



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

May 1, 2014

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

SUBJECT: CATAWBA NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT  
05000413/2014002, 05000414/2014002

Dear Mr. Henderson:

On March 31, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Catawba Nuclear Station Units 1 and 2. The enclosed inspection report documents the inspection results which were discussed on April 1, 2014, with you and other members of your staff. The inspectors documented the results of this inspection in the enclosed inspection report.

No NRC-identified or self-revealing findings were identified during this inspection. However, the inspectors documented a licensee-identified violation which was determined to be of very low safety significance in this report. The NRC is treating this violation as a noncited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy. If you contest the violation or the significance of this NCV, 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 20555-001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Catawba.

Additionally, as we informed you in the 2013 fourth quarter integrated inspection report, cross-cutting aspects identified in the last six months of 2013 using the previous terminology were being converted in accordance with the cross-reference in Inspection Manual Chapter 0310. Section 4OA5 of the enclosed report documents the conversion of these cross-cutting aspects which will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the 2014 mid-cycle assessment review. If you disagree with the cross cutting aspect reassignment, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at the Catawba Nuclear Station.

In accordance with Title 10 of the "Code of Federal Regulations 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Gerald McCoy, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

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

Enclosure: Integrated Inspection Report 05000413/2014002, 05000414/2014002  
w/Attachment: Supplemental Information

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

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SUBJECT: CATAWBA NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT  
05000413/2014002, 05000414/2014002

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**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket Nos.: 50-413, 50-414

License Nos.: NPF-35, NPF-52

Report Nos.: 05000413/2014002, 05000414/2014002

Licensee: Duke Energy Carolinas, LLC

Facility: Catawba Nuclear Station, Units 1 and 2

Location: York, SC 29745

Dates: January 1, 2014 through March 31, 2014

Inspectors: A. Hutto, Senior Resident Inspector  
R. Cureton, Resident Inspector  
J. Rivera-Ortiz, Senior Reactor Inspector (Section 4OA5)

Approved by: Gerald McCoy, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

Enclosure

## **SUMMARY OF FINDINGS**

IR 05000413/2014-002, 05000414/2014-002; 1/1/2014 – 3/31/2014; Catawba Nuclear Station, Units 1 and 2; Integrated Inspection Report

The report covered a three-month period of inspection by the resident inspectors and one Region-based reactor inspector. The significance of inspection findings are indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP) dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas" dated December 19, 2013. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process" revision 5.

One violation of very low safety significance (Green), which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and corrective action tracking number are listed in section 4OA7.

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## 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, Barrier Integrity

#### 1R01 Adverse Weather Protection

##### a. Inspection Scope

Adverse Weather Conditions: The inspectors reviewed the licensee's severe weather actions following freezing temperatures on January 6, 2014. This included a review of actions required by OP/0/A/6500/115, Operator Rounds, and OP/0/B/6700/015, Weather Related Activities to ensure measures were taken to protect mitigating systems from adverse weather effects. Documents reviewed are listed in the Attachment.

Flood Protection Measures - External: The inspectors reviewed the licensee's external flood protection features. The inspectors performed a walkdown of external site areas including designated Type I and Type II inlet catch basins, cooling tower yard berms, and diesel generator room access curbs and seals which are designed to protect safety-related facilities from flooding during a local probable maximum precipitation event. The walkdown included observing that the steel gratings on four sides and top of the basins were intact. To the extent possible, the inspectors visually observed the basins and pipe cavities to determine that the areas were free of debris accumulation and that no significant blockage of the drains was apparent. The inspectors also observed the condition of berms and seals to verify that their physical condition had not degraded and were capable to fulfill their designed functions. The inspectors reviewed the corrective action program documents to ascertain that the licensee was identifying issues and resolving them. Documents reviewed are listed in the Attachment.

##### b. Findings

No findings were identified.

#### 1R04 Equipment Alignment

##### a. Inspection Scope

Partial Walkdowns: The inspectors performed three partial system walkdowns during the activities listed below to assess the operability of redundant or diverse trains and

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components when safety-related equipment was inoperable. The inspectors performed walkdowns to identify any discrepancies that could impact the function of the system and, therefore, potentially increased risk. The inspectors reviewed applicable operating procedures and walked down system components, selected breakers, valves, and support equipment to determine if they were in the correct position to support system operation. The inspectors reviewed protected equipment sheets, maintenance plans, and system drawings to determine if the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program. Documents reviewed are listed in the Attachment.

