



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

April 27, 2017

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

SUBJECT: CATAWBA NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000413/2017001 AND 05000414/2017001

Dear Mr. Simril:

On March 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Catawba Nuclear Station Units 1 and 2. On April 20, 2017, 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.

The NRC inspectors did not identify any findings or violations of more than minor significance.

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 05000413/2017001 and 05000414/2017001
w/Attachment: Supplemental Information

cc Distribution via ListServ

T. Simril

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SUBJECT: CATAWBA NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000413/2017001 AND 05000414/2017001 April 27, 2017

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-413, 50-414

License Nos.: NPF-35, NPF-52

Report No.: 05000413/2017001 and 05000414/2017001

Licensee: Duke Energy Carolinas, LLC

Facility: Catawba Nuclear Station, Units 1 and 2

Location: York, SC 29745

Dates: January 1, 2017 through March 31, 2017

Inspectors: J. Austin, Senior Resident Inspector
C. Scott, Resident Inspector
W. Loo, Senior Health Physicist (Sections 1EP2,
1EP3, 1EP4, 1EP5, 4OA1)
S. Sanchez, Senior Emergency Preparedness
Inspector (Sections 1EP2, 1EP3, 1EP4, 1EP5,
4OA1)
M. Toth, Project Engineer (Section 4OA5)

Approved by: Frank Ehrhardt, Chief
Reactor Projects Branch 1

Enclosure

SUMMARY

IR 05000413/2017001 and 05000414/2017001, January 1, 2017 through March 31, 2017;
Catawba Nuclear Station, Units 1 and 2; Integrated Inspection Report

The report covered a three-month period of inspection by the resident inspectors and regional inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6. No findings were identified during this inspection period.

REPORT DETAILS

Summary of Plant Status

Unit 1: Operated at or near 100 percent rated thermal power for the entire inspection period.

Unit 2: Operated at or near 100 percent rated thermal power for the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

.1 Impending Adverse Weather Conditions

The inspectors reviewed the licensee's preparations to protect risk-significant systems from cold weather expected during January 6 – 9, 2017. The inspectors evaluated the licensee's implementation of adverse weather preparation procedures and compensatory measures, including operator staffing, before the onset of and during the adverse weather conditions. The inspectors reviewed the licensee's plans to address the consequences that may result from cold weather. The inspectors verified that operator actions specified in the licensee's adverse weather procedure maintain readiness of essential systems. The inspectors verified that required surveillances were current, or were scheduled and completed, if practical, before the onset of anticipated adverse weather conditions. The inspectors also verified that the licensee implemented periodic equipment walkdowns or other measures to ensure that the condition of plant equipment met operability requirements. Documents reviewed are listed in the attachment.

.2 Summer Readiness of Offsite and Alternate AC Power System

The inspectors reviewed the licensee's procedures for operation and continued availability of offsite and onsite alternate AC power systems. The inspectors also reviewed the communications protocols between the transmission system operator and the licensee to verify that the appropriate information is exchanged when issues arise that could affect the offsite power system.

The inspectors reviewed the material condition of offsite and onsite alternate AC power systems (including switchyard and transformers) by performing a walkdown of the switchyard. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)a. Inspection Scope.1 Partial Walkdown

The inspectors verified that critical portions of the selected systems were correctly aligned by performing partial walkdowns. The inspectors selected systems for assessment because they were a redundant or backup system or train, were important for mitigating risk for the current plant conditions, had been recently realigned, or were a single-train system. The inspectors determined the correct system lineup by reviewing plant procedures and drawings. Documents reviewed are listed in the attachment.

The inspectors selected the following four systems or trains to inspect:

- Unit 2, 2B1 and 2B2 component cooling (KC) pump while the 2A KC was out of service (OOS) for maintenance
- Unit 1 and Unit 2, auxiliary feedwater system (CA) makeup sources with the CA condensate storage tank isolated
- Unit 1 and Unit 2, 1B and 2B service water (RN) pumps while the 1A RN pump was OOS for maintenance
- Unit 0 'D' instrument air (VI) compressor following identification of multiple air leaks

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05AQ)a. Inspection ScopeQuarterly Inspection

The inspectors evaluated the adequacy of selected fire plans by comparing the fire plans to the defined hazards and defense-in-depth features specified in the fire protection program. In evaluating the fire plans, the inspectors assessed the following items:

- control of transient combustibles and ignition sources
- fire detection systems
- fire suppression systems
- manual firefighting equipment and capability
- passive fire protection features
- compensatory measures and fire watches
- issues related to fire protection contained in the licensee's corrective action program

The inspectors toured the following six fire areas to assess material condition and operational status of fire protection equipment. Documents reviewed are listed in the attachment.

