



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

January 29, 2020

Mr. Tom Ray
Site Vice President
McGuire Nuclear Station
Duke Energy Carolinas, LLC
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

SUBJECT: MCGUIRE NUCLEAR STATION – INTEGRATED INSPECTION REPORT
05000369/2019004 AND 05000370/2019004

Dear Mr. Ray:

On December 31, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at McGuire Nuclear Station. On January 16, 2020, 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/

Frank J. Ehrhardt, 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
05000369/2019004 AND 05000370/2019004 Dated January 29, 2020

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OFFICE	RII: DRP	RII: DRP	RII: DRP	RII: DRS		
NAME	A. Hutto	J. Worosilo	F. Ehrhardt	M. Schwieg		
DATE	1/28/2020	1/28/2020	1/28/2020	1/27/2020		

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers: 05000369 and 05000370

License Numbers: NPF-9 and NPF-17

Report Numbers: 05000369/2019004 and 05000370/2019004

Enterprise Identifier: I-2019-004-0021

Licensee: Duke Energy Carolinas, LLC

Facility: McGuire Nuclear Station

Location: Huntersville, North Carolina

Inspection Dates: October 01, 2019 to December 31, 2019

Inspectors: G. Hutto, Senior Resident Inspector
B. Griman, Acting Resident Inspector
M. Meeks, Senior Operations Engineer
M. Schwieg, Reactor Inspector

Approved By: Frank J. Ehrhardt, 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 plant status activities described in IMC 2515, Appendix D, "Plant Status," and conducted routine reviews using IP 71152, "Problem Identification and Resolution." 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 03.04) (1 Sample)

- (1) The inspectors evaluated readiness to cope with external flooding for the following areas:
 - Unit 1 and 2 yard storm drains
 - Auxiliary building roof flood mitigation features

71111.04Q - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (2 Samples)

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

- (1) Diesel generator 1A on October 8, 2019
- (2) "B" train of control room chilled water on November 5, 2019

71111.04S - Equipment Alignment

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

- (1) The inspectors evaluated system configurations during a complete walkdown of the 1A train of the nuclear service water (RN) system on December 19, 2019.

71111.05A - Fire Protection (Annual)

Annual Inspection (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated fire brigade performance on December 6, 2019.

71111.05Q - Fire Protection

Quarterly Inspection (IP Section 03.01) (3 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) Auxiliary building elevation 716' safety injection system (NI) pump rooms on October 9, 2019
- (2) Service building elevation 739' instrument air compressor area on December 15, 2019
- (3) Control room area on December 31, 2019

71111.06 - Flood Protection Measures

Inspection Activities - Internal Flooding (IP Section 02.02a.) (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the:

- (1) Unit 1 and 2 component cooling water pump areas and the auxiliary building sump, on December 11, 2019

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 15, 2019, 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 December 2, 2019, 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 3.02, "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 the large volume 1A accumulator feed and bleed on October 5, 2019, and entry into AP-36, "Control Room High Temperature," on November 4, 2019.

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

- (1) The inspectors observed and evaluated Active Simulator Exam (ASE-32), which involved a rod control malfunction, a main steam line break, and the reactor failing to trip on October 30, 2019.

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness Inspection (IP Section 02.01) (2 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

- (1) Nuclear Condition Report (NCR) 2291880, "A" control room chilled water system (YC) chiller tripped
- (2) NCR 2292639, Investigate/repair oil leak at standby shutdown facility (SSF) diesel oil filter 0ADFL0010 housing

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

- (1) Unit 1 equipment protection plan for the B train control room chilled water pump out of service (OOS) on October 1, 2019
- (2) Elevated risk during Yellow Grid condition on October 3, 2019
- (3) Unit 2 equipment protection plan for the 2A diesel generator OOS on October 23, 2019
- (4) Unit 1 equipment protection plan for the 1B safety injection pump OOS on December 11, 2019

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 02.02) (4 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) NCR 2295184, Abnormal radio-isotopic activity in Unit 2 component cooling system, on October 9, 2019
- (2) NCR 2297083, MAGNASTOR ultrasonic examination during fabrication prior to normalizing heat treatment, on October 15, 2019
- (3) NCR 2298259, Cutler Hammer relay environmental qualification qualified life not established in the equipment data base, on October 23, 2019
- (4) NCR 2305715, Harris operating experience testing SA-1 differential relays applies to McGuire Nuclear Station, on December 12, 2019

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Engineering Change (EC 95873), Replace All Three 125 VDC Standby Shutdown Facility Battery Chargers, on December 17, 2019

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) PT/1/A/4350/002 B, Diesel Generator 1B Operability Test, after oil sample on October 8, 2019
- (2) PT/2/A/4403/003 A, RN Train A Valve Stroke Time Testing - Shutdown, after valve preventive maintenance (PMs) on 2RN-16A, on October 22, 2019
- (3) PT/2/A/4350/002 A, Diesel Generator 2A Operability Test, after diesel down-day maintenance on October 24, 2019
- (4) PT/2/A/4200/020 A, Airlock Operability Test, after Unit 2 upper airlock seal inspection, on November 14, 2019
- (5) PT/1/A/4206/001 B, 1B Safety Injection Pump Operability Test, after pump coupling PMs, on December 12, 2019

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (2 Samples)

- (1) PT/2/A/4350/002, Diesel Generator 2B Operability Test, on November 7, 2019
- (2) PT/2/A/4350/006, LD Train A Valve Stroke Timing - Quarterly, on December 18, 2019

Inservice Testing (IP Section 03.01) (1 Sample)

- (1) 2B NI pump performance test on October 7, 2019

71114.06 - Drill Evaluation

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

The inspectors evaluated:

- (1) McGuire Drill 19-07 which involved a loss of off-site power and subsequent loss of all AC power, on November 13, 2019

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, 2018–September 30, 2019)
- (2) Unit 2 (October 1, 2018–September 30, 2019)

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

- (1) Unit 1 (October 1, 2018–September 30, 2019)
- (2) Unit 2 (October 1, 2018–September 30, 2019)

71152 - Problem Identification and Resolution

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

- (1) The inspectors reviewed the licensee's corrective action program for potential adverse trends in the area of equipment reliability 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 January 16, 2020, the inspectors presented the integrated inspection results to Tom Ray and other members of the licensee staff.

