



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

April 29, 2021

Mr. Tom Simril  
Site Vice-President  
Duke Energy Carolinas LLC  
4800 Concord Rd.  
York, SC 29745

SUBJECT: CATAWBA NUCLEAR STATION – INTEGRATED INSPECTION REPORT  
05000413/2021001 AND 05000414/2021001

Dear Mr. Simril:

On March 31, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Catawba Nuclear Station. On April 27, 2021, 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. 05000413 and 05000414  
License Nos. NPF-35 and NPF-52

Enclosure:  
As stated

cc w/ encl: Distribution via LISTSERV®

SUBJECT: CATAWBA NUCLEAR STATION – INTEGRATED INSPECTION REPORT  
05000413/2021001 AND 05000414/2021001 Dated April 29, 2021

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DATE	4/29/2021	4/29/2021	4/29/2021	4/29/2021	

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

Docket Numbers: 05000413 and 05000414

License Numbers: NPF-35 and NPF-52

Report Numbers: 05000413/2021001 and 05000414/2021001

Enterprise Identifier: I-2021-001-0069

Licensee: Duke Energy Carolinas LLC

Facility: Catawba Nuclear Station

Location: York, South Carolina

Inspection Dates: January 01, 2021 to March 31, 2021

Inspectors: J. Austin, Senior Resident Inspector  
C. Scott, Resident Inspector  
B. Collins, Senior Reactor Inspector  
S. Sandal, Senior Reactor Analyst

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 Catawba 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

Type	Issue Number	Title	Report Section	Status
LER	05000413/2020-002-00	LER 2020-002-00 for Catawba Nuclear Station, Unit 1 re Unacceptable Indication Identified During Reactor Pressure Vessel Head Nozzle Penetration Inspection	71153	Closed
LER	05000413/2020-002-01	LER 2020-002-01 for Catawba Nuclear Station, Unit 1, Unacceptable Indication Identified During Reactor Pressure Vessel Head Nozzle Penetration Inspection	71153	Closed

## 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 until the beginning of refueling outage 2CR24, on March 27, 2021.

## 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 Disease 2019 (COVID-19), resident 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; conducted plant status activities as described in IMC 2515, Appendix D, "Plant Status"; 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 portions 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

#### 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 including strong winds and heavy rain projected on March 18, 2021.

### 71111.04 - Equipment Alignment

#### Partial Walkdown Sample (IP Section 03.01) (5 Samples)

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

- (1) Standby shutdown facility (SSF) while equalize battery charge in progress on February 22, 2021

- (2) Outside steam/feed doghouse on February 26, 2021
- (3) 1A emergency diesel generator (EDG) on March 5, 2021
- (4) 1B EDG on March 5, 2021
- (5) Unit 1 "A" switchgear room on March 5, 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) Unit 1B EDG on March 27, 2021
- (2) Unit 1A EDG on March 27, 2021
- (3) Unit 2A EDG on March 27, 2021
- (4) Unit 2B EDG on March 27, 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) Condition Report (CR) 2368536, leakage into 2A EDG sequencer hallway from an underground service water conduit on February 1, 2021

#### 71111.11Q - Licensed Operator Regualification Program and Licensed Operator Performance

##### Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (2 Samples)

- (1) The inspectors observed licensee performance in the control room:
  - During spent fuel pool valve lineup verification on January 20, 2021
  - While nuclear instrumentation calibration was in progress on February 22, 2021
  - While Unit 2 turbine driven auxiliary feedwater (TDAFW) pump testing was in progress on February 26, 2021
- (2) The inspectors observed licensed operator performance in the control room during:
  - Rod control testing on March 5, 2021
  - Unit 2 cooldown on March 27, 2021

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

- (1) The inspectors observed and evaluated a simulator examination with a 1A steam generator (SG) tube leak, an injured person, a control rod malfunction, a reactor trip, and a steam dump malfunction on January 28, 2021.

## 71111.12 - Maintenance Effectiveness

### Maintenance Effectiveness (IP Section 03.01) (3 Samples)

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

- (1) CR 2370808, Standby shutdown facility (SSF) AC supply breaker tripped on February 20, 2021
- (2) CR 2370808, 1SLXG 4B found tripped open on March 12, 2021
- (3) CR 2373914, "E" Instrument air compressor tripped on March 18, 2021

### 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) CR 2369526, Quality control noted discrepancy with engineering on February 11, 2021

## 71111.13 - Maintenance Risk Assessments and Emergent Work Control

### Risk Assessment and Management Sample (IP Section 03.01) (1 Sample)

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) 2ETB power supply swap to Unit 1 on March 23, 2021

## 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) CR 2363831, SSF voltage fluctuations on January 6, 2021
- (2) CR 2363827, Refueling water storage tank (FWST) increased makeup frequency on January 6, 2021
- (3) CR 2367070, 1B auxiliary feedwater (AFW) pump did not meet acceptance criteria on January 26, 2021
- (4) CR 2367764, jacket cooling water standpipe lowering on the 1A EDG on February 1, 2021
- (5) CR 2368879, Technical Support Center (TSC) air handling unit not cooling on February 8, 2021
- (6) CR 2369575, Perform evaluation to determine why "A" YC chiller failed to cool on March 12, 2021

#### 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 419126, Replace conduit enclosure box for service water conduit manhole (CMH-8B)

#### 71111.19 - Post-Maintenance Testing

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

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

- (1) Work Order (WO) 20442043, Determine cause of breaker 24 tripping open on February 9, 2021
- (2) WO 20194443, 1B transformer fan tripped off February 9, 2021
- (3) WO 20441326-01, PT/2/A/4200/13C IWV 2RN-11A following maintenance on March 10, 2021
- (4) WO 20380727, Replace actuator clutch ring on 2RN11A on March 10, 2021
- (5) WO 20430507, PT/1/A/4350/02A- D/G 1A Fast Start following planned maintenance on March 16, 2021
- (6) WO 20438606, ESPS louver stuck open on March 23, 2021

#### 71111.20 - Refueling and Other Outage Activities

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

- (1) (Partial)  
The inspectors evaluated Unit 2 CR24 outage activities beginning on March 27, 2021.

