were appropriately monitored for degradation and that repairs and replacements were appropriately fabricated, examined and accepted by reviewing the documentation of the following activities from April 19, 2021, to April 30, 2021:

03.01.a - Nondestructive Examination and Welding Activities.

1. Ultrasonic Examination (UT) of Main Steam System Pipe to Pipe Weld, American Society of Mechanical Engineers (ASME) Category R-A, Drawing Inservice inspection (ISI)-13142-33-A, Component W-29

2. UT of Main Steam System Pipe to Pipe Weld, ASME Category R-A, Drawing ISI-13142-36-A, Component W-31
3. UT of High-Pressure Coolant Injection System Pipe to Valve Weld, ASME Category R-A, Drawing ISI-13142-42-A, Component W-5
4. UT of High-Pressure Coolant Injection System Elbow to Pipe Weld, ASME Category R-A, Drawing ISI-13142-42-A, Component W-2
5. Magnetic Particle Examination (MT) of Reactor Vessel Top Head Flange Weld, ASME Category B-A, Drawing ISI Figure 1, Component W-8
6. Visual Examination (VT-3) of Fuel Pool Emergency Cooling System Seismic Restraint, ASME Category F-A, Drawing ISI-13142-67, Component H-7
7. VT-3 of Primary Containment Emergency Core Cooling System Header Snubbers/Struts, ASME Category F-A, Drawing NH-95932-A, Component H-2C
8. 2019-UT-013, ASME Section XI Flaw Evaluation, Drawing ISI Figure 5, Nozzle to Vessel Weld ID N-3C
9. 2019-UT-041, ASME Section XI Flaw Evaluation, Drawing ISI-13142-33A, Pipe to Pipe Weld ID W-30
10. Pipe Replacement on Emergency Filtration Train – Emergency Service Water, Division 1, Line ESW1-3”-HBD Supply Piping; Weld Numbers W1, W3, W4, W5, W6, W7, W9, W10, W11, W12R1, W13, W14, W15, W16 and W17 (WO 700033209)
11. Pipe Elbow Replacement for Emergency Service Water Line ESW5-4”-HBD Supply Piping; Weld Numbers W1A, W2 AND W3 (WO 700054695)

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

(1) The inspectors observed operators reduce power and place the low flow feedwater regulation valve in control of reactor water level. The inspectors also observed operators open the generator output breaker to start refueling outage 30 on April 17, 2021.

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

(1) The inspectors observed and evaluated licensed operator as found simulator evaluation on June 1, 2021.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (1 Sample)

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

(1) Ensured that Monticello has not installed and does not have on hand emergency diesel generator speed switches supplied by Dynalco and Engine Systems Inc.

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (2 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) Licensee discovery, before execution, of an unrecognized elevated risk associated with moving the emergency core cooling system test window to a new time in refueling outage 30 on April 19, 2021
(2) Deviation in thermal limit predictors during reactor startup on May 20, 2021

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (4 Samples)

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

(1) QIM 501000050168, Blown fuse 5A-F25, power supply to scram discharge volume vent and drain valve panel indication lights and test switch, on April 6, 2021
(2) QIM 501000050959, MO 2010, torus spray inboard isolation valve diagnostic test results on April 26, 2021
(3) QIM 501000051097, Control rod 10-15 position indicating probe trouble shooting on April 27, 2021
(4) QIM 501000053024, 8906 C System check unable to verify, Ultrasonic check for RHR header voiding, on June 10, 2021

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (3 Samples)

The inspectors evaluated the following temporary or permanent modifications:

(1) Temporary modification to disable alarm 514-A-19, loss of transformer 1R auxiliary control voltage
(2) Emergency diesel generator 11 voltage regulator - droop modification implementation during 1R30
(3) Add cell and replace 11 battery during 1R30

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (18 Samples)

The inspectors evaluated the following post-maintenance test activities to verify system operability and functionality:

