



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

October 29, 2010

Mr. J. R. Morris  
Site Vice President  
Duke Energy Carolinas, LLC  
Catawba Nuclear Station  
4800 Concord Road  
York, SC 29745-9635

**SUBJECT: CATAWBA NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT  
05000413/2010004, 05000414/2010004**

Dear Mr. Morris:

On September 30, 2010, 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 October 6, 2010, with you and other members of your staff.

The inspection examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one NRC-identified finding of very low safety significance (Green) which was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest this NCV, you should provide a written response within 30 days of the date of this inspection report, with the basis for your denial, to the United States Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at Catawba. In addition, if you disagree with the characterization of this finding, 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 Catawba.

DEC

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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).

Sincerely,

***/RA/***

Jonathan H. Bartley, 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 05000413/20010004, 05000414/2010004  
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

DEC

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Letter to J. R. Morris from Jonathan H. Bartley dated October 29, 2010

SUBJECT: CATAWBA NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT  
05000413/2010004, 05000414/2010004

Distribution w/encl:

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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.: 05000413/2010004, 05000414/2010004

Licensee: Duke Energy Carolinas, LLC

Facility: Catawba Nuclear Station, Units 1 and 2

Location: York, SC 29745

Dates: July 1, 2010, through September 30, 2010

Inspectors: A. Hutto, Senior Resident Inspector  
R. Cureton, Resident Inspector  
A. Alen, Reactor Inspector (Section 40A5)  
C. Even, Reactor Inspector (Section 40A5)  
G. Johnson, Operations Engineer (Section 1R11)  
D. Jones, Senior Reactor Inspector (Section 40A5)  
W. Loo, Senior Health Physicist (Section 40A5)  
M. Meeks, Operations Engineer (Section 1R11)

Approved by: Jonathan H. Bartley, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000413/2010004, 05000414/2010004; 7/1/2010 - 9/30/2010; Catawba Nuclear Station, Units 1 and 2; Fire Protection

The report covered a three month period of inspection by two resident inspectors, three reactor inspectors, one health physicist, and two operations engineers. One Green finding, which was determined to be a non-cited violation (NCV), was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The cross-cutting aspects were determined using IMC 0310, "Components Within The Cross-Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

Cornerstone: Initiating Events

- Green. An NRC-identified Green NCV of the Fire Protection Program (FPP) was identified when transient combustible materials of greater than 15 pounds and located near an ignition source were stored in the Unit 2 electrical penetration room without prior review and approval as required by NSD 313, Control of Combustible and Flammable Material. The issue was entered into the licensee's corrective action program as Problem Investigation Program report (PIP) C-10-5521.

The performance deficiency was more than minor because it was associated with the Initiating Events cornerstone attribute of fire and adversely affected the cornerstone objective in that the adjacent 600V pressurizer heater breaker panel could ignite the combustibles and cause damage to safety-related containment pressure transmitters. The finding was determined to be of very low safety significance (Green) because the transient combustibles did not involve low flash point liquids or self igniting material. This finding was associated with the cross-cutting aspect of the licensee defining and effectively communicating expectations regarding procedural compliance in the Work Practices component of the Human Performance area because the requirements of NSD 313 were not clearly communicated [H.4(b)]. (Section 1R05)

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## REPORT DETAILS

### Summary of Plant Status

Unit 1 operated at or near 100 percent Rated Thermal Power (RTP) until September 10, 2010, when power was reduced to 88 percent RTP for control valve movement testing. Power was returned to 100 percent RTP on September 11, 2010, where it remained for the rest of the inspection period.

Unit 2 began the inspection period at 100 percent RTP. On August 13, 2010, power was reduced to approximately 18 percent RTP to add oil to the 2A reactor coolant pump motor upper reservoir. The unit was returned to 100 percent RTP on August 15, 2010, and remained until August 29, 2010, when power coast down to a planned refueling outage commenced. Unit 2 was shut down on September 18, 2010, and remained shut down for the rest of the inspection period.

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R01 Adverse Weather Protection

##### a. Inspection Scope

Flood Protection Measures - External: The inspectors performed a walkdown of external site areas including designated Type I inlet catch basins on-site, which were part of the surface water drainage system designed to protect all 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 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 components when safety-related equipment was inoperable. The inspectors attempted

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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.

- Walkdown of the Unit 2 A & B trains of Auxiliary Feedwater while the Unit 2 Turbine Driven Auxiliary Feedpump was inoperable
- Walkdown of the 2A Emergency Diesel Generator (EDG) while the 2B EDG was out of service for pre-outage maintenance
- Walkdown of Unit 1A Service Water System while the B Train of service water was out of service for maintenance

Complete System Walkdown: The inspectors conducted one detailed walkdown/review of the Unit 2 Chemical and Volume Control System. The inspectors used licensee procedures and licensing and design documents to verify that the system (i.e., pump, valve, and electrical) alignment was correct; valves and pumps did not exhibit leakage that would impact their function; major portions of the system and components were correctly labeled; hangers and supports were correctly installed and functional; and essential support systems were operational. In addition, pending design and equipment issues were reviewed to determine if the identified deficiencies significantly impacted the system's functions. Items included in this review were: the operator workaround list; the temporary modification list; and outstanding maintenance work requests/work orders. A review of open PIPs was also performed to verify that the licensee had appropriately characterized and prioritized safety-related equipment problems for resolution in the corrective action program. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R05 Fire Protection

a. Inspection Scope

Fire Protection Walkdowns: The inspectors walked down accessible portions of the five 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.

