



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200  
ATLANTA, GEORGIA 30303-1200

January 26, 2022

Mr. Tom Ray  
Site Vice President  
Duke Energy Carolinas, LLC  
12700 Hagers Ferry Road  
Huntersville, NC 28078

SUBJECT: MCGUIRE NUCLEAR STATION – INTEGRATED INSPECTION REPORT  
05000369/2021004 AND 05000370/2021004

Dear Mr. Ray:

On December 31, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at McGuire Nuclear Station. On January 18, 2022, 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.

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,

**/RA/**

Eric J. Stamm, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

Docket Nos. 05000369 and 05000370  
License Nos. NPF-9 and NPF-17

Enclosure:  
As stated

cc w/ encl: Distribution via LISTSERV®

SUBJECT: MCGUIRE NUCLEAR STATION – INTEGRATED INSPECTION REPORT  
05000369/2021004 AND 05000370/2021004

DISTRIBUTION:

M. Kowal, RII

S. Price, RII

PUBLIC

RidsNrrPmMcGuireResource

RidsNrrDro Resource

ADAMS ACCESSION NUMBER: ML22026A344

<input checked="" type="checkbox"/> SUNSI Review		<input checked="" type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive		<input checked="" type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available		
OFFICE	RII/DRP	RII/DRP	RII/DFFI	RII/DRP	RII/DRP	
NAME	A. Hutto	C. Scott	N. Peterka	D. Jackson	E. Stamm	
DATE	1/24/2022	1/24/2022	1/21/2022	1/24/2022	1/26/2022	

OFFICIAL RECORD COPY

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

Docket Numbers: 05000369 and 05000370

License Numbers: NPF-9 and NPF-17

Report Numbers: 05000369/2021004 and 05000370/2021004

Enterprise Identifier: I-2021-004-0011

Licensee: Duke Energy Carolinas, LLC

Facility: McGuire Nuclear Station

Location: Huntersville, North Carolina

Inspection Dates: October 1, 2021 to December 31, 2021

Inspectors: A. Hutto, Senior Resident Inspector  
C. Scott, Resident Inspector  
N. Peterka, Fuel Facility Inspector  
M. Meeks, Senior Operations Engineer

Approved By: Eric J. Stamm, Chief  
Reactor Projects Branch 1  
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 McGuire Nuclear Station, 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

Unit 1 operated at or near 100 percent rated thermal power (RTP) for the entire inspection period.

Unit 2 began the inspection period shut down for a scheduled refueling outage. The unit was brought on-line on October 11, 2021, and returned to 100 percent RTP on October 15, 2021, and remained at or near 100 percent RTP 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," 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

#### External Flooding Sample (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated that flood protection barriers, mitigation plans, procedures, and equipment are consistent with the licensee's design requirements and risk analysis assumptions for coping with external flooding on October 18, 2021.

### 71111.04 - Equipment Alignment

#### Partial Walkdown Sample (IP Section 03.01) (3 Samples)

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

- (1) 1A diesel generator, on October 12, 2021
- (2) 1A motor driven auxiliary feedwater system, on October 28, 2021
- (3) Unit 1/2 channel "D" vital AC and DC instrument power, on November 4, 2021

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

- (1) The inspectors evaluated system configurations during a complete walkdown of the Unit 1 service water system, on December 14, 2021.

### 71111.05 - Fire Protection

#### Fire Area Walkdown and Inspection Sample (IP Section 03.01) (4 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) Shutdown safety facility (fire area SSF) on December 13, 2021
- (2) Emergency supplemental power supply (fire area YRD) on December 13, 2021
- (3) Unit 1 cable spread room on December 14, 2021
- (4) Units 1 and 2 main control room on December 20, 2021

### 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) Units 1 and 2 diesel generator rooms

### 71111.07A - Heat Sink Performance

#### Annual Review (IP Section 03.01) (1 Sample)

The inspectors evaluated readiness and performance of:

- (1) 2B component cooling water heat exchanger

### 71111.11A - Licensed Operator Requalification Program and Licensed Operator Performance

#### Requalification Examination Results (IP Section 03.03) (1 Sample)

- (1) Annual Review of Licensee Requalification Examination Results: On November 8, 2021, the facility licensee completed the annual requalification operating examinations required to be administered to all licensed operators in accordance with Title 10 of the Code of Federal Regulations 55.59(a)(2), "Requalification Requirements," of the NRC's "Operator's Licenses." During the week of December 13, 2021, the inspectors performed an in-office review of the overall pass/fail results of the individual operating examinations and the crew simulator operating examinations in accordance with Inspection Procedure (IP) 71111.11, "Licensed Operator Requalification Program." These results were compared to the thresholds established in Section 03.03, "Requalification Examination Results," of IP 71111.11.

## 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 Unit 2 reactor startup following refueling outage M2R27, on October 10, 2021.