(1) Residual heat removal service water (RHRSW) pump 14 discharge check valve on April 2, 2021
(2) Drywell atmospheric cooling damper test following replacement of VRF 3 fan motor on May 3, 2021
(3) 0255-04-IA-1-1, RHR loop 'A' quarterly pump and valve tests following preventive maintenance on RHR division 1 drywell spray outboard valve, work order (WO) 700070708-0020
(4) 0255-04-IA-1-1, RHR loop 'A' quarterly pump and valve tests following preventive maintenance on RHR division 1 drywell spray valve inboard valve, WO 700070709-003
(5) 0255-04-IA-1-1, RHR loop 'A' quarterly pump and valve tests following preventive maintenance on RHR division 1 low pressure coolant injection (LPCI) injection inboard valve, WO 700089911-0080
(6) RHR division1 LPCI injection outboard valve, WO 700049702-0200
(7) RHR division 1 heat exchanger shell side relief valve, WO 700049570-0030
(8) 0255-04-IA-1-1, RHR loop 'A' quarterly pump and valve tests following preventive maintenance on RHR division 1 discharge header relief valve, WO 700049570-0030
(9) 0255-04-IA-1-1, RHR loop 'A' quarterly pump and valve tests following preventive maintenance on RHR 11 and 13 pumps minimum flow check valve, WO 700049569-0025
(10) 0255-07-IA-2, Main steam isolation valve functional checks test, after preventative maintenance on 'C' inboard main steam isolation valve, WO 700049286-0020
(11) 0255-07-IA-2, Main steam isolation valve functional checks test, after preventative maintenance on 'D' inboard main steam isolation valve, WO 700049287-0020
(12) 0255-07-IA-2, Main steam isolation valve functional checks test, after preventative maintenance on 'B' inboard main steam isolation valve, WO 700049285-0020
(13) 0255-07-IA-2, Main steam isolation valve functional checks test, after preventative maintenance on 'A' inboard main steam isolation valve, WO 700049284-0020
(14) 0255-07-IA-2, Main steam isolation valve functional checks test, after preventative maintenance on 'A outboard main steam isolation valve, WO 700049295-0020
(15) 0255-07-IA-2, Main steam isolation valve functional checks test, after preventative maintenance on 'B' outboard main steam isolation valve, WO 700049448-0020
(16) 0255-07-IA-2, Main steam isolation valve functional checks test, after preventative maintenance on 'C' outboard main steam isolation valve, WO 700049296-0020
(17) 0255-07-IA-2, Main steam isolation valve functional checks test, after preventative maintenance on 'D' outboard main steam isolation valve, WO 700049297-0020
(18) 0147-02, B train standby gas treatment system filter tests, after preventive maintenance on moisture eliminators, charcoal adsorbers and high efficiency particulate air filters, on May 26, 2021

71111.20 - Refueling and Other Outage Activities

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

(1) The inspectors evaluated refueling outage 30 activities from April 17, 2021 to May 23, 2021.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (6 Samples)

(1) Reactor coolant pressure boundary leakage test on May 13, 2021
(2) Control rod drive SCRAM insertion time test on May 13, 2021
(3) Integrated primary containment leak rate test on May16, 2021
(4) High pressure coolant injection system pump flow and valve test with reactor pressure less than or equal to 165psig on May 19, 2021
(5) Reactor core injection cooling quarterly pump and valve tests on May 21, 2021
(6) Stack noble gas sampling and analysis for A WRGM (wide range gas monitor) train on June 11, 2021

Inservice Testing (IP Section 03.01) (2 Samples)

(1) Local leak rate testing on inboard main steam isolation valves on April 22, 2021
(2) RHR loop 'A' quarterly pump and valve tests on May 6, 2021

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated how the licensee identifies the magnitude and extent of radiation levels and the concentrations and quantities of radioactive materials and how the licensee assesses radiological hazards.

Instructions to Workers (IP Section 03.02) (1 Sample)

The inspectors evaluated instructions to workers including radiation work permits used to access high radiation areas.

(1) The inspectors reviewed RWPs for entry into high radiation areas, observed briefings for entry into high radiation areas, and observed radioactive material labels in various locations.

Contamination and Radioactive Material Control (IP Section 03.03) (2 Samples)

The inspectors evaluated licensee processes for monitoring and controlling contamination and radioactive material.

(1) The inspectors observed licensee surveys of potentially contaminated material leaving the radiologically controlled area during a refueling outage.
(2) The inspectors observed workers exiting the radiologically controlled area during a refueling outage.

Radiological Hazards Control and Work Coverage (IP Section 03.04) (3 Samples)

The inspectors evaluated in-plant radiological conditions during facility walkdowns and observation of the following radiological work activities.

(1) Residual heat removal system valve work under RWP 215123
(2) Local leak rate testing flange removal and instillation in the drywell under RWP 215504
(3) Refueling operations under RWP 215700

High Radiation Area and Very High Radiation Area Controls (IP Section 03.05) (4 Samples)

The inspectors evaluated licensee controls of the following High Radiation Areas and Very High Radiation Areas:

(1) Radioactive waste pump room, locked high radiation area (LHRA)
(2) Torus area, high radiation area (HRA)
(3) Fuel pool skimmer tank room, LHRA
(4) Reactor water clean-up pump work area, LHRA

Radiation Worker Performance and Radiation Protection Technician Proficiency (IP Section 03.06) (1 Sample)

(1) The inspectors evaluated radiation worker and radiation protection technician performance as it pertains to radiation protection requirements.

71124.02 - Occupational ALARA Planning and Controls

Implementation of ALARA and Radiological Work Controls (IP Section 03.03) (3 Samples)

The inspectors reviewed as low as reasonably achievable practices and radiological work controls for the following work activities.

