



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
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ATLANTA, GEORGIA 30303-1257

July 24, 2018

Mr. Tom Simril
Site Vice President
Duke Energy Corporation
Catawba Nuclear Station
4800 Concord Road
York, SC 29745-9635

**SUBJECT: CATAWBA NUCLEAR STATION – NUCLEAR REGULATORY COMMISSION
INTEGRATED INSPECTION REPORT 05000413/2018002; 05000414/2018002;
05000413/2018502 AND 05000414/2018502**

Dear Mr. Simril:

On June 30, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Catawba Nuclear Station Units 1 and 2. On July 23, 2018, the NRC inspectors discussed the results of this inspection with Mr. Clark Curry and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. These findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of these NCVs, 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 Nuclear Station. If you disagree with the 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 the Catawba Nuclear Station.

T. Simril

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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 Ehrhardt, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Docket Nos.: 50-413, 50-414
License Nos.: NPF-35, NPF-52

Enclosure:
IR 05000413/2018002, 05000414/2018002,
05000413/2018502, AND 05000414/2018502

cc: Distribution via ListServ

T. Simril

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SUBJECT: CATAWBA NUCLEAR STATION – NUCLEAR REGULATORY COMMISSION
INTEGRATED INSPECTION REPORT 05000413/2018002; 05000414/2018002;
05000413/2018502 AND 05000414/2018502 July 24, 2018

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DATE	7/20/2018	7/24/2018					

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers: 50-413, 50-414

License Numbers: NPF-35, NPF-52

Report Numbers: 05000413/2018002; 05000414/2018002;
05000413/2018502, and 05000414/2018502

Enterprise Identifier: I-2018-002-0034
I-2018-502-0003

Licensee: Duke Energy Carolinas, LLC

Facility: Catawba Nuclear Station, Units 1 and 2

Location: York, SC

Inspection Dates: April 1, 2018 to June 30, 2018

Inspectors: J. Austin, Senior Resident Inspector
C. Scott, Resident Inspector
W. Loo, Senior Health Physicist
A. Nielsen, Senior Health Physicist
W. Pursley, Health Physicist
J. Rivera, Health Physicist
S. Sanchez, Sr. Emergency Preparedness Inspector
C. Fontana, Emergency Preparedness Inspector
J. Viera, Operations Engineer
A. Hutto, Senior Resident Inspector (McGuire)

Approved By: F. Ehrhardt, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring licensee's performance by conducting a quarterly baseline inspection at Catawba Units 1 and 2 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. NRC and self-revealed findings, violations, and additional items are summarized in the table below.

List of Findings and Violations

Failure to Identify and Correct CAQ Associated with Failure of the 2B Seal Water Injection Filter O-ring			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Initiating Events	Green NCV 05000414/2018002-01 Closed	[P.2] - Evaluation	71111.12 - Maintenance Effectiveness
A self-revealed Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified for the licensee's failure to promptly identify and correct a condition adverse to quality associated with the failure of 2B seal water injection filter (SWIF) O-ring on May 13, 2018. Specifically, the licensee's failure to implement corrective actions for the first failure of the O-ring on 2B SWIF on March 12, 2018, led to a second failure of 2B SWIF O-ring on May 13, 2018.			

Failure to Promptly Identify and Correct a Condition Adverse to Quality			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000413/2018002-02 Closed	[P.2] – Evaluation	71111.15 – Operability Determinations and Functionality Assessments
The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to promptly identify and correct a condition adverse to quality associated with low resistance readings for core exit thermocouples (CET) identified during testing on January 30, 2018. Specifically, the licensee failed to declare two CETs inoperable when resistance readings were outside of the acceptance criteria until April 9, 2018.			

Additional Tracking Items

Type	Issue number	Title	Report Section	Status
URI	05000414/2018002-03	Notice of Enforcement Discretion Granted from Technical Specifications Related to the Failure of the 2A EDG During Post-Maintenance Test	71153 – Follow-up of Events and Notices of Enforcement Discretion	Open

PLANT STATUS

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

Unit 2 began the inspection period in refueling outage 2EOC22 and returned to 100 percent RTP on April 17, 2018. On May 10, 2018, power was reduced to approximately 50 percent RTP due to a turbine runback. Power was returned to 100 percent RTP on May 11, 2018.

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."

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Summer Readiness (1 Sample)

The inspectors evaluated summer readiness of offsite and alternate alternating current (AC) power systems on June 28, 2018.

Impending Severe Weather (2 Samples)

The inspectors evaluated readiness for impending adverse weather conditions for a tornado warning and watch on April 15, 2018, when the licensee entered RP/07, "Natural Disaster and Earthquake" for both Units.

The inspectors evaluated readiness for impending adverse weather conditions for a tornado warning on May 30, 2018.

71111.04 - Equipment Alignment

Partial Walkdown (3 Samples)

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

- (1) Unit 2, 2B emergency diesel generator (EDG) with 2A EDG out of service (OOS) for maintenance on April 19, 2018
- (2) Unit 1, 1A safety injection (SI) pump on May 22, 2018
- (3) Unit 1, 1A EDG with 1B OOS for leak on EDG engine cooling water (ECW) on May 29, 2018

Complete Walkdown (1 Sample)

The inspectors evaluated system configurations during a complete walkdown of the 2B EDG lube oil system on June 27, 2018.

71111.05AQ - Fire Protection Annual/Quarterly

Quarterly Inspection (4 Samples)

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

- (1) Fire Area 5: Unit 2 electrical penetration room, elevation 560 on May 16, 2018
- (2) Fire Area 16 and 17: Unit 1 and 2 cable room on May 17, 2018
- (3) Fire Area 14: Unit 2 'A' train essential switchgear room on May 22, 2018
- (4) Fire Area 2: Unit 2 CA (auxiliary feedwater) pump and motor driven CA pump pits on May 24, 2018

71111.06 - Flood Protection Measures

Internal Flooding (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the Unit 1 auxiliary feedwater pump room on June 1, 2018.

71111.07 - Heat Sink Performance

Heat Sink (1 Sample)

The inspectors evaluated the 2A component cooling water heat exchanger performance on April 2, 2018.

71111.11 - Licensed Operator Regualification Program and Licensed Operator Performance

Operator Regualification (1 Sample)

The inspectors observed and evaluated reactor operator simulator training on June 21, 2018.

Operator Performance (1 Sample)

The inspectors observed and evaluated abnormal procedure response to a loss of power to "A" vital bus on May 16, 2018.