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

- (1) The inspectors observed and evaluated Cold Crew Exam - 3, involving a failed pressurizer power operated relief valve, a loss of condenser vacuum, a turbine trip, a failed reactor coolant pump, and a small break loss of coolant accident, on October 20, 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) Nuclear condition report (NCR) 2397076, inadequate quantity of hydrogen igniters to complete scope of work

## 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) Equipment protection plan for Unit 2 spent fuel pool cooling time to 200 degrees Fahrenheit, on October 14, 2021
- (2) Equipment protection plan for "B" control room air handling unit bearing failure, on October 26, 2021

## 71111.15 - Operability Determinations and Functionality Assessments

### Operability Determination or Functionality Assessment (IP Section 03.01) (5 Samples)

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

- (1) NCR 2401165, 2D reactor coolant flow, 2NCFT5090, issues during M2R27, on October 19, 2021
- (2) NCR 2404495, "B" control room air handling unit (0VCAH0002) start pushbutton stuck out, on November 9, 2021

- (3) NCR 2405373, gas present during emergency core cooling system venting of 2ND-121, on November 16, 2021
- (4) NCR 2405536, standby shutdown facility (SSF) fuel oil tank showed presence of water, on November 30, 2021
- (5) NCR 2407993, Unit 2 reactor coolant system core exit thermocouple at location J02 reading less than Tcold, on December 15, 2021

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (4 Samples)

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

- (1) TT/2/A/9700/414, "Diesel Load Sequencer 2B Cutler-Hammer Relay Replacement Functional Verification," following sequencer circuit modifications, on October 1, 2021
- (2) PT/0/A/4150/028, "Initial Criticality and Zero Power Physics Test," following core reload, on October 13, 2021
- (3) OP/0/A/6450/011, "Control Area Ventilation/Chilled Water System," following replacement of "B" control room air handler unit bearing, on October 27, 2021
- (4) PT/0/A/4200/002, "SSF Operability Test," following SSF diesel preventive maintenance (PM), on November 26, 2021

71111.20 - Refueling and Other Outage Activities

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

- (1) The inspectors evaluated Unit 2 refueling outage M2R27 activities from October 1, 2021, to October 15, 2021.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Ice Condenser Testing (IP Section 03.01) (1 Sample)

- (1) PT/0/A/4200/018, "Ice Bed Analysis," on October 7, 2021

**OTHER ACTIVITIES – BASELINE**

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

BI01: Reactor Coolant System (RCS) Specific Activity Sample (IP Section 02.10) (2 Samples)

- (1) Unit 1 (October 1, 2020 through September 30, 2021)
- (2) Unit 2 (October 1, 2020 through September 30, 2021)



BI02: RCS Leak Rate Sample (IP Section 02.11) (2 Samples)

- (1) Unit 1 (October 1, 2020 through September 30, 2021)
- (2) Unit 2 (October 1, 2020 through September 30, 2021)

71152 - Problem Identification and Resolution (PI&R)

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

- (1) The inspectors reviewed the licensee's corrective action program for potential adverse trends in equipment reliability that might be indicative of a more significant safety issue.

Annual Follow-up of Selected Issues (IP Section 02.03) (1 Sample)

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

- (1) NCR 2408566, 1VNHGH021/1-MCA-VN-H021: Investigate/repair snubber

**INSPECTION RESULTS**

No findings were identified.

**EXIT MEETINGS AND DEBRIEFS**

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

- On January 18, 2022, the inspectors presented the integrated inspection results to Tom Ray and other members of the licensee staff.

**DOCUMENTS REVIEWED**

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Procedures	AP/0/A/5500/044	Plant Flooding	
71111.04	Drawings	MCFD-1592-01.01	Flow Diagram of Auxiliary Feedwater System (CA)	
	Procedures	OP/1/A/6250/002	Auxiliary Feedwater System	
		OP/1/A/6400/006 A	Nuclear Service Water System Valve Checklists	
	Procedures	OP/2/A/6350/002 A	Diesel Generator	
71111.05	Calculations	MCC-1535.00-00-00-0106	MNS Fire PRA Summary Report Calculation	
	Fire Plans	CSD-MNS-PFP-AB-0767-001	Auxiliary Building Elev. 767	
		CSD-MNS-PFP-SRV-0739-001	Service Building Elevation 739 Pre-fire Plan	
	Procedures	AD-EG-ALL-1520	Transient Combustible Control	
71111.06	Procedures	AP/0/A/5500/044	Plant Flooding	
71111.07A	NDE Reports	MG-NDE-ET-002	2KCHX006 Eddy Current Inspection Results	
	Work Orders	WO 20440813	PM-2KCHX0006-(2B) Clean/Inspect/Eddy Current Test	
71111.11Q	Procedures	AD-OP-ALL-1000	Conduct of Operations	
71111.12	Procedures	AD-EG-ALL-1204	Single Point Vulnerability Identification, Elimination and Mitigation	
		AD-EG-ALL-1206	Equipment Reliability Classification	
		AD-EG-ALL-1209	System, Component, and Program Health Reports and Notebooks	
		AD-EG-ALL-1210	Maintenance Rule Program	
		AD-EG-ALL-1211	System Performance Monitoring and Trending	
71111.13	Procedures	AD-OP-ALL-0201	Protected Equipment	
71111.15	Procedures	AD-EG-ALL-1211	System Performance Monitoring and Trending	
		AD-OP-ALL-0102	Operability Decision Making	
		AD-OP-ALL-0105	Operability Determinations and Functionality Assessment	
71111.19	Procedures	AD-EG-ALL-1155	Post Modification Testing	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		OP/0/A/6450/011	Control Area Ventilation / Chilled Water System	
71111.22	Procedures	AD-WC-ALL-0250	Work Implementation and Completion	
71151	Procedures	AD-LS-ALL-0004	NRC Performance Indicators and Monthly Operating Report	
		AD-PI-ALL-0100	Corrective Action Program	
71152	Procedures	AD-LS-ALL-0006	Notification/Reportability Evaluation	
		AD-PI-ALL-0100	Corrective Action Program	
		AD-PI-ALL-0105	Effectiveness Reviews	