(1) Residual heat removal system valve work under RWP 215123
(2) Local leak rate testing flange removal and instillation in the drywell under RWP 215504
(3) Reactor water clean-up inboard isolation valve work under RWP 215513

Radiation Worker Performance (IP Section 03.04) (1 Sample)

The inspectors evaluated radiation worker and radiation protection technician performance during:

(1) Residual heat removal system valve work under RWP 215123

71124.03 - In-Plant Airborne Radioactivity Control and Mitigation

Temporary Ventilation Systems (IP Section 03.02) (1 Sample)

The inspectors evaluated the configuration of the following temporary ventilation systems:

(1) High-efficiency particulate air filter unit installed for turbine generator work

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

MS05: Safety System Functional Failures (SSFFs) Sample (IP Section 02.04) (1 Sample)

(1) April 01, 2020 through March 31, 2021

BI02: RCS Leak Rate Sample (IP Section 02.11) (1 Sample)

(1) April 01, 2020 through March 31, 2021

71152 - Problem Identification and Resolution

Semiannual Trend Review (IP Section 02.02) (1 Sample)

(1) The inspectors reviewed the impact of licensee corrective actions to address and correct minor NRC identified documentation issues that if left uncorrected could potentially result in more significant safety issues.

Annual Follow-up of Selected Issues (IP Section 02.03) (2 Samples)

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issues:

(1) The inspectors reviewed, assessed, and verified the adequacy of licensee corrective actions of residual heat removal (RHR) and decay heat removal hardening issues identified during the last refueling outage (RFO), RFO 29.
(2) The inspectors reviewed, assessed, and verified the adequacy of licensee corrective actions associated with a dropped handrail into the reactor cavity during RFO 29.

INSPECTION RESULTS

Licensee-Identified Non-Cited Violation	71111.08G
This violation of very low safety significance was identified by the licensee and has been entered into the licensee corrective action program and is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.	
Violation: Title 10 CFR 50.55a(g)(4) requires, in part, that "throughout the service life of a boiling water-cooled nuclear power facility, components that are classified as Class MC pressure retaining components and their integral attachments must meet the requirements set forth in the Section XI of the American Society of Mechanical Engineers Boiler & Pressure Vessel Code." In Section XI-2001 Edition including 2003 Addenda, Table IWE-2500-1 Examination Categories, Category E-A, Containment Surfaces. Item E1.10, "Containment Vessel Pressure Retaining Boundary," requires, in part, general visual "examination shall include all accessible interior and exterior surfaces of Class MC components, parts, and appurtenances." Contrary to the above, from September 9, 2009 to September 8, 2018, the Second IWE Interval, the licensee failed to perform general visual examination on all accessible surface areas on the exterior of the drywell portion of containment, namely flued head and other piping penetrations. Significance/Severity: Green. The inspectors concluded the violation was of very-low safety significance because the issue did not represent an actual open pathway of containment resulting in a Green finding. Licensee performance of 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," provided reasonable assurance for containment Class MC structural integrity. Corrective Action References: The licensee entered the concern into the corrective action program as issue 501000050476 with corrective actions to ensure general visual examinations are performed on accessible exterior surfaces of containment during the 2021 refueling outage.	

Locked High Radiation Area Not Controlled in Accordance with Technical Specifications			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Occupational Radiation Safety	Green NCV 05000263/2021002-01 Open/Closed	[H.5] - Work Management	71124.01
The inspectors reviewed a self-revealed Green finding and associated Non-Cited Violation (NCV) of Technical Specification (TS) 5.7.2 when the licensee failed to lock or guard entryways into a High Radiation Area (HRA) with dose rates greater than 1.0 rem/hour at 30 cm and allowed subsequent entry by personnel without dose rates having been established.			

Description:

On January 23, 2021, operations attempted to perform a backwash and precoat of the 11 Reactor Water Cleanup (RWCU) filter. Prior to initiation, a Radiation Protection Technician (RPT) was posted outside the reactor radioactive waste pump and tank room, which was posted and controlled as an HRA with dose rates less than 1 rem/hr in accordance with TS 5.7.1. When operations placed the hand switch for AO-12-4-14A (filter demineralizer T-202A inlet valve) to close, the individual noticed that the valve did not indicate it had closed. After referring to system technical documentation, the operator determined that the valve did not need to be closed as the first step in the subsequent backwash programing sequence was to open the valve. The operator then initiated the backwash programmer. The operator noticed that the backwash process failed when valve AO-12-4-14A failed to close when commanded by the programmer. The operator notified the control room and proceeded to the pump and tank room to coordinate entry with the RPT. The RPT entered the area, performed radiation surveys, and determined that dose rates were comparable to previous surveys. Operations then entered the area to perform some trouble shooting and concluded that no further attempts would be made on that shift to complete the backwashing activities. All personnel then left the area. At shift turnover, the RPT turned over that dose rates in the pump and tank room were consistent with previous surveys.