- 2B safety injection (NI) pump while the 2A NI pump was out of service for planned maintenance
- 'A' train of control room ventilation and chilled water (VC/YC) while the 'B' train was out of service for planned maintenance
- 2B train of auxiliary feedwater (CA) while the 2A pump was out of service for maintenance

b. Findings

No findings were identified.

1R05 Fire Protection

a. Inspection Scope

Fire Protection Walkdowns: The inspectors walked down accessible portions of the four plant areas listed below to assess the licensee's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. The inspectors observed the fire protection suppression and detection equipment to determine whether any conditions or deficiencies existed which could impair the operability of that equipment. The inspectors selected the areas based on a review of the licensee's safe shutdown analysis probabilistic risk assessment and sensitivity studies for fire-related core damage accident sequences. Documents reviewed are listed in the Attachment.

- Standby Shutdown Facility
- Unit 2 Turbine Building Basement
- 2A Diesel Generator (DG) Room
- Unit 2 railroad bay and transformer yard

b. Findings

No findings were identified.



## 1R07 Heat Sink Performance

### a. Inspection Scope

Annual Review: The inspectors reviewed the performance of the Unit 1 'B' DG jacket water cooling heat capacity test and evaluated the test data for acceptable performance. The inspectors reviewed the system configuration associated with the test, heat load requirements, the methodology used in calculating heat exchanger performance, and the method for tracking the status of tube plugging activities via the data logger and computer processing equipment. Documents reviewed are listed in the Attachment.

### b. Findings

No findings were identified.

## 1R11 Licensed Operator Regualification (LOR) Program and Licensed Operator Performance

### .1 Quarterly Resident Inspector LOR Activity Review

#### a. Inspection Scope

The inspectors observed Simulator Exercise Guide S-06 to assess the performance of licensed operators during a license operator regualification simulator training session. The exercise included a loss of a feedwater pump causing a turbine runback and a DRPI malfunction. The exercise also included a loss of all feedwater causing a turbine and reactor trip. The inspectors assessed overall crew performance, clarity and formality of communications, use of procedures, alarm response, control board manipulations, group dynamics and supervisory oversight. The inspectors observed the post-exercise critique to determine whether the licensee identified deficiencies and discrepancies that occurred during the simulator training. Documents reviewed are listed in the Attachment.

#### b. Findings

No findings were identified.

### .2 Quarterly Resident Inspector Licensed Operator Performance Review

#### a. Inspection Scope

The inspectors observed operators in the main control room and assessed their performance during a Unit 2 operation of the 2A auxiliary feedwater pump in recirculation mode, and during isolation of the 1A component cooling water heat exchanger to perform a surveillance on 1RN-291. Documents reviewed are listed in the Attachment.

#### b. Findings

No findings were identified.

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## 1R12 Maintenance Effectiveness

### a. Inspection Scope

The inspectors reviewed the two activities listed below for items such as: 1) appropriate work practices; 2) identifying and addressing common cause failures; 3) scoping in accordance with 10 CFR 50.65(b) of the Maintenance Rule; 4) characterizing reliability issues for performance; 5) trending key parameters for condition monitoring; 6) charging unavailability for performance; 7) classification and reclassification in accordance with 10 CFR 50.65(a)(1) or (a)(2); and 8) appropriateness of performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified as (a)(1). For each item selected, the inspectors performed a detailed review of the problem history and surrounding circumstances, evaluated the extent of condition reviews as required, and reviewed the generic implications of the equipment and/or work practice problem. Documents reviewed are listed in the Attachment.

- PIP C-13-6634, 2DGCP charger output voltage drifted low during capacity test
- PIP C-14-1451, 2A NW Surge Chamber pressure increased to 92.5 psig

### b. Findings

No findings were identified.

## 1R13 Maintenance Risk Assessments and Emergent Work Control

### a. Inspection Scope

The inspectors reviewed the following five activities to determine if the appropriate risk assessments were performed prior to removing equipment for work. When emergent work was performed, the inspectors reviewed the risk assessment to determine that the plant risk was promptly reassessed and managed. The inspectors reviewed the use of the licensee's risk assessment tool and risk categories in accordance with Nuclear System Directive (NSD) 415, Operational Risk Management (Modes 1-3), to verify there was appropriate guidance to comply with 10 CFR 50.65(a)(4). Documents reviewed are listed in the Attachment.