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- Unit 1 Turbine Bldg. 594' level
- Unit 1/2 Nuclear Service Water (RN) Pump House
- Unit 1/2 Auxiliary Building 577' level
- Unit 1 Mechanical Penetration Room 543' level
- Unit 2 Electrical Penetration Room 560' level

b. Findings

Introduction: An NRC-identified Green NCV of the Fire Protection Program (FPP) was identified when transient combustible material was not evaluated for acceptability as required by NSD 313, Control of Combustible and Flammable Material. Transient combustible materials of greater than 15 pounds and located near an ignition source were stored in the Unit 2 electrical penetration room without prior review and approval.

Description: During a walkdown of the Unit 2 560' level electrical penetration room, the inspectors observed a housekeeping area established adjacent to a safety-related 600V pressurizer heater breaker panel and safety-related containment pressure transmitters. The area contained a large amount of heavy canvass cloth, two large coils of rubber water hose and about 48 ft<sup>3</sup> of plastic flexible vacuum hose. The heavy canvass cloth was considered fire retardant but not fire proof. NSD 313 required that transient combustible material must be evaluated and approved by the site fire protection engineer if the material exceeds fifteen pounds or was adjacent to an ignition source. The inspectors estimated the amount of material in the area exceeded 15 pounds and was stored near the 600V pressurizer heater breaker panel which was a potential ignition source. The inspectors noted that the transient combustible evaluation had not been performed as indicated on the associated housekeeping tags. The inspectors followed up with the fire protection engineer who determined the storage of the material would not have been approved based on the close proximity of an ignition source. The inspectors notified operations personnel and the material was removed from the area. After further discussions with the licensee, the inspectors determined that the requirements of NSD 313 were not clearly communicated.

Analysis: The failure to obtain prior review and approval for the storage of transient combustibles in the Unit 2 electrical penetration room was a performance deficiency. The performance deficiency was more than minor because it was associated with the Initiating Events cornerstone attribute of fire and adversely affected the cornerstone objective in that the adjacent 600V pressurizer heater breaker panel could ignite the combustibles and cause damage to safety-related containment pressure transmitters. The finding was determined to be of very low safety significance (Green) using IMC 0609, Appendix F, Attachment 1, because the transient combustibles did not involve low flash point liquids or self igniting material. This finding was associated with the cross-cutting aspect of the licensee defining and effectively communicating expectations regarding procedural compliance in the Work Practices component of the Human Performance area because the requirements of NSD 313 were not clearly communicated. [H.4(b)]

Enforcement: 10 CFR 50.48 stated that each operating nuclear power plant must have a FPP that satisfies Criterion 3 of 10 CFR 50, Appendix A. Catawba Unit 2 License Condition 2.C.5 stated that the licensee shall implement and maintain in effect all provisions of the approved FPP as described in the Updated Final Safety Analysis Report (UFSAR). Catawba UFSAR, Section 9.5.1.2, stated in part that administrative controls were included in NSDs to manage control of flammable and combustible materials. NSD 313 required that ordinary combustibles stored in housekeeping areas in quantities of greater than 15 pounds or adjacent to an ignition source must have prior review and approval by the site fire protection engineer. Contrary to the above, from approximately August 25, 2010, to September 8, 2010, the licensee did not adequately implement the FPP as required by NSD 313 in that review and approval from the site fire protection engineer was not obtained prior to storing transient combustibles greater than 15 pounds and adjacent to an ignition source in a housekeeping area in the Unit 2 electrical penetration room. Because this violation is of very low safety significance and is in the licensee's corrective action program as PIP C-10-5521, it is being treated as an NCV, consistent with Section 2.3.2 of the NRC's Enforcement Policy: NCV 05000414/2010004-01, Failure to Adequately Control Transient Combustible Materials in Accordance with the Fire Protection Program.

#### 1R06 Flood Protection Measures

##### a. Inspection Scope

Internal Flooding: The inspectors reviewed the UFSAR, Individual Plant Examination, and flood analysis documentation associated with internal plant areas to determine the effect of flooding. The inspectors reviewed the licensee's internal flood protection features for the flood walls constructed in the 568 foot elevation in the Unit 1 and Unit 2 Turbine Buildings to protect electrical switchgear and transformers against flooding caused by the rupture of piping or components associated with the Circulating Water System. The internal areas were selected and walked down based on the flood analysis calculations. Through observation and design review, the inspectors reviewed sealing of doors, holes in penetrations, potential flooding sources, and water intrusion detection instrumentation. The inspectors reviewed corrective action program documents to verify that the licensee was identifying issues and resolving them. Documents reviewed are listed in the Attachment.

Underground Cable Inspection: The inspectors entered two conduit manholes (RN Conduit CMH-6B & 9B) to verify that the cables were not submerged, that the cables were not damaged or degraded, and that the sump pumps were functioning properly.

##### b. Findings

No findings were identified.

## 1R07 Heat Sink Performance

### a. Inspection Scope

Annual Review: The inspectors reviewed the performance of the Unit 2 'B' Emergency Diesel Generator Engine Cooling Water (KD) Heat Exchanger 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 Program

### a. Inspection Scope

Quarterly Resident Review: The inspectors observed Simulator Exercise S-37 to assess the performance of licensed operators during a license operator requalification simulator training session. The exercise included a fire scenario in the Unit 1 cable spread room that required alternate plant control from the standby shutdown facility, and a toxic gas release in the control room that required a plant shutdown from the auxiliary shutdown panels. The inspection focused on high-risk operator actions performed during implementation of the abnormal and emergency operating procedures, and the incorporation of lessons-learned from previous plant and industry events. The classification and declaration of the Emergency Plan by the Shift Technical Advisor and Operations Shift Manager was also observed during the scenario. The post-scenario critique conducted by the training instructor and the crew was observed. Documents reviewed are listed in the Attachment.