Unknown to the operators and RPT at the time, the position of valve AO-12-4-14A (being open at the beginning of the programming sequence) resulted in the holding pump (which maintains pressure across the demineralizer elements to keep the resin beads adhered to the elements) turning off, as designed; however, various valves did not operate as expected due to the logic tie to valve AO-12-4-14A. The holding pump being turned off resulted in highly contaminated resin falling off the demineralizer elements and accumulating in the bottom of the tank. The resin then slowly moved through the system, via leaking valves, into components of the system located in the pump and tank room.

During the next shift, RPTs briefed personnel going into the pump and tank room to radiological conditions as indicated on surveys taken on January 18, 2021, which showed a maximum dose rate of 302 mrem/hr. Two individuals entered the area, received electronic dosimeter dose rate alarms (maximum dose rates encountered being 1440 mrem/hr and 286 mrem/hr), and immediately left the area and reported to radiation protection. Follow-up surveys of the area indicated dose rates of up to 3 rem/hr at 30 cm from the source.

During review of this event, the licensee learned that valve AO-12-4-14A had the same issue in October 2020 (failure to close); however, the resin moved into the area more quickly. The RPT involved in the 2020 evolution was able to identify dose rates exceeding 1 rem/hr and establish appropriate controls prior to leaving the area. The licensee also determined that valves that were known to leak or suspected to leak attributed to the resin moving into the area. Consequently, the inspectors concluded that the January 2021 failure to recognize the changing radiological conditions and implement appropriate controls was reasonably foreseeable and preventable.

Corrective Actions: Immediate corrective actions included posting the area with a Locked High Radiation Area (LHRA) sign and locking the door to the area. Subsequent corrective actions included performance of an apparent cause evaluation, review of applicable procedures, and training for radiation protection and operations personnel.

Corrective Action References: Issue number 501000048045; Unexpected Dose Rate Alarm Issue number 501000049450; Communication Issue Between Operations and Radiation Protection

Performance Assessment:

Performance Deficiency: The licensee failed to lock or guard entryways into an HRA with dose rates greater than 1.0 rem/hour at 30 cm from the source and allowed subsequent entry by personnel without dose rates having been established, contrary to TS 5.7.2.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, failure control access to and work within HRAs exceeding 1 rem/hr could lead to unintended dose. Additionally, the inspectors identified that more than minor example 6.f from Inspection Manual Chapter 0612, Appendix E, "Examples of Minor Issues," most closely resembled this issue.

Significance: The inspectors assessed the significance of the finding using Appendix C, “Occupational Radiation Safety SDP.”

Cross-Cutting Aspect: H.5 - Work Management: The organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The work process includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities. Specifically, the work process did not identify the risk associated with this evolution given previous failures and did not effectively coordinate between the different groups involved.

Enforcement:

Violation: Technical Specification 5.7.2 states, in part, that for HRAs with dose rates not exceeding 1.0 rem/hr at 30 cm from the radiation source or from any surface penetrated by the radiation, but less than 500 rads/hour at 1 meter form the radiation source or from any surface penetrated by the radiation,

- Each entryway to such an area shall be conspicuously posted as a high radiation area and shall be provided with a locked or continuously guarded door or gate that prevents unauthorized entry and

- Except for individuals qualified in radiation protection procedures, or continuously escorted by such individuals, entry into such areas shall be made only after dose rates in the area have been determined and entry personnel are knowledgeable of them.

Contrary to the above, on January 23, 2021, the licensee failed to provide each entryway to the reactor radioactive waste pump and tank room, an HRA with dose rates exceeding 1.0 rem/hr at 30 cm from the source or from any surface penetrated by the radiation, with a locked or continuously guarded door or gate that prevents unauthorized entry and failed to make entry into the area by individuals (not qualified in radiation protection or escorted by such individuals) only after dose rates had been determined and entry personnel were made knowledgeable of them. Specifically, radiation levels in the reactor radioactive waste pump and tank room were up to 3.0 rem/hr; however, the licensee failed to lock or guard the entrance into the room. Personnel (not qualified in radiation protection) entered the room

based on radiation surveys that were performed days before the entry and that were not indicative of the elevated dose rates that existed in the room.

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

Assessment	71152

During RFO 29, the licensee failed to correctly harden the shutdown cooling system which resulted in the failure of the division 1 RHR pump start circuitry. This was a maintenance rule function failure. The licensee immediately restored division 1 RHR pump start circuitry. Long term corrective actions included procedure changes for starting and swapping RHR pumps to ensure proper RHR pump start circuitry configuration.