- Unit 1 and Unit 2, cable room, fire area 16
- Unit 1, electrical penetration room, 577' elevation, fire area 13
- Unit 2, electrical penetration room, 577' elevation, fire area 12
- Unit 2, A DG corridor, fire area 43
- Unit 2, A DG room, fire area 27
- Unit 1, exterior doghouse, fire area 51

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

Internal Flooding

The inspectors reviewed related flood analysis documents and walked down the area listed below containing risk-significant structures, systems, and components susceptible to flooding. The inspectors verified that plant design features and plant procedures for flood mitigation were consistent with design requirements and internal flooding analysis assumptions. The inspectors also assessed the condition of flood protection barriers and drain systems. In addition, the inspectors verified the licensee was identifying and properly addressing issues using the corrective action program. Documents reviewed are listed in the attachment.

- Unit 2, auxiliary feedwater pump room, 544' elevation

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program and Licensed Operator Performance (71111.11)

a. Inspection Scope

.1 Resident Inspector Quarterly Review of Licensed Operator Regualification

On March 23, 2017, the inspectors observed an evaluated simulator scenario administered to an operating crew conducted in accordance with the licensee's accredited regualification training program. The scenario involved a main turbine runback, a reactor trip, a control rod misalignment and a small break loss of coolant accident with safety injection.

The inspectors assessed the following:

- licensed operator performance

- the ability of the licensee to administer the scenario and evaluate the operators
- the quality of the post-scenario critique
- simulator performance

Documents reviewed are listed in the attachment.

.2 Resident Inspector Quarterly Review of Licensed Operator Performance in the Actual Plant/Main Control Room

The inspectors observed licensed operator performance in the main control room during Unit 2, 2B diesel generator testing on February 28, 2017, and Unit 2, feedwater heater 2B2 level oscillations on March 2, 2017.

The inspectors assessed the following:

- use of plant procedures
- control board manipulations
- communications between crew members
- use and interpretation of instruments, indications, and alarms
- use of human error prevention techniques
- documentation of activities
- management and supervision

Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors assessed the licensee's treatment of the three issues listed below to verify the licensee appropriately addressed equipment problems within the scope of the maintenance rule (10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants"). The inspectors reviewed procedures and records to evaluate the licensee's identification, assessment, and characterization of the problems as well as their corrective actions for returning the equipment to a satisfactory condition. Documents reviewed are listed in the attachment.

- Condition Report (CR) 2100554, 'A' Control Area Chilled Water (YC) Chiller Tripped on High Inboard Bearing Temperature
- CR 2072520, Unit 1 Rod Control Cabinet Urgent Alarm
- CR 2100643, Unit 1 Evaluation Required per AD-EG-ALL-1210, Repetitive Maintenance Rule Functional Failures Occurred on the Radiation Monitoring System

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed the five maintenance activities listed below to verify that the licensee assessed and managed plant risk as required by 10 CFR 50.65(a)(4) and licensee procedures. The inspectors assessed the adequacy of the licensee's risk assessments and implementation of risk management actions. The inspectors also verified that the licensee was identifying and resolving problems with assessing and managing maintenance-related risk using the corrective action program. Additionally, for maintenance resulting from unforeseen situations, the inspectors assessed the effectiveness of the licensee's planning and control of emergent work activities. Documents reviewed are listed in the attachment.

- Unit 1, February 8, 2017, emergent risk assessment for missed surveillance for Unit 1 divide barrier (hatch) integrity inspection
- Unit 1, February 14, 2017, protection plan with the 1A DG OOS for scheduled maintenance
- Unit 1, February 14, 2017, yellow risk condition with 1A DG unavailable for bearing inspection
- Unit 0, February 24, 2017, protection plan with the standby shutdown facility (SSF) OOS for maintenance
- Unit 2, March 28, 2017, protection plan with the 2B CA pump OOS for testing

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

Operability and Functionality Review

The inspectors selected the six operability determinations or functionality evaluations listed below for review based on the risk-significance of the associated components and systems. The inspectors reviewed the technical adequacy of the determinations to ensure that technical specification operability was properly justified and the components or systems remained capable of performing their design functions. To verify whether components or systems were operable, the inspectors compared the operability and design criteria in the appropriate sections of the technical specification and updated final safety analysis report to the licensee's evaluations. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. Additionally, the

inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the attachment.

- Unit 1, 1NW-61B, Nuclear Service Water (RN) Supply Valve Failed to Open During Performance Test (PT), CR 2074228
- Unit 2, 2A DG Jacket Water Leak, CR 2091344
- Unit 2, Turbine Driven Auxiliary Feedwater Pump Trip and Throttle Valve Control Circuit Found Loose, CR 2057215
- Unit 1, 1B Centrifugal Charging Pump (NV) Thrust Bearing Oil Level Low, CR 2107060
- Unit 1, Rubber Gasket Found in 1B DG Starting Air Inlet Check Valve, 1VG-73, CR 02105977
- Unit 2, 2A1 Component Cooling Pump (KC) Outboard Bearing Oil Level, CR 2089480

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors verified that the three plant modifications listed below did not affect the safety functions of important safety systems. The inspectors confirmed the modifications did not degrade the design bases, licensing bases, and performance capability of risk significant structures, systems and components. The inspectors also verified modifications performed during plant configurations involving increased risk did not place the plant in an unsafe condition. Additionally, the inspectors evaluated whether system operability and availability, configuration control, post-installation test activities, and changes to documents, such as drawings, procedures, and operator training materials, complied with licensee standards and NRC requirements. In addition, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with modifications. Documents reviewed are listed in the attachment.

