



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

November 7, 2019

Mr. Tom Simril
Site Vice President
Duke Energy Carolinas, LLC
Catawba Nuclear Station
4800 Concord Road
York, SC 29745

SUBJECT: CATAWBA NUCLEAR STATION – INTEGRATED INSPECTION REPORT
05000413/2019003 AND 05000414/2019003

Dear Mr. Simril:

On September 30, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Catawba Nuclear Station Units 1 and 2. On October 23, 2019, 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.

Three findings of very low safety significance (Green) are documented in this report. Three of these findings involved violations of NRC requirements; one was determined to be Severity Level IV. We are treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or significance or severity of the violations documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement; and the NRC Resident Inspector at Catawba.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; and the NRC Resident Inspector at Catawba.

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 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Frank J. Ehrhardt, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Docket Nos. 05000413 and 05000414
License Nos. NPF-35 and NPF-52

Enclosure: Inspection Report 05000413/2019003
and 05000414/2019-003

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SUBJECT: CATAWBA NUCLEAR STATION – INTEGRATED INSPECTION REPORT
05000413/2019003 AND 05000414/2019003

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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: 05000413/2019003 and 05000414/2019003

Enterprise Identifier: I-2019-003-0016

Licensee: Duke Energy Carolinas, LLC

Facility: Catawba Nuclear Station

Location: York, South Carolina

Inspection Dates: July 01, 2019 to September 30, 2019

Inspectors: J. Austin, Senior Resident Inspector
C. Scott, Resident Inspector
A. Butcavage, Reactor Inspector
S. Downey, Senior Reactor Inspector
C. Dykes, Health Physicist
W. Loo, Senior Health Physicist
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A. Nielsen, Senior Health Physicist
J. Rivera, Health Physicist

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 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

Failure to Declare Motor Driven Auxiliary Feedwater Pumps Inoperable When Technical Specification Support System was Out Of Service			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000413/2019003-01 Open/Closed	[H.14] - Conservative Bias	71111.06
<u>Introduction:</u> The inspectors identified a Green finding and associated NCV of Technical Specification (TS) 3.7.5, "Auxiliary Feedwater System," for the failure to declare the Unit 1 motor driven auxiliary feedwater pumps (MDAFW) pumps inoperable and comply with the associated action statements when a necessary support system was not available to perform its safety function.			

Failure to Comply with Selected Licensee Commitment (SLC) 16.6-5			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000413,05000414/2019003-02 Open/Closed	[H.8] - Procedure Adherence	71111.15
The inspectors identified a Green finding and associated NCV of TS 5.4.1, "Procedures," for Units 1 and 2 when the licensee failed to comply with SLC 16.6-5, "Residual Heat Removal/Containment Spray Sump Pump (ND/NS) Interlock." Specifically, on February 4, 2019, the licensee failed to enter Condition 'A' when the ND/NS sump pump interlock was not functional and take the required action to implement alternate means of fulfilling the interlock function.			

Failure to take Technical Specification Actions with Two Trains of Component Cooling Inoperable and Failure to Submit an Associated 8-hour NRC Report			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green Severity Level IV NCV 05000414/2019003-03 Open/Closed	[H.14] - Conservative Bias	71111.15
<u>Introduction:</u> The inspectors identified a Green finding and associated Severity Level IV NCV of TS 3.7.7 "Component Cooling Water System (KC)" for failure to take TS actions for two inoperable trains of KC and of 10 CFR 50.72(b)(3)(v)(A, B, and D) for the failure to notify the NRC within 8 hours of an event or condition that could have prevented fulfillment of a safety function.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
URI	05000413/2019002-03	Unresolved Item (URI) MSPI Data associated with failure of the 1A emergency diesel generator (EDG) not reported	71151	Closed
NOV	05000413/2019002-04	Failure to Provide Complete and Accurate Information in Licensee Event Report (LER)	71152	Closed
NOV	05000413,05000414/2019002-01	Failure to Report the Loss of Emergency Assessment Capability of the Technical Support Center Within Eight Hours	71152	Closed

PLANT STATUS

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

Unit 2 began the inspection at 100 percent RTP. On September 14, 2019, Unit 2 began shutdown for refueling outage 2CR23 and remained shut down through 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 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

Summer Readiness (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated summer readiness of offsite and alternate alternating current (AC) power systems.

Impending Severe Weather (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated readiness for impending adverse weather conditions for hurricane Dorian on September 5, 2019

71111.04Q - Equipment Alignment

Partial Walkdown (IP Section 03.01) (3 Samples)

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

- (1) Unit 1 and Unit 2 vital battery charger area on July 31, 2019
- (2) Unit 1 A and B starting air system on August 7, 2019
- (3) Unit 2 A train component cooling (KC) on September 20, 2019

71111.05Q - Fire Protection

Quarterly Inspection (IP Section 03.01) (4 Samples)

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

- (1) Unit 2 B train essential switchgear room, elevation 560, fire zone 7 on September 11, 2019
- (2) Unit 1 B train essential switchgear room, elevation 560, fire zone 8 on September 11, 2019
- (3) Unit 2 turbine building, elevation 564, fire zone TB2 on September 11, 2019
- (4) Unit 1 and Unit 2 control room, elevation 594, fire zone 21 on September 14, 2019

71111.06 - Flood Protection Measures

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

The inspectors evaluated internal flooding mitigation protections in:

- (1) Condition Report (CR) 2275149, Evaluation of liquid waste and sump pumps of CA operability

71111.07T - Heat Sink Performance

Triennial Review (IP Section 02.02) (3 Samples)

The inspectors evaluated heat exchanger/sink performance on the following:

- (1) Heat exchangers cooled by service water, IP Section 02.02b
 - Component cooling water heat exchanger KC-1B
 - Component cooling water heat exchanger KC-2A
- (2) Closed loop heat exchanger, IP Section Section 02.02c
 - Motor cooler for 1NV-MR-ACC
- (3) Heat sink, IP Section 02.02d,
 - Service water pump train "A" performance
 - Service water pump train "B" performance
 - Service water intake structure and buried piping walk-down
 - CR 02278842, Pipe sleeve clearances downstream of 1RN11A not adequate

71111.08P - Inservice Inspection Activities (PWR)

PWR Inservice Inspection Activities (IP Section 03.01) (1 Sample)

- (1) PWR Inservice Inspection Activities Sample (IP Section 03.01) (1 Sample)

The inspectors evaluated pressurized water reactor non-destructive testing by reviewing the following examinations from September 23 – 27, 2019:

1. Ultrasonic Examination (UT)
 - a. Reactor vessel outlet nozzle-to-safe-end dissimilar metal welds (N22), ASME Class 1, automated UT (observed)
 - b. Reactor vessel outlet nozzle-to-safe-end dissimilar metal welds (N202), ASME Class 1, automated UT (observed)
2. Penetrant Testing (PT)
 - a. Base metal repairs on valve body 2CF040, SG B containment isolation inlet check valve, ASME Class 2 (reviewed)
3. Visual Examination (VE)
 - a. Reactor vessel closure head outer surface, ASME Class 1, Bare metal visual exam (observed)
 - b. Visual examination of SG 2D Hot Leg Cladding Anomaly
4. Eddy Current Testing (ET)
 - a. SG 2A - ET for tube R31C33, ASME Class 1
 - b. SG 2B - ET for tube R26C68, ASME Class 1
 - c. SG 2C - ET for tubes R38C99, R44C81, ASME Class 1
 - d. SG 2D - ET for tube R36C16, ASME Class 1

The inspectors evaluated the licensee's boric acid corrosion control program performance.

