



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

January 30, 2023

Edward Pigott
Site Vice President
Duke Energy Carolinas, LLC
McGuire Nuclear Station
12700 Hagers Ferry Road
Huntersville, NC 28078

SUBJECT: MCGUIRE NUCLEAR STATION – INTEGRATED INSPECTION REPORT
05000369/2022004 AND 05000370/2022004

Dear Edward Pigott:

On December 31, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at McGuire Nuclear Station. On January 25, 2023, the NRC inspectors discussed the results of this inspection with Brent Bare 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 that reads "Eric Stamm".

Signed by Stamm, Eric
on 01/30/23

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
05000369/2022004 AND 05000370/2022004 Dated: January 30, 2023

DISTRIBUTION:

R2EICS

RIDSNNRRPMMCGUIRE Resource

RIDSNNRRDRO Resource

PUBLIC

ADAMS ACCESSION NUMBER:ML23027A152

<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/DRP		
NAME	A. Hutto	D. Jackson	E. Stamm		
DATE	1/26/2023	01/30/2023	01/30/20132		

OFFICIAL RECORD COPY

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

Docket Numbers: 05000369 and 05000370

License Numbers: NPF-9 and NPF-17

Report Numbers: 05000369/2022004 and 05000370/2022004

Enterprise Identifier: I-2022-004-0017

Licensee: Duke Energy Carolinas, LLC

Facility: McGuire Nuclear Station

Location: Huntersville, North Carolina

Inspection Dates: October 1, 2022, to December 31, 2022

Inspectors: A. Hutto, Senior Resident Inspector
F. Young, Resident Inspector
P. Gresh, Emergency Preparedness Inspector
S. Sanchez, Senior Emergency Preparedness Inspector
C. Scott, Senior Project Engineer
J. Viera, Senior Operations Engineer
J. Walker, Emergency Response Inspector

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 operated at or near 100 percent RTP for the entire 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

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

- (1) The inspectors evaluated that flood protection barriers, mitigation plans, procedures, and equipment were consistent with the licensee's design requirements and risk analysis assumptions for coping with external flooding on October 5, 2022.

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) Unit 1 "B" train of nuclear service water system on October 12, 2022
- (2) Standby shutdown facility diesel generator on November 10, 2022
- (3) Unit 1 "A" emergency diesel generator (EDG) on December 2, 2022

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

- (1) The inspectors evaluated system configurations during a complete walkdown of the Unit 2 containment spray system on November 30, 2022.

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) Unit 2 auxiliary feedwater (CA) room on October 14, 2022
- (2) Unit 2, "A" and "B" EDG rooms on November 16, 2022
- (3) Auxiliary building 767' elevation on November 27, 2022
- (4) Auxiliary building shared area 733' elevation on December 14, 2022

71111.11A - Licensed Operator Requalification Program and Licensed Operator Performance

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

- (1) The 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 November 14, 2022, the inspector 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 IP 71111.11, "Licensed Operator Requalification Program." These results were compared to the thresholds established in Section 3.03, "Requalification Examination Results," of IP 71111.11.

The inspectors reviewed and evaluated the licensed operator examination failure rates for the requalification annual operating exam completed on June 22, 2022.

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 operator crew performance in the main control room during Unit 2 PT/2/A/4150/17A, "Pressurizer Heater Capacity Measurement," on November 17, 2022, and during Unit 1 PT/0/A/4150/041, "[Rod Cluster Control Assembly] Bank Repositioning," on November 21, 2022.

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

- (1) The inspectors observed and evaluated operator crew performance during the emergency preparedness simulator scenario involving a loss of offsite power followed by a complete loss of power, on October 13, 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) Nuclear condition report (NCR) 2446466, 1SV-1AB [steam generator power-operated relief valve] needs action for return to operability (failed to stroke within the acceptable range), on November 2, 2022

Quality Control (IP Section 03.02) (1 Sample)

The inspectors evaluated the effectiveness of maintenance and quality control activities to ensure the following SSC remains capable of performing its intended function:

- (1) NCR 2423987, 1NM-0022AC [nuclear sampling containment isolation valve] new actuator will not cycle electrically (Event Notification #55960), failure on April 16, 2022

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (3 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 "B" containment spray system valve closing force testing, on October 4, 2022
- (2) Equipment protection plan for vital battery EVCA performance testing and equalize charging, on October 26, 2022
- (3) Equipment protection plan for main control room ventilation train "B" filter maintenance, on November 7, 2022

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) NCR 2443908, 1NM-191B needs recurring task to check/add oil to support quarterly valve stroke timing test
- (2) NCR 2446444, Unit 2 upper containment outer airlock door upper piston sticking
- (3) NCR 2447352, 1A diesel generator governor oil leaks
- (4) NCR 2447806, channel calibration performed on radiation monitor OEMF50L did not meet acceptance criteria

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) Engineering change (EC) 240488, Interferences associated with the 2A nuclear service water pump replacement
- (2) EC 415976, Thermal overpressure protection at 1ND-1B and 1ND-2AC (residual heat removal system isolation valves)