- Engineering Change (EC) 108655, Radiation Monitors (EMF) Addition to Auxiliary Building Chilled Water System (YN)
- EC 406380, Update Drawing for U-2 Reactor Coolant System Loop #3 Flow Transmitter
- EC 403650, Temporary GAG Installed on 1AS-4 (main steam to auxiliary steam header bypass)

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)a. Inspection Scope

The inspectors either observed post-maintenance testing or reviewed the test results for the maintenance activities listed below to verify the work performed was completed correctly and the test activities were adequate to verify system operability and functional capability.

- Work Order (WO) 20134963-01, replace 1A DG barring device air cylinder gasket, February 7, 2017
- WO 20061746, repair of 'A' YC chiller after on high bearing temperature, February 15, 2017
- WO 20085484, clean/replace 1RN 'A' pump strainer, February 15, 2017
- WO 20129428, preventive maintenance on 2NV865A, standby makeup pump suction from transfer tube, February 21, 2017
- Work Request 2012975, preventive maintenance on turbine driven CA pump 2, March 2, 2017
- WO 20153702, replace safety injection (NI) pump 2A mini-flow isolation, March 16, 2017
- WO 20147707, pre-outage preventive maintenance on 1A DG, March 22, 2017

The inspectors evaluated these activities for the following:

- acceptance criteria were clear and demonstrated operational readiness
- effects of testing on the plant were adequately addressed
- test instrumentation was appropriate
- tests were performed in accordance with approved procedures
- equipment was returned to its operational status following testing
- test documentation was properly evaluated

Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with post-maintenance testing. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)a. Inspection Scope

The inspectors reviewed the five surveillance tests listed below and either observed the test or reviewed test results to verify testing adequately demonstrated equipment operability and met technical specification and current licensing basis. The inspectors evaluated the test activities to assess for preconditioning of equipment, procedure adherence, and equipment alignment following completion of the surveillance. Additionally, the inspectors reviewed a sample of related corrective action documents to

verify the licensee was identifying and correcting any deficiencies associated with surveillance testing. Documents reviewed are listed in the attachment.

Routine Surveillance Tests

- PT/0/A/4200/042, Access Door and Hatch Seal Periodic Inspection and Replacement
- PT/2/A/4350/002A, Diesel Generator 2A Operability Test
- PT/2/B/4350/002B, Diesel Generator 2B Operability Test
- PT/1/A/4600/002A, Mode 1 Periodic Surveillance

In-Service Tests (IST)

- PT/2/A/4200/005A, Safety Injection Pump 2A Performance Test

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Evaluation

a. Inspection Scope

The inspectors evaluated the adequacy of the licensee's methods for testing and maintaining the alert and notification system in accordance with NRC Inspection Procedure 71114, Attachment 02, "Alert and Notification System Evaluation." The applicable planning standard, 10 CFR Part 50.47(b)(5), and its related 10 CFR Part 50, Appendix E requirements were used as reference criteria. The criteria contained in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, were also used as a reference.

The inspectors reviewed various documents which are listed in the attachment and interviewed personnel responsible for system performance. This inspection activity satisfied one inspection sample for the alert and notification system on a biennial basis.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Staffing and Augmentation System

a. Inspection Scope

The inspectors reviewed the licensee's emergency response organization (ERO) augmentation staffing requirements and process for notifying the ERO to ensure the readiness of key staff for responding to an event and timely facility activation. The qualification records of key position ERO personnel were reviewed to ensure all ERO qualifications were current. A sample of problems identified from augmentation drills or system tests performed since the last inspection was reviewed to assess the effectiveness of corrective actions. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 03, "Emergency Response Organization Staffing and Augmentation System." The applicable planning standard, 10 CFR 50.47(b)(2), and its related 10 CFR 50, Appendix E requirements were used as reference criteria.

The inspectors reviewed various documents which are listed in the attachment. This inspection activity satisfied one inspection sample for the ERO staffing and augmentation system on a biennial basis.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

Since the last NRC inspection of this program area, one change was made to the radiological emergency plan, one change was made to the emergency action levels (EALs), and several changes were made to the implementing procedures. The licensee determined that, in accordance with 10 CFR 50.54(q), the plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The inspectors reviewed these changes to evaluate for potential reductions in the effectiveness of the plan. However, this review was not documented in a safety evaluation report and does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety.