- Complex Plan for the B train of VC/YC being out of service for planned maintenance
- 1A DG equipment protection plan during maintenance on the 1B DG (yellow risk condition)
- Unplanned Yellow risk due to emergent yellow grid status while the 1A safety injection pump tagged out for maintenance
- Complex Plan for a planned activity to replace 1RN-3A (yellow risk condition)
- Yellow risk condition due to the E instrument air (VI) compressor and the E VI dryer out of service concurrently

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b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessmentsa. Inspection Scope

The inspectors evaluated the technical adequacy of the five operability evaluations or functionality assessments listed below to determine if Technical Specification (TS) operability was properly justified and the subject components and systems remained available such that no unrecognized increase in risk occurred. The inspectors reviewed the operability determinations to verify that they were made as specified by NSD 203, Operability. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) to determine that the systems and components remained available to perform their intended function. Documents reviewed are listed in the Attachment.

- PIP C-14-0230, Toxic gas hazard evaluation not performed
- PIP C-13-12554, Unit 1 standby makeup pump discharge relief lifted
- PIP C-14-1971, 2A RN Pump Motor Cooler has possible leak
- PIP C-14-2178, Calculation CNC-1139.14-00-0005 does not consider dead and live loads for horizontal structures in tornado missile protection analysis.
- PIP C-14-2154, Mounting screws for aux building and spent fuel pool ventilation damper limit switches are not correct

b. Findings

No findings were identified.

1R18 Plant Modificationsa. Inspection Scope

The inspectors reviewed the following temporary plant modification to verify the adequacy of the modification package, and to evaluate the modification for adverse effects on system availability, reliability and functional capability. Documents reviewed are listed in the Attachment.

- EC112118, Rescale 2B T-hot Average Signal due to Loss of 2NCRD5461

b. Findings

No findings were identified.

## 1R19 Post Maintenance Testing

### a. Inspection Scope

The inspectors reviewed the five post-maintenance tests listed below to determine if procedures and test activities ensured system operability and functional capability. The inspectors reviewed the licensee's test procedures to determine if the procedures adequately tested the safety function(s) that may have been affected by the maintenance activities, that the acceptance criteria in the procedures were consistent with information in the applicable licensing basis and/or design basis documents, and that the procedures had been properly reviewed and approved. The inspectors also witnessed the tests and/or reviewed the test data to determine if test results adequately demonstrated restoration of the affected safety function(s). Documents reviewed are listed in the Attachment.

- 2B DG operability test following PMs
- 1B DG operability test following voltage regulator maintenance
- 1B NS pump following planned maintenance
- 2A DG operability test following hot web deflection measurements
- 1B DG following #1 bearing replacement

### b. Findings

No findings were identified.

## 1R22 Surveillance Testing

### a. Inspection Scope

For the five tests listed below, the inspectors witnessed testing and/or reviewed the test data to determine if the SSCs involved in these tests satisfied the requirements described in the Technical Specifications, the UFSAR, and applicable licensee procedures, and that the tests demonstrated that the SSCs were capable of performing their intended safety functions.

#### Surveillance Tests

- PT/1/A/4200/009A, Auxiliary Safeguards Test Cabinet Period Test, Enclosure 13.3, Steam Line Isolation (K623) – Train B
- PT/2/A/4350/002 A, Diesel Generator 2A Operability Test
- OP/2/A/6200/011, Primary Sampling System, Enclosure 4.3, Reactor Coolant Loops A and C (reactor coolant system specific activity)

#### In-Service Tests

- PT/1/A/4200/004 B, Containment Spray Pump 1A Performance Test
- PT/1/A/4200/013 C, RN Valve Inservice Test (QU); Enclosure 13.19, 1RN-291 Valve Inservice Test

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors sampled licensee data to confirm the accuracy of reported PI data for the six indicators during periods listed below. To determine the accuracy of the reported PI elements, the reviewed data was assessed against PI definitions and guidance contained in Nuclear Energy Institute 99-02, Regulatory Assessment Indicator Guideline, Rev. 6. Documents reviewed are listed in the Attachment.