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) PT/2/A/4208/003 B, "Containment Spray (NS) Train B Valve Stroke Timing - Shutdown," following functional testing on valve 2NS-3B, on October 4, 2022
- (2) PT/1/A/4350/002 B, "Diesel Generator 1B Operability Test," following fluid level checks on the 1B EDG, on October 6, 2022
- (3) PT/2/A/4252/003 A, "Auxiliary Feedwater (CA) Train A Valve Stroke Timing - Quarterly Turbine Driven Pump Flowpath," following functional testing on 2CA-54AC, on October 17, 2022
- (4) PT/2/A/4350/004 A, "2A D/G Periodic and Load Sequencer Test," following 2A EDG governor linkage adjustment, on October 18, 2022
- (5) PT/2/A/4350/002 B, "Diesel Generator 2B Operability Test," following fluid level checks on the 2B EDG, on November 1, 2022
- (6) Work Order 02179103, Task 12, "2RN RL 2ATC4A GA Relay Functional," to test relay functionality and downstream valve response following relay replacement, on November 8, 2022

71111.22 - Surveillance Testing

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

Inservice Testing (IP Section 03.01) (1 Sample)

- (1) PT/1/A/4252/001, "#1 TD CA Pump Performance Test," on October 18, 2022

71114.02 - Alert and Notification System Testing

Inspection Review (IP Section 02.01-02.04) (1 Sample)

- (1) The inspectors evaluated the maintenance and testing of the alert and notification system during the week of October 17, 2022.

71114.03 - Emergency Response Organization Staffing and Augmentation System

Inspection Review (IP Section 02.01-02.02) (1 Sample)

- (1) The inspectors evaluated the readiness of the emergency response organization during the week of October 17, 2022.

71114.04 - Emergency Action Level and Emergency Plan Changes

Inspection Review (IP Section 02.01-02.03) (1 Sample)

- (1) The inspectors evaluated submitted emergency action level, emergency plan, and emergency plan implementing procedure changes during the week of October 17, 2022. This evaluation does not constitute NRC approval.

71114.05 - Maintenance of Emergency Preparedness

Inspection Review (IP Section 02.01 - 02.11) (1 Sample)

- (1) The inspectors evaluated the maintenance of the emergency preparedness program during the week of October 17, 2022.

71114.06 - Drill Evaluation

Drill/Training Evolution Observation (IP Section 03.02) (1 Sample)

The inspectors evaluated:

- (1) McGuire emergency preparedness drill 22-04 on October 13, 2022. The drill involved the loss of offsite power with one diesel generator out of service for maintenance, followed by the loss of the one operating diesel generator.

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, 2021, through September 30, 2022)
- (2) Unit 2 (October 1, 2021, through September 30, 2022)

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

- (1) Unit 1 (October 1, 2021, through September 30, 2022)
- (2) Unit 2 (October 1, 2021, through September 30, 2022)

EP01: Drill/Exercise Performance (DEP) Sample (IP Section 02.12) (1 Sample)

- (1) July 1, 2021, through June 30, 2022

EP02: Emergency Response Organization (ERO) Drill Participation (IP Section 02.13)
(1 Sample)

- (1) July 1, 2021, through June 30, 2022

EP03: Alert And Notification System (ANS) Reliability Sample (IP Section 02.14) (1 Sample)

- (1) July 1, 2021, through June 30, 2022

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) NCR 2447052, Nuclear Oversight audit: 95 stranded McGuire NCRs were not properly processed to closure in the nuclear asset suite
- (2) NCR 2448134, ORN0009B was diagnostically tested at 9.3 years instead of 6 years per GL 96-05 Motor Operated Valves Program

71152S - Semiannual Trend Problem Identification and Resolution

Semiannual Trend Review (Section 03.02) (1 Sample)

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

INSPECTION RESULTS

No findings were identified.

EXIT MEETINGS AND DEBRIEFS

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

- On October 21, 2022, the inspectors presented the emergency preparedness program inspection results to Edward Pigott and other members of the licensee staff.
- On January 25, 2023, the inspectors presented the integrated inspection results to Brent Bare, Plant Manager, 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-1574-01.01	Flow Diagram of Nuclear Service Water System (Unit 1)	
		MCFD-2563-01.00	Flow Diagram of Containment Spray System (Unit 2)	
	Procedures	OP/1/A/6350/002	Diesel Generator	
		OP/2/A/6350/002 A	Diesel Generator	
71111.05	Drawings	MFSD-003	Unit 2 Auxiliary Feedwater Pump Room	
		MFSD-007/008	Unit 2 Diesel Generator Rooms	
		MFSD-014	Auxiliary Building 733' Elevation	
		MFSD-025	Auxiliary Building 767' Elevation	
	Procedures	AD-EG-ALL-1520	Transient Combustible Control	
71111.11Q	Procedures	AD-OP-ALL-1000	Conduct of Operations	
71111.12	Corrective Action Documents	NCR 2423987	1NM-0022AC new actuator will not cycle electronically	
	Miscellaneous	Part 21 Report Event #55960	Potential Defect in Quick Disconnect Connector Cable Assemblies	
	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	
		AD-OP-ALL-0204	Plant Status Control	
		AD-WC-ALL-0204	On-line Risk Management Process	
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	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.18	Calculations	MCC-1206.16-18-2139	Support Restraint Calculation for Math Model RN-542-1	
		MCC-1206.16-18-3139	Alternate Analysis Isometric Qualification for 2-MCA-L-RN-542-1	
71111.19	Procedures	AD-EG-ALL-1155	Post Modification Testing	
71111.22	Procedures	AD-EG-ALL-1720	In-service Testing (IST) Program Implementation	
		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	
71152A	Procedures	AD-LS-ALL-0006	Notification/Reportability Evaluation	
		AD-PI-ALL-0105	Effectiveness Reviews	
71152S	Procedures	AD-PI-ALL-0100	Corrective Action Program	