Biennial Review: The inspectors reviewed documentation, interviewed licensee personnel, and observed the administration of operating tests associated with the licensee's operator requalification program to assess the effectiveness of the facility licensee in implementing requalification requirements identified in 10 CFR Part 55, Operators' Licenses. The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG-1021, Operator Licensing Examination Standards for Power Reactors, and Inspection Procedure (IP) 71111.11, Licensed Operator Requalification Program. The inspectors also evaluated the licensee's simulation facility for adequacy for use in operator licensing examinations using ANSI/ANS-3.5-1998, American National Standard for Nuclear Power Plant Simulators for use in Operator Training and Examination. The inspectors observed the performance of three crews during the operating tests. Documentation reviewed included written examinations, Job Performance Measures, simulator scenarios, licensee procedures, on-shift records, simulator modification request records, simulator performance test records, operator feedback records, licensed operator

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qualification records, remediation plans, watchstanding records, and medical records. The records were inspected using the criteria listed in IP 71111.11. Documents reviewed are listed in the Attachment.

b. Findings

Introduction: An Unresolved Item (URI) concerning a potential failure to report a permanent change in medical condition for a licensed operator as required by 10 CFR 55.25 was identified.

Description: During a review of a random sample of medical records and associated documents, the inspectors identified that the licensee potentially failed to report a permanent medical condition of an individual who was a licensed operator. The inspectors determined that a licensed operator had been diagnosed with a permanent medical condition on September 11, 2006. The licensed operator notified the licensee of the medical condition on the next day. A member of the licensee's medical staff submitted the medical details to the corporate medical director, and questioned if NRC notification was required. On September 13, 2006, the corporate medical director determined that the requirements of ANSI/ANS 3.4 were met and no NRC notification was required. On September 22, 2008, the licensee sent a license renewal letter to the NRC, including NRC Form 396. The only restriction identified on NRC Form 396 was that the individual required corrective lenses to be worn during performance of his licensed operator duties. On November 13, 2008, based on the information provided by the licensee, the NRC renewed the individual's operator license with one restrictive condition identified, specifically that the individual shall wear corrective lenses while performing licensed operator duties. The licensee entered the issue of concern into its corrective action program as PIP C-10-04465.

This issue is unresolved pending receipt of further information from the licensee, including NRC Form 396s for the above individual and any other licensed individuals identified during an extent-of-condition review. Once the additional information is received, an NRC medical review will occur, and a determination will be made if this issue constitutes a performance deficiency that is more than minor: URI 05000413,414/2010004-02: Failure to Report a Permanent Change in Medical Condition for a Licensed Operator.

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

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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-10- 4459, 1A Diesel Generator cylinder 6R thermocouple failure
- PIPs C-10-5131, 5159, Unit 2 pressurizer pressure master controller failures

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the following six 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 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.

- Emergent Orange Risk Condition due to a weld repair rendering 1A Component Cooling Water unavailable
- Review of Complex Plan activities during the 2A Pre-Outage Diesel Down Day
- Review of Critical/Complex Plan for RN to KD Excavation Dig # 5A
- Review of Critical Activity Plan for Orange Paragon work related to 1RN-290 replacement
- 2EOC17 (End-of-Cycle) Shutdown Risk Assessment
- RN to KD Piping Replacement 2B Diesel Generator during 2EOC17 Critical Activity Plan

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors evaluated the technical adequacy of the five operability evaluations 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 UFSAR to determine that the systems and components remained available to perform their intended function. Documents reviewed are listed in the Attachment.

- PIP C-10-3976, Low oil level on 1B Containment Spray pump
- PIP C-10-4076, Gas void found upstream of 2NV-860
- PIP C-10-4358, Slave relay K602 failed to unlatch
- PIP C-10-5101, Steam Generator 1C sample flow was lost following Auxiliary Safeguards Testing
- PIP C-10-5358, H2 Igniter junction box splices not per design drawings

b. Findings

No findings were identified.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed the temporary plant modification, Unit 2 Temporary Monitoring System for Distributed Control System implementation, to verify the adequacy of the modification package, and to evaluate the modification for adverse affects on system availability, reliability and functional capability. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed the six 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.

