



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, ILLINOIS 60532-4352

May 10, 2022

Mr. Christopher Domingos  
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 05000263/2022001

Dear Mr. Domingos:

On March 31, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Monticello Nuclear Generating Plant. On April 14, 2022, 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.

No findings or violations of more than minor significance were identified during this inspection.

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,

A handwritten signature in black ink, appearing to read "Hironori Peterson".

Signed by Peterson, Hironori  
on 05/10/22

Hironori Peterson, Chief  
Branch 3  
Division of Reactor Projects

Docket No. 05000263  
License No. DPR-22

Enclosure:  
As stated

cc w/ encl: Distribution via LISTSERV®

Letter to Christopher Domingos from Hironori Peterson dated May 10, 2022.

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT – INTEGRATED INSPECTION  
REPORT 05000263/2022001

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**U.S. NUCLEAR REGULATORY COMMISSION  
Inspection Report**

Docket Number: 05000263

License Number: DPR-22

Report Number: 05000263/2022001

Enterprise Identifier: I-2022-001-0064

Licensee: Northern States Power Company, Minnesota

Facility: Monticello Nuclear Generating Plant

Location: Monticello, MN

Inspection Dates: January 01, 2022 to March 31, 2022

Inspectors: C. Norton, Senior Resident Inspector  
A. Demeter, Reactor Engineer  
T. McGowan, Resident 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.

### **List of Findings and Violations**

No findings or violations of more than minor significance were identified.

### **Additional Tracking Items**

None.

## PLANT STATUS

Monticello Nuclear Generating Plant began the inspection period at rated thermal power. On January 12, 2022, the licensee observed a small increase in drywell unidentified leakage. On January 23, 2022, the licensee shut down the unit to repair the source of the increased drywell leakage. On January 27, 2022, the licensee restarted the unit and reached rated thermal power on January 28, 2022. The unit remained 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 performed activities described in IMC 2515, Appendix D, "Plant Status," conducted routine reviews using IP 71152, "Problem Identification and Resolution," 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

#### Impending Severe Weather Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated the adequacy of the overall preparations to protect risk-significant systems from impending severe weather, extreme cold temperatures, and loss of heating boiler on January 7, 2022.

### 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) Division 2 emergency diesel generator starting air system on January 10, 2022
- (2) Division 2 emergency diesel generator fuel oil system on January 10, 2022
- (3) Standby liquid control system on February 10, 2022
- (4) Control ventilation system and emergency filtration train on February 10, 2022

### 71111.05 - Fire Protection

#### Fire Area Walkdown and Inspection Sample (IP Section 03.01) (7 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 2-H, west shutdown cooling area on February 25, 2022
- (2) Fire Zone 1-C, reactor core isolation cooling (RCIC) room on February 25, 2022
- (3) Fire Zone 1-E, high pressure core injection (HPCI) room on February 25, 2022
- (4) Fire Zone 1-G, control rod drive (CRD) pump room on February 25, 2022
- (5) Fire Zone 33, emergency filtration train (EFT) building third floor on February 25, 2022
- (6) Fire Zone 12-A, lower 4KV Bus area (13 & 15) on February 25, 2022
- (7) Fire Zone 14-A, upper 4KV Bus area (14 & 16) on February 25, 2022

### 71111.06 - Flood Protection Measures

#### Inspection Activities - Internal Flooding (IP Section 03.01) (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the:

- (1) Flood Zone RB-VI

### 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 and evaluated licensed operator performance in the control room during reactor startup following forced outage on January 27, 2022.

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

- (1) The inspectors observed and evaluated licensed simulator training session on March 28, 2022

### 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) High pressure coolant injection system maintenance window ending March 23, 2022

### 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) Risk associated with a degraded and uncompensated fire penetration seal on January 18, 2022
- (2) Risk associated with increase in unidentified drywell unidentified leakage and the licensee response on January 27, 2022

### 71111.15 - Operability Determinations and Functionality Assessments

#### Operability Determination or Functionality Assessment (IP Section 03.01) (6 Samples)

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

- (1) 501000055698, CV-1729 engineering change request testing not performed
- (2) 501000060413, Step change in 12 standby liquid control (SBLC) pump insulation resistance
- (3) 501000060422, control room CRV/emergency filtration train system flow indicating controller indicating flow while out of service
- (4) 501000060565, VV-1728, division 1 residual heat removal service water flow control valve, failed open
- (5) 501000060504 Drywell particulate radioactivity monitoring system trouble alarm received
- (6) 501000061772 After replacing the sight glass on P-202B, it was found to be leaking one drop of oil per minute