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness (2 Samples)

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

- (1) Condition Report (CR) 2190684, 2B seal water injection filter top O-ring failure, March 12 and May 13, 2018
- (2) CR 2208504, 2EMF-49, reactor coolant system (RCS) activity on May 23, 2018

71111.13 - Maintenance Risk Assessments and Emergent Work Control (4 Samples)

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

- (1) Equipment protection plan when 2SV-7 (2C SG PORV) was declared inoperable due to failed nitrogen leakage test on April 5, 2018
- (2) Equipment protection plan for calibration of 2NCP5121 (Loop B NC Pressure) with the safe shutdown facility diesel OOS on April 20, 2018
- (3) Equipment protection plan for the loss of Unit 1 vital inverter IEIC with 1B EDG OOS on May 15, 2018
- (4) Equipment protection plan for loss of the 48VDC power supply from 1ERPC and 1B solid state protection system (SSPS) failure on May 15, 2018

71111.15 - Operability Determinations and Functionality Assessments (5 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) CR 2191418, Non-conservative dose analysis/protracted cooldown rates on March 14, 2018
- (2) CR 2191912, Steam leak on Unit 1 turbine driven auxiliary feedwater greater than limit in prompt determination of operability, on March 15, 2018
- (3) CR 2204792, Two core exit thermocouples (CETs) with unacceptable resistance readings were declared inoperable on April 9, 2018
- (4) CR 22083558, New information related to previous Part 21 evaluation CR 1561969, on May 15, 2018
- (5) CR 2211000, 1B EDG annunciator failed to start, on June 5, 2018

71111.18 - Plant Modifications (1 Sample)

The inspectors evaluated the following temporary or permanent modification:

- (1) Engineering change 412844, Defeat low pressure lube oil trip for 2B EDG on June 28, 2018

71111.19 - Post Maintenance Testing (5 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) IP/1/A/3222/014 Q, "Steam generator narrow range level protection channel 3 (LT-548), Loop D (1CFLT5590), after repair of 1D steam generator narrow range level channel failing low," on April 16, 2018
- (2) PT/2/A/4600/003 A, "Monthly Surveillance, "after repair of 2NCP5151 Loop B NC pressure on safe shutdown facility control panel, on April 20, 2018
- (3) PT/1/A/4200/009, "Engineering Safety Feature Actuation Periodic Actuation test following the repair of 1NW61B, 1B NW surge chamber RN supply on April 24, 2018
- (4) PT/1/A/4350/002 B, "Diesel generator 1B operability test," following repair of 1B DG KD engine cooling tubing leak on May 29, 2018
- (5) PT/2/A/4350/002 B, "Diesel generator 2B operability test," following repair for 2B DG non-emergency trip on June 27, 2018

71111.20 - Refueling and Other Outage Activities (1 Sample)

The inspectors evaluated refueling outage 2RFO22 activities from March 17, 2018, to April 17, 2018.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Routine (6 Samples)

- (1) PT/2/A/4700/014, "Auxiliary shutdown panel 2B functional test (Unit 1 outage)," on March 28, 2018
- (2) PT/2/A/4200/009, "Engineered safety features actuation periodic test," on April 7, 2018
- (3) PT/2/A/4600/022 A, "Mode 1 periodic surveillance items," on May 23, 2018
- (4) PT/1/A/4200/027, "NW Valve In-service Test," on June 6, 2018
- (5) PT/2/A/4350/002 A, "Diesel Generator 2A Operability Test," on June 14, 2018
- (6) PT/1/A/4350/002 A, "Diesel Generator 1A Operability Test," on June 20, 2018

In-service (1 Sample)

- (1) PT/2/A/4200/041 A, "Local leak rate test during outage," on April 5, 2019

71114.01 - Exercise Evaluation (1 Sample)

The inspectors evaluated the biennial emergency plan exercise during the week of June 4, 2018. The exercise scenario simulated a feedwater containment isolation valve going closed, followed by a manual reactor trip with several adjacent control rods not inserting. A steam generator tube rupture and manual safety injection, followed by an unisolable main steam leak at the main steam safety valve with worsening fuel damage that led to both a Site Area Emergency and General Emergency simulated classifications so that the offsite organizations could demonstrate their ability to implement emergency actions.

71114.04 - Emergency Action Level and Emergency Plan Changes (1 Sample)

The inspectors evaluated submitted Emergency Action Level and Emergency Plan changes during the week of June 4, 2018. This evaluation does not constitute NRC approval.

71114.08 - Exercise Evaluation – Scenario Review (1 Sample)

The inspectors reviewed and evaluated in-office, the proposed scenario for the biennial emergency plan exercise at least 30 days prior to the day of the exercise.

71114.06 - Drill Evaluation

Drill/Training Evolution (1 Sample)

The inspectors evaluated a training evolution scenario which simulated a hot particle in the controlled access security room, a 1A reactor coolant pump high vibration, a 1A charging pump failure, a fuel clad failure and high containment hydrogen on May 1, 2018.

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (1 Sample)

The inspectors evaluated radiological hazards assessments and controls.

Instructions to Workers (1 Sample)

The inspectors evaluated worker instructions.

Contamination and Radioactive Material Control (1 Sample)

The inspectors evaluated contamination and radioactive material controls.

Radiological Hazards Control and Work Coverage (1 Sample)

The inspectors evaluated radiological hazards control and work coverage.

High Radiation Area and Very High Radiation Area Controls (1 Sample)

The inspectors evaluated risk-significant high radiation area and very high radiation area controls.

Radiation Worker Performance and Radiation Protection Technician Proficiency (1 Sample)

The inspectors evaluated radiation worker performance and radiation protection technician proficiency.

71124.02 - Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls

Radiological Work Planning (1 Sample)

The inspectors evaluated the licensee's radiological work planning by reviewing the following activities:

- (1) 2NC-27 and 2NC-29 Actuator Replacement Activities, RWP No. 2140, HIGH RADIATION AREA 2NC-27 and 2NC-29 Actuator Replacement
- (2) Regenerative Heat Exchanger Activities, RWP No. 2135, HIGH RADIATION AREA Regen HX Activities (Lower Containment) No Room Entries
- (3) RX Head Inspection Activities, RWP No. 2453, Rx Head Inspections Includes Shroud, Hanger, Insulation & Inspections (U/L)
- (4) Thimble Tube Activities, RWP No. 2108, ENA Thimble Tube Activities in Lower Containment, Annulus and Auxiliary Bldg.

Verification of Dose Estimates and Exposure Tracking Systems (1 Sample)

The inspectors evaluated dose estimates and exposure tracking.

Implementation of ALARA and Radiological Work Controls (1 Sample)

The inspectors reviewed ALARA practices and radiological work controls by reviewing the following activities:

- (1) ALARA Plan No. C1EOC23-17-06, Core Exit Thermocouple (CET) Replacement,
- (2) ALARA Plan No. C2R22-18-01, Install/Remove Temporary Shielding during C2R22
- (3) ALARA Plan No. C2R22-18-02, Reactor Head Activities
- (4) ALARA Plan No. C2R22-18-09, Remove/Replace Rx Head Bare Metal Insulation during C2R22
- (5) ALARA Plan No. C2R22-18-20, 2NC027 and 2NC029 Actuator Replacement

Radiation Worker Performance (1 Sample)

The inspectors evaluated radiation worker and radiation protection technician performance.