- Turbine Driven Auxiliary Feedwater Pump #2 performance test following pump preventive maintenance
- Diesel Generator 2A Performance Test following Pre-Outage maintenance
- "E" Instrument Air Dryer following "A" Pre-Filter Replacement

- Containment Spray Pump 1A Performance Test following motor preventive maintenance
- 2RN-292B in-service test following valve relocation and rewiring during RN to KD modifications
- 2B Service Water train flow balance following dewatering and connection to new diesel generator cooling water piping.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities

a. Inspection Scope

The inspectors conducted reviews and observations for selected outage activities to ensure that: (1) the licensee considered risk in developing the outage plan; (2) the licensee adhered to the outage plan to control plant configuration based on risk; (3) mitigation strategies were in place for losses of key safety functions; and (4) the licensee adhered to operating license and TS requirements. Between September 18, 2010, and September 30, 2010, the following activities related to the refueling outage were reviewed for conformance to applicable procedures and selected activities associated with each evaluation were witnessed:

- Outage risk management plan/assessment
- Clearance activities
- Reactor coolant system instrumentation
- Plant cooldown
- Mode changes from Mode 1 (power operation) to No Mode (defueled)
- Shutdown decay heat removal and inventory control
- Containment closure
- Refueling activities

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 TS, 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/2/A/4200/009 A, Auxiliary Safeguards Test Cabinet Periodic Test, Enclosure 13.38 Containment Isolation Phase A Train B, Rev. 195
- PT/1/A/4450/005 A, Containment Air Return Fan 1A and Hydrogen Skimmer Fan 1A Performance Test, Rev. 48
- IP/1/A/3200/001 A, Solid State Protection System Train A Periodic Test, Rev. 15

In-Service Tests

- PT/0/A/4400/022 B, Nuclear Service Water Pump Train B Performance Test, Rev. 80
- PT/1/A/4400/003 B, Component Cooling Water Train 1B Performance Test, Rev. 69

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluationa. Inspection Scope

The inspectors observed and evaluated the licensee's emergency planning performance during a drill conducted on August 5, 2010. The inspectors reviewed licensee activities that occurred in the Technical Support Center during a simulated event. The inspectors' assessment focused on the timeliness and accuracy of the event classification, notification of offsite agencies and the overall response of the personnel involved in the drill from an operations and emergency planning perspective. The performance of the Emergency Response Organization was evaluated against applicable licensee procedures and regulatory requirements. The inspectors attended the post-exercise critique for the drill to evaluate the licensee's self-assessment process for identifying potential deficiencies relating to failures in classification and notification. The inspectors reviewed the completed critique developed by the licensee documenting the overall performance of the Emergency Response Organization.

b. Findings

No findings were identified.

## 4. OTHER ACTIVITIES

4OA1 Performance Indicator Verificationa. Inspection Scope

The inspectors sampled licensee data to confirm the accuracy of reported performance indicator (PI) data for the four indicators during periods listed below. To determine the

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accuracy of the reported PI elements, the reviewed data was assessed against PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Indicator Guideline, Rev. 5. Documents reviewed are listed in the Attachment.

Cornerstone: Initiating Events

- Unplanned Power Changes, Unit 1 & 2

Cornerstone: Mitigating Systems

- Residual Heat Removal, Unit 1 & 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 July 1, 2009, through June 30, 2010. 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 2009-2010. 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.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution

a. Inspection Scope

Daily Review: As required by Inspection Procedure 71152, Identification and Resolution of Problems, and in order to help identify repetitive equipment failures or specific human performance 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.

Focused Review: The inspectors performed an in-depth review of PIP C-10-1351, Unit 1 Loss of Load Runback. The inspectors reviewed the actions taken by the licensee to verify that the issue was accurately and timely identified and was appropriately evaluated for operability and reportability. The inspectors also reviewed the root cause evaluation and the completed and proposed corrective actions to verify that they were prioritized and implemented commensurate with the safety significance of the issue. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA3 Followup of Events and Notices of Enforcement Discretion

.1 (Closed) Licensee Event Report (LER) 05000413/2010-003-00, Technical Specification Violation Due to Failure to Perform Required Actions Following Solid State Protection System Relay Latch Failure.

On April 30, 2010, a relay (K625) in the A train of the system failed to latch during testing of the phase B isolation portion of Engineered Safety Feature Actuation System. Initially, the licensee determined that the failure did not affect Engineered Safety Feature Actuation System operability. On May 20, 2010, the licensee subsequently determined that the A train of manual initiation of phase B isolation was inoperable as it was affected by the relay latching failure. As a result, TS 3.3.2 required actions were not performed in the required time from the initial discovery of the failure. The licensee entered this issue into their corrective action program as PIP C-10-3012. The LER, the licensee's root cause evaluation, and corrective action documents were reviewed by the inspectors to verify the accuracy of the LER and that corrective actions were completed to restore TS compliance. The enforcement aspects of the event were dispositioned in NRC Inspection Report 05000413,414/2010003.

.2 (Closed) LER 05000413/2010-004-00, Technical Specification Violation Involving Notice of Enforcement Discretion (NOED) Due to Failure of Diesel Generator Engine-Mounted Thermocouple (NOED 10-2-003)

a. Inspection Scope

The inspectors reviewed the licensee's LER and related documents to verify the accuracy of the LER and completion of corrective actions which included the replacement of the broken thermocouple. The inspectors reviewed the licensee's submitted NOED request, reviewed plant status conditions, and walked down committed compensatory actions to verify that the licensee complied with the conditions of the NOED. The inspectors also reviewed the licensee's failure cause analysis and corrective action documents. Documents reviewed are listed in the Attachment.

b. Findings

Introduction: A Notice of Enforcement Discretion was issued for TS 3.8.1, Required Action B.4; TS 3.7.8, Required Action A.1; TS 3.7.5, Required Action B.1; and TS 3.6.6, Required Action A.1, when the 1A Emergency Diesel Generator (EDG) could not be restored to operable within the completion time specified in TS 3.8.1, Condition B. The TS required action would have been to shutdown Unit 1.