The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 04, "Emergency Action Level and Emergency Plan Changes." The applicable planning standards of 10 CFR 50.47(b), and its related requirements in 10 CFR 50, Appendix E were used as reference criteria. The inspectors reviewed various documents that are listed in the attachment to this report. This inspection activity satisfied one inspection sample for the emergency action level and emergency plan changes on an annual basis.

b. Findings

No findings were identified.

1EP5 Maintenance of Emergency Preparedness

a. Inspection Scope

The inspectors reviewed the corrective actions identified through the emergency preparedness program to determine the significance of the issues, the completeness and effectiveness of corrective actions, and to determine if issues were recurring. The licensee's post-event after action reports, self-assessments, and audits were reviewed to assess the licensee's ability to be self-critical, thus avoiding complacency and degradation of their emergency preparedness program. Inspectors reviewed the licensee's 10 CFR 50.54(q) change process, personnel training, and selected screenings and evaluations to assess adequacy. The inspectors toured facilities and reviewed equipment and facility maintenance records to assess licensee's adequacy in maintaining them. The inspectors evaluated the capabilities of selected radiation monitoring instrumentation to adequately support EAL declarations.

The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 05, "Maintenance of Emergency Preparedness." The applicable planning standards, related 10 CFR 50, Appendix E requirements, and 10 CFR 50.54(q) and (t) were used as reference criteria. The inspectors reviewed various documents which are listed in the Attachment. This inspection activity satisfied one inspection sample for the maintenance of emergency preparedness on a biennial basis.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed the emergency preparedness drill conducted on January 19, 2017. The inspectors observed licensee activities in the technical support center to evaluate implementation of the emergency plan, including event classification, notification, and protective action recommendations. The inspectors evaluated the licensee's performance against criteria established in the licensee's procedures. Additionally, the inspectors attended the post-exercise critique to assess the licensee's effectiveness in identifying emergency preparedness weaknesses and verified the identified weaknesses were entered in the corrective action program. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors reviewed a sample of the performance indicator (PI) data, submitted by the licensee, for the Unit 1 and Unit 2 PIs listed below. The inspectors reviewed plant records compiled between January 2016 and December 2016 to verify the accuracy and completeness of the data reported for the station. The inspectors verified that the PI data complied with guidance contained in Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," and licensee procedures. The inspectors verified the accuracy of reported data that were used to calculate the value of each PI. In addition, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with PI data. Documents reviewed are listed in the attachment.

Cornerstone: Initiating Events

- unplanned scrams per 7000 critical hours

Cornerstone: Mitigating Systems

- cooling water system

Cornerstone: Barrier Integrity

- reactor coolant system specific activity

Cornerstone: Emergency Preparedness

- drill/exercise performance (DEP)
- emergency response organization (ERO) readiness
- alert and notification system (ANS) reliability

For the specified review period, the inspectors examined data reported to the NRC, procedural guidance for reporting PI information, and records used by the licensee to identify potential PI occurrences. The inspectors verified the accuracy of the PI for ERO drill and exercise performance through review of a sample of drill and event records. The inspectors reviewed selected training records to verify the accuracy of the PI for ERO drill participation for personnel assigned to key positions in the ERO. The inspectors verified the accuracy of the PI for alert and notification system reliability through review of a sample of the licensee's records of periodic system tests. The inspectors also interviewed the licensee personnel who were responsible for collecting and evaluating the PI data. Licensee procedures, records, and other documents reviewed within this inspection area are listed in the attachment. This inspection satisfied three inspection samples for PI verification on an annual basis.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Routine Review

The inspectors screened items entered into the licensee's corrective action program to identify repetitive equipment failures or specific human performance issues for follow-up. The inspectors reviewed problem identification program reports, attended screening meetings, or accessed the licensee's computerized corrective action database.

.2 Annual Followup of Selected Issues

a. Inspection Scope

The inspectors conducted a detailed review of the following two nuclear condition reports:

- CR 2094372, Configuration Management Challenges
- CR 2040888, Decision Making Process for DG Bearing Inspection

The inspectors evaluated the following attributes of the licensee's actions:

- complete and accurate identification of the problem in a timely manner
- evaluation and disposition of operability and reportability issues
- consideration of extent of condition, generic implications, common cause, and previous occurrences
- classification and prioritization of the problem
- identification of root and contributing causes of the problem
- identification of any additional condition reports
- completion of corrective actions in a timely manner

Documents reviewed are listed in the attachment.

b. Findings and Observations

No findings were identified.