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 shutdown for refueling outage on September 14, 2019.

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

- (1) The inspectors observed and evaluated just in time training for turbine heat up and placing turbine online for Unit 2 startup on September 5, 2019.

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness Inspection (IP Section 02.01) (3 Samples)

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

- (1) CR 2280631, 2A1 KC pump discharge check valve on July 9, 2019
- (2) CR 2285715, 2NW-185A (seal water supply isolation valve) loss of indication on August 7, 2019
- (3) A(1) action plan for liquid waste system on September 22, 2019

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management (IP Section 03.01) (5 Samples)

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

- (1) Unit 2 orange risk while in single train KC on July 6, 2019
- (2) Unit 1 and Unit 2 motor driven auxiliary feedwater (CA) complex activity plan on July 17, 2019
- (3) Unit 2 Catawba outage 23 schedule risk review on August 29, 2019
- (4) Unit 2 yellow risk during plant shutdown for refueling outage on September 14, 2019
- (5) Unit 2 yellow risk for decay heat removal on September 18-19, 2019

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 02.02) (6 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) CR 2275467, All four residual heat removal containment spray (ND/NS) sump pumps removed from service in February, 2019
- (2) CR 2280660, Evaluate component cooling (KC) heat exchanger (HX) cleaning interlock defeats for operable train on July 7, 2019
- (3) CR 2294178, 2B ND Pump 1.47 and 4KV essential power indication on July 29, 2019
- (4) CR 2286336, Hanger for 1A NS pump pulled away from wall on August 10, 2019
- (5) CR 2288731, Operability and functional requirements on August 26, 2019
- (6) Engineering Change (EC) 94585, 2A DG voltage regulator modification on September 27, 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) EC 45036, Containment pressure setpoint changes on September 23, 2019

71111.19 - Post-Maintenance Testing

Post-Maintenance Test (IP Section 03.01) (7 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) Work Order (WO) 20259380, Functional testing of the 1EIA vital inverter following the diode replacement on July 22, 2019
- (2) WO 20109953, Functional testing of the 2A EDG following preventive maintenance on July 24, 2019

- (3) WO 20330410, Functional testing following repair of the 1NW-61B, 1B containment penetration valve injection surge chamber service water supply on July 25, 2019
- (4) WO 20309801-04, Post maintenance testing following replacement of the 1RN38B, RN pump 1B discharge isolation on July 29, 2019
- (5) CR 2287483, Repair erratic indication on standby nuclear service water pump (SNSWP) level indicator on August 17, 2019
- (6) CR 2288168, Acceptance criteria not met for standby shutdown facility (SSF) EDG diodes on August 22, 2019
- (7) CR 2290112, Instrument air dryer could not be placed inservice after post-maintenance testing on September 4, 2019

71111.20 - Refueling and Other Outage Activities

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

- (1) (Partial) The inspectors evaluated items during refueling outage 2CR23 which began on September 14, 2019 and ran through the inspection period.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (4 Samples)

- (1) PT/2/A/4350/015A Diesel Generator (DG) 2A Periodic Test on July 12, 2019
- (2) PT/0/A/4200/017A SSF Diesel Test on August 21, 2019
- (3) PT/2/A/4200/09 Engineered Safety Features Activation Periodic Test on September 16, 2019
- (4) PT/2/A/4700/13 Auxiliary Shutdown Panel A Functional Test on September 17, 2019

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (IP Section 02.01) (1 Sample)

The inspectors evaluated radiological hazards assessments and controls.

- (1) The inspectors reviewed the following:

Radiological Surveys

- CNS-M-20190922-7, U2 TSRs\TSR 203B 2NC29, September 22, 2019
- CNS-M-20190922-7, U2 TSRs\TSR 203B 2NC29, September 15, 2019
- CNS-M-20190924-14, C2R23 SG Shiftly Routine, September 24, 2019
- CNS-M-20190925-10, C2R23 SG Shiftly Routine, September 25, 2019
- CNS-M-20190915-38, "B" SG Bowl Survey, September 23, 2019
- CNS-M-20191001-17, "B" SG Bowl Survey, October 1, 2019
- CNS-M-20190915-39, "C" SG Bowl Survey, September 23, 2019
- CNS-M-20191001-18, "C" SG Bowl Survey, October 1, 2019

Air Sample Survey Records

- CN19092300049, C Cold Leg:inside SG Bowl, September 23, 2019
- CN19092300021, B SG remove diaphragms, September 23, 2019
- CN19092300048, C SG Nozzle DAM install Platform, September 23, 2019
- CN19092300051, C SG; install Nozzle DAM, September 23, 2019

Instructions to Workers (IP Section 02.02) (1 Sample)

The inspectors evaluated instructions to workers including, labels, radiation work permits and electronic dosimeter alarm setpoints used to access high radiation areas.

- (1) The inspectors reviewed the following:

Radiation Work Permits (RWP)

- RWP #2812, SG EDDY Current Activities, Revision 44
- RWP #2810, SG Remove Diaphragms (LC/UC/AUX/OS), Revision 30
- RWP #2808, SG Install/Remove Nozzle Covers, Revision 29
- RWP #2117, Mechanical Valves (Lower Containment), Revision 21

Electronic Alarming Dosimeter Alarms

- September 14, 2019, 11.3 mrem/hr alarm/10 mrem/hr setpoint
- September 19, 2019, 29 mrem alarm/ 25 mrem setpoint

Labeling of Containers

- Waste Shipping area
- Low Level Waste Storage

Contamination and Radioactive Material Control (IP Section 02.03) (1 Sample)

The inspectors evaluated licensee processes for monitoring and controlling contamination and radioactive material. The inspectors verified transactions of nationally tracked sources had been reported.

- (1) The inspectors verified the following sealed sources are accounted for and are intact:

- CHP-S-0486
- CHP-S-0520
- CHP-S-0527
- CHP-S-0024

Radiological Hazards Control and Work Coverage (IP Section 02.04) (1 Sample)

The inspectors evaluated in-plant radiological conditions during facility walkdowns and observation of radiological work activities.

- (1) The inspectors also reviewed the following radiological work package for areas with airborne radioactivity:

- Inservice inspection of reactor vessel upper head penetrations
- Steam generator platform eddy current inspection work
- Drain down

High Radiation Area and Very High Radiation Area Controls (IP Section 02.05) (1 Sample)

- (1) The inspectors evaluated risk-significant high radiation area and very high radiation area controls, including postings and physical controls.