### 71111.18 - Plant Modifications

#### Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (2 Samples)

The inspectors evaluated the following temporary or permanent modifications:

- (1) T-Mod 601000003596, leak repair on LT-3128, level transmitter for moisture separator drain tank, T-6, dump valve
- (2) Scaffold program controls for long term scaffold installation

#### Severe Accident Management Guidelines (SAMG) Update (IP Section 03.03) (1 Sample)

- (1) The inspectors verified the site's severe accident management guidelines were updated in accordance with the boiler water reactor (BWR) generic severe accident technical guidelines and validated in accordance with NEI 14-01, "Emergency Response Procedures and Guidelines for Beyond Design Basis Events and Severe Accidents," Revision 1

### 71111.19 - Post-Maintenance Testing

#### Post-Maintenance Test Sample (IP Section 03.01) (6 Samples)

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

- (1) 0255-05-1A-1-2, B RHRSW quarterly after replacing B RHRSW flow control valve positioner, work order (WO) 700095943-0120
- (2) Check for leaks after code repair of B recirculation loop outboard drain valve, XR-7-2, WO 700102233-0040
- (3) 0255-05-1A, A RHRSW quarterly pump and valve tests after troubleshooting A RHRSW flow control valve positioner, WO 700103303-0020
- (4) Off Gas Hold Up (OGHU) Train B Condenser Level Controller PMT following work performed under engineering change request 601000000429, WO 700067435-0040
- (5) Reactor water clean up 12 filter demin backwash supply following actuator overhaul, WO 700058452-0030
- (6) Control rod drive pump 12 in rush current test PMT, WO 700070042-0010

### 71111.20 - Refueling and Other Outage Activities

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

- (1) The inspectors evaluated forced outage activities from January 24, 2022 to January 27, 2022.

### 71111.22 - Surveillance Testing

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

#### Surveillance Tests (other) (IP Section 03.01) (3 Samples)

- (1) Secondary containment instrumentation calibration for standby gas treatment B train LCO instruments on March 3, 2022, WO 700069802-0010
- (2) Fire pump exercise and fuel quantity test on March 15, 2022
- (3) Low pressure core cooling pumps discharge pressure interlock instrument test and calibration division 2, WO 700099207-0010

#### Inservice Testing (IP Section 03.01) (2 Samples)

- (1) B RHRSW quarterly pump and valve tests, WO 700095943
- (2) Standby liquid control pump and valve tests on February 10, 2022

#### FLEX Testing (IP Section 03.02) (1 Sample)

- (1) Quarterly Functional Test of number 11 120V portable diesel generator testing on February 25, 2022



## 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) (1 Sample)

- (1) January 1, 2021 through December 31, 2021

#### IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02) (1 Sample)

- (1) January 1, 2021 through December 31, 2021

#### IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 02.03) (1 Sample)

- (1) January 1, 2021 through December 31, 2021

### 71152A - Annual Follow-Up Problem Identification and Resolution

#### Annual Follow-Up of Selected Issues (Section 03.03) (2 Samples)

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

- (1) Corrective actions associated with 'B' residual heat removal service water flow control valve oscillations at IST reference flow
- (2) Corrective actions associated with partial control room ventilation isolation (Group 2) during preventive maintenance

### 71153 - Follow Up of Events and Notices of Enforcement Discretion

#### Event Report (IP Section 03.02) (1 Sample)

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

- (1) EN 55708 60-day optional 10CFR50.73(a)(1) to report an invalid actuation of secondary containment relays in accordance with 10CFR50.73(a)(2)(iv)(A)

## INSPECTION RESULTS

Observation: Corrective Actions Associated with 'B' Residual Heat Removal Service Water Flow Control Valve Oscillations at in Service Testing (IST) Reference Flow	71152A
The inspectors reviewed the licensee's actions to resolve residual heat removal service water (RHRSW) flow control valve oscillations occurring at the in-service testing (IST) reference flow. This was documented in QIM 501000055651, CV-1729 controller issue.	
Following replacement of the 'B' residual heat removal service water system flow control valve body and internals, the valve oscillated when adjusted to the established IST reference flow value. The licensee modified the IST test procedure to provide an alternate method to	

establish a stable flow at the reference value and tested the 'B' division RHRSW pumps. Subsequently, the licensee demonstrated the operability of the B RHRSW system in accordance with technical specification requirements. Later the licensee established additional IST reference values to demonstrate that the 'B' RHRSW flow control valve was operating acceptably. The inspectors identified no issues of concern.