#### 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

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

- (1) PT/1/A/4350/02A, EDG slow start test start on January 12, 2021
- (2) PT/0/A/4400//22A, 1A service water pump test on February 12, 2021
- (3) PT/2/A/4200/005 A, safety injection pump 2A performance test on March 11, 2021

##### Inservice Testing (IP Section 03.01) (1 Sample)

- (1) PT/2/A/4250/03A, 2A auxiliary feedwater pump IWP test on February 11, 2021



#### 71114.06 - Drill Evaluation

##### Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (1 Sample)

- (1) The inspectors observed an emergency preparedness drill on January 20, 2021. The scenario involved a loss of feedwater, a reactor trip, an automatic trip without scram, and a loss of coolant accident concluding in a site area emergency.

#### **OTHER ACTIVITIES – BASELINE**

##### 71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

##### IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 03.03) (2 Samples)

- (1) Unit 1 submittals listed for the period from January 2020 through December 2020
- (2) Unit 2 submittals listed for the period from January 2020 through December 2020

##### MS10: Cooling Water Support Systems (IP Section 03.09) (2 Samples)

- (1) Unit 1 submittals listed for the period from January 2020 through December 2020
- (2) Unit 2 submittals listed for the period from January 2020 through December 2020

##### BI01: Reactor Coolant System (RCS) Specific Activity Sample (IP Section 03.10) (2 Samples)

- (1) Unit 1 submittals listed for the period from January 2020 through December 2020
- (2) Unit 2 submittals listed for the period from January 2020 through December 2020

##### 71152 - Problem Identification and Resolution

##### 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) CR 2370303, ESPS generator 2 main breaker charging spring did not charge on February 16, 2021

##### 71153 - Followup of Events and Notices of Enforcement Discretion

##### Event Report (IP Section 03.02) (2 Samples)

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

- (1) LER 05000413/2020-002-00, "Unacceptable Indication Identified during Reactor Vessel Pressure Head Nozzle Penetration Inspection," (ADAMS Accession No. ML20195A588): The inspectors determined that it was not reasonable to foresee or

- correct the cause discussed in the LER therefore no performance deficiency was identified. The inspectors did not identify a violation of NRC requirements.
- (2) LER 05000413/2020-002-01, "Unacceptable Indication Identified during Reactor Vessel Pressure Head Nozzle Penetration Inspection," (ADAMS Accession No. ML20212L578): The inspectors determined that it was not reasonable to foresee or correct the cause discussed in the LER therefore no performance deficiency was identified. The inspectors did not identify a violation of NRC requirements.

## **OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL**

### 2515/194 - Inspection of the Licensee's Implementation of Industry Initiative Associated With the Open Phase Condition Design Vulnerabilities In Electric Power Systems (NRC Bulletin 2012-01)

Revision 0 of this Temporary Instruction (TI) was previously inspected, and closed, in Inspection Report 2019011 (ADAMS ML19205A317). However, a subsequent revision to the Nuclear Energy Institute (NEI) Voluntary Initiative (Revision 3) provided plants the option to leave the open phase protection (OPP) system in monitoring mode only in lieu of activating the automatic trip circuitry, provided it was supported by a risk evaluation. Revision 1 (and later Revision 2) of this TI was issued to provide inspection guidance for the new option.

The inspectors reviewed licensee analyses and procedures that demonstrated operator manual actions would successfully mitigate the impact of an Open Phase Condition (OPC). The analyses were reviewed remotely, and the procedures were reviewed and walked down on-site. The inspectors completed Section 03.01c of TI 2515/194, Revision 2.

The inspectors verified that modeling used for the OPC reflected the as-designed and as-built plant, assumptions made by the licensee were reasonable, and licensee procedures were adequate to successfully respond to an OPC. The inspectors also verified that human reliability analysis and recovery evaluations were done in accordance with NEI and voluntary initiative guidance.

## **INSPECTION RESULTS**

No findings were identified.

## **EXIT MEETINGS AND DEBRIEFS**

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

- On April 27, 2021, the inspectors presented the integrated inspection results to Tom Simril and other members of the licensee staff.

**DOCUMENTS REVIEWED**

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
2515/194	Calculations	CNC-1535.00-00-0259	Catawba Nuclear Station PRA Analysis of Implementation Options for Open Phase Condition Protection	Revision 0
2515/194	Drawings	CN-0950-00.01	One Line Diagram 230KV Switching Station	Revision 0
2515/194	Procedures	EP/1(2)/A/5000/E-0	Reactor Trip or Safety Injection	Revision 46 (46)
2515/194	Procedures	EP/1(2)/A/5000/ES-0.1	Reactor Trip Response	Revision 48 (49)
2515/194	Procedures	OP/0/B/6100/008 B	Reference For OPP Event Logger Alarms	Revision 000
2515/194	Procedures	OP/1(2)/B/6100/010 L	Annunciator Response for Panel 1(2)AD-11	Revision 066 (064)
2515/194	Procedures	OP/1(2)/B/6300/001	Turbine Generator	Revision 115 (096)