Radiation Worker Performance and Radiation Protection Technician Proficiency (IP Section 02.06) (1 Sample)

- (1) The inspectors evaluated radiation worker awareness and performance and radiation protection technician proficiency.

71124.06 - Radioactive Gaseous and Liquid Effluent Treatment

Inspectors evaluated licensee performance in ensuring gaseous and liquid effluent processing systems are maintained to properly mitigate, monitor and evaluate radiological discharges to the public. Inspectors reviewed compensatory measures for out-of-service effluent monitors.

Walk Downs and Observations (IP Section 02.01) (1 Sample)

The inspectors walked down the following gaseous and liquid radioactive effluent monitoring and filtered ventilation systems to assess the material condition and verify proper alignment according to plant design:

- OEMF-49 Waste Liquid Discharge Monitor
- 2EMF-35 Unit Vent Particulate Monitor
- 2EMF-36 Unit Vent Gas and Particulate Monitor

Calibration and Testing Program (Process & Effluent Monitors) (IP Section 02.02) (1 Sample)

The inspectors reviewed gaseous and liquid effluent monitor instrument calibrations or tests by reviewing information not limited to but including alarm set points, periodicity, and National Institute of Standards and Traceability for sources used for the following sample set of monitors:

- OEMF-49 Waste Liquid Discharge Monitor, July 2017 and February 2019
- 2EMF-36 Unit Vent Gas Monitor (Low Range), February 2017 and August 2018

Sampling and Analysis (IP Section 02.03) (1 Sample)

The inspectors reviewed the following radioactive effluent sampling and analysis activities:

- The inspectors observed Unit 2 Containment Air sampling, analysis, and batch release permit preparation on August 1, 2019
- No additional sampling and analysis activities were available for observation during this inspection

Effluent discharges with inoperable monitors:

- None were available for review during this inspection

Instrumentation and Equipment (IP Section 02.04) (1 Sample)

The inspectors reviewed flow rates for effluent stack and related vent flow and surveillances. Inspectors also reviewed maintenance and methodologies for one high-range effluent monitor relied on in emergency operating procedures for decision making. Records reviewed were:

- Unit 1A Auxiliary Building Filtered Exhaust Filter Train Performance Test, August 2018
- Unit 2B Auxiliary Building Filtered Exhaust Filter Train Performance Test, March 2018
- 2EMF-36 Unit Vent Gas Monitor (High Range), February 2017 and August 2018

Dose Calculations (IP Section 02.05) (1 Sample)

The inspectors reviewed required annual reports for changes, release permits and the offsite dose calculation manual for changes and results. Some documents reviewed include the following:

- Gaseous Waste Release Permit Report No. 2019042, Unit 2 Containment Air Release and Addition, May 9, 2019
- Gaseous Waste Release Permit Report No. 2019068, Unit 2 Containment Air Batch Release, August 1, 2019
- Liquid Waste Release Permit Report No. 2019018, Auxiliary Monitor Tank "A", June 26, 2019

Abnormal gaseous or liquid tank discharges:

- None were available for review during this inspection period

71124.07 - Radiological Environmental Monitoring Program (REMP)

Site Inspection (IP Section 02.01) (1 Sample)

Inspectors evaluated licensee performance in ensuring REMP is implemented in accordance with licensing documentation and REMP is validating doses are within the legal dose limits. Inspectors also reviewed the licensee's effort to continue to implement the NEI/Industry Groundwater Protection Initiative.

The inspectors performed walkdowns of sampling stations, thermoluminescent locations and meteorological instrumentation. Inspectors also performed observations of preparation and collections of different environmental sample types. Inspectors reviewed sampling results and maintenance, calibration, quality control and ground water records. Records reviewed, and samples observed included but were not limited to the following:

Walkdowns, Calibrations, and Maintenance Record Review

- Site No. 200, Site Boundary, Air Sampler No. 09099, Last Calibration Date: June 14, 2019

- Site No. 201, Site Boundary, Air Sampler No. 09094, Last Calibration Date: June 27, 2019
- Site No. 208, Discharge Canal, Air Sampler No. 09097, Last Calibration Date: May 16, 2019
- Site No. 212, Tega Cay, Air Sampler No. 09048, Last Calibration Date: April 29, 2019
- Site No. 200, Site Boundary, REMP TLD Nos. 200A and 200B
- Site No. 201, Site Boundary, REMP TLD Nos. 201A and 201B
- Site No. 208, Discharge Canal, REMP TLD Nos. 208A and 208B
- Site No. 212, Tega Cay, REMP TLD Nos. 212A and 212B
- Site No. 256, Control/Fairhope Road, REMP TLD Nos. 256A and 256B
- Site No. 208H, Discharge Canal (House), Water Sampler No. 00305, Last Calibration Date: July 23, 2019
- Site No. 211, Lake Wylie Dam, Water Sampler No. 00274, Last Calibration Date: June 22, 2019
- Site No. 214, Rock Hill, Water Sampler No. 02945, Last Calibration Date: September 11, 2018
- Site No. 218, Belmont, Water Sampler No. 09260, Last Calibration Date: October 09, 2018
- Site No. 214, Liberty Hill Sheriff's Boathouse, Water Sampler No. 09385, Last Calibration Date: October 09, 2018

Environmental Sample Collections and Preparation Observation

- Site No. 200, Site Boundary, Air Sampler No. 09099
- Site No. 201, Site Boundary, Air Sampler No. 09094
- Site No. 208, Discharge Canal, Air Sampler No. 09097
- Site No. 212, Tega Cay, Air Sampler No. 09048

Licensee Actions in Response to Missed Sample, Inoperable Sampler, Lost TLD or Anomalous Measurement

- CR 02248944, CNS TLD # 249-A 4Q 2018 TLD Missing
- CR 02262921, CNS TLD # 225 1Q 2019 Missing From Location
- CR 02277966, 2019 CNS REMP Air/water sampler issues

Sampling Program for the Potential of Licensed Material Entering Groundwater

- Monitor Tank Building Sump
- Radwaste Facility Building Sump
- Units 1 and 2 Spent Fuel Pools
- Waste Evaporator Feed Tank Sumps

Groundwater Protection Initiative (GPI) Implementation (IP Section 02.02) (1 Sample)

- (1) The inspectors reviewed the licensees continuing implementation of the voluntary Nuclear Energy Institute Ground Water Protection Initiative.

71124.08 - Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

Radioactive Material Storage (IP Section 02.01) (1 Sample)

The inspectors evaluated radioactive material storage areas for compliance with requirements for posting, labeling, and physical controls during plant walk downs. Inspectors also evaluated the material condition of several containers of radioactive materials (at least five) for signs of degradation.

- Dry Active Waste (DAW) Storage Building areas
- Auxiliary Building areas

Radioactive Waste System Walkdown (IP Section 02.02) (1 Sample)

The inspectors evaluated liquid and solid radioactive waste processing systems during plant walkdowns for alignment with licensing descriptions, material condition, administrative and physical controls. Inspectors also evaluated changes to the systems, waste stream mixing methodologies and process control program descriptions.