The inspectors concluded that the licensee had appropriately addressed the issue of the valve oscillations. No findings or violations were identified.

Observation: A Preventive Maintenance Deficiency Results in an Unplanned Control Room Ventilation Isolation

71152A

On November 29, 2021, upon restoration following maintenance, the division 2 refuel floor process radiation monitor signal spiked causing a partial group 2 isolation. The control room ventilation isolated and went into the recirculation mode. Investigation revealed that the spike was caused by connector degradation between the cable and the radiation monitor. This was repaired and control room ventilation was returned to normal operation.

Reviewing past plant operating experience, the licensee discovered that three separate spiking issues had occurred with the fuel pool and reactor building exhaust plenum radiation monitors in 2006. A root cause evaluation identified that routine quarterly maintenance of these radiation monitors puts strain on the cables and cable connectors. Connector degradation over time results in spiking of the detector output. A corrective action to periodically replace the cable and cable connector was put into the fuel pool and reactor building exhaust plenum process radiation monitor preventative maintenance bases.

In 2017, the cable and connector were not replaced as required by the preventative maintenance bases. This resulted in excessive cable degradation and the signal spike that initiated the partial group 2 isolation on November 29, 2021. The failure to replace the cable and cable connector in 2017 was a performance deficiency. The performance deficiency was minor because it could not be viewed as a precursor to a significant event, if left uncorrected it would not have the potential to lead to a more significant safety concern, and it was not associated with a cornerstone attribute such that it adversely affected a corner stone objective. The licensee initiated Quality Issue 501000059353 to determine how and why the cable and cable connector were not replaced as required by the preventative maintenance basis, establish the extent of condition, and implement corrective actions to ensure preventative maintenance is performed in accordance with the preventative maintenance bases.

The inspectors concluded that the licensee had taken appropriate action to address this issue. No more than minor findings or violations were identified.

## EXIT MEETINGS AND DEBRIEFS

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

- On April 14, 2022, the inspectors presented the integrated 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	A.6	Acts of Nature	64
		C.4-B.08.03A	Loss of Heating Boiler	22
71111.04	Drawings	NH170037	Main Control Room CRV/EFT System	84
		NH36253	Standby Liquid Control System	80
	Procedures	2154-14	Fuel Oil System Prestart Valve Checklist	20
		2154-28	Diesel Generator Air Start System Prestart Valve Checklist	12
71111.05	Fire Plans	A.3-01-C	Fire Zone 1-C RCIC Room and Appendix R Cable Enclosure	11
		A.3-01-E	Fire Zone 1-E HPCI Room - Reactor Building Elevation 896'	9
		A.3-01-G	Fire Zone 1-G CRD Pump Room	5
		A.3-02-H	Fire Zone 2-H West Shutdown Cooling Area	10
		A.3-12-A	Fire Zone 12-A Lower 4KV Bus Area (13 & 15)	19
		A.3-14-A	Fire Zone 14-A Upper 4KV Bus Area (14 & 16)	18
		A.3-33	Fire Zone 33 EFT Building Third Floor	12
71111.06	Drawings	NF 36057	Equipment Location Reactor Building, Plans at EL 986'-6" and 1001'-2"	77
	Engineering Evaluations	07-035	Internal Flooding Analysis	0
71111.11Q	Miscellaneous	SEG MT-LOR-22B-01S	Cycle 22B Normal/Abnormal Scenario	1
71111.12	Procedures	4900-01	PM for Limitorque Motor Operated Valves	48
	Work Orders	700069537	MO 2067 PM	03/22/2022
		700070784	ST-2052 Outlet Check Disassemble and Inspect	03/21/2022
		700071743	MO 2061 PM	03/22/2022
71111.13	Corrective Action Documents	501000059851	Temporary Fire Penetration Seal Installed Incorrectly	01/18/2021
	Procedures	FP-OP-ROM-02	Shutdown Safety Risk Challenge Review	1
71111.15	Corrective Action Documents	501000036052	Oil Weep Found on P-202B Lower Glass	12/23/2019
		501000055698	CV-1729 ECR Testing Not Performed	09/03/2021
		501000060413	12 Standby Liquid Control Pump Insulation Resistance Step Change Since Last Surveillance	02/09/2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		501000060422	FIC 9116B (Control Room CRV/EFT System) Indicating Flow While Out of Service	02/09/2022
		501000060504	DW CAM Trouble Alarm Received	02/12/2022
		501000060565	CV-1728, Failed Open	02/15/2022
		501000061772	Sight Glass Leaking Oil	03/29/2022
	Drawings	NH-46162	P&ID Primary Containment Nitrogen Control System	90
71111.18	Corrective Action Documents Resulting from Inspection	501000060572	Question on Scaffold Clearance	02/16/2022
		501000060949	Long Standing Scaffold Installation	03/02/2022
	Engineering Evaluations	601000003596	Leak Seal for 3128	03/07/2022
	Procedures	4 AWI-08.16.01	Monticello Emergency Operating Procedure and Beyond-Design-Basis Guideline Maintenance Program	13
		A.7-SAMG-01	RPV and Primary Containment Injection (Modes 1-4)	10
		A.7-SAMG-02	RPV, Containment, and Radioactivity Release Control (Modes 1-4)	10
		A.7-SAMG-03	Refueling (Mode 5)	4
		C.5-GM-02.01	Plant Specific Technical Guidelines	25
		C.5-GM-02.02	Plant Specific technical Guidelines Appendix A	21
		FP-MA-FSC-01	Scaffolding	0
B.06.01-06	Operations Manual Section: Turbine	13		
71111.19	Work Orders	700058452-0030	12 Reactor Water Clean Up Filter Demin Backwash Supply	02/25/2022
		700067435-0040	Off Gas Hold Up Train B Condenser Level Controller PMT	02/23/2022
		700070042-0010	AC Motor Online (EMAX) Testing	03/03/2022
		700095943-0130	12 RHR HX RHRSW Outlet	01/20/2022
		700102233-0040	B Recirculation Pump Loop Drain	01/27/2022
		700103303-0020	CV-1728, PMT	02/16/2022
71111.20	Miscellaneous	602000020082	Shutdown Safety Risk Challenge Review	01/25/2022
	Procedures	2100	Master Systems Checklist	19
		2120	Plant Prestart Checklist	14
		2145	RHR System Venting	19
		2150	Plant Prestart Checklist	51