4OA5 Other Activities

.1 Temporary Instruction (TI) 2515/192, "Inspection of the Licensee's Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems."

a. Inspection Scope

The objective of this performance based TI was to verify implementation of interim compensatory measures associated with an open phase condition design vulnerability in electric power systems for operating reactors. The inspectors conducted an inspection to determine if the licensee had implemented the interim compensatory measures listed below. These compensatory measures are to remain in place until permanent automatic detection and protection schemes are installed and declared operable for open phase condition design vulnerability. The inspectors verified the following:

- The licensee identified and discussed with plant staff the lessons-learned from the open phase condition events at U.S. operating plants including the Byron Station open phase condition and its consequences. This included conducting operator training for promptly diagnosing, recognizing consequences, and responding to an open phase condition.
- The licensee updated plant operating procedures to help operators promptly diagnose and respond to open phase conditions on off-site power sources credited for safe shutdown of the plant.
- The licensee established and implemented periodic walkdown activities to inspect switchyard equipment such as insulators, disconnect switches, and transmission line and transformer connections associated with the offsite power circuits to detect a visible open phase condition.
- The licensee ensured that routine maintenance and testing activities on switchyard components have been implemented and maintained. As part of the maintenance and testing activities, the licensee assessed and managed plant risk in accordance with 10 CFR 50.65(a)(4) requirements.

b. Findings

No findings were identified.

.2 Operation of an Independent Spent Fuel Storage Installation (60855.1)

a. Inspection Scope

The inspectors performed a walkdown of the onsite independent spent fuel storage installation (ISFSI). The inspectors reviewed records to verify that the licensee recorded and maintained the location of each fuel assembly placed in the ISFSI. The inspectors also reviewed surveillance records to verify that daily surveillance requirements were

performed as required by technical specifications. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On April 20, 2017, the resident inspectors presented the inspection results to Mr. Tom Simril and other members of the licensee's staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

C. Abernathy, Manager, Nuclear Site Services
S. Andrews, Sr. Engineer Regulatory Affairs,
T. Arlow, Emergency Planning Manager
C. Bigham, Director Nuclear Organizational Effectiveness
M. Carwile, Chemistry Manager
B. Cauthen, Lead Engineer
D. Cribb, Senior Emergency Preparedness Specialist
C. Curry, Plant Manager
S. Fischer, Senior Emergency Preparedness Specialist
C. Fletcher, Regulatory Affairs Manager
N. Flippin, Work Management Manager
B. Foster, Operations Manager
T. Jenkins, Maintenance Manager
L. Keller, General Manager Nuclear Engineering
B. Leonard, Training Manager
J. Overly, Fleet Emergency Preparedness Programs Manager
T. Simril, Site Vice-President
J. Smith, Radiation Protection Manager
D. Thompson, Emergency Preparedness Corporate Functional Area Manager
S. West, Director, Nuclear Plant Security
C. Wilson, Sr. Engineer Regulatory Affairs

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

TI 2515/192	TI	Inspection of the Licensee's Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems (Section 4OA5)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

AD-WC-ALL-0230, Seasonal Readiness

Section 1R04: Equipment Alignment

Clearance: PRT-1-17-1A RNSTA-0007

PT/2/A/4400/003/C, Component Cooling System Valve Verification, Rev. 025

OP/0/A/6500/115, Operator Rounds

CNS-1592.CA-00-0001, Auxiliary Feedwater System Design Bases Document

Section 1R05: Fire Protection

Fire Brigade Response Strategies for Safety-Related Areas, Rev. 039

Fire Strategy Plan, Fire Area 27: Unit 2 A Diesel Generator Room, 594 level

Fire Strategy Plan, Fire Area 43: Unit 2 Diesel Room Corridor

Fire Strategy Plan, Fire Area 13: Unit 1 Electrical Penetration Room, 577 level

Fire Strategy Plan, Fire Area 12: Unit 2 Electrical Penetration Room, 577 level

Fire Strategy Plan, Fire Area 17: Unit 1 Cable Room

Fire Strategy Plan, Fire Area 16: Unit 2 Cable Room

Fire Strategy Plan, Fire Area 10: Unit 1 Battery Room

Fire Strategy Plan, Fire Area 51: Unit 1 Exterior Doghouse

Section 1R06: Flood Protection Measures

CNC-1206-03.00-0001: Flood Levels for Structures Outside of the Reactor Building

Section 1R11: Licensed Operator Requalification

PT/2/A/4350/002, Diesel Generator Operability Test, Rev 116

AD-OP-ALL-1000, Conduct of Operations

OP/2/B/6250/004, Feedwater Heater Vents, Drains, and Bleed Systems

Section 1R12: Maintenance Effectiveness

CR 2085621, VI (Instrument Air) System Reduced Margin

AD-EG-ALL-1210, Maintenance Rule Program

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

CR 2106791, Magnastor Transfer Cask height limit exceeded during lift over RN Piping