Cornerstone: Initiating Events

- Unplanned Scrams with Complications, Unit 1 and 2

Cornerstone: Mitigating Systems

- Cooling Water Systems, Unit 1 and 2

Cornerstone: Barrier Integrity

- RCS Activity, Unit 1 and 2

The inspectors reviewed the licensee's procedures and methods for compiling and reporting the PIs including the Reactor Oversight Program Mitigating Systems Performance Indicator Basis Document for Catawba. The inspectors reviewed the raw data for the PIs listed above for the period of January 1, 2013, through December 31, 2013. The inspectors also independently screened TS Action Item Logs, selected control room logs, work orders and surveillance procedures, and maintenance rule failure determinations to determine if unavailability/unreliability hours were properly reported. The inspectors compared the licensee's raw data against the graphical representations and specific values contained on the NRC's public web page for 2013. The inspectors also reviewed the past history of PIPs for systems affecting the Mitigating Systems Performance Indicators listed above for any that might have affected the reported values. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution

.1 Daily Review

As required by Inspection Procedure 71152, Problem Identification and Resolution, and in order to help identify repetitive equipment failures or specific human performance

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issues for follow-up, the inspectors performed screening of items entered into the licensee's corrective action program. This was accomplished by reviewing copies of PIPs, attending selected daily Site Direction and PIP screening meetings, and accessing the licensee's computerized database.

## .2 Annual Follow-up of Selected Issues

### a. Inspection Scope

The inspectors performed an in-depth review of the following issue within the mitigating systems cornerstone entered into the licensee's corrective action program.

- PIP C-13-11876, Error in NC wide range RTD scaling calculation

The inspectors reviewed the actions taken to determine if the licensee had adequately addressed the following attributes. Documents reviewed are listed in the Attachment.

- Complete, accurate and timely identification of the problem
- Evaluation and disposition of operability and reportability issues
- Consideration of previous failures, extent of condition, generic or common cause implications
- Prioritization and resolution of the issue commensurate with safety significance
- Identification of the root cause and contributing causes of the problem
- Identification and implementation of corrective actions commensurate with the safety significance of the issue

### b. Findings

No findings were identified.

## 4OA3 Followup of Events and Notices of Enforcement Discretion (NOED)

### .1 (Closed) Licensee Event Report (LER) 05000413/2013-001-00: Each Diesel Generator Was Determined to be Unknowingly Inoperable During Its Monthly Surveillance Test Due to Technical Specification (TS) Surveillance Requirement (SR) 3.8.1.17 Not Being Met.

On August 13, 2013, following completion of an engineering review, the licensee determined that each diesel generator had been inoperable during its monthly surveillance test. As a result, the required action of TS SR 3.8.1.1 to verify offsite power breaker alignment was not performed within one hour. The cause was due to a legacy design error with the diesel controls preposition circuit supplied by the vendor that was not identified during design review. The preposition circuit was designed to return the DG voltage and frequency settings to their nominal values if an emergency start signal was received while the diesel was being operated during surveillance testing. The licensee identified that the as-built circuit would de-energized above 200 revolutions per minute and not perform the preposition function. If an emergency start signal were

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received while the licensee was performing routine full load tests, the resulting DG output voltage would remain within the required TS range; however, the output frequency would be above the TS required 2 percent limit. The maximum potential out of tolerance frequency was limited for each DG by their respective mechanical governors (62 hertz being highest for the 2A DG). The licensee demonstrated that the over frequency condition would not have prevented the DGs nor the supplied emergency safeguards equipment from performing their design safety function.

The licensee entered this issue into their corrective action program as PIP C-13-5044. The LER and the supporting documents were reviewed by the inspectors which included completed corrective actions to correct the preposition circuit to its original intended design configuration for each DG, and to revise surveillance procedures to perform SR 3.8.1.17 at full load. The inspectors determined the TS violations were minor because the design error did not prevent the DGs from being able to perform their design function; therefore, these violations are not subject to enforcement action in accordance with the NRC's Enforcement Policy.

.2 (Closed) Licensee Event Report (LER) 05000413/2013-002-00: Technical Specification Limiting Conditions for Operation (LCOs) 3.6.3 and 3.7.3 Were Violated Due to the Isolation of Nitrogen Supply to Two Unit 1 Main Feedwater Isolation Valves.