THIRD PARTY REVIEWS

Inspectors reviewed the World Association of Nuclear Operators reports that were issued during the inspection period.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Calculations	MCC-1100.00-00-0002	McGuire Probable Maximum Precipitation Flood Analysis	
	Drawings	MC-1022-01.00	Grading Plan, Plant Area	
	Miscellaneous	MCS-1465.00-00-0012	Design Basis Specification for Flooding from External Sources	
71111.04Q	Drawings	MCFD-1618-01.00	Flow Diagram of Control Room Chilled Water System	Rev. 9
	Procedures	OP/1/A/6350/002	Diesel Generator	
71111.04S	Corrective Action Documents	NCR 2279804	1RNP5220 (1A DG HX RN Flow) Indication is Erratic	
		NCR 2292418	Minor RN Leak on the Outlet of the A YC Chiller	
	Drawings	MCFD-1574-01.00	Flow Diagram of Nuclear Service Water System	Rev. 33
		MCFD-1574-01.01	Flow Diagram of Nuclear Service Water System	Rev. 37
	Miscellaneous	MCS-1574.RN-00-0001	Design Basis Document Nuclear Service Water System	Rev. 26
	Work Orders	WO 20369650	1-RN-ST-0001 Leakage Identified on the strainer	
71111.05A	Miscellaneous	MCS-1465.00-00-0008	Design Basis Specification for Fire Protection	
	Procedures	AD-OP-ALL-0207	Fire Brigade Administrative Procedures	
71111.05Q	Drawings	CSD-MNS-PFP-SRV-0739-001	Units 1 and 2 Service Building Elevation 739	Rev. 0
		MFSD-004	AUX 716	Rev. 0
		MFSD-024	Control Room	Rev. 1
	Procedures	AD-EG-All-1520	Transient Combustible Control	
71111.06	Calculations	MCC-1206.47-69-100	Auxiliary Building Flooding Analysis	
	Miscellaneous	MCS-1154.00-0004	Design Basis Specification for Auxiliary Building Structures	
	Procedures	AP/0/A/5500/044	Plant Flooding	
71111.11Q	Drawings	MCFC-1362-02.00	Flow Diagram of Safety Injection System (NI)	Rev. 8

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		MCFD-1372-01.01	Flow Diagram of Nuclear Sampling System (NM)	Rev. 8
		MCFD-1562-02.01	Flow Diagram of Safety Injection System (NI)	Rev. 7
		MCFD-1562.03.01	Flow Diagram of Safety Injection System (NI)	Rev. 15
		MFCDD-1562-03.00	Flow Diagram of Safety Injection System (NI)	Rev. 18
	Procedures	OP/1/A/6200/009	Accumulator Operation	Rev. 116
71111.12	Procedures	AD-EG-ALL-1209	System, Component and Program Health Reports and Programs	
		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-0240	On-line Risk Management Process	
71111.15	Procedures	AD-OP-ALL-0102	Operability Decision Making	
		AD-OP-ALL-0105	Operability Determinations and Functionality Assessment	
71111.18	Engineering Changes	EC 95873	Replace All Three 125 VDC SSF Battery Chargers Mod	
	Procedures	AD-EG-ALL-1132	Preparation and Control of Design Change Engineering Changes	
		AD-EG-ALL-1137	Engineering Change Product Selection	
71111.19	Procedures	AD-WC-ALL-0250	Work Implementation and Completion	
		PT/0/A/4350/030	Nordberg Diesel Engine 6 yr Periodic Maintenance	Rev. 27
		PT/1/A/4206/001 B	1B Safety Injection Pump Operability Test	
		PT/1/A/4350/002 B	Diesel Generator 1B Operability Test	Rev. 113
		PT/2/A/4200/020 A	Airlock Operability Test	
		PT/2/A/4350/002 A	Diesel Generator 2A Operability Test	
		PT/2/A/4403/003	RN Train A Valve Stroke Time Testing - Shutdown	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		A		
71111.22	Procedures	AD-EG-ALL-1202	Preventive Maintenance and Surveillance Testing Administration	
		AD-EG-ALL-1720	In-service Testing (IST) Program Implementation	
		PT/2/A/4206/001 B	2B NI Pump Performance Test	Rev. 51
	Work Orders	20341401		10/07/2019
71114.06	Procedures	AD-EP-ALL-0101	Emergency Classification	
		AD-EP-ALL-0105	Activation and Operation of the Technical Support Center	
		AD-EP-ALL-0109	Offsite Protective Action Recommendations	
		AD-EP-ALL-0111	Control Room Activation of the ERO	
71151	Procedures	AD-LS-ALL-0004	NRC Performance Indicators and Monthly Operating Report	
71152	Corrective Action Documents	NCR 2300082	Rotorck Clutch Ring Part 21 Engineering Evaluation	
	Procedures	AD-PI-ALL-0100	Corrective Action Program	