Inspectors reviewed and assessed the adequacy of the current revision of the decay heat removal hardening procedure and observed decay heat removal hardening during RFO 30. This included starting and swapping the division 1 RHR pumps after completion of the hardening steps (not performed during RFO 29) to demonstrate RHR pump start circuitry was configured correctly.

The inspectors determined that corrective actions for this issue were effective and that decay heat removal hardening during RFO 30 was performed correctly.

Assessment	71152

During RFO 29, licensee personnel removing a ventilation hose from the reactor cavity came in contact with and dislodged a section of handrail which fell into the cavity. No injuries or damage to plant equipment resulted. The licensee entered the event into the corrective action program as QIM 501000025613, Dropped Object in Reactor Cavity. Corrective actions included completing an engineering change request to install pins to secure the handrails. This was completed April 14, 2021. The inspectors walked down the modification on April 22, 2021 and assessed the corrective actions adequate to prevent recurrence.

Observation: Assessment of corrective actions to address documentation issues	71152

During the fourth quarter 2020, while reviewing documentation for the division 2 emergency diesel generator overhaul, much of the work performed by vendors and contractors, inspectors identified several documentation issues including improper use of N/A (not applicable), failure to document step completions, adding or changing steps without appropriate approvals and, most significantly, failure to perform independent verifications when required. None of the NRC identified documentation issues revealed a physical degradation of the division 2 emergency diesel generator nor did these issues bring into question the operability or functionality of the diesel generator. The licensee entered inspector concerns into the corrective action program, addressed specific NRC identified issues and implemented corrective actions to improve documentation.

During this inspection period, which included a refuel outage where vendors and contractors performed much of the work, inspectors randomly reviewed several work packages on safety significant structures, systems and components for accuracy and completeness. Although some minor documentation issues were identified, none were to the extent identified in the fourth quarter 2020 work packages for the division 2 emergency diesel generator overhaul. The inspectors did not identify any failure to perform independent verifications, any improper

changes to work steps or any failure to document step completions. Also, the inspectors observed an increase in CAP items for licensee identified documentation issues.

The inspectors determined that licensee corrective actions have resulted in improved documentation of licensee work activities.

EXIT MEETINGS AND DEBRIEFS

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

- On July 27, 2021, the inspectors presented the integrated inspection results to Mr. S. Hafen, Plant Manager, and other members of the licensee staff.
- On April 30, 2021, the inspectors presented the Inservice inspection results to Mr. T. Conboy, Site Vice President, and other members of the licensee staff.
- On May 27, 2021, the inspectors presented the radiation protection inspection results to Mr. S. Hafen, Plant Manager, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Procedures	1150	Summer Checklist	82
	Work Orders	700070756	Summer Readiness: Perform Procedure 1150	02/20/2021
71111.04	Drawings	M135	Fuel Pool Cooling and Cleanup System	75
		NH-36051 (M-133)	P&ID, Diesel Oil System	87
		NH-36244 (M-118)	Control Rod Hydraulic System	90
		NH-36245 (M-119)	Control Rod Hydraulic System	80
		NH-36248 (M-122)	Core Spray System	90
		NH-36664 (M-112)	P&ID, RHR Service Water and Emergency Service Water Systems	97
	Procedures	9111-05	Decay Heat Removal Hardening	5
		A.2-405	Release Rate Determination	17
		A.2-422	Stack Iodine /Particulate Sampling and Analysis	13
		B.02.01-05	Fuel Pool Cooling	58
		FLEX	Diverse and Flexible Coping Strategies (FLEX) Program Document	11
		OSP-FIR-1489	B.5.B/FLEX Equipment Inventory	32
71111.05	Fire Plans	Strategy A.3-02-E	Fire Zone 2-E, TIP Room	5
		Strategy A.3-02-F	Fire Zone 2-F, Main Steam Chase	5
		Strategy A.3-12-C	Fire Zone 12-C, Condenser Area	12
		Strategy A.3-12-E	Fire Zone 12-E, Steam Jet Air Ejector Room	2
		Strategy A.3-200	Fire Zone 200, Drywell	1
		Strategy A.3-30	Fire Zone 30, Turbine Deck	17
71111.08G	Corrective Action Documents	02001972	Support on SR-360 on Torus Ring Header is Binding	02/28/2002
		1558248	PSH-116 Hanger Has Slight Bend	05/16/2017
		500000296087	B Filtration Service Water Leak in Elbow	04/26/2019
		501000022266	MIC Pitting on Line ESW5-3-HBD in Intake Building, ISO NF-93491-B, P7	01/23/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		501000022345	MIC Pitting on Line ESW5-3-HBD in Intake Building, ISO NF-93491-B, P10	01/24/2019
		501000022428	MIC Pitting on Line SW59-4-HF in Intake Building, ISO NX-13142-57-C, P7	01/29/2019
		501000022608	MIC Pitting on Line ESW5-3-HBD in Intake Building, ISO NF-93491-B, P2	02/01/2019
		501000024866	SW-MIC Pitting Detected in Line SW10-18-GF	03/29/2019
		501000026135	B Filtration Service Water Leak in Elbow	04/23/2019
		501000026252	ESW Piping too Short for Elbow Repair	04/24/2019
		501000026298	Core Shroud, New Indications on Horizontal Welds H4 and H5 Need Evaluation	04/25/2019
		501000026320	ISI VT Hanger Indication: Pipe Support PSH-116 – Loose Nut on Top of South Spring Can	04/24/2019
		501000026350	Foreign Material Identified in Steam Dryer during IVVI	04/25/2019
		501000026386	Foreign Material Intrusion, Level 1 Area	04/27/2019
		501000026520	Nondestructive Examination, Dye Penetrant (PT) Indication	04/29/2019
		501000028239	Replaced Emergency Service Water Pipe Below Calculated Minimum Thickness (Tmin)	06/06/2019
		501000048909	EPRI 19 CFR Part 21: Information Transfer	02/23/2021
		501000050476	OpEx: Quad Cities; NRC Unresolved Item 05000254/2019001-01, Insulation Not Removed Prior to General Visual Examination of Containment Surface Areas	04/14/2021
		50100047869	Water Leak Downstream of MO-2358	01/18/2021
		608000000393	Piping Supports Deficiency Evaluation	05/06/2019
		98000702	ISI Discrepancies (1998 Refuel Outage)	03/23/1998
	Corrective Action Documents Resulting from Inspection	501000050835	CAP 501000047869 Was Not Identified as an Aging Management Condition during Aging Management Screening	04/22/2021
	Drawings	ISI Figure 1	Reactor Vessel Top Head	5
		ISI Figure 5	Reactor Vessel Nozzles	5
		ISI-13142-33-A	Main Steam A, Line PS1-18"-ED	5
		ISI-13142-36-A,	Main Steam D, Line PS4-18"-ED	6
		ISI-13142-42-A	High Pressure Coolant Injection (Steam Side), Line	6