On November 8, 2013, the licensee discovered that the isolation valve for the remote nitrogen accumulator for 1CF-42,1B steam generator main feedwater isolation valve was shut. This resulted in 1CF-42 being inoperable beginning July 13, 2013, when the local nitrogen accumulator pressure dropped below the required operability pressure of 2050 psig for single accumulator operation. The licensee's extent of condition review identified this condition also existed on 1CF-60, 1D steam generator main feedwater isolation valve, between the dates of January 19, 2013, to November 25, 2013. The licensee determined that the cause of the remote accumulator isolation was procedure steps to reopen these valves were erroneously marked "N/A" during the restoration process due to an inadequate pre-job brief. The licensee entered this issue into their corrective action program as PIP C-13-10910. The LER, the licensee's apparent cause analysis, and corrective action documents were reviewed by the inspectors to verify the accuracy of the LER and that corrective actions were appropriate to restore operability for the affected valves. The enforcement aspects are discussed in Section 4OA7.

.3 NOED Review

a. Inspection Scope

On March 4, 2014, the 1A DG was declared inoperable for planned maintenance which included taking position measurements of the connecting rod bearings. The licensee entered TS 3.8.1 condition B which had a 72 hour LCO action statement due to this planned maintenance. While taking these measurements, it was discovered that the bearing for connecting rod number seven had rotated within the connecting rod approximately 25 degrees from its normal horizontal position. Based on this observation, the licensee decided to replace the bearing to allow for an analysis of the cause of the rotation. The licensee determined that replacement of the bearing and

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return the 1A EDG to service could not be completed prior to the end of the TS LCO action statement. Additionally, 72 hour action statements were also entered for the Nuclear Service Water System (TS 3.7.8), Auxiliary Feedwater System (TS 3.7.5), and Containment Spray System (TS 3.6.6) due to various system dependencies.

On March 6, 2013, the licensee requested enforcement discretion for an additional 60 hours allowed outage time to complete connecting rod number 7 bearing replacement and testing and preclude a plant shutdown of Unit 1. The NRC verbally granted NOED 14-2-001 at 8:00 p.m. on March 6, 2014. The licensee subsequently returned the 1A DG and support systems to an operable status on March 9 at 3:40 a.m., which was within the completion time approved in the NOED. Documents reviewed are listed in the Attachment.

b. Findings

Introduction: The inspectors identified an unresolved item (URI) regarding NOED 14-2-001 granted on March 6, 2014.

Description: The inspectors reviewed NOED 14-2-001 and related documents to determine the accuracy and consistency with the licensee's assertions and implementation of the licensee's compensatory measures and commitments, those of which included deferring non-essential surveillances and other maintenance activities on the 1A DG, the auxiliary feed water (AFW) turbine-driven pump, the standby shutdown system and switchyard, and posting of dedicated fire watches in selected risk significant areas. Additional inspection is required to conduct a review of the LER, root cause, and planned corrective actions. This URI is identified as URI 05000413/2014002-01, NOED 14-2-001 to allow bearing replacement and testing of the 1A diesel generator.

4OA5 Other Activities

.1 (Closed) Temporary Instruction (TI) 2515/182 – Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks

a. Inspection Scope

The inspectors conducted a review of records and procedures related to the licensee's program for buried piping and underground piping and tanks in accordance with Phase II of TI 2515/182 to confirm that the licensee's program contained attributes consistent with Sections 3.3.A and 3.3.B of Nuclear Energy Institute (NEI) 09-14, "Guideline for the Management of Buried Piping Integrity," Revision 3, and to confirm that these attributes were scheduled and/or completed by the NEI 09-14 deadlines. The inspectors interviewed licensee staff responsible for the buried piping program and reviewed program related activities to determine if the program attributes were accomplished in a manner which reflected acceptable practices in program management. The licensee's buried piping and underground piping and tanks program was inspected in accordance with paragraph 03.02.a of the TI and it was confirmed that activities which correspond to completion dates specified in the program, which have passed since the Phase 1 inspection was conducted, have

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been completed. The licensee's buried piping and underground piping and tanks program was inspected in accordance with paragraph 03.02.b of the TI and responses to specific questions found in <http://www.nrc.gov/reactors/operating/ops-experience/buried-pipe-ti-phase-2-insp-req-2011-11-16.pdf> were submitted to the NRC headquarters staff. Additionally, the inspectors reviewed the licensee's risk ranking process and implementation of the inspection plan using the guidance of paragraph 03.04 and 03.05 of the TI. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified. Based upon the scope of the review described above, Phase 2 of TI-2515/182 was completed.

.2 Reassignment of Cross Cutting Aspects

The table below provides a cross-reference for findings identified in the last six months of 2013 with associated cross-cutting aspects to the new cross-cutting aspects resulting from the common language initiative. These aspects and any others identified since January 2014, will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the 2014 mid-cycle assessment review.