71124.03 - In-Plant Airborne Radioactivity Control and Mitigation

Engineering Controls (1 Sample)

The inspectors evaluated airborne controls and monitoring.

Use of Respiratory Protection Devices (1 Sample)

The inspectors evaluated respiratory protection.

Self-Contained Breathing Apparatus for Emergency Use (1 Sample)

The inspectors evaluated the licensee's self-contained breathing apparatus program.

71124.04 - Occupational Dose Assessment

Source Term Characterization (1 Sample)

The inspectors evaluated the licensee's source term characterization.

External Dosimetry (1 Sample)

The inspectors evaluated the licensee's external dosimetry program.

Internal Dosimetry (1 Sample)

The inspectors evaluated the licensee's internal dosimetry program.

Special Dosimetric Situations (1 Sample)

The inspectors evaluated the licensee's performance for special dosimetric situations.

71124.05 - Radiation Monitoring Instrumentation

Walk Downs and Observations (1 Sample)

The inspectors evaluated radiation monitoring instrumentation during plant walkdowns.

Calibration and Testing Program (1 Sample)

The inspectors evaluated the licensee's calibration and testing program.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below for the period from June 1, 2017, through March 31, 2018. (8 Samples)

- (1) Mitigating System Performance Index (MSPI) Emergency AC
- (2) MSPI High Pressure Injection Systems
- (3) MSPI Heat Removal Systems (AFW)
- (4) Radiological Effluent TS/ODCM Radiological Effluent Occurrences
- (5) Occupational Exposure Control Effectiveness

71152 - Problem Identification and Resolution

Semiannual Trend Review (1 Sample)

The inspectors reviewed the licensee's corrective action program for trends that might be indicative of a more significant safety issue.

71153 - Follow-up of Events and Notices of Enforcement Discretion

Licensee Event Reports (1 Sample)

The inspectors evaluated the following licensee event report which can be accessed at <https://lersearch.inl.gov/LERSearchCriteria.aspx>:

- (1) Licensee Event Report (LER) 414/2018-001-00, Auxiliary Feedwater System Auto-Start Due to a Loss of Both Feedwater Pumps Signal, on March 19, 2018

Notice of Enforcement Discretion (1 Sample)

The inspectors evaluated the licensee actions surrounding Notice of Enforcement Discretion (NOED) 18-2-001 which can be accessed at <http://www.nrc.gov/reading-rm/doc-collections/enforcement/notices/noedreactor.html>, on June 14, 2018.

INSPECTION RESULTS

Failure to Identify and Correct CAQ Associated with Failure of the 2B Seal Water Injection Filter O-ring			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Initiating Events	Green NCV 05000414/2018002-01 Closed	[P.2] – Evaluation	71111.12 – Maintenance Effectiveness
<p>A self-revealed Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified for the licensee's failure to promptly identify and correct a condition adverse to quality associated with the failure of 2B seal water injection filter (SWIF) O-ring. Specifically, the licensee's failure to implement corrective actions for the first failure of the O-ring on 2B SWIF on March 12, 2018, led to a second failure of 2B SWIF O-ring on May 13, 2018.</p>			
<p><u>Description:</u></p> <p>On March 12, 2018, with Unit 2 at 100 percent power, control room operators entered AP-10, "Reactor Coolant Leak," due to indications of a charging line leak. Operators also entered AP-8 "Malfunction of Reactor Coolant Pump" due to all four Unit 2 reactor coolant pump (RCP) lower bearing and #1 seal outlet temperatures increasing. The RCS leak was determined to be from the in-service 2B seal injection filter. Operators took immediate actions to terminate the leak by isolating reactor coolant system letdown. Operators placed the 2A SWIF in-service and restored seal water cooling to the RCPs. Shortly after the failure it was determined that the leak was caused by failure of an O-ring on the 2B SWIF lid housing. Following the transient the licensee entered the issue into the corrective action program (CAP) and initiated actions to determine the cause.</p> <p>On May 13, 2018, with Unit 2 at 100 percent power, the 2B SWIF O-ring failed causing an RCS leak. Operators took similar actions to isolate the leak and placed the 2A SWIF in-service. After further investigation, the licensee determined that the two failures were caused by torque applied to the filter trunnion bolts during maintenance activities over time. This resulted in a gap in the lid to the filter housing joint and allowed the O-ring to fail. After the second failure, the licensee initiated actions to determine the appropriate torque value and replace the trunnions. The licensee also initiated actions to ensure that no gap existed between the lid and the filter housing for the SWIFs on both Units.</p> <p>After the second failure the inspectors noted that the cause evaluation for the O-ring failure on March 12, 2018, was not complete. The due date for the evaluation was changed twice because the failed O-ring had not been sent for lab analysis. The inspectors concluded that the failure to identify and correct the adverse condition associated with the March failure contributed to the second failure on May 13, 2018.</p> <p>Corrective Actions: The licensee took immediate corrective actions to isolate the RCS leak and restore seal water cooling to the reactor coolant pumps by aligning the backup filter. The licensee also initiated actions to identify the appropriate torque and revise maintenance procedures verify no gap exists between the lid and filter housing.</p> <p>Corrective Action Reference: CR 219084</p>			

Performance Assessment:

Performance Deficiency: The inspectors determined that the licensee's failure to promptly identify and correct a condition adverse to quality associated with the failure of 2B seal water injection filter (SWIF) O-ring was a performance deficiency and a violation of 10 CFR Part 50, Appendix B, Criterion XVI.

Screening: The inspectors determined the performance deficiency was more than minor because it adversely affected the equipment performance attribute of the initiating events cornerstone and its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to implement timely corrective actions for the failure of the 2B SWIF O-ring on March 12, 2018, resulted in a second failure of the 2B SWIF O-ring on May 13, 2018.

Significance: The inspectors assessed the significance of the finding using IMC 0609, Attachment 4, "Initial Characterization of Findings," dated October 7, 2016, and IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012. The inspectors determined that the finding was of very low safety significance (Green) because the finding would not have likely affected other systems used to mitigate a LOCA resulting in a total loss of their function.

Cross-cutting Aspect: The inspectors determined the finding had a cross-cutting aspect of evaluation in the area of problem identification and resolution, because the licensee failed to thoroughly evaluate the failure of the 2B SWIF on March 12, 2018, to ensure that resolutions addressed the cause of the O-ring failure.

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," states that measures shall be established to ensure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected.