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			PS18-8"-ED	
		ISI-13142-67	Fuel Pool Emergency Cooling, Line REW11-8"-HG	5
		NH-95932-A	Ring Header Seismic Restraints (Bays 1-4)	2
	Engineering Changes	EC 601000001498	Replace Section of ESW1-3”-HBD Piping	07/30/2019
	Engineering Evaluations	CAP 501000048909 Form QF0558	Engineering Evaluation: EPRI 19 CFR Part 21 Information Transfer	04/16/2021
		SIA Report 1801294.401	Disposition of Off-Axis Indications Found at Monticello Nuclear Generating Plant Core Shroud Circumferential Welds H4 and H5	0
	Miscellaneous	B31-P1P1-GTSM-001	ASME - Welding Procedure Specification (WPS): Type Carbon Steel (P1) Welded to Carbon Steel (P1)	4
		NCR 94-366	Nonconformance Report: SR-360 Configuration Concern	02/01/1995
		RRP 2017-29-005	Repair/Replacement Plan: Emergency Service Water Line ESW1-3”-HBD; Like-for-Like Replacement of Approximately 20 Feet of 3" Sch.40 Pipe and Associated Fittings Located in the Intake Structure	2
		RRP 2019-29-037	Repair/Replacement Plan: Emergency Service Water Line ESW5-4”-HBD; Like-for-Like Replacement of 4 Inch Elbow by Welding	0
	NDE Reports	2019UT001	Nozzle/Vessel Weld, Component N-3C - Inner Radius	04/25/2019
		2019UT002	Nozzle/Vessel Weld, Component N-3C	04/27/2019
		2019UT002	Nozzle/Vessel Weld, Component N-3C	04/27/2019
		2019UT012	Main Steam Pipe to Pipe Weld, ISI-13142-33-A Component W-30	04/29/2019
		2019UT013	Nozzle/Vessel Weld, Component N-3C	04/27/2019
		2019UT041	Main Steam Pipe to Pipe Weld, ISI-13142-33-A Component W-30	04/29/2019
		2101MT001	Magnetic Particle Examination: Reactor Vessel Top Head Flange Weld, ISI Figure 1, Component W-8	04/21/2021
		2101UT003	UT Calibration/Examination: Main Steam System Pipe to Pipe Weld, ISI-13132-33-A, Component, W-29	04/22/2021
		2101UT005	UT Calibration/Examination: Main Steam System Pipe to	04/22/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Pipe Weld, ISI-13132-36-A, Component, W-31	
		2101UT007	UT Calibration/Examination: High Pressure Coolant Injection System, Pipe to Valve Weld, ISI-13142-42-A, Component W-5	04/24/2021
		2101UT008	UT Calibration/Examination: High Pressure Coolant Injection System, Elbow to Weld, ISI-13142-42-A, Component W-2	04/24/2021
		2101VT007	Visual Examination (VT-3): Fuel Pool Emergency Cooling System Seismic Restraint, ISI-13142-67 Component H-7	04/21/2021
		2101VT019	Visual Examination (VT-3): Primary Containment Emergency Core Cooling System Header Snubbers/Struts, NH-95932-A Component H-2C	04/24/2021
		98-0085R1	UT - Reactor Vessel Nozzle to Vessel Weld, Component N-3C	03/29/1998
		BOP-PT-19-006	ESW-3”-HBD, 3” Butt Welds, Weld #3 and 4	02/11/2019
		BOP-PT-19-007	ESW-3”-HBD, 3” Butt Welds, Weld #1, 7, 9, 10, 11, 14, and 15	02/13/2019
		BOP-PT-19-031	ESW5-4”-HBD Pipe to Elbow Weld, Weld #1	04/24/2019
		BOP-PT-19-032	ESW5-4”-HBD Pipe Welds, Weld #1A, 2, 3	04/25/2019
		BOP-PT-19-038	ESW-3”-HBD, 3” Butt Welds, Weld #12	04/29/2019
		BOP-PT-19-039	ESW-3”-HBD, 3” Butt Welds, Weld #12R1	04/29/2019
		BOP-PT-19-040	ESW-3”-HBD, 3” Butt Welds, Weld #5, 6, 13, 16, and 17	04/29/2019
		700033209-0020	VT-2 System Leakage Visual Test	05/01/2019
		700054695-0030	VT-2 System Leakage Test	04/25/2019
	Procedures	Document 0515	Primary Containment Visual Examination for Structural Problems	16
		FP-PA-ARP-01	CAP Process	58
		FP-PE-NDE-200	Solvent Removable Visual Dye Penetrant Examination	2
		FP-PE-NDE-300	Dry Magnetic Particle Examination – Yoke/Coil	3
		FP-PE-NDE-401	Ultrasonic Examination of Ferritic Welds – Supplement 3	9
		FP-PE-NDE-520	Visual Examination for Leakage	9
		FP-PE-NDE-530	Visual Examination, VT-3	10
		PDI-UT-1	Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds	G