Description: On July 27, 2010, TSs 3.8.1, 3.7.8, 3.7.5, and 3.6.6 were entered to perform scheduled preventative maintenance and to replace the 6R cylinder exhaust thermocouple. The licensee discovered that the thermocouple was severed from its

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base and was located intact in the inlet of the right bank turbo charger. The turbocharger was removed to allow for retrieval of the thermocouple. There was no damage to the turbocharger. The licensee analyzed the thermocouple and determined the failure was due to mechanical fatigue.

Removal of the turbocharger significantly increased the work scope such that operability of the 1A EDG could not be restored within the 72-hour completion time which would require Unit 1 to be shut down. The licensee requested the NRC exercise discretion to not enforce compliance with these TSs. A NOED was granted to allow an additional 24 hours to restore the 1A EDG to operable.

Analysis: No performance deficiency was identified as the thermocouple failure was unique based on the licensee's analysis, a review of internal and external operating experience, and vendor information. The inspectors determined the licensee could not have reasonably foreseen and prevented this condition. The licensee entered this condition into their corrective action program as PIP C-10-4459. A cross-cutting aspect was not assigned.

Enforcement: No violation of regulatory requirements was identified because the 1A EDG was returned to operable within the time allowed by TSs.

#### 40A5 Other Activities

##### .1 Quarterly Resident Inspector Observations of Security Personnel and Activities

###### a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours. These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

###### b. Findings

No findings were identified.

##### .2 (Closed) Temporary Instruction (TI) 2515/173 Review of the Implementation of the Industry Ground Water Protection Voluntary Initiative

###### a. Inspection Scope

The inspectors reviewed elements of the licensee's environmental monitoring program to evaluate compliance with the voluntary Groundwater Protection Initiative as described in NEI 07-07, Industry Ground Water Protection Initiative – Final Guidance Document,

August 2007 (ADAMS Accession Number ML072610036). Inspectors interviewed personnel, performed walk-downs of selected areas, and reviewed the following items:

- Site characterization of geology and hydrology as described in the licensee's groundwater flow study report
- Evaluations of SSCs that contain or could contain licensed material and evaluations of work practices that involved licensed material for which there is a credible mechanism for the licensed material to reach the groundwater
- Implementation of the onsite groundwater monitoring program to monitor for potential licensed radioactive leakage into groundwater
- Locations of groundwater monitoring wells installed as a result of implementation of the Groundwater Protection Initiative
- Procedures for the decision making process for potential remediation of leaks and spills, including consideration of the long term decommissioning impacts
- Records of leaks and spills recorded in the licensee's decommissioning files in accordance with 10 CFR 50.75(g)
- Licensee briefings of local and state officials on the licensee's groundwater protection initiative
- Procedures for notification to the local and state officials and to the NRC regarding detection of leaks and spills
- Procedures for external notifications and reports if an onsite groundwater sample exceeds the criteria in the radiological environmental monitoring program
- Groundwater monitoring results as reported in the annual radiological environmental operating report
- Licensee and industry assessments of implementation of the groundwater protection initiative

b. Findings

No findings were identified.

.3 (Closed) TI 2515/177, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01)

a. Inspection Scope

The inspectors reviewed the implementation of the licensee's actions in response to Generic Letter 2008-01. The systems reviewed included the safety injection, refueling water, residual heat removal, chemical and volume control, and containment spray systems. The inspectors performed the following inspection activities. Documents reviewed are listed in the Attachment.

- Reviewed the licensing basis to verify that actions to address gas accumulation were consistent with the operability requirements
- Reviewed the design basis to verify that actions taken to address gas accumulation were appropriate

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- Reviewed analyses performed by the licensee to verify that methodologies for predicting gas void accumulation, movement, and impact were appropriate
- Reviewed test procedures and test results to verify that test procedures were appropriate to detect gas accumulations that could challenge the safety function of these systems
- Reviewed the testing frequencies to verify that the testing intervals were appropriate based on historical gas accumulation events and susceptibility to gas accumulation
- Reviewed the test programs and processes to verify that they were sensitive to precursors to gas accumulation
- Reviewed corrective actions associated with gas accumulation to verify that identified issues were being appropriately identified and corrected
- Reviewed plant modifications including the installation of additional vent valves
- Reviewed selected vent valve installations to verify that the locations selected were appropriate
- Performed walk downs of selected subject systems to verify that the reviews and design verifications conducted by the licensee had drawn appropriate conclusions with respect to piping configurations and pipe slope which could result in gas accumulation susceptibility

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On October 6, 2010, the resident inspectors presented the inspection results to Mr. Jim Morris, Catawba Site Vice President, and other members of licensee management, who acknowledged the findings. The inspectors confirmed that any proprietary information provided or examined during the inspection period had been returned.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee Personnel

T. Arlow, Emergency Planning Manager  
W. Byers, Security Manager  
J. Caldwell, Modifications Engineering Manager  
D. Cantrell, Chemistry Manager  
A. Donato, Mechanical, Civil Engineering  
J. Ferguson, Mechanical, Civil Engineering Manager  
T. Hamilton, Work Control Manager  
G. Hamrick, Station Manager  
R. Hart, Regulatory Compliance Manager  
M. Helton, Radiation Protection  
R. Herring, Mechanical, Civil Engineering  
T. Jenkins, Superintendent of Maintenance  
J. McConnell, Shift Operations Manager  
J. Morris, Catawba Site Vice President  
K. Phillips, Training Manager  
S. Putnam, Safety Assurance Manager  
T. Ray, Engineering Manager  
M. Sawicki, Regulatory Compliance Engineer  
R. Simril, Operations Superintendent  
J. Smith, Radiation Protection Manager  
D. Ward, Civil Engineering Supervisor  
T. Wright, RP General Supervisor