Contrary to the above, the licensee failed to promptly identify and correct a condition adverse to quality following the failure of the Unit 2, 2B SWIF O-ring on March 12, 2018. As a result, Unit 2 experienced a second failure of the 2B SWIF O-ring on May 13, 2018. The licensee took immediate corrective actions isolate the RCS leak and restore seal water cooling to the reactor coolant pumps by aligning the backup filter.

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

Failure to Promptly Identify and Correct a Condition Adverse to Quality			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000413/2018002-02 Closed	[P.2] – Evaluation	71111.15 – Operability Determinations and Functionality Assessments
<p>The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” for the licensee’s failure to promptly identify and correct a condition adverse to quality associated with low resistance readings for core exit thermocouples (CET) identified during testing on January 30, 2018. Specifically, the licensee failed to declare two CETs inoperable when resistance readings were outside of the acceptance criteria, until April 9, 2018.</p>			
<p><u>Description:</u></p> <p>On January 30, 2018, while performing thermocouple indication calibration check (IP/2/A/3122/003B, Section 10.5, “ICCM Train A Analog/Digital Internal Loop Calibration and Power Supply Check/Replacement,”) maintenance identified three CETs that didn’t meet the lead resistance to ground acceptance criteria and documented the values as unsatisfactory. On February 2, 2018, CR 2181846 was generated to address the shorted CET readings. The CR identified that three CETs had ground readings out of specification, but the actual thermocouple was indicating properly for plant conditions. Maintenance verified via work order (WO) 20177989 that the thermocouples were indicating properly and the CR was closed. On April 7, 2018, CR 2196923 was generated as a result of inspectors’ follow-up questions. This CR reviewed and evaluated operating experience that addressed potential CET water intrusion that could be detected by the thermocouple to ground resistance checks. Maintenance (via WO 20244802) took additional resistance CET/ground measurements closer to the reactor vessel head, to eliminate potential erroneous readings and verify the acceptance criteria of the CETs. These measurements identified unacceptable lead resistance to ground readings on two CETs.</p> <p>Corrective Action(s): Based on the unacceptable resistance readings, the license declared two CETs inoperable and initiated corrective actions to address the CETs in a future refueling outage.</p> <p>Corrective Action Reference(s): CR 2204792</p>			
<p><u>Performance Assessment:</u></p> <p>Performance Deficiency: The inspectors determined that the licensee’s failure to promptly identify and correct a condition adverse to quality associated with low resistance readings for CET identified during testing, was a performance deficiency and a violation of 10 CFR Part 50, Appendix B, Criterion XVI.</p> <p>Screening: The performance deficiency was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone, and adversely</p>			

affected the cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events. Specifically, the licensee failed to declare two CETs inoperable when resistance readings were outside of the acceptance criteria, until April 9, 2018.

Significance: The inspectors assessed the significance of the finding using IMC 0609, Attachment 4, "Initial Characterization of Findings," dated October 7, 2016, and IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012. The inspectors determined that the finding was of very low safety significance (Green) because it was not a design deficiency; did not represent a loss of system and/or function; did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time; and did not result in the loss of a high safety-significant, non-technical specification train.

Cross-cutting Aspect: The finding had a cross-cutting aspect of evaluation in the area of problem identification and resolution because the licensee failed to thoroughly evaluate unacceptable resistance measurements for the CETs identified on January 30, 2018. Specifically, the licensee did not use the corrective action program and acceptance criteria in the maintenance procedure to evaluate the low resistance readings and the impact to CET operability.

Enforcement:

Violation: 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected.

Contrary to the above, between January 30, 2018, and April 9, 2018, the licensee failed to promptly identify and correct a condition adverse to quality associated with low resistance readings for CETs identified during maintenance testing.

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

Observation	71152 – Problem Identification and Resolution
<p>The inspectors identified an adverse trend associated with emergent equipment issues with emergency diesel generators. During the last assessment from January 2018 to June 2018, all four of the Catawba's EDGs have had emergent equipment issues that have resulted in extended periods of unavailability. The following items are examples of this trend:</p> <p>On May 29, 2018, an auxiliary operator identified a jacket water leak on the 1B EDG while in standby. Engineering calculated that the leak would increase to approximately 1.38 gph with the diesel operating and would not meet the 7 day mission time if no action was taken. The diesel was declared inoperable and returned to service on May 30, 2018, following repairs.</p>	

On June 11, 2018, during a post maintenance test of the 2A EDG, the output breaker 2ETA18 tripped open due to actuation of lockout relay 86D when trying to parallel and load. The licensee determined that the issue was likely caused by recent maintenance. The 2A EDG was declared operable on June 14, 2018, following repairs.

On June 19, 2018 during the performance of maintenance on the 1A EDG, the licensee identified that power driven potentiometer (PDP) was not working. The diesel was declared operable on June 20, 2018, following replacement of the PDP.

On June 26, 2018, during a scheduled surveillance test, the 2B EDG tripped due to a low lube oil pressure non-emergency trip. The licensee implemented a compensatory action to remove the non-emergency trip until repairs could be made and declared the diesel operable on June 27, 2018.

Unresolved Item (Open)	Notice of Enforcement Discretion Granted from Technical Specifications Related to the Failure of the 2A EDG during Post-maintenance Test URI 05000414/2018-002-03	71153 – Follow-up of Events and Notices of Enforcement Discretion
<p><u>Description:</u></p> <p>As required by Inspection Manual Chapter 0410 Section 06.03.c, an unresolved item is being opened associated with a Notice of Enforcement Discretion 18-2-001 related to approval to not comply with TS requirements associated with the failure of the 2A emergency diesel generator during post-maintenance testing on June 11, 2018.</p> <p>On the basis of the staff's evaluation of the licensee's request, the NRC concluded that granting the NOED was consistent with the NRC's Enforcement Policy and had no adverse impact on public health and safety or the environment. Therefore, as communicated orally to the Duke staff on June 14, 2018, the NRC exercised enforcement discretion to not enforce compliance with TS LCO 3.8.1 Condition G requirements that Catawba Nuclear Station, Units 2, be in Mode 2 by 10:08 a.m. EDT on June 14, 2018. Unit 2, Mode 3 entry was extended by 48 hours, to allow completion of repair on the 2A emergency diesel generator.</p> <p>Planned Closure Action: Inspectors will review the licensee's cause evaluation for this issue.</p> <p>Licensee Actions: Duke completed repairs to the 2A emergency diesel generator such that the condition causing the need for the NOED was corrected at 9:06 p.m. EDT on June 14, 2018.</p> <p>Corrective Action Reference: CR 2212222</p>		

EXIT MEETINGS AND DEBRIEFS

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

The inspectors confirmed that proprietary information was controlled to protect from public disclosure.