- Waste solidification building systems
- Monitor tank building systems

Waste Characterization and Classification (IP Section 02.03) (1 Sample)

The inspectors evaluated the radioactive waste characterization and classification for the following waste streams:

- 2018 DAW
- 2019 Resin Batching Tank

Shipment Preparation (IP Section 02.04) (1 Sample)

The inspectors observed preparation activities for the following radioactive waste shipment.

- Shipment of Low Specific Activity (LSA), DAW on September 25, 2019

Shipping Records (IP Section 02.05) (1 Sample)

The inspectors evaluated the following non-excepted package shipment records:

- 19-16, LSA, Resin
- 19-14, Type B, Resin
- 18-21, LSA, DAW
- 18-02, Type B, Resin
- 17-25, Type B, Filters

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02) (2 Samples)

- (1) Unit 1 submittals listed for the period from July 1, 2018 through June 30, 2019
- (2) Unit 2 submittals listed for the period from July 1, 2018 through June 30, 2019

MS09: Residual Heat Removal Systems (IP Section 02.08) (2 Samples)

- (1) Unit 1 submittals listed for the period from July 1, 2018 through June 30, 2019
- (2) Unit 2 submittals listed for the period from July 1, 2018 through June 30, 2019

OR01: Occupational Exposure Control Effectiveness Sample (IP Section 02.15) (1 Sample)

- (1) Submittals listed for the period from April 1, 2018 to June 30, 2019

PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences (RETS/ODCM) Radiological Effluent Occurrences Sample. (IP Section 02.16) (1 Sample)

- (1) Submittals listed for the period from April 1, 2018 to June 30, 2019

71152 - Problem Identification and Resolution

Annual Follow-up of Selected Issues (IP Section 02.03) (2 Samples)

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

- (1) Closed: NOV 05000413/414/2019002-01 "Failure to Report the Loss of Emergency Assessment Capability of the Technical Support Center within Eight Hours"
- (2) Closed: NOV 05000413/2019002-04 "Failure to Provide Complete and Accurate Information in LER"

71153 - Followup of Events and Notices of Enforcement Discretion

Event Report (IP Section 03.02) (3 Samples)

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

- (1) LER 2019-002-00 for Catawba Nuclear Station, Unit 1, Condition Prohibited by Technical Specifications due to Auxiliary Feedwater Sump Pump Conditions (ADAMS accession: ML19161A254). The circumstances surrounding this LER are documented as NOV 05000413/2019002-04 in Inspection Report 05000413/2019002, 05000414/2019002, 07200045/2019002 Section 71153 (ADAMS accession: ML19226A096).

- (2) LER 2019-002-01 for Catawba Nuclear Station, Unit 1, Condition Prohibited by Technical Specifications due to Auxiliary Feedwater Sump Pump Conditions. (ADAMS accession: ML19254F558). The circumstances surrounding this LER are documented as NCV 05000413/2019003-01 in the table below.
- (3) LER 2019-003-00 for Catawba Nuclear Station, Unit 2, Component Cooling Water System Alignment led to Both Trains of Component Cooling Water Inoperable (ADAMS accession: ML19247D814). The circumstances surrounding this LER are documented as NCV 05000414/2019003-03 in the table below.

INSPECTION RESULTS

Failure to Declare Motor Driven Auxiliary Feedwater Pumps Inoperable When Technical Specification Support System was Out Of Service			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000413/2019003-01 Open/Closed	[H.14] - Conservative Bias	71111.06
<p><u>Introduction:</u> The inspectors identified a Green finding and associated NCV of TS 3.7.5, "Auxiliary Feedwater System," for the failure to declare the Unit 1 motor driven auxiliary feedwater pumps (MDAFW) pumps inoperable and comply with the associated action statements when a necessary support system was not available to perform its safety function.</p> <p><u>Description:</u> On April 11, 2019, with Unit 1 at 100 percent power, the sump pump for the 1B MDAFW pump failed to start in manual. The licensee initiated Work Request (WR) 20139666 to investigate and repair the sump pump. On April 24, 2019, inspectors noted that the 1B MDAFW sump pump remained out of service and the associated 1B MDAFW pump was not declared inoperable. Based on a review of the UFSAR and LER 2008-001, the inspectors questioned whether the unavailability of the sump pump could affect the operability of the MDAFW pumps. Updated Final Safety Analysis Report (UFSAR) Section 11.2.2.2.5.7 states, "each auxiliary feedwater pump (AFW) is mounted in a separate pit to meet NPSH requirements, so each pit has a sump and safety related sump pump of corresponding channel to prevent flooding of the AFW pumps, assuming a 50 gpm leak." Additionally, Licensee Event Report (LER) 2008-001 documented that the AFW systems for both units were declared inoperable after it was discovered that flow restrictor cover plates for the interior doghouse drains were not installed and a feedwater line break in that area, coincident with a loss of off-site power, could flood the AFW pump area. The 2008 LER said that flow restrictors were installed in the drains to ensure the safety related AFW sump pumps could protect the AFW system after a feedwater pipe break in the doghouses. The inspectors discussed this information with the licensee, and the licensee stated that the MDAFW sump pumps were not required for operability per the design basis document (DBD). On April 30, 2019, the licensee entered this issue in the corrective action program to address the discrepancy between the UFSAR and DBD descriptions of the MDAFW sump pumps. The 1B MDAFW sump pump was repaired and returned to service on May 1, 2019.</p> <p>On May 30, 2019, the licensee completed an evaluation of the issue and confirmed that the MDAFW sump pumps are required to be functional to support operability of their associated MDAFW pumps. The inspectors concluded that there was sufficient information in the UFSAR and LER 2008-001 to recognize the safety function of the MDAFW sump pumps and their impact on the operability of the MDAFW pumps. License Event Report 2019-002-00</p>			

was submitted on June 10, 2019, and documented that there were several instances when Unit 1 MDAFW pumps should have been declared inoperable for the corresponding times that the associated sump pumps were nonfunctional.

Corrective Actions: The 1B MDAFW sump pumps were repaired and returned to service on May 1, 2019.