CR 2106868, 'A' Station Air Compressor Functional

CR 2103240, 1VY19 (Containment H2 Purge Outlet Flow) Found Open

Section 1R15: Operability Evaluations

AD-OP-ALL-0105, Operability Determinations and Functionality Assessment

CR 2098642, NW Pressure and Level Currently Outside Engineering Guidance

CR 2097443, Safety Injection Gearbox (1NI-152B) Slow Oil Leak from Flange

CR 2097504, DG2A1 Adequate Flow Light Did Not Illuminate When DG Start

CR 2096366, Safe Shutdown Facility Equipment Not Required for Functionality

CR 2093553, Cell #88 Voltage not Meeting Admin. Limits

CR 2091435, EDB Update for 1A Safety Injection Motor Oil

CR 2063333, Fuel Handling Hoist Speed Guidance
 CR 2105968, Unit 1 FWST inleakage from the FW system
 CR 1972952, 1B RN to NW verification test failed
 CR 2074228, QCE-Why was foreign material in NW system piping
 CR 2110250, 1VGPS5100: I/R Air Leak
 CN-1609-04.00, Flow Diagram of Diesel Engine Starting Air System (VG), Rev. 27

Section 1R18: Plant Modifications

CR 2099683, CR Relay Replaced/EDB Requires Update
 CR 2098244, Temporary Heat Trace Installed with Work Request
 CR 2097297, Capacitor Replacement Parts Unavailable
 CR 2098725, Acceptable Substitutes Availability
 CR 2097725, NW System Procedure Review Identified Additional Revision
 Apparent Cause Evaluation Report, NOS Area for Improvement

Section 1R19: Post-Maintenance Testing

CR 2092666, FM found during strainer tube cleaning of 1A strainer
 AD-EG-ALL-1155, Post Modification Testing
 PT/0/A/4450/008, Control Room Area Ventilation System Performance Test, Rev. 49
 MP/0/A/7400/070, Diesel Engine Barring Device Removal, Repair and Replacement
 WO 20069155-01, Clean the SSF DG Radiator
 PT/2/A/4250/003C, Turbine Driven Auxiliary Feedwater Pump #2 Performance Test
 PT/2/A/4200.013A, NI Valve In-service Test (QU)

Section 1R22: Surveillance Testing

AD-EG-ALL-1202, Preventive Maintenance and Surveillance Testing Administration
 CR 2096500, Operators are Performing Actions from Ops Guides
 CR 2098252, 2012 Work Order Package Incomplete for Barrier Integrity Surveillance Requirement
 CR 2096642, Seismic System Monthly COT
 CR 2098252, 2012 w/o Pkg. incomplete for Divider Barrier Integrity Surv Req

Section 1EP2: Alert and Notification System Evaluation

Procedures and Reports

Catawba Nuclear Station Emergency Plan, Rev. 149
 EPFAM 3.3, Alert and Notification System (Siren Program), Rev. 16
 Federal Signal Corp. 2001 Siren Installation and Operating Instructions

Records and Data

Annual RTU and Battery Preventive Maintenance Checklist, Nuclear Station: CNS; Siren Site No. 78, Picasso Ticket No. WO1223097, dated 3/29/17
 Catawba Nuclear Station, 2016 and 2017 Emergency Preparedness Information Calendars
 CNS-ANS-05171984, CNS Alert and Notification System (ANS) Design Report for Catawba Nuclear Station, Dated 5/17/84, Report to FEMA, Rev. No. 000, dated 8/1/12
 Quick-Hitter Self-Assessment Report, Assignment No. 02078969-05, (EP) NRC Baseline Inspection Readiness in 1st Quarter, 1/9–13/17

Selected documentation of: Full Cycle Siren Test, Attachment 3.3.14.9, EPFAM 3.3, Alert and Notification System (Siren Program), Rev. No. 16, 1/14/15 – 10/12/16; Annual RTU and Battery Preventive Maintenance Checklist, Attachment 3.3.14.9, EPFAM 3.3, Alert and Notification System (Siren Program), Rev. No. 16, 10/27/15 – 11/15/16; and Annual Siren Preventive Maintenance Checklist, Attachment 3.3.14.7, EPFAM 3.3, Alert and Notification System (Siren Program), Rev. No. 16, 6/24/15 – 7/11/16
 Silent Test Report for Catawba Toddville COMM, 3/28/17

Corrective Action Program Documents (Action Requests)

AR 01898848, Siren #37 in York County experienced a failure during the Quarterly Full Cycle Test
 AR 01928933, ANS Self-Assessment
 AR 02087640, Siren No. 43 failed Silent Communication Test
 AR 02091208, Siren No. 81 indicated a Chopper Failure during Full Cycle Siren Testing
 AR 02101159, Performance Trend on Siren Alarm Issues
 AR 02112652, Duke Telecom technician did not use current revision of EP FAM
 AR 02112961, Siren testing requirement

Section 1EP3: Emergency Response Organization Staffing and Augmentation System Procedures, Guidance Documents, and Manuals