- On July 23, 2018, the inspector presented the quarterly resident inspector inspection results to Mr. Clark Curry, and other members of the licensee staff.

LIST OF DOCUMENTS REVIEWED

71111.01 - Adverse Weather Protection

CR 2198735, Damage to temporary structures due to high wind event
PT/0/B/4700/039, Hot Weather Protection, Rev.23
OP/0/B/6700/015, Weather Related Activities

71111.04 - Equipment Alignment

OP/1/A/6350/002, Diesel Generator Operation
OP/1/A/6200/006, Safety Injection System
OP/2/A/6550/002, D/G Lube Oil System

71111.05AQ - Fire Protection Annual/Quarterly

CSD-CNS-PFP-AB-0522-001, Auxiliary Building Elev 522 Pre-Fire Plan
CSD-CNS-PFP-AB-0577-001, Auxiliary Building Elevation 574 and 577

71111.11 - Licensed Operator Regualification Program and Licensed Operator Performance

CPE 1811, Crew Performance Evaluation
AP/2/5500/013, Boron dilution

71111.12 - Maintenance Effectiveness

NCR 2208969, WO 20253228-01 found timer OOT
NCR 2192722, 2ETB Degraded Voltage Timer Failed Acceptance Criteria
EC 411844, Degraded Bus Timer Setpoint Change
IP/0/A/4971/005, Degraded Bus Voltage Trip and Alarm Timers Calibration Procedure
NCR 2200142, Repair 2NCP5121

71111.19 - Post Maintenance Testing

WO 20247706, 2NC PT 5121: Repair pressure reading low
NCR 2199526, 1D Steam Generator Narrow Range Level Channel 3 is failing
WO 20247339, Replace 1D SG NR level channel 3 7300 card

71111.22 - Surveillance Testing

CR 2199526, 1D Narrow Range Level CH#3 failing

71114.01 - Exercise Evaluation

Procedures

Catawba Nuclear Station (CNS) Emergency Plan, Section B, Rev. 165
AD-EP-ALL-0101, Emergency Classification, Rev. 1
AD-EP-ALL-0103, Activation an Operations of the Emergency Operations Facility, Rev. 1
AD-EP-ALL-0104, ERO Communication Guidelines and Forms, Rev. 1
AD-EP-ALL-0105, Activation & Operation of the Technical Support Center, Rev. 1
AD-EP-ALL-0109, Offsite Protective Action Recommendations, Rev. 2
AD-EP-ALL-0110, Recovery, Rev. 1
AD-EP-ALL-0202, Emergency Response Dose Assessment, Rev. 6
AD-EP-ALL-0203, CNS Specific Field Monitoring, Rev. 0
AD-EP-ALL-0304, State & County Notifications, Rev. 1

RP/0/A/5000/010, Conducting a Site Assembly or Preparing the Site for an Evacuation,
Rev. 28

Records and Data

Catawba Nuclear Station 2018 Emergency Planning Graded Exercise Scenario Book
Control Room Simulator, Operations Support Center, Technical Support Center, and
Emergency Operations Facility/Joint Information Center - Documentation packages
(logs, Event Notification Forms, Protective Action Recommendations, Media
Releases, and Radiological Dose Assessments)

Corrective Action Program Documents (Nuclear Condition Reports)

NCR 02211058, CNS EP Exercise 18-02 RP bridge line non-functional
NCR 02211060, CNS EP Drill 18-02 – RWP 33 LHRA task
NCR 02211311, CNS Exercise 18-02 Objective B.2 unsatisfactory
NCR 02211320, CNS Exercise 18-02 Objective B.7 graded unsatisfactory
NCR 02211328, CNS Exercise 18-02 Objective E.2 Demonstration Criteria 7
unsatisfactory
NCR 02211337, CNS Exercise Objective H.1 Demonstration Criteria 8 unsatisfactory
NCR 02211589, CNS NRC EX 18-02 unsatisfactory Objective I3
NCR 02211616, Demonstration Criteria I.3 scored unsatisfactory for TSC
NCR 02211661, CNS Exercise 18-02 Demonstration Criteria H.3 was not met

71114.04 - Emergency Action Level and Emergency Plan Changes

Procedures

AD-EP-ALL-0101, Emergency Classification, Rev. 1
AD-EP-ALL-0109, Offsite Protective Action Recommendations, Rev. 1 & 2
AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment, Rev. 6
AD-EP-ALL-0502, Emergency Preparedness 10 CFR 50.54(q) Training Requirements,
Rev. 1
AD-EP-ALL-0602, Emergency Plan Change Screening and Effectiveness Evaluations 10
CFR 50.54(Q), Rev. 5
Catawba Nuclear Station Emergency Plan, Section B, Rev. 165

Change Packages

10 CFR 50.54(q) Screening Evaluation Form for AD-EP-ALL-0202, Rev. 6, Emergency
Response Offsite Dose Assessment, dated September 25, 2017
10 CFR 50.54(q) Effectiveness Evaluation Form for AD-EP-ALL-0202, Rev. 6, Emergency
Response Offsite Dose Assessment, dated September 25, 2017
10 CFR 50.54(q) Screening Evaluation Form for AD-EP-ALL-0101, Rev. 1, Emergency
Classification, dated December 5, 2017
10 CFR 50.54(q) Effectiveness Evaluation Form for AD-EP-ALL-0101, Rev. 1, Emergency
Classification, dated December 5, 2017
10 CFR 50.54(q) Screening Evaluation Form for AD-EP-ALL-0109, Rev. 2, Offsite
Protective Action Recommendations, dated March 16, 2018
10 CFR 50.54(q) Effectiveness Evaluation Form for AD-EP-ALL-0109, Rev. 2, Offsite
Protective Action Recommendations, dated March 19, 2018
10 CFR 50.54(q) Screening Evaluation Form for Catawba Emergency Plan, Sections A, B,
E, G, H, I, J, K, M, O, & P, dated September 21, 2017

- 10 CFR 50.54(q) Effectiveness Evaluation Form for Catawba Emergency Plan, Sections A, B, E, G, H, I, J, K, M, O, & P, dated September 21, 2017
- 10 CFR 50.54(q) Screening Evaluation Form for Catawba Emergency Plan, Sections A, B, E, G, H, I, J, K, M, O, & P, dated December 5, 2017
- 10 CFR 50.54(q) Effectiveness Evaluation Form for Catawba Emergency Plan, Sections A, B, E, G, H, I, J, K, M, O, & P, dated December 5, 2017
- 10 CFR 50.54(q) Screening Evaluation Form for Catawba Emergency Plan, Section B Rev. 165, dated March 15, 2018
- 10 CFR 50.54(q) Screening Evaluation Form for Catawba Emergency Plan, Section N, Rev. 149, dated February 2, 2018
- 10 CFR 50.54(q) Screening Evaluation Form for Catawba Emergency Plan, Section Q, Rev. 151, dated March 15, 2018