Corrective Action References: CR 2270638, CR 2271394 and CR 2275149

Performance Assessment:

Performance Deficiency: The inspectors determined that the failure to declare the MDAFW pumps inoperable when a necessary support system was not available to perform its related support function was a performance deficiency and violation of TS 3.7.5.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the Unit 1 MDAFW pumps were inoperable at different times when their associated MDAFW sump pumps were not capable of performing their safety related function to prevent flooding of the MDAFW pumps. The 1B MDAFW pump was inoperable for a period longer than the allowed 72-hour completion time from April 11- May 1, 2019. There were two instances when two trains of AFW were inoperable longer than the allowed 6 hour completion time of TS Limiting Condition for Operation (LCO) 3.7.5 Condition C. On April 11, 2019, both 1A and 1B MDAFW sumps pumps were out of service (OOS) simultaneously. The 1A MDAFW sump was returned to service April 12, 2019. On April 17th, the 1B MDAFW sump pump was OOS at the same time as the 1A MDAFW was OOS. The 1A MDAFW pump was returned to service on April 18th, 2019. The 1A and 1B MDAFW sumps were also OOS at the same time on January 19, 2019 for a few hours.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined that the issue required a detailed risk evaluation because the finding represents an actual loss of function of a single train for greater than its technical specification allowed outage time. A detailed risk evaluation was performed by a regional senior reactor analyst in accordance with IMC 0609 Appendix A using the SAPHIRE Version 8.2.0 and Catawba SPAR model Version 8.57. The major analysis assumptions included: auxiliary feedwater flooding would be associated with a loss of main feedwater, that the non-safety-related floor drain sump pumps would not be available, and no credit for recovery of the auxiliary feedwater sump pumps. The dominant sequence involved a loss of main feedwater event that involved flooding of the auxiliary feedwater pump area(s) with a loss of the motor-driven auxiliary feedwater system due to the performance deficiency and a failure to establish feed bleed conditions for heat removal. The risk was mitigated by the relatively short exposure periods of the condition. The analysis determined that the performance deficiency resulted in an increase in core damage frequency of <1 E-6/year, a GREEN finding of very low safety significance.

Cross-Cutting Aspect: H.14 - Conservative Bias: Individuals use decision making-practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop. The inspectors determined this performance deficiency had a cross-cutting aspect in the conservative bias

component of the human performance area, because the licensee did not use conservative assumptions to identify the required support function of the MDAFW sump pumps and their impact on the operability of the MDAFW pumps.

Enforcement:

Violation: Technical Specification 3.7.5, "Auxiliary Feedwater System," requires in part three AFW trains to be OPERABLE in MODES 1, 2, and 3. With one of the required AFW trains (pump or flow path) inoperable in MODES 1, 2, or 3 for reasons other than Condition A, action must be taken to restore OPERABLE status within 72 hours. Condition C states that when two AFW trains are inoperable in MODES 1, 2, or 3, the unit must be in MODE 3 within 6 hours. Contrary to the above, on January 19, April 11, and April 19, 2019, the 1A and 1B MDAFW pumps were rendered inoperable at different times because its associated sump pumps were nonfunctional and operators did not comply with the applicable technical specification action statements.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Failure to Comply with Selected Licensee Commitment (SLC) 16.6-5

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000413,05000414/2019003-02 Open/Closed	[H.8] - Procedure Adherence	71111.15

Introduction: The inspectors identified a Green finding and associated NCV of TS 5.4.1, "Procedures," for Units 1 and 2 when the licensee failed to comply with Selected Licensee Commitment (SLC) 16.6-5, "Residual Heat Removal/ Containment Spray Sump Pump (ND/NS) Interlock." Specifically, on February 4, 2019, the licensee failed to enter Condition 'A' when the ND/NS sump pump interlock was not functional and take the required action to implement alternate means of fulfilling the interlock function.

Description: On February 4, 2019, with both Units at 100 percent power, the licensee removed power from the four ND/NS sump pump motor breakers to prevent operation during cleaning of the ND/NS sump area. With power removed from the sump pump motors, the corresponding level switches and alarms were nonfunctional. Selected Licensee Commitment 16.6-5 requires that the ND/NS sump pump interlock be functional in MODES 1-4. If the commitment is not met, then the required action is to immediately implement an alternate means of satisfying the interlock function. The function of the ND/NS interlock is to alert the control room operator of a potential emergency core cooling system (ECCS) leak in the ND/NS pump area. During a review of the maintenance history of the ND/NS sump pumps, inspectors identified that operators failed to comply with SLC 16.6-5 during cleaning of the sumps on February 4, 2019. As a result, operators were unable to monitor for ECCS leakage in ND/NS area from the level switches in the control room. The licensee entered this issue into the corrective action program and completed a cause evaluation for the issue. The licensee concluded that the SLC should have been entered and compensatory actions were required to monitor the ND/NS ump area for leakage during the maintenance activity.

Corrective Actions: The licensee took corrective actions to restore the power to the ND/NS sump pumps following the sump cleaning and implemented standing instructions to aid in functionality determinations.

Corrective Action References: CR 2275467, CR 2283390

Performance Assessment:

Performance Deficiency: The inspectors determined that the failure to comply with SLC 16.6-5, "Residual Heat Removal/Containment Spray Sump Pump Interlock" was a performance deficiency and a violation of TS 5.4.1.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Configuration Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Because of the licensee's failure to comply with SLC 16.6-5, operators were unable to monitor the ND/NS pump area for ECCS leakage from the control room.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined that the finding was of very low safety significance (Green) because the finding did not represent an actual loss of function of one or more non-tech spec trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours.

Cross-Cutting Aspect: H.8 - Procedure Adherence: Individuals follow processes, procedures, and work instructions. The inspectors identified a cross-cutting aspect of procedures in the area of human performance because the operators failed to comply with the SLC when the ND/NS sump pumps were removed from service.

Enforcement:

Violation: Technical Specification 5.4.1.a, "Procedures," requires that the licensee implement the commitments contained in UFSAR Chapter 16. The Selected Licensee Commitment (SLC) Manual is designated as Chapter 16 of the UFSAR. Selected Licensee Commitment 16.6-5 requires that the ND/NS sump pump interlock be functional in Modes 1-4 and if the commitment is not met, then the required action is to immediately implement an alternate means of satisfying the interlock function. Contrary to the above, on February 4, 2019, the licensee failed to comply with SLC 16.6-5 during maintenance of the ND/NS sump. As a result, operators were unable to monitor the ND/NS pump area for ECCS leakage from the control room while the ND/NS interlock was nonfunctional.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Failure to take Technical Specification Actions with Two Trains of Component Cooling Inoperable and Failure to Submit an Associated 8-hour NRC Report