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		2167	Plant Startup	105
		2167-03	Startup Checklist Mode 4 to Mode 2	21
		9111-05	Decay Heat Removal Hardening	5
		B.01.04-05	Shutdown of One Reactor Recirculation Pump with Reactor at Power	59
	Work Orders	700102233-0010	XR-7-2, Replace Body to Bonnet Gasket	3
		700103063	ASME Section XI Repair /Replacement Plan	9
		70102233-0010	XR-7-2, Replace Body to Bonnet Gasket	3
		70102233-0020	XR-7-2 Body to Bonnet Sealing Surface Repair	0
		70102233-0035	XR 7-2, Check Bonnet Torque	0
	71111.22	Procedures	0255-02-III	Standby Liquid Control Pump and Valve Tests
0255-05-1A-1-2			B RHRSW Quarterly Pump and Valve Tests	91
0261			Fire Pump Exercise and Fuel Quantity Check	60
OSP-APR-0037-02			APRS-Low Pressure Core Cooling Pumps Discharge Pressure Interlock Instrument Test and Calibration-Division 2	1
OSP-BDB-0297			G-101 Number 11 120V Portable Diesel Generator Testing	4
OSP-BDB-0398			G-102 12 120V Portable Diesel Generator Testing	5
Work Orders		700069802-0010	Secondary Containment Instrument Calibration - Standby Gas Treatment B Train	03/03/2022
		700095943-0150	CV-1729 Perform Flow Test	01/22/2022
71151	Miscellaneous	QF0445	Unplanned Scrams per 7000 Critical Hours, Monthly Submission Forms (January 1, 2021 through December 31, 2021)	18
		QF0445	Unplanned Scrams with Complications (USwC), Monthly Submission Forms (January 1, 2021 through December 31, 2021)	18
		QF0445	Unplanned Power Changes per 7000 Critical Hours, Monthly Submission Forms (January 1, 2021 through December 31, 2021)	18
71152A	Corrective Action Documents	501000055651	CV-1729 Controller Issue	09/01/2021
	Procedures	3108	Pump/Valve/Instrument Record of Corrective Action	01/22/2022
71152S	Corrective Action Documents	501000058690	RM-17-453B Spiked High	11/29/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Corrective Action Documents Resulting from Inspection	501000059353	PMCR Not Implemented as Requested	12/28/2021
71153	Procedures	FP-OP-REP-01	Reactor Plant Event Notification Worksheet	4