Corrective Action Program Documents

NCR 02211821, Material provided to NRC led to inspection delays (NRC-identified)

71114.08 - Exercise Evaluation

Procedures

Catawba Nuclear Station (CNS) Emergency Plan, Section B, Rev. 165
 CNS 2018 Emergency Planning Graded Exercise Scenario Book
 AD-EP-ALL-0101, Emergency Classification, Rev. 1
 AD-EP-ALL-0103, Activation and Operations of the Emergency Operations Facility, Rev. 1
 AD-EP-ALL-0104, ERO Communication Guidelines and Forms, Rev. 1
 AD-EP-ALL-0105, Activation & Operation of the Technical Support Center, Rev. 1
 AD-EP-ALL-0109, Offsite Protective Action Recommendations, Rev. 2
 AD-EP-ALL-0110, Recovery, Rev. 1
 AD-EP-ALL-0202, Emergency Response Dose Assessment, Rev. 6
 AD-EP-ALL-0203, CNS Specific Field Monitoring, Rev. 0
 AD-EP-ALL-0304, State & County Notifications, Rev. 1

Records and Data

CNS 8-Year Matrix of Scenario Elements
 April 5, 2016 Critique Report
 July 28, 2016 Critique Report, dated 8/29/16
 November 9, 2016 Contaminated Injured Person Drill Report, dated 12/8/16
 November 10, 2016 SAMG Drill Critique Report, dated 12/8/16
 November 14, 2016 Augmentation Drill Report, dated 12/8/16
 January 19, 2017 Critique Report
 July 15, 2017 ERO Augmentation Drill Report
 September 14, 2017 & November 2, 2017 Critique Report
 Self-Assessment Report QHSA 2174092-05, 2018 CNS EP Program NRC Biennial Exercise Readiness, dated 5/8/18

71124.01: Radiological Hazard Assessment and Exposure Controls

Procedures, Guidance Documents and Manuals

AD-PI-ALL-0100, "Corrective Action Program", Rev. 13
 AD-RP-ALL-0002, "Radiation and Contamination Surveys", Rev. 0
 AD-RP-ALL-0004, "Radiological Posting and Labeling", Rev. 0

AD-RP-ALL-0005, "Access Controls for High and Locked High Radiation Areas", Rev. 0
AD-RP-ALL-0006, "Personnel Contamination Monitoring", Rev. 0
AD-RP-ALL-0007, "Control of Radioactive Material", Rev. 0
AD-RP-ALL-1103, "Radiation Protection Self Assessments", Rev. 2
AD-RP-ALL-2017, "Access Controls for High, Locked High, and Very High Radiation Areas",
Rev. 5
AD-RP-ALL-3002, "Unconditional Release of Material", Rev. 1
AD-RP-ALL-4015, "Dosimetry in Gradient Radiation Fields", Rev. 0

Records and Data

Air Sample CN18032000022, U2 Rx Building Upper Containment Blind Flange Removal
Air Sample CN18032000025, U2 Rx Building Upper Containment Blind Flange Removal
Air Sample CN18032000036, U2 Equipment Hatch
Air Sample CN18032100005, U2 Equipment Hatch
Air Sample CN18032100033, U2 Rx PRT Routine
Air Sample CN18032200029, U2 Rx PRT Routine
Catawba Nuclear Site Radioactive Source Index
National Source Tracking System Annual Inventory Reconciliation Report, 01/16/18
Radiological Survey M-20131005-10, U2 Rx Building Upper Containment Deep End Post-vac
Radiological Survey M-20160930-5, U2 Rx Building Upper Containment Deep End
Radiological Survey M-20161002-14, U2 Rx Building Upper Containment Deep End
Radiological Survey M-20171003-10, 577' Aux Building General Area
Radiological Survey M-20180212-4, 577' Aux Building General Area
Radiological Survey M-20180319-14, U2 Crudburst Room 308
Radiological Survey M-20180319-3, U2 Mech Pen Room
Radiological Survey M-20180320-17, U2 Job Coverage for Blind Flange Removal
Radiological Survey M-20180321-10, U2 Incore Sump Equipment Hatch Area
Radiological Survey M-20180323-9, Aux Building 577' Overhead Areas
Radiation Work Permit (RWP) No. 2101, RP Activities in Lower Containment & Annulus
RWP No. 2405, VV Ductwork (HRA)
RWP No. 2415, Rx Building Fuel Activities
Self-briefing Location Map
Summary of Spent Fuel Pool Inventory, 12/31/17
U1 Alpha Radiation Characterization, 10/23/17
U2 Alpha Radiation Characterization, 01/11/17

Corrective Action Program (CAP) Documents

AR 02174014
AR 02142221
Quick-hitter Self-assessment Report 02086403-05

71124.02: Occupational ALARA Planning and Controls

Procedures, Guidance Documents and Manuals

AD-PI-ALL-0100, "Corrective Action Program", Rev. 13
AD-RP-ALL-2000, "Preparation and Management of Radiation Work Permits", Rev. 3
AD-RP-ALL-9000, "ALARA Program", Rev. 8
AD-RP-ALL-9001, "ALARA Planning", Rev. 4
MP/0/A/7650/126, "Installation of Temporary Lead Shielding", Rev. 7

RPMP 02-01, "Establishing RWP Setpoints", Rev. No. 1

Records and Data

2CR22 CBCU Dose Rates, 03/19/18

ALARA Plan No. C1EOC23-17-01, Install/Remove Temporary Shielding during 1EOC23, Rev. 0

ALARA Plan No. C1EOC23-17-02, Reactor Head Activities, Rev. 0

ALARA Plan No. C1EOC23-17-11, 1NC027 and 1NC029 Activities, Rev. 0

ALARA Plan No. C2R22-18-03A, 2A NCP Seal Replacement, Rev. 0

ALARA Plan No. C2R22-18-17, CRGT Relocation, Rev. 0

Attachment 4, C2R22 Crudburst, C2R22 Crudburst Shutdown.xls (Crud Graph), Undated

CNS 2017 and 2018 Annual Estimate Developments, Undated

CSD-RP-CNS-4001, Boundary Dose Rates Established for ISFSI Phase III Project, Rev. 0, 02/13/18, Tier Level 3

Memorandums for File, Catawba Nuclear Station: ALARA Committee Meeting Minutes, File No. CN-750.20, 2017 CNS October (Rescheduled September Meeting), ALARA Committee Meeting, 12/12/17; 2017 CNS November, ALARA Committee Meeting, 11/27/17; 2018 CNS January, ALARA Committee Meeting, 01/22/18; and CNS March, ALARA Committee Meeting, 03/22/18