Cornerstone	Significance/Severity	Cross-Cutting Aspect	Report Section
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Mitigating Systems	Green Severity Level IV NCV 05000414/2019003-03 Open/Closed	[H.14] - Conservative Bias	71111.15
<p><u>Introduction:</u> The inspectors identified a Green finding and associated Severity Level IV NCV of TS 3.7.7 "Component Cooling Water System (KC)," for a failure to take TS actions for two inoperable trains of KC and of 10 CFR 50.72(b)(3)(v)(A, B, and D) for the failure to notify the NRC within 8 hours of an event or condition that could have prevented fulfillment of a safety function.</p>			
<p><u>Description:</u> On July 5, 2019, the licensee made an unplanned entry into TS 3.7.7 "Component Cooling Water System (KC)," Condition A, when the 2A1 KC pump discharge check valve 2KC-5 failed to close when the 2A1 KC pump was secured. Operations declared the 2A train of KC inoperable. On July 6, 2019, during corrective maintenance on 2KC-5, operations used a procedure that defeated the interlocks that cause the non-essential reactor building supply and return header valves for both trains of KC to close on an engineered safeguards actuation signal (ESFAS). While Unit 2 was in this alignment (approximately 14 hours and eleven minutes), the inspectors questioned whether the licensee could satisfy TS Surveillance Requirement (SR) 3.7.7.2, which requires each automatic valve in the flow path servicing safety-related equipment to be tested to ensure the equipment actuates to its correct position on an actual or simulated signal. Updated Final Safety Analysis Report Section 9.2.2.3.5 states that electric motor operated valves are provided on all headers to non-essential equipment to isolate and separate the two component cooling trains and the valves automatically close on an engineered safeguards actuation signal. Additionally, SR 3.0.1 states that failure to meet a surveillance, whether such failure is experienced during performance of the surveillance or between performances, shall be failure to meet the LCO. The inspectors concluded that the licensee should have declared the B train of KC inoperable and complied with the TS 3.7.7 Required Action A when TS SR 3.7.7.2 could not be performed with the interlocks defeated on July 6, 2019.</p> <p><u>Corrective Actions:</u> The licensee returned the 2A train to operable on July 6, 2019. The licensee subsequently submitted License Event Report 2019-003 on September 4, 2019. On September 19, 2019, the licensee made a non-emergency event report for an event or condition that could have prevented fulfillment of a safety function.</p> <p><u>Corrective Action References:</u> CR 2280660</p>			
<p><u>Performance Assessment:</u></p> <p><u>Performance Deficiency:</u> The licensee's failure to take TS actions for both trains of the component cooling water system being inoperable as required by TS 3.7.7 and subsequently notify the NRC within 8 hours as required by 10 CFR 50.72(b)(3)(v)(A, B, and D) was a performance deficiency.</p> <p><u>Screening:</u> The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee's failure to recognize that both trains of component cooling water were inoperable and perform actions required by TS 3.7.7 extended the amount of time that they operated in Mode 1 with an inoperable safety related system.</p>			

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined that the issue required a detailed risk evaluation because the finding represents an actual loss of function of a single train for greater than its technical specification allowed outage time. A detailed risk evaluation was performed by a regional senior reactor analyst using SAPHIRE Version 8.2.0 and NRC SPAR model Version 8.57. The analysis assumed a complete loss of CCW heat exchanger functionality given an engineered safeguards actuation signal coincident with low refueling water storage tank level. The dominant sequence involved random unavailability of a CCW train with a failure to manually close the crosstie valves following a stuck-open pressurizer relief valve initiating event. The risk was mitigated by the short 14-hour exposure period of the condition. The analysis determined that the performance deficiency resulted in an increase in core damage frequency of $<1\text{E-}6$ /year, a GREEN finding of very low safety significance.

Cross-Cutting Aspect: H.14 - Conservative Bias: Individuals use decision making-practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop. The inspectors determined this performance deficiency had a cross-cutting aspect in the conservative bias component of the human performance area, because the licensee did not use conservative assumptions to determine operability of the B train of component cooling water when inspectors questioned whether the licensee could perform the TS surveillance with the ESFAS signals defeated.

Enforcement:

The ROP's significance determination process does not specifically consider the regulatory process impact in its assessment of licensee performance. Therefore, it is necessary to address this violation which impedes the NRC's ability to regulate using traditional enforcement to adequately deter non-compliance.

Severity: Based on the examples provided in Section 6.9 of the Enforcement Policy, dated May 28, 2019 "Inaccurate and Incomplete Information of Failure to Make a Required Report," the performance deficiency was determined to be a SL IV violation. Specifically, Example d.9 states that a SL IV violation involves a failure to make a report the NRC in accordance with 10 CFR 50.72.

Violation: Technical Specification 3.7.7 governs the component cooling water system (KC). Limiting Condition for Operation 3.7.7 requires two KC trains to be operable in Modes 1, 2, 3, and 4. Limiting Condition for Operation 3.7.7 Required Action A states with one train inoperable, restore KC train to OPERABLE status within 72 hours. Limiting Condition for Operation 3.7.7 Required Action B states if the Required Action and associated Completion Time of Condition A is not met, the plant must be in Mode 3 within 6 hours and Mode 5 within 36 hours. Title 10 CFR 50.72 states that the licensee shall notify the NRC as soon as practical and in all cases within 8 hours of the occurrence of any event or condition that at the time of discovery could have prevented the fulfillment of the safety function

Contrary to the above, on July 6, 2019 from 0156 until 1545 (14 hours and eleven minutes), both trains of KC were inoperable, and the licensee failed to complete the required TS actions. Contrary to the above, from July 6, 2019 until September 19, 2019, the licensee failed to notify the NRC within eight hours of an event that could have prevented the fulfillment of a safety function when both trains of KC were inoperable.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Unresolved Item (Closed)	Unresolved Item (URI) MSPI Data associated with failure of the 1A emergency diesel generator (EDG) not reported URI 05000413/2019002-03	71151
<p>Description: This item was opened to review the mitigating system performance indicator (MSPI) data for Unit 1 Emergency AC system reported in the 2nd quarter for the failure of the 1A EDG on March 21, 2019. The MSPI unavailability was associated with an EDG heat exchanger cooling water valve 1RN-P09 found broken and in the closed position during a surveillance test. Catawba engineering reported approximately 17 hours of unavailability instead of the 268 hours that the EDG was inoperable. The inspectors had internal discussions with members of the Office of Nuclear Reactor Regulation staff to evaluate the licensee's justification for not reporting the total number of unavailability hours associated with the EDG failure.</p> <p>Closure Basis: The inspectors determined that the hours reported in the 2nd quarter for the failure of the 1A EDG were appropriate and did not identify a performance deficiency. This URI is closed.</p> <p>Corrective Action Reference(s): CR 2275533</p>		
Observation: Closure of NOV 05000413/414/2019002-01 "Failure to Report the Loss of Emergency Assessment Capability of the Technical Support Center within Eight Hours"		71152
The inspectors reviewed the licensee's response to NOV 05000413/414/2019002-01 "Failure to Report the Loss of Emergency Assessment Capability of the Technical Support Center within Eight Hours," and determined that the reason, corrective actions taken and planned to address recurrence, and the date when full compliance was achieved for this violation is adequately addressed and captured on the docket (ML19255K404). This item is closed.		
Observation: Closure of NOV 05000413/2019002-04 "Failure to Provide Complete and Accurate Information in Licensee Event Report (LER)"		71152
The inspectors reviewed the licensee's response to NOV 05000413/2019002-04 "Failure to Provide Complete and Accurate Information in Licensee Event Report (LER)," and determined that the reason, corrective actions taken and planned to address recurrence, and the date when full compliance was achieved for this violation is adequately addressed and captured on the docket (ML19255K405). This item is closed.		