AD-EP-ALL-0301, Activation of the Emergency Response Organization Notification System (ERONS), Rev. 0
 AD-EP-ALL-0501, Emergency Preparedness Staff Training and Qualifications, Rev. 0
 AD-PI-ALL-0100, Corrective Action Program, Rev. 7
 Catawba Nuclear Station Training Addenda, Catawba Nuclear Station Emergency Response (ER) Training Program Description, Addendum 7111.0, Rev. No.18
 Duke Energy Corporation, Catawba Nuclear Station, Emergency Plan, Rev. 16-1, March 2016
 Nuclear Generation Department, Employee Training and Qualification System Standard, 7111.0, Emergency Response Training, Rev. 10
 PD-EP-ALL-0800, Drills and Exercises Program, Rev. 3
 Quick-Hitter Self-Assessment Report, Assignment No. 02078969-05, (EP) NRC Baseline Inspection Readiness in 1st Quarter, 1/9–13/17

Records and Data

AD-EP-ALL-0501, Emergency Preparedness Staff Training and Qualifications, Rev. 0, Duke Energy, Nuclear Generation Department, Emergency Preparedness Staff Training Plan, Position Specific Guide, Attachment 1, 6/4/15, 8/10/16, 8/11/16, 8/18/16, 8/22/16, 9/8/16, 10/6/16, 10/7/16, 10/17/16, 10/24/16, 10/25/16, 11/29/16, and 1/19/17
 Catawba Nuclear Station, ERO Team Personnel Time and Distance to Plant Notebook
 CNS ERO Communication Test, 3/28/17 Report
 CNS October 16, 2015 and November 14, 2016, Emergency Response Organization (ERO) Augmentation Drill Reports
 ERO Member Contact Information, Catawba Nuclear Station, Report Executed 3/29/17

Corrective Action Program Documents

AR 01993061, 10-16-15 Augmentation Drill Report
 AR 02013376, SAMG training needed to maintain minimum ERO staffing
 AR 02041960, EP Augmentation Drill stopped due to ERO callout issue

1EP4 Emergency Action Level and Emergency Plan Changes

Procedures

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. 1
 Catawba Nuclear Station Emergency Plan, Revision 16-1 & 149

Change Packages

10 CFR 50.54(q) Screening Evaluation Form for Catawba Emergency Plan, Section D, Rev. 149, dated 3/10/17
 10 CFR 50.54(q) Screening Evaluation Form for Catawba Emergency Plan, Section E, Rev. 146, dated 9/30/15
 10 CFR 50.54(q) Screening Evaluation Form for Catawba Emergency Plan, Section E, Rev. 146, dated 10/7/15
 10 CFR 50.54(q) Screening Evaluation Form for Catawba Emergency Plan, Section E, Rev. 146, dated 11/21/15
 10 CFR 50.54(q) Screening Evaluation Form for Catawba Emergency Plan, Section H, Rev. 16-1, dated 12/22/15
 10 CFR 50.54(q) Screening Evaluation Form for Catawba Emergency Plan, Section H, Rev. 16-1, dated 8/24/16
 10 CFR 50.54(q) Screening Evaluation Form for Catawba Emergency Plan, Section H, Rev. 16-1, dated 2/7/17
 10 CFR 50.54(q) Screening Evaluation Form for Catawba Emergency Plan, Section J, Rev. 146, dated 9/22/16

Section 1EP5: Maintenance of Emergency Preparedness

Procedures

Catawba Nuclear Station (CNS) Emergency Plan, Rev. 149
 AD-EP-ALL-0204, Distribution of KI Tablets in the Event of a Radioiodine Release, Rev. 0
 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. 1
 AD-EP-ALL-0801, Design and Development of Drills and Exercises, Rev. 1
 AD-EP-ALL-0802, Conducting Drills and Exercises, Rev. 0
 AD-EP-ALL-0803, Evaluation and Critique of Drills and Exercises, Rev. 0
 AD-EP-ALL-1000, Conduct of Emergency Preparedness, Rev. 1
 HP/0/B/1000/006, Emergency Equipment Functional Check and Inventory, Rev. 61
 HP/0/B/1009/004, Environmental Monitoring for Emergency Conditions Within 10 Mile Radius of CNS, Rev. 31
 RP/0/A/5000/020, Technical Support Center (TSC) Activation Procedure, Rev. 42
 RP/0/A/5000/024, OSC Activation Procedure, Rev. 35
 SR/0/A/2000/003, Activation of the Emergency Operations Facility, Rev. 11

Records and Data

2016 through 2017 Letters of Agreement for various offsite agencies
 50.54(q) Qualified List, dated 2/21/17
 Catawba 2016 EP Biennial Inspection & Graded Exercise Readiness, dated 1/16
 CNS Annual Population Update, dated 10/18/15