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Work Orders	700054851-0010	Tighten Fastener on Top of South Spring Can	05/07/2019
		700054851-0060	Tighten Fastener and Correct Top Eye Rod	05/17/2019
		700033209-0009	Replace Piping Due to Pitting on Emergency Filtration Train – Emergency Service Water, Division 1, ESW1-3”-HBD Supply Piping	05/30/2019
		700054695-0010	Replace Piping Elbow Due to Through Wall Hole for Emergency Service Water Division 2, ESW5-4”-HBD Supply Piping	04/23/2019
71111.11Q	Miscellaneous	RQ-SS-177	Simulator Exercise Guide	1
	Procedures	2204	Plant Shutdown	78
		B.05.07-05	Reactor Level Control System	28
71111.12	Miscellaneous	10CFR21-0118	Reporting of Defects and Non-Compliance-Engine Systems, Ins.	10/26/2017
71111.13	Corrective Action Documents	0501000052353	Startup Delay-Deviation in Predictors	05/20/2021
		501000050558	Late Identified Schedule Risk	04/16/2021
71111.15	Corrective Action Documents	501000050168	Blown Fuse 5A-F25 (Power Supply to Scram Discharge Volume Vent and Drain Valve Panel Indication Lights and Test Switch)	04/06/2021
		501000050559	MO2010 Diagnostic Test Results	04/23/2021
		501000051097	Control Rod 10-15 Position Indicating Probe Trouble Shooting	10/26/2021
		501000053024	8906 C System Check Unable to Verify	06/09/2021
	Drawings	NH-36425	Control Rod Hydraulic System	80
		NX-7834-67-19	Elementary Diagram, Reactor Protection System	76
71111.18	Corrective Action Documents	CAP AR 01476976	Question on the 12 EDG Voltage Regulator Wiring	04/30/2015
		00001496761	Potential Non-Conservative Technical Specification	10/14/2015
	Drawings	ECR0149-NX-9216-5-4	Physical Schematic and Field Connections, Model 999-11 EDG	09/28/2020
		NX-9216-5-20180130-081	Physical Schematic and Field Connections, Model 999 - 11 EDG	81
	Engineering Changes	601000001877	Add Cell and Replace 11 (125 Vdc) Battery	06/12/2020
		601000002604	TMOD Remove 1R Control Voltage Alarm	09/29/2020
	Procedures	0198-01	11 125Vdc Battery Capacity Test	30