EXIT MEETINGS AND DEBRIEFS

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

- On October 23, 2019, 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
71111.06	Corrective Action Documents	CR 01453587	Interior doghouse floor drains do not match WL flow diagram	
		CR 02270638	Discrepancies on CA sump pump support function	
		CR 02271394	On 4/11/19, 1B CA sump pump did not start in manual PRR 02275661, PT/1/A/4700/020, Rev. 18	
		CR 02275149	Evaluation of WL sump pumps support of CA operability	
	Engineering Changes	EC 97231	CD501674, add restriction/cover plates at drains in interior doghouse	
	Miscellaneous	CNC-1206.03-00-0001	Flood levels for structures outside the reactor building	
		CNC-1223.15-00-0022, Rev. 0	Orifice sizing for doghouse drains Catawba UFSAR, (Chapter 11)	
		CNC-1223.15-00-0049	Analysis of the liquid radwaste C & D floor drain and auxiliary feedwater sump pump system	
		CNC01223.42-00-0089	Evaluation of doghouse flood on motor driven CA operability	
		CNS-1565.WL-00-0001	Design basis documentation for the liquid waste system	
		CNS-1581.WZ-00-0001	Groundwater drainage system (WZ) design basis specification	
		CNS-1592.CA-00-0091	Auxiliary feedwater system (CA) design basis specification	
	Procedures	PT/1/A/4700/020	WL/WN sump pumps and check valves inservice test, Rev. 018	
		PT/1/A/4700/020	WL/WN sump pumps and check valves inservice test, Rev. 015	
	Work Orders	WP 20322343	1 WL PU BMS: investigate CA sump pump not starting	
		WR 20139666	1B CA sump pump would not start when taken to manual	
71111.07T	Calculations	CNC-1150.01-00-0001	SNSWP Thermal Analysis During One Unit LOCA and One Unit Shutdown	5/12/16
		CNC-1206.02-84-2032, Rev. 9	Rigorous Stress Analysis for Problem 10RN, Evaluation of Sleeve Clearance Issue Documented in NCR 2278842	7/1/2019
		CNC-1223.24-00-	Nuclear Service Water System Test Criteria	10/14/2015

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		0011		
		CNC-1223.24-00-0041	Design Basis Heat Load and Flow Demands on the Standby Nuclear Service Water Pond (SNSWP)	11/14/2012
		CNC=1223.24-00-0018	Acceptable RN Flow and Fouling Factor in the KC Heat Exchangers	Rev. 4
	Corrective Action Documents	AR 02278842	Pipe Sleeve Clearances Downstream of 2RN11A Not Adequate	6/24/2019
		AR 02286917	VZ Damper B4A Failed in Open Position	8/14/19
		AR 02287349	PT/0/A4400/022 A, Steps 11.1 and 11.2, Acceptance Criteria Clarification	8/15/2019
		AR 02287352	PT/0/A4400/022 B, Steps 11.1 and 11.2, Acceptance Criteria Clarification	8/15/2019
		EAR 02280363	Engineering Assignment Request, for AR 02280363, Create EC to add support to piping downstream of 2RN11A	7/3/19
		PDO 2278842	CR 2278842, Prompt Determination of Operability	7/2/2019
	Drawings	CN-1345-01	Nuclear Service Water & Standby Nuclear Service Water Intake and Discharge Pipe Layout	Rev 34
		CN-1345-02	Nuclear Service Water & Standby Nuclear Service Water Intake and Discharge Pipe Layout, Details and Sections	Rev. 38
		CN-1573-01.00	Flow Diagram of Component Cooling System (KC)	Rev. 30
		CN-1573-2.1	Flow Diagram of Component Cooling System (KC)	Rev. 9
		CN-1573-2.2	Flow Diagram of Component Cooling System (KC)	Rev. 7
		CN-1573-2.3	Flow Diagram of Component Cooling System (KC)	Rev. 4
		CN-1574-01.00	Flow Diagram of Nuclear Service Water System (RN)	Rev. 56
		CN-1574-01.01	Flow Diagram of Nuclear Service Water System (RN)	Rev. 63
		CN-1574-01.02	Flow Diagram of Nuclear Service Water System (RN)	Rev. 56
		CN-2574-02.01	Flow Diagram of Nuclear Service Water System (RN)	Rev. 48
	Miscellaneous	CNS UFSAR, Section 9.2	Catawba Nuclear Station, Updated Final Safety Analysis Report	4/14/2018
		Catawba Units 1 & 2, Tech Spec 3.7.9	Standby Nuclear Service Water Pond (SNSWP)	Amendment Nos.263/259
		CNS-1150.04-00-0001	Design Basis Specification for the Nuclear Service Water Pump Structure	Rev. 8

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		CNS-1574.RN-00-0001	Nuclear Service Water System (RN) Design Basis Specification	Rev. 65
		ML 19238A220	Catawba Nuclear Station, Units 1 and 2 - Transmittal of Dam Inspection Report	9/4/2019
		NSM CN-50391	Design Engineering Department Scope Document, Catawba Nuclear Station, Unit 1 & 2 Shared. Relocate RN Lines Supplying Cooling Flow to the RN Pump Motor Lower Bearing Coolers	10/7/1988
		Q1-2019, CNS Unit 2	Nuclear Service Water System Health Report	First Quarter 2019
		Q4-2018, CNS Unit 1 & 2	Component Cooling System Health Report	Fourth Quarter 2018
		USNRC Regulatory Guide 1.127	Criteria and Design Features for Inspection of Water Control Structures Associated with Nuclear Power Plants	Rev. 2
		CNS-1573.KC-00-0001	Component Cooling System (KC) Design Basis Specification	Rev. 45
	Procedures	CNS AP/0/A/5500/020	Loss of Nuclear Service Water	Rev. 46
		MP/0/A/7650/088 A	Controlling Procedure For Systems Pressure Testing of ISI Applications For ASME Section XI Duke Class A, B And C Systems And Components	Rev, 7
		PT/0/A/4200/013	Service Water (RN) Shared Valves In-service Test (QU) , Reference Work Order 203322467-01, Stroke Time Testing	7/12/2019
		PT/0/A/4400/008 A	RN Flow Balance Train A	7/18/19
		PT/0/A/4400/008 B	RN Flow Balance Train B	5/28/19
		PT/0/A/4400/022 A	Nuclear Service Water Pump Train A Performance Test	5/15/2019
		PT/0/A/4400/022 B	Nuclear Service Water Pump Train B Performance Test	7/1/2019
		PT/1/A/4400/006	KC Heat Exchanger 1A Heat Capacity	11/17/18