CNS Annual Population Update, dated 7/22/16
 CNS Critique Report, ERO Practice Drill, dated 1/8/15
 CNS Critique Report, ERO Training Drill, dated 8/20/15
 CNS Critique Report, ERO Training Drill, dated 9/15/15
 CNS Critique Report, ERO Training Drill, dated 10/1/15
 CNS Critique Report, ERO Off-Year Exercise, dated 10/8/15
 CNS Critique Report, ERO Practice Drill, dated 1/28/16
 CNS Critique Report, ERO Training Drill, dated 2/18/16
 CNS Critique Report, ERO Graded Exercise, dated 4/5/16
 CNS Critique Report, ERO Drill, dated 5/26/16
 CNS Critique Report, ERO Drill, dated 7/28/16
 CNS Critique Report, ERO Drill, dated 12/1/16
 CNS Critique Report, ERO Drill, dated 1/19/17
 CNS-ETE-12132012, Part 1 of 2 – ETE Reports Dated 12/13/12, Rev. 000 for CNS, dated 12/18/12
 CNS-ETE-12132012, Part 2 of 2 – ETE Reports Dated 12/13/12, Rev. 000 for CNS, dated 12/18/12
 CNS-ETE-10182015, ETE Analysis for PARs, Rev. 0, dated 10/18/15
 CNS-ETE-10172016, ETE Analysis for PARs, Rev. 0, dated 10/17/16
 (EP) NRC Baseline Inspection Readiness in 1st Quarter 2017, dated 2/17
 NOS Audit Catawba Emergency Planning 2016-CNS-EP-01, dated 3/10/16
 Quick Cause Evaluation Report, dated 1/14/16
 Quick Cause Evaluation Report, dated 2/16/16
 Quick Cause Evaluation Report, dated 3/13/17
 Safety Evaluation Report for CNS, dated 4/18/16

Corrective Action Program Documents

AR 01508311, Review of industry OE concerning TSC habitability licensing/design basis
 AR 01898175, Several concerns with valves (dampers) in the TSC ventilation system (VH)
 AR 02017713, Field monitoring team demonstration criteria rated unsat
 AR 02017742, Debrief item from the CNS 2016 NRC evaluated emergency exercise
 AR 02018036, Unsat demonstration criteria I.5 #2 during CNS Drill 16-03
 AR 02099530, Seven Letters of Agreement expired
 AR 02112405, Uncontrolled copy of EP Group Manual Guideline 5.3.6
 AR 02112937, Emergency Plan LOA 12 & LOA 20 not current revision

1EP6: Drill Evaluation

CR 2093118, IR TSC Cooling
 CR 2093391, Security Critique Items from the ERO Drill 17-1
 January 19, 2017 Critique Report

Section 40A1: Performance Indicator Verification

Procedures

AD-EP-ALL-0001, Emergency Preparedness Key Performance Indicators, Rev. 2
 AD-EP-ALL-0002, NRC Regulatory Assessment PI Guideline EP Cornerstone, Rev. 2
 AD-PI-ALL-0100, Corrective Action Program, Rev. 7
 AD-LS-ALL-0004, NRC Performance Indicators & Monthly Operating Reports, Rev. 1

Records and Data

Documentation of Performance Indicator data from January 1, 2016, through December 31, 2016 for DEP, ANS, and ERO

Corrective Action Program Documents

AR 01985319, Inaccurate KPI data reported to the NRC
 AR 02018330, Inconsistent NRC DEP KPI documentation
 AR 02027893, FEMA evaluation results in KPI being red
 AR 02112266, December 2016 EP KPI data required to be recreated

Section 40A2: Problem Identification and Resolution

CR 02104975, 2HW28 Heater Drain Valve Malfunction

Section 40A5: Other Activities

PT/0/B/4350/015, 230kV Switchyard Verification, Rev. 06
 OP/1/A/6350/001, Normal Power Checklist, Rev. 82
 OP/2/A/6350/001, Normal Power Checklist, Rev. 81
 WO 01899767-02, Doble Test Yellow Bus Coupling Capacitors
 WO 01899767-01, 230kV Bus PM
 WO 01939380-01, Busline 1A Six Year PM
 WO 01939380-02, Busline 1A Doble Testing CCVTs and Lightning Arrestors
 WO 02155463-01, Busline 2A Six Year PM
 WO 02155463-02, Busline 2A Doble Test Coupling Capacitors
 01981365, I/R CT3 Y phase main power line not attached to bushing
 01983962, Quick Hitter SAST: Plant Summer Readiness
 AD-PI-ALL-0300, Self-Assessment 02072048
 AD-PI-ALL-0100, Corrective Action Program
 Transformer Weekly Rounds Unit 1 and 2, January 2016 – present
 Switchyard Weekly Inspections, PT/0/B/4350/015, January 2016 – present
 Catawba Nuclear 230kV Switchyard Inspection Monthly Surveillances, January 2016 - present
 Catawba Extent of Condition Response to Oconee Open Phase
 Engineering Change 11753, OAC Alarm Response Guide Open Phase Condition
 IN TOUCH Newsletter/Memo dated 12/8/2015
 Catawba Response to RAI dated February 3, 2014, ML14037A111
 OP-CN-CP-OUT, Outage Brief on EC 111753 Open Phase Failure Alarms, pgs. 32-35, Rev. 26
 PT/O/A/4550/015A, Inventory of Fuel Special Nuclear Material
 PT/O/A/4550/015B, Inventory of Non-Fuel Special Nuclear Material