Inspection Report	Old Cross-Cutting Aspect	New Cross-Cutting Aspect
2013005	H.2(b)	H.9

4OA6 Meetings, Including Exit

On April 1, 2014, the resident inspectors presented the inspection results to Mr. Kelvin Henderson and other members of licensee management. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements, which met the criteria of the NRC Enforcement Policy, for being dispositioned as a Non-Cited Violation.

- The licensee identified two examples where Unit 1 main feedwater isolation valves were inoperable for greater than the TS allowed outage time due to isolation valves for one of two nitrogen accumulators being incorrectly left closed following heat up activities at the conclusion of the last Unit 1 refueling outage. TS 3.7.3 condition A required in part that for one or more main feedwater isolation valves (MFIV) inoperable, the inoperable MFIV must be closed or isolated within 72 hours and must be verified closed or isolated once every 7 days. Contrary to the above, the licensee failed to close the MFIVs for 1CF-42 and 1CF-60 within 72 hours following the initial time of inoperability on July 13, 2013, and January 19, 2013, respectively.

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Operability was restored on November 8, 2013, and November 25, 2013, respectively. A risk evaluation was required because the condition involved overlapping exposure times for different trains, multiple event frequencies, and mitigation capability that was not modeled in the NRC's risk model. A Senior Reactor Analyst performed a bounding calculation that accounted for these factors which resulted in a delta-CDF equal to  $2.6 \times 10^{-8}$  (i.e., Green result). The dominant sequence was a main steam line break where the redundant isolation valves fail to close on demand and the main feedwater pumps fail to trip. This issue was documented in the licensee's corrective action program as PIP C-13-10910.

ATTACHMENT: SUPPLEMENTARY INFORMATION

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## **SUPPLEMENTARY INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

T. Arlow, Emergency Planning Manager  
D. Barker, Operations Manager  
C. Blackwelder, Fleet Program Engineer  
D. Cantrell, Chemistry Manager  
T. Hamilton, Nuclear Training Manager  
R. Hart, Regulatory Affairs Manager  
K. Henderson, Site Vice-President  
T. James, Electrical Systems Engineer  
T. Jenkins, Maintenance Manager  
C. Kamilaris, Organizational Effectiveness Director  
L. Keller, Engineering Manager  
M. Mayberry, Electrical Systems Engineer  
K. Phillips, Work Management Manager  
P. Simbrat, Regulatory Affairs Specialist  
T. Simril, Plant Manager  
J. Smith, Radiation Protection Manager  
W. Suslick, Director, Nuclear Engineering  
S. West, Director, Nuclear Plant Security

### **LIST OF REPORT ITEMS**

#### **Opened**

URI 05000413/2014002-01      NOED 14-2-001 to allow bearing replacement and testing of the 1A diesel generator (Section 4OA3.3)

#### **Closed**

LER 05000413/2013-001-00      Each Diesel Generator (DG) Was Determined to be Unknowingly Inoperable During Its Monthly Surveillance Test Due to Technical Specification (TS) Surveillance Requirement (SR) 3.8.1.17 Not Being Met (Section 4OA3.1)

LER 05000413/2013-002-00      Technical Specification Limiting Conditions for Operation (LCOs) 3.6.3 and 3.7.3 Were Violated Due to the Isolation of Nitrogen Supply to Two Unit 1 Main Feedwater Isolation Valves (Section 4OA3.2)

TI 2515/182      Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks, Phase II (Section 4OA5.1)

## **LIST OF DOCUMENTS REVIEWED**

### **Section 1R01: Adverse Weather Protection**

OP/0/B/6700/015, Weather Related Activities  
PT/0/B/4700/038, Cold Weather Protection  
IP/0/B/3560/009, Preventative Maintenance and Operational Check of Freeze Protection Heat Trace and Instrument Box Heaters Systems  
CN-1022-17; Powerhouse Yard Area Drainage Layout  
CN-1024-01; Yard Drainage Section Details and Schedules  
CN-1024-02; Yard Drainage Section Details and Schedules  
Catawba USFSAR, Section 2.4; Hydrologic Engineering  
Catawba UFSAR, Section 3.4; Water Level (Flood) Design  
CNS-1465.00-00-0011, Design Basis Specification for Flooding from External Sources