Memorandums for File, Catawba Nuclear Station: CNS Unit 2EOC21 Refueling & Maintenance Outage, Summary of Personnel Radiation Exposures, File No. CN-750.20, 11/14/16; and CNS Unit 1EOC23 Refueling & Maintenance Outage, Summary of Personnel Radiation Exposures, File No. CN-750.20, 05/25/17

RWP No. 2114, Snubbers and Hanger Work (Lower Containment and Annulus), Rev. 23

RWP No. 2116, Scaffolding Activities (Lower Containment and Annulus), Rev. 16

RWP No. 2405, Reactor Head Activities, Rev. 22

Temporary Shielding Request (TSR) No. 17-221, 2FW 009, Work Order No. (WON) 20178174, Task Nos. 27 & 57, 09/14/17

TSR No. 17-224B, Letdown Orifice Area, WON 20178174, Task Nos. 32 & 62, 09/14/17

TSR No. 17-260, NV Line Room 427, WON 20178304, Task Nos. 01 & 12, 09/14/17

TSR No. 17-261, ND "B" Train Room 109, WON 20178304, Task Nos. 03 & 06, 09/06/17

TSR No. 17-262, ND "A" Train Room 110, WON 20178304, Task Nos. 08 & 15, 09/06/17

TSR No. 18-239, SFP Manipulator Bridge, WON 20178304, Task Nos. 19 & 20, 02/15/18

TSR No. 18-296B, 2B NC Hot Leg RTD, WON 20174285, Task Nos. 12 & 16, 03/21/18

VSDS Standard Map Survey Report, Catawba Nuclear Station, Survey CNS-M-20180131-1, ISFSI 3rd Pad Project Occupancy Study, 01/31/18

CAP Documents

CR 02173309

CR 02194662

CR 02194663

CR 02198835

71124.03: In-Plant Airborne Radioactivity Control and Mitigation

Procedures, Guidance Documents and Manuals

AD-RP-ALL-0003, "Radiological Air Sampling", Rev. 0

AD-RP-ALL-2019, "TEDE ALARA Evaluations and DAC Hour Tracking", Rev. 2

AD-RP-ALL-6000, "Respiratory Protective Equipment Approval and Issue", Rev. 2

AD-RP-ALL-6001, "Quantitative Fit Testing", Rev. 0
AD-RP-ALL-6002, "Inspections of Self-Contained Breathing Apparatus (SCBA) and Associated Equipment", Rev. 0
AD-RP-ALL-7004, "Operation of Air Sampling Equipment", Rev. 2

Records and Data

AD-RP-ALL-6002 Inspections of Self-Contained Breathing Apparatus (SCBA) and Associated Equipment Data Sheets for Inspections Conducted January and February 2018
Laboratory Report Compressed Air Gas Quality Testing, EAGLE 5000 BARON II SCBA COMP (RCA), 01/25/18
Laboratory Report Compressed Air Gas Quality Testing, BARON 3 SCBA COMPRESSOR (CTR), 01/25/18
Lesson Plan HS0113, Advanced Basic Respiratory Initial Training Initial Training (SCBA) and Requalification for MSA, M-7 Firehawk
MSA C.A.R.E Authorized Repair Center & Technician Certifications, Exp - May 2018
Portable HEPA #100186 Particulate Air Filter Test Results, 02/22/18
Portable HEPA #3392 Particulate Air Filter Test Results, 02/22/18
Respiratory Fit Test Training Roster, 04/26/18
SCBA Flow Test Certification, ENRAD ID 04094, 08/16/16 and 09/15/17
SCBA Flow Test Certification, ENRAD ID 04350, 06/12/16 and 06/29/17
SCBA Flow Test Certification, ENRAD ID 04357, 06/12/17 and 11/07/15
Work Order (WO) 20075254, 1CRA-PFT-1, Carbon Adsorber Bank in Place Leak Test, HEPA Filter DOP Test and Radioiodine Penetration Test, 11/09/16
WO 2162714, 1CRA-PFT-1, Carbon Adsorber Bank in Place Leak Test, HEPA Filter DOP Test and Radioiodine Penetration Test, 04/24/15
WO 2017108, 1CRA-PFT-2, Carbon Adsorber Bank in Place Leak Test, HEPA Filter DOP Test and Radioiodine Penetration Test, 04/21/16
WO 20157324, 1CRA-PFT-2, Carbon Adsorber Bank in Place Leak Test, HEPA Filter DOP Test and Radioiodine Penetration Test, 10/26/17

CAP Documents

AR 02056821
AR 02058684
AR 02069119
AR 02079067
AR 02088897
AR 02091112
AR 02168635
AR 02168702

71124.04: Occupational Dose Assessment

Procedures, Guidance Documents and Manuals

AD-RP-ALL-2010, "Skin Dose from Contamination", Rev. 1
AD-RP-ALL-4010, "Internal Dose Assessment", Rev. 1
AD-RP-ALL-4011, "In Vitro Bioassay", Rev. 1
AD-RP-ALL-7008, "APEX INVIVO Whole Body Counter Operation, Quality Control Checks and Data Review", Rev. 2
CSD-RP-ALL-4016, "Prospective Determination for Occupational Exposure", Rev. 0

TE-RP-ALL-4003, "Placement of Personnel Dosimetry for Non-Uniform Radiation Fields",
Rev. 0
TE-RP-ALL-4004, "Multiple Dosimetry", Rev. 4

Records and Data

AD-RP-ALL-0003, Attachment 1, Airborne Radioactivity Calculation Worksheet, Survey # CNS-M-20180403-6, U-2 Refuel Cavity Deep End, 04/23/18
AD-RP-ALL-2014, Attachment 3, Alpha Air Sample Counting Results Form, U-2 Refuel Cavity Deep End, 04/23/18
AD-RP-ALL-2019, Attachment 4, TEDE/ALARA Evaluation and DAC Hour Tracking, 04/23/18
Air Sample Survey # CNS-M-20180403-10, U-2 Refuel Cavity Deep End, Gamma Spec Results
Catawba Nuclear Station – TLD/ED Correlations for 2nd Semi-Annual 2017
CNS Alpha Radiation Characterization, 04/12/18
Daily Job Dose History Report for RWP 2414, 04/03/18
NVLAP Certificate of Accreditation to ISO/IEC 17025:2005: Effective dates 04/01/17 through 3/31/18
Personnel Contamination Event Logs, 2016, 2017 and 2018 to date Report, CNS ISFSI Neutron to Gamma Ratio Characterization, undated
TE-RP-ALL-4001, Attachment 1, Pregnancy Exposure Agreement for two workers, 2018
TE-RP-ALL-4004, Attachment 2, Multipack Forms: Multipack ID#4732, 01/10/18