#### NRC personnel

J. Thompson, Project Manager, NRR

### LIST OF REPORT ITEMS

#### Opened

05000413,414/2010004-02	URI	Failure to Report a Permanent Change in Medical Condition for a Licensed Operator (Section 1R11)
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#### Opened and Closed

05000414/2010004-01	NCV	Failure to Adequately Control Transient Combustible Material in Accordance with the Fire Protection Program (Section 1R05)
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Closed

05000413/2010-003-00	LER	Technical Specification Violation Due to Failure to Perform Required Actions Following Solid State Protection System Relay Latch Failure (Section 4OA3.1)
05000413/2010-004-00	LER	Technical Specification Violation Involving Notice of Enforcement Discretion (NOED) Due to Failure of Diesel Generator Engine-Mounted Thermocouple (NOED 10-2-003) (Section 4OA3.2)
Temporary Instruction 2515/173	TI	Review of the Implementation of the Industry Ground Water Protection Voluntary Initiative (Section 4OA5.2)
Temporary Instruction 2515/177	TI	Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01) (Section 4OA5.3)

**LIST OF DOCUMENTS REVIEWED****Section 1R01: Adverse Weather Protection**

CN-1022-17; Powerhouse Yard Area Drainage Layout, Rev. 12  
 CN-1024-01; Yard Drainage Section Details and Schedules, Rev. 34  
 CN-1024-02; Yard Drainage Section Details and Schedules, Rev. 46  
 CN-1024-04; Yard Drainage C.B. Schedule, Rev. 38  
 Catawba UFSAR, Section 2.4; Hydrologic Engineering  
 Catawba UFSAR, Section 3.4; Water Level (Flood) design

**Section 1R04: Equipment Alignment**

CN-2592-1.0, Unit 2 Flow Diagram of Auxiliary Feedwater System, Rev. 29  
 CN-1574-1.0, Unit 1 & 2 Flow Diagram of Nuclear Service Water System, Rev. 52  
 CN-1574-2.0.01, Unit 1 Flow Diagram of Nuclear Service Water System, Rev. 54  
 CN-2554-01.00, Unit 2 Flow Diagram of Chemical and Volume Control System, Rev. 25  
 CN-2554-1.6, Unit 2 Flow Diagram of Chemical and Volume Control System, Rev. 15  
 CN-2554-1.7, Unit 2 Flow Diagram of Chemical and Volume Control System, Rev. 19  
 CNS-1554.NV-00-0001, Design Basis Specification for the Chemical and Volume Control System, Rev. 38  
 C-10-01151, Employee bumped valve while climbing over to decontaminate area  
 C-10-04858, Active leak where running "T" inserts into the transmitter  
 C-10-05575, Nightly NC leakage PTs are hampered by erratic operation of 2NV-294  
 C-10-05733, During performance of PT/2/A/4206/006, Leak Rate Determination, components were found to have leaks  
 OP/2/A/6200/001, Chemical and Volume Control System, Rev. 119  
 PT/2/A/4200/006 A, Boron Injection Valve Lineup Verification, Rev. 027



**Section 1R05: Fire Protection**Station Fire Impairment Log

NSD 313, Control of Combustible and Flammable Material, Rev. 7  
 Fire Strategy Area 146, Unit 1 Turbine Building 594' level  
 Fire Strategy Area 29/30, Nuclear Service Water Pump House  
 Fire Strategy Area 18, Unit 1/2 Auxiliary Building 577' level  
 Fire Strategy Area 4, Unit 1 Mechanical Penetration Room 543' level  
 Fire Strategy Area 5, Unit 2 Electrical Penetration Room 560' level

**Section 1R06: Flood Protection Measures**

Drawing CN-1938-06, Electrical Equipment Layout Outdoor Area, Rev. 13  
 Drawing CN-1938-06.01, Computer Cable Routing Outdoor Area, Rev. 9

**Section 1R07: Heat Sink Performance**

PT/2/A/4400/006 F, KD Heat Exchanger 2B Heat Capacity Test, Rev. 025  
 PT/2/A/4400/009, Cooling Water Flow Monitoring for Asiatic Clams and Mussels Test, Rev. 046

**Section 1R11: Licensed Operator Requalification Program**Records

License Reactivation Packages (10 Records Reviewed)  
 LORP Training Attendance records (20 Records Reviewed)  
 Medical Files (8 Records Reviewed)  
 Remedial Training Records (22 Records Reviewed)  
 Remedial Training Examinations (10 Records Reviewed)  
 LORP Training Feedback Summaries (4 Training Cycles Reviewed)  
 Time-on-Shift Records (9 Operators and SROs Reviewed)

Written Examinations

LOR 101ES (SRO), Administered 07/23/10  
 LOR 1015AS (SRO), Administered 7/30/10  
 "A" Shift Remediation Exam, Administered 2008

Operating Test Items

JPM OP-CN-CP-AD-0-13, Establish NC Pump Seal Injection from the SSF (Loss of All AC, U-1), Rev. 1  
 JPM OP-CN-VX-024, Containment Hydrogen Control Systems, Rev. 20  
 JPM OP-CN-EP-EP1-010, Emergency Boration for Two Stuck Rods, Rev. 1  
 JPM OP-CN-RT-RXM-004, Quantify Steam Leak Size Using AP-28/E-0 Immediate Actions, Rev. 2  
 JPM OP-CN-ECCS-NS-105, Align the NS System to Cold Leg Recirculation, Rev. 1  
 Active Simulator Exam (ASE) Scenario OP-CN-ASE-35, Rev. 10  
 ASE Scenario OP-CN-ASE-41, Rev. 05