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Work Orders	700067808	Projects Replace No. 11 125 Vdc Battery	04/30/2021
		700077055-0120	11 EDG Voltage Regulator - Droop Mod, Pre-Op Testing and PMT	04/27/2021
71111.19	Procedures	0255-04-IA-1-1	RHR Loop A Quarterly Pump and Valve Tests	95
		0255-07-IA-2	Main Steam Isolation Valve Functional Checks Test	40
		147-02	B Train Standby Gas Treatment System Tilter Tests	38
		FP-WM-WOE-01	Work Order Execution Process	20
	Work Orders	700049569-0025	700049569-002511 AND 13 RHR Pumps Minimum Flow Check Valve	1
		700043114-02	14 RHRSW Pump Discharge Check Valve	04/01/2021
		700049570-0030	RHR Div 1 Heat Exchanger Shell Side Relief Valve	1
		700049570-0030	RHR Div 1 Discharge Header Relief Valve	0
		700049702-0200	RHR Div 1 LPCI Injection Outboard	1
		700057709-0100	Drywell Atmosphere Cooling System Inspection and Repair	05/03/2021
		700070708-0020	RHR Div 1 Drywell Spray Outboard	2
		700070709-003	RHR Div 1 Drywell Spray Outboard	2
		700089911-0080	RHR Div 1 LPCI Injection Inboard	2
71111.20	Procedures	2167	Plant Startup	104
		2167-04	Startup Checklist for Surveillance Requirements, 150psig Checklist	9
		FS-S-FMP-01	10 CFR 26 Fatigue Management Fleet Procedure	9
71111.22	Procedures	0081	Control Rod Drive SCRAM Insertion Time Test	76
		0108	HPCI Pump Flow and Valve Test with Reactor Pressure Less Than or Equal to 165psig	68
		0136	Integrated Primary Containment Leak Rate Test	21
		0137-07A	Reactor Steam Supply Valves Leak Rate Testing	41
		0164-B	Stack Release Rate Determination	10
		0253-02	SBGT Quarterly Test	57
		0255-04-IA-1-1	RHR Loop A Quarterly Pump and Valve Tests	95
		0255-08-IA-1	RCIC Quarterly Pump and Valve Tests	85
		0255-20-IIC-1	Reactor Coolant Pressure Boundary Leakage Test	50
		4170-02	SBGT B Moisture Eliminators Charcoal Adsorbers and HEPA Filters Cycle PM	16

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		FP-CY-GSA-01	Operation of the Gamma Spectral Analysis Instrumentation	4
		I.05.26	Stack Noble Gas Sample	7
71124.01	Procedures	FP-RP-NISP-05	Access Controls for High Radiation Areas	03
	Radiation Surveys	VSDS-M-20210118-1	Reactor Water Clean-Up Backwash 985 Valve Gallery	01/18/2021
		VSDS-M-20210123-6	Dose Rate Investigation After Reactor Water Clean-Up Backwash Dose Rate Alarms	01/23/2021
		VSDS-M-20210423-21	Breach of MO-2014	04/23/2021
		VSDS-M-20210428-20	MO-2397 Pre-Job Radiological Surveys	04/28/2021
	Radiation Work Permits (RWPs)	215123	1R30 Repair Leak MO-2014	01
		215504	1R30 Drywell General Local Leak Rate Testing	00
		215700	1R30 Refuel Floor Activities	00
71124.02	Radiation Work Permits (RWPs)	215513	DW MO-2397 General Work Activities and Repair	01
71151	Miscellaneous	QF-0445	NRC Data Collection and Submittal - Safety System Functional Failures (April 2020 through March 2021)	16
		QF-0445	NRC Data Collection and Submittal - Reactor Coolant System Total Leakage (April 2020 through March 2021)	16
	Procedures	FP-PA-PI-02	NRC and MOR Performance Indicator Reporting	15
71152	Corrective Action Documents	501000025613	Dropped Object in Reactor Cavity	4/15/2019
		501000025624	RHR DHR Hardening Issue Identified	04/16/2019
	Procedures	9111-05	Decay Heat Removal Hardening	5
	Work Orders	700049378	Calibrate Bus 15 Components	04/23/2021
		700049561-0010	HPCI Exhaust Line Vacuum Breaker Leak Rate Test	04/26/2021
		700054626-0010	Fire Detection Instrumentation Detector Sensitivity Check for 935' Rx Bldg Behind C-121, C-122 and C-126	04/23/2021
		700055070-0010	Dryer Removal	04/23/2021
		700055165-0010	Remove Reactor Well Shield Blocks	04/23/2021
		700055245-0010	LPCI LOOP "A" Valves MO-2014, AO-1046A and RHR-81 Test	04/23/2021
		700057684-0010	Fire Hose Station and Yard Hydrant Hose House Equipment	04/23/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Inspection	
		700066072	Snubber Changeout, Remove 564 Install 504	04/19/2021