### **Section 1R04: Equipment Alignment**

CN-2592-1.0, Unit 2 Flow Diagram of Auxiliary Feedwater System  
OP/2/A/6250/002, Auxiliary Feedwater System  
OP/0/A/6450/011, Control Room Area Ventilation/Chilled Water System  
OP/2/A/6200/006, Safety Injection System  
CNS-1562.NI-00-0001, Design Basis Specification for the Safety Injection System  
CN-2562-01.02, Unit 2 Flow Diagram of Safety Injection System

### **Section 1R05: Fire Protection**

Station Fire Impairment Log  
NSD-313, Control of Combustible and Flammable Material  
Fire Strategy Fire Area 149, Unit 2 568' level Turbine Building  
Fire Strategy Fire Areas 207, 208, Standby Shutdown Facility  
Fire Strategy Fire Area 150, Unit 2 594' level Turbine Building  
Fire Strategy Fire Area 28, 2A Emergency Diesel Generator room

### **Section 1R07: Heat Sink Performance**

PT/1/A/4400/006 F, KD Heat Exchanger 1B Heat Capacity Performance Test

### **Section 1R11: Licensed Operator Requalification**

Simulator Exercise Guide S-06  
EP/1/A/5000/E-0, Reactor Trip or Safety Injection  
AP/1/A/5500/006, Loss of S/G Feedwater  
OP/2/A/6100/003, Controlling Procedure for Unit Operation

### **Section 1R12: Maintenance Effectiveness**

EDM 210, Engineering Responsibilities for the Maintenance Rule  
PIP C-13-6634, 2DGCP charger output voltage drifted low during capacity test  
125 VDC D/G Auxiliary Power System (EPQ) Maintenance Rule Summary Report  
Containment Valve Injection Water System (NW) System Health Report  
PIP C-14-2646, Unit 1 and Unit 2 NW system is A(1) based on Repetitive Maintenance Preventable Functional Failures

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

NSD 213, Risk Management Process  
SOMP 02-02 Operations Roles in Risk Management

**Section 1R15: Operability Evaluations**

NSD 203, Operability/Functionality  
NSD 122, Temporary Configuration Changes  
CNC-1223.59-04-0006, VG Capability  
CNC-1139.14-00-0005, Tornado Missile Protection Analysis  
CNC-1139.08-02-0001, Aux Building Beams and Slabs at Elev. 611-0  
UFSAR Section 3.5.3.2, Overall Design Procedures

**Section 1R18: Plant Modifications**

NSD 209, 10 CFR 50.59 Process  
EC 112118, Rescale 2B THOT-Average Signal Due to Loss of 2NCRD5461  
CNC-1552.08-00-0023, Protection and Safeguards Instrument Uncertainties  
CNC-1399.03-00-0033, Unit 2 Scaling Calculation for Loop B Thot-Avg Summing Amp EC-112118

**Section 1R19: Post-Maintenance Testing**

PT/2/A/4350/002 B, Diesel Generator 2B Operability Test  
PT/1/A/4350/002 B, Diesel Generator 1B Operability Test  
PT/2/A/4350/002 A, Diesel Generator 2A Operability Test  
PT/1/A/4200/004 C, Containment Spray Pump 1B Performance Test

**Section 4OA1: Performance Indicator Verification**

NSD 225, NRC Performance Indicators  
NEI 99-02, Regulatory Assessment Performance Indicator Guideline  
SRPMP 10-1, NRC Performance Indicator Data Collection, Validation, Review and Approval  
Catawba Master File, CN: 854.02-04

**Section 4OA2: Problem Identification and Resolution**

NSD 208, Problem Investigation Program  
NSD 500, Red Tags/Configuration Control Tags  
SOMP 02-01, Safety Tagging and Configuration Control  
PIP C-13-11876, Error in NC wide range RTD scaling calculation  
CNC-1399.03-00-0006, NC Wide Range RTD Scaling Calculation for 1NCLP5860 to the 1A ASP  
IP/1/A/3121/012 A, Calibration Procedure for ASP NC Wide Range Temperature and Hot Leg B Pressure Indications

**Section 4OA3: Followup of Events and Notices of Enforcement Discretion (NOED)**

PIP C-13-5033, EDG controls will not return to their pre-position settings  
PIP C-13-10910, 1CFIV0421 found in the closed position  
PIP C-13-11543, 1CFIV0601 was determined to be closed following 1EOC20  
WO 02125269 01, 1CF-42: Ck/Chrg Nitrogen Accumulator  
IP/0/A/3010/021, Nitrogen System Charging for Main Feedwater Isolation Valves  
Duke letter dated 2/10/14, LER 413/2013-002-0