Procedures

Standby Shutdown Facility Diesel Operations, CNS OP/0/B/6350/011, Rev. 40  
 Operations Training Management Procedure (OTMP) 7.0, Simulator Configuration Management, rev. 11, dated 08/22/2008  
 OTMP 3.4, Active Simulator Exam Development Guide, rev. 03, dated 04/28/2010

Duke Energy procedure NSD 805, Nuclear Station Unit Specific Training Simulators, rev. 1, dated 04/21/2009

#### Simulator Steady State Tests

2007 Simulator Steady-State Power Operation Test, Rev. 12  
2008 Simulator Steady-State Power Operation Test, Rev. 15  
2009 Simulator Steady-State Power Operation Test, Rev. 16

#### Simulator Normal Evolution Tests

Simulator Core Reload and Normal Evolutions (10/01/2007)  
Simulator Core Reload and Normal Evolutions (03/12/2010)  
Simulator Duty Cycle (Real Time) Periodic Test (2006)  
Simulator Duty Cycle (Real Time) Periodic Test (2007)  
Simulator Duty Cycle (Real Time) Periodic Test (2008)  
Simulator Duty Cycle (Real Time) Periodic Test (2009)

#### Simulator Transient Tests

Test #3, SB LOCA (2007)  
Test #3, SB LOCA (2004)  
Test #3, SB LOCA (2009)  
Test #3, SB LOCA (2010)  
Test #7, Loss of All Feedwater (2007)  
Test #7, Loss of All Feedwater (2008)  
Test #7, Loss of All Feedwater (2009)  
Test #7, Loss of All Feedwater (2010)  
Test #10, PORV Failure (2004)  
Test #10, PORV Failure (2008)  
Test #10, PORV Failure (2009)  
Test #10, PORV Failure (2010)  
Test #14, Loss of CF ATWS (2007)  
Test #14, Loss of CF ATWS (2008)  
Test #14, Loss of CF ATWS (2009)  
Test #14, Loss of CF ATWS (2010)

#### Simulator Scenario Based Tests

ASE OP-CN-ASE-35, Rev. 10  
ASE OP-CN-ASE-41, Rev. 05  
ASE OP-CN-ASE-35, Rev. 09  
ASE OP-CN-ASE-10, Rev. 27  
ASE OP-CN-ASE-41, Rev. 04

#### Simulator Problem Reports & Design Change Requests

CNM-047, 10/16/05 Resolved discrepancies identified in 2004 Transient Test #3  
CVC-084, 01/17/06 Resolved discrepancies identified in 2004 Transient Test #10  
PCS-063, 01/31/10 Install the hardware and software Digital Process Control System

Other

PIP C-09-05890, dated 10/06/2009, Results and Areas for improvement following administration of the Annual Operating Exam; July-August 2009

PIP C-08-06650, dated 11/10/2008, Documenting Training Assessment TRN-12-08, HLP/LOR Training Program Self-Assessment

PIP C-10-04465, Documentation of a historical issue which was discovered during an NRC Inspection (medical conditions)

PIP C-10-04237, Licensed operator failed to notify medical of medication change

PIP G-10-00176, Olfactory testing may not meet NRC requirements for hazardous agents

Catawba Targeted Training Assessment Report TRN-12-08, HLP/LOR Training Program Self-Assessment

Catawba Targeted Training Assessment Report TRN-07-10, NRC 71111.11 Readiness Assessment

**Section 1R12: Maintenance Effectiveness**

EDG System Health Report, 2Q 2010

Maintenance Rule SCC Summary Report, EDG Super System

PIP C-10-4459, 1A Diesel Generator cylinder 6R thermocouple Failure

Maintenance Rule SCC Summary Report, ILE, Pressurizer Pressure and Level Control

PIP C-10-5131, Pressurizer pressure master failed to 24 percent

PIP C-10-5159, Pressurizer pressure master failure

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

NSD 415 Operational Risk Management (Modes 1-3) per 10 CFR 50.65 (a)(4), Rev. 5

Risk Management Actions for 2RN-350 Weld Leak

Complex Plan for 2A Diesel Generator Pre-Outage Down Day Work Activities

Critical/Complex Plan for RN to KD Excavation Dig #5A

Critical Activity Plan for 1RN-290 Replacement (Orange Paragon Risk)

Unit 2 EOC17 Shutdown Risk Assessment

RN to KD Piping Replacement 2B D/G during 2EOC17, Rev. 2

RN to KD Outage Preparation Support Fragnet

**Section 1R15: Operability Evaluations**

NSD203, Operability/Functionality, Rev. 19

NSD 122, Temporary Configuration Changes, Rev. 00

PIP C-10-3976, Low oil level on 1B Containment Spray pump

PIP C-10-4076, Gas void found upstream of 2NV-860

PIP C-10-4358, Slave relay K602 failed to unlatch

PIP C-10-5101, Steam Generator 1C sample flow lost following Auxiliary Safeguards Testing