CAP Documents

AR 02079103
AR 02131088
AR 02136044
AR 02136049
AR 02145007
AR 02174077
AR 02193996
Self-Assessment Number: 02086398, 2017 CNS Alpha Program Self-Assessment, 07/06/17
Self-Assessment Number: 02086402, External Dosimetry Program Assessment, 10/05/17

71124.05: Radiation Monitoring Instrumentation

Procedures, Guidance Documents and Manuals

AD-PI-ALL-0100, "Corrective Action Program", Rev. 13
AD-RP-ALL-7005, "Radiation Protection Portable Instrument Source Response Check", Rev 2
AD-RP-ALL-7008, "Apex In Vivo Whole Body Counter Operation, Quality Checks and Data Review", Rev. 2
CNS NEI Rev 006 Wallcharts (EALs), Rev. 0
Enrad-Proc-811, "Operation and Maintenance of J.L. Shepherd Calibrator", Rev. 2
RA/0/1300/002, "Setup, Calibration and Quality Control of Canberra Series 5 Automatic Planchet Counting System (APC)", Rev. 2
RA/0/1300/005, "Quality Control Check of Count Room Equipment", Rev. 3
RA/0/1400/006, "Radiation Protection Fixed Instruments Response Check", Rev. 32
RA/0/1400/014, "Radiation Protection Portable Instruments Response Check", Rev. 2

Records and Data

AD-RP-ALL-7007, Apex In Vivo Whole Body Counter Calibration, 10/31/16 and 11/17/17

Control Charts - APC-1296 QA and Bkgd, APC-1299 QA and Bkgd, Germanium Detector No. 5
 Total Counts and Peak FWHMs, and LS-1300 H-3 Background and Efficiency Baseline,
 03/25/18 – 04/24/18

Duke Energy Interlaboratory Cross Check Program Sample Analysis Form, Tritium in Water,
 LS-1300 and LS-1301, 07/12/17

Eckert & Zeigler Analytics, Results of Radiochemistry Cross Check Program, 4th Quarter 2017

Enrad Laboratories Certificate of Calibration, AMS-4 No. 01398, 10/26/17 and 02/14/18

Enrad Laboratories Certificate of Calibration, Argos-5AB No. 12885, 03/07/17 and 01/25/18

Enrad Laboratories Certificate of Calibration, Cronos-4 No. 12246, 01/05/17 and 01/3/18

Enrad Laboratories Certificate of Calibration, GEM-5 No. 02800, 01/04/17 and 01/3/18

Enrad Laboratories Certificate of Calibration, Lud-9-3 No. 11731, 03/14/17 and 02/23/18

Enrad Laboratories Certificate of Calibration, Ludlum Model 3 (CPM) No. 03602, 01/26/17 and
 02/19/18

Enrad Laboratories Certificate of Calibration, Ludlum Model 12-4 (Remball) No. 03134, 07/02/16
 and 08/28/17

Enrad Laboratories Certificate of Calibration, Telepole No. 02134, 09/21/16 and 02/09/18

FASTSCAN1 Calibration and Background Checks, 04/26/18

LS-1300, Liquid Scintillation Counter Calibration Verification, 08/02/16 and 08/23/17

MGP Instruments Calibration Certificate, ED No. 968416, 03/23/17 and 01/17/18

Quality Assurance Reports, DET05, 1st Check and 2nd Check After Gain Adjustment, 04/24/18

RA 0 1300 001, Calibration of PerkinElmer TriCarb 2900TR Series Liquid Scintillation Counters,
 LS-1300, 08/2/16 and 08/23/17

RA 0 1300 002, Setup, Calibration and Quality Control of Canberra Series 5 Automatic Planchet
 Counting System (APC), APC-1296, 04/16/17 and 04/16/18

RA 0 1300 002, Setup, Calibration and Quality Control of Canberra Series 5 Automatic Planchet
 Counting System (APC), APC-1299, 04/16/17 and 04/16/18

RA 0 1300 003, Calibration of Apex Gamma Spectroscopy System, Detector # 5 Efficiency
 Calibration Approval, 11/15/16 and 11/08/17

RA 0 1300 005, Quality Control Check of Count Room Equipment, Det #5 Recalibration,
 04/24/18

Verification of the SCRAM Program used for calibration of the J.L. Shepherd Model 89 Shielded
 Calibration Range Irradiator at Catawba Nuclear Station, 08/16/16 and 08/16/17

WO 02189993 01, 1EMF Perform Chnl Cal on EMF-12, 05/17/16

WO 20033365 01, 2EMF-53A Perform Channel Cal, 09/26/16

WO 20178491 04, 2EMF-53A Perform Channel Cal, 04/19/18

CAP Documents

CR 02170140
 CR 02181393
 CR 02182297
 CR 02182301
 CR 02185656
 CR 02190975

Quick Hitter Self Assessment Report, Assignment No. 02086401-05, Radiation Protection
 Instruments, 10/16/17

71151: Performance Indicator Verification

Procedures, Guidance Documents and Manuals

AD-CP-DEC-0021, "Projected Offsite Dose from Radioactive Effluents", Rev. 1

AD-RP-ALL-1101, "Performance Indicators (PI) for the Occupational and Public Radiation Safety Cornerstones", Rev. 0

AD-EP-ALL-0002, NRC Regulatory Assessment Performance Indicator Guideline
Emergency Preparedness Cornerstone, Rev. 3

Records and Data

AD-CP-DEC-0021, "Projected Offsite Dose from Radioactive Effluents", Attachment 2,
[CNS] Dose Commitment Date Sheet, Rev. 1, 01/15/18

AD-RP-ALL-1101, "Performance Indicators (PI) for the Occupational and Public Radiation Safety Cornerstones", Rev. 0, June 2017 through March 2018

Catawba Dose Rate Alarm Log, 06/01/17 – 04/20/18

Gaseous Waste Release Permit Report, GWR No. 2018025, 04/16/18

Liquid Waste Release Permit Report, LWR No. 2018018, 04/12/18

DEP opportunities documentation for 1st, 2nd, 3rd, 4th quarters 2017, & 1st quarter 2018

Siren test data for 1st, 2nd, 3rd, 4th quarters 2017, & 1st quarter 2018

Drill & exercise participation records of ERO personnel for 1st, 2nd, 3rd, 4th quarters 2017, &
1st quarter 2018

71152 - Problem Identification and Resolution

2215227, 2BEDG Non-Emergency Trip on Low Lube Oil Pressure

2209372, 1B DG KD Engine Cooling Tubing Leak

2212222, 2A Diesel Generator 86D Lockout Trip

2213816, 1EQC VR A: Power Driven Pot Not Working Properly

71153 - Follow-up of Events and Notices of Enforcement Discretion

CR 2192321, 2B CA Auto start