Duke letter dated 10/10/13, LER 413/2013-001-0  
 Duke letter dated 3/10/14, Request for NOED Regarding TS 3.8.1

### **Section 40A5: Other Activities**

#### **Corrective Action Program Documents**

PIPs C-12-05622, C-13-00474, C-13-04053, C-14-01312, C-14-01313, C-14-01318, C-14-01319

#### **Procedures**

CISI-1462.20-0020 - C1-PT-039, CNS UNIT 1 – ISI PT Plan Addendum Sheet Serial Number C1-PT-039, Rev. 0

CMCS-1167.02, Catawba Maintenance Coating Schedule, Rev. 14

CMCS-1167.02, Catawba Maintenance Coating Schedule, Rev. 39, 8/31/10

FCSM-1167, Field Coating Specification Manual, Section FCSM-9, Rev. 6

IP/0/B/3550/001, Cathodic Protection System Testing Procedure, Rev. 37

MP/0/A/7650/088 A, Controlling Procedure for Systems Pressure Testing of ISI Applications for ASME Section XI Duke Class A, B, and C Systems and Components, Rev. 02

MP/0/A/7650/172, Trenching and Excavation, Rev. 8

#### **Other Documents**

Catawba Buried Piping Integrity Group Program (BPIG) Health Report – 2nd Quarter 2013

Catawba Buried Piping Integrity Group Program (BPIG) Health Report – 3rd Quarter 2013

Catawba Buried Piping Integrity Group Program (BPIG) Health Report – 4th Quarter 2013

Catawba Cathodic Protection System Health Report – 2nd Quarter 2013

Catawba Cathodic Protection System Health Report – 3rd Quarter 2013

Catawba Cathodic Protection System Health Report – 4th Quarter 2013

C-ENG-SA-13-17, Buried Pipe Program NRC TI 2515/182 Phase II Inspection, 7/24/13

DWG CN-ISIL3-1609-3.0, ASME Section XI – Third Inspection Interval Inservice Inspection

Pressure Test Boundary of Diesel Generator Fuel Oil System, Rev. 1

Engineering Support Document – Catawba Nuclear Station Buried Piping Integrity Program, Rev. 5, 10/30/13

PM 00034255-01, 0EUC-Inspect/PM U1/U2 Cathodic Protection Rectifiers

PM 00035715-01, 0EUC-Inspect Rectifier 1RECT0001

PM 00035715-02, 0EUC-Inspect Rectifier 1RECT0002

PM 00035715-03, 0EUC-Inspect Rectifier 1RECT0004

PM 00035715-04, 0EUC-Inspect Rectifier 1RECT0005

PM 00035715-05, 0EUC-Inspect Rectifier 1RECT0006

PM 00035715-08, 0EUC: Perform Testing for Cathodic Protection

PM 00035715-08, 1EUC EM RECT0007: Perform Functional/Retest IP/0/B/3550/001

PM 00053043-01, 1EUC EM RECT0006: Perform Inspection on Rectifier

PM 00053044-01, 1EUC EM RECT0005: Perform Inspection on Rectifier

PM 00053045-01, 1EUC EM RECT0004: Perform Inspection on Rectifier

PM 00053046-01, 1EUC EM RECT0002: Perform Inspection on Rectifier

PM 00053047-01, 1EUC EM RECT0001: Perform Inspection on Rectifier

PM 00888178-01, 2FD TK 0044 – Clean/Inspect Fuel Oil Tank

PM 00889291-01, 1FD TK 0044 – Clean/Inspect Fuel Oil Tank

PM 00994302-01, OWL PU BAB – Inspect/Repair Sump Pump

PM 02047960-01, R/R Unit 1 North/South RWST Trench

Technical Report of Containment Chilled Water System Nuclear Service Water System Using  
GUL Wavemaker G-3 for Duke Energy Corporation at Catawba Nuclear Station, Unit 1,  
06/02/2010

Training Attendance Report, Course CNIB22-N – Cathodic Protection System Initial Classroom,  
4/16/13

WO 02053088-05, Pull Hatch Covers Outside U1 DG Building to Inspect 42" RN Pipe, 8/15/12

WO 02053088-06, Pull Hatch Covers Outside U1 DG Building to Inspect 42"