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		C		
		PT/1/A/4400/006 D	KC Heat Exchanger 1B Heat Capacity Test	4/29/2017
		PT/2/A/4400/003 1	Component Cooling (KC) System Essential Header Flow Balance,	2/12/2019
		PT/2/A/4400/006 C	KC Heat Exchanger 2A Heat Capacity Test	9/11/2016
		PT/2/A/4400/006 D	KC Heat Exchanger 2B Heat Capacity Test	3/17/18
	Work Orders	02109615-01	1NV-MR-ACC-Perform PM on Motor Air Cooler	5/18/2014
		20092419-45	A Train Pump-house Structure Inspection in accordance with Work Order 20193638-07 Instructions	11/25/2018
		20168750-01	1RN PP SYS: Zone 1RN-0012L-C, ISI Pressure Test Inspections	1/9/2018
		20189529 06	Component Cooling Heat Exchanger, IKC HX A: TEST/CLEAN TUBES	12/08/2018
		20189529 06	1KC HX A, Test Clean Tubes	12/8/2018
		20276396	EC 406529, 1A/2A RN, Diesel Generator Pond Return Pipe Inspection	3/18/2019
		20276397	EC 406529, 1B/2B RN Diesel Generator Pond Return Pipe Inspection	5/23/2019
		60168747-01	1RN PP SYS: Zone 1RN-0011L-C, ISI Pressure Test Inspections	1/9/2018
71111.08P	Calibration Records		Calibration Certification for MiZ-80 (iD) Eddy Current Tester, Serial Number 654402	01/28/2019
	Corrective Action Documents	02269511, 02288325, 02288327, 02063763, 02293665, 02293548, 02294385		
	Drawings	10020859	EXP/Spiral Groove Combo Standard	01/20/2006
	Miscellaneous		Certificate of Conformance for 610XP Test Probe, Serial	06/29/19

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Number 773924	
			Catawba Unit 2 Secondary Side Integrity Plan	Revision 4
			Visual Examination Visual Test Chart Certification	09/04/2013
			Catawba Unit 2 R22 Steam Generator Skip Inspection Assessment	Revision 0
			Catawba 2EOC23 Steam Generator Degredation Assessment	Revision 0
		0197-AST-100879	Final Condition Monitoring and Operational Assessment for Catawba 2EOC21 Outage	Revision 0
		0274-PLAN-103186	Catawba C2R23 - RSG ECT Inspection Plan	Revision 0
		13B01WLU	Krautkramer Transducer Certification	09/22/2019
		13B01WM3	Krautkramer Transducer Certification	09/22/2019
		6018	CNS Unit 2 Reactor Vessel Head Deposit Samples	09/26/2019
		C. Wyffels	Wesdyne Certificate of Qualification: UT-III (PDI)	01/15/2019
		C. Wyffels	Vision Acuity Examination Record	12/31/2018
		M. Hill	NDE Examiner Certification: VT-2, II-N	08/22/2019
		M. Hill	SSI Vision Acuity Record	12/03/2018
		R. Healey	NDE Examiner Certification: VT-2, III-N	08/22/2019
		R. Healey	SSI Vision Acuity Record	04/10/2019
		S. Sabo	SSI Certificate of Qualification: UT-III (PDI)	08/22/2019
		S. Sabo	SSI Vision Acuity Record	08/01/2019
	NDE Reports	2RPV-202-121ASE	Outlet Nozzle DM Weld 22	09/26/2019
		2RPV-202-121DSE	Outlet Nozzle DM Weld 202	09/26/2019
		VT-19-126	Visual Examination for Boric Acid Detection	09/27/2019
	Procedures	NDE-NE-ALL-7202	Visual Examination of PWR Reactor Pressure Vessel Upper Head Penetrations	Revision 3
		NDE-NE-CNS-0121	Eddy Current Guidelines for Duke Energy's D5 Steam Generators	Revision 2
		NDE-NE-CNS-0122	Site Technique Validation for Catawba Nuclear Station Unit 2	Revision 3

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		NS-WKI-000006	Mechanical Tube Plug & Stabilizer Installation for RSGs	Revision 10
		PDI-ISI-254-SE-NB	Remote In Service Examination of Reactor Vessel Nozzle to Safe End, Nozzle to Pipe, and Safe End to Pipe Welds Using the Nozzle Scanner	Revision 3
	Work Orders	20034175-10		
71111.15	Calculations	CNC-1503.13-00-0382	USQ evaluation of procedure change for KC cross train alignment to maintain ECCS/CA pumps available	
	Corrective Action Documents	2280660	Evaluation KC HX cleaning interlocks defeats for operable train	
		AR 2A1 KC pump discharge check valve failed to close		
	Miscellaneous	Critical Evolution Plan	KC HX tube cleaning	
		Engineering Spec CNS-1573.KC-00-0001		
		UFSAR Chapter 9.2.2		
	Procedures	OP/2/A/6400/005, enclosure 4.9.1	Protected equipment posting for KC HX 2A inoperability	
		PT/1/A/4200/021 A	KC valve inservice test	
		PT/2/A/4200/009	Engineered safety features actuation periodic test	
		PT/2/A/4400/003G	KC System crossover valves SP/SS with low FWST signal defeat for KC HX 2A & 2B cleaning	
71124.01	Corrective Action Documents	02292682, 02212419		
	Procedures	AD-RP-ALL-0002	Radiation and Contamination Survey	Revision 2
71124.06	Corrective Action Documents Resulting from Inspection	AR 02293159	NRC comments on ambiguity of SLC requirements for returning a certain effluent monitor back to service in a timely manner	09/23/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Miscellaneous		Catawba Nuclear Station Units 1 and 2, Offsite Dose Calculation Manual (ODCM)	Rev. 62
		LCOTR # T11801456	1EMF45B nonfunctional	08/21/2018
	Procedures	HP/0/B/1000/010	Determination of Radiation Monitor Setpoints	Rev. 68
		HP/0/B/1004/004	Radioactive Liquid Waste Release	Rev. 46
		HP/0/B/1004/005	Radioactive Gaseous Waste Release - VQ & VP System	Rev. 60
71124.07	Corrective Action Documents	02282886	Meteorological Tower Upper Wind Speed Failed	07/21/2019
		02284712	Meteorological Instrumentation Procedure Revision	07/31/2019
	Procedures	AD-CP-ALL-0015	Radiological Environmental Monitoring Program Data Evaluation,	Rev. 3
		AD-CP-ALL-0017	Radiological Groundwater Protection	Rev. 3
		IP/0/B/3343/001	Meterological Monitoring System Check	Rev. Nos. 064 and 065
		Procedure 721	EnRad Laboratories, Airborne Radioiodine and Airborne Particulate Sampling at Catawba Nuclear Station	Rev. 14
71124.08	Procedures	AD-RP-ALL-5000	Preparation and Shipment of Radioactive Material and Radioactive Waste	Rev. 3
		AD-RP-ALL-5002	10 CFR 61 Radioactive Waste Classification	Rev. 1
71151	Calculations	CNC-1206.03-00-0001		
	Corrective Action Documents	CR 2275467 and CR 2283390		
	Miscellaneous		Liquid and Gaseous Release and Dose Summary Reports	06/01/2019
		UFSAR Section 6.3.2, Section 9.3.3 and Section 11.2.2		
	Procedures	AD-RP-ALL-1101	Performance Indicators (PI) for the Occupational and Public Radiation Safety Cornerstones	Rev. 0
	Work Orders	WO 20307390		