PIP C-10-5358, H2 Igniter junction box splices not per design drawings

Drawing CN-1735-02.01, Connection Diagram, H2 Mitigation System, Rev. 6A

**Section 1R18: Plant Modifications**

NSD 209, 10 CFR 50.59 Process, Rev. 14

EC 98616, Temporary Loop Monitoring System for DCS Design Change

**Section 1R19: Post Maintenance Testing**

PT/2/A/4250/003C, Turbine Driven Auxiliary Feedwater Pump #2 Performance Test, Rev. 82  
 PT/2/A/4350/002 A, Diesel Generator 2A Operability Test, Rev. 091  
 OP/0/A/6450/005, Instrument Air System; Enclosure 4.6, Shifting Air Filters, Rev. 132  
 PT/1/A/4200/004 B, Containment Spray Pump 1A Performance Test, Rev. 062  
 PT/2/A/4200/013 C, RN Valve Inservice Test (QU), Rev. 53  
 PT/0/A/4400/008 B, RN Flow Balance Train B, Rev. 049

**Section 4OA1: Performance Indicator Verification**

NSD 225, NRC Performance Indicators, Rev. 4  
 NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 5  
 Catawba Master File CN: 854.02-4, MSPI Residual Heat Removal

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

PIP C-10-1351, Unit 1 loss of load runback during switchyard PCB testing

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

Duke Energy Letter, Notice of Enforcement Discretion TS 3.8.1, AC Sources – Operating, Dated 08/02/10  
 USNRC Letter, Notice of Enforcement Discretion for Duke Energy Carolinas Regarding Catawba Nuclear Station (NOED No. 10-2-003), Dated 08/09/10

**Section 4OA5: Other Activities**

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**Procedures, Manuals, and Guidance Documents**

SRPMP 8-2, Investigation of Unusual Radiological Occurrence, Rev. 003  
 SRPMP 9-1, Groundwater Well Sampling Protocol, Rev. 004  
 NPM, NSD 516, Tritium Management Program, Rev. 0  
 NPM, NSD 517, Radiological Ground Water Protection Program, Rev. 001  
 Nuclear Groundwater Protection Initiative Communications Plan, Rev. 2010

**Records and Data Reviewed**

Catawba Nuclear Station, Units 1 and 2, 2009 Annual Radiological Effluent Release Report  
 CNS Tritium Groundwater Trend, Undated  
 Groundwater Capture Zone on Groundwater Protection Project Site Plan, Catawba Nuclear Station, Dated 09/08/08  
 Site Characterization Report for Groundwater Protection Initiative at Duke Energy Catawba Nuclear Station, York, South Carolina, April 2008

**Corrective Action Program Documents**

Assessment C-RPS-SA-10-07, Groundwater Protection Voluntary Initiative NRC Inspection Procedure 2515/173, Dated 06/09/10  
 Assessment RPS-22-08, NEI Self Assessment of Groundwater Protection Initiative Implementation, Dated 04/24/08  
 Assessment RPS-22-09, Evaluation of Ground Water Protection Well Sampling Data, Dated 10/13/09  
 SRPMP 8-2, Investigation of Unusual Radiological Occurrence, Rev. 000, East trench from the Monitor Tank Building has ~1 inch of contaminated water over the entire area (PIP C-06-04865), Dated 11/30/06

PIP G-08-00419, Implementation requirements for the new NSD 517, Radiological Ground Water Protection Program  
 PIP G-08-01004, NEI 07-07, Industry Ground Water Protection Initiative, Three Site Assessment

### TI-177

#### Drawings

CN-1571-01.00, Flow Diagram of Refueling Water System, Rev. 30  
 CN-1561-01.00, Flow Diagram of Residual Heat Removal System, Rev. 31  
 CN-1561-1.1, Flow Diagram of Residual Heat Removal System, Rev. 24  
 CN-1554-1.1, Flow Diagram of Chemical and Volume Control System, Rev. 15  
 CN-1554-1.7, Flow Diagram of Chemical and Volume Control System, Rev. 28  
 CN-1562-1.2, Flow Diagram of Safety Injection System, Rev. 30  
 CN-1562-01.03, Flow Diagram of Safety Injection System, Rev. 17  
 CN-1563-1.0, Flow Diagram of Containment Spray System, Rev. 37  
 CN-1492-ND004, Auxiliary Building Residual Heat Removal System, Rev. 15  
 CN-1492-ND.00-024, Auxiliary Building Residual Heat Removal System, Rev. 18  
 CN-1492-ND.00-025, Auxiliary Building Residual Heat Removal System, Rev. 10  
 CN-1492-ND.00-029, Auxiliary Building Residual Heat Removal System, Rev. 17  
 CN-1492-ND.00-031, Auxiliary Building Residual Heat Removal System, Rev. 10  
 CN-1492-ND.00-041, Auxiliary Building Residual Heat Removal System, Rev. 10  
 CN-1492-ND042, Auxiliary Building Residual Heat Removal System, Rev. 9  
 CN-1492-ND.00-055, Auxiliary Building Residual Heat Removal System, Rev. 12  
 CN-1492-ND.00-064, Auxiliary Building Residual Heat Removal System, Rev. 1  
 CN-1492-NI.00-001, Auxiliary Building Safety Injection System, Rev. 13  
 CN-1492-NI.00-003, Auxiliary Building Safety Injection System, Rev. 6  
 CN-1492-NI.00-004, Auxiliary Building Safety Injection System, Rev. 8  
 CN-1492-NI.00-005, Auxiliary Building Safety Injection System, Rev. 8  
 CN-1492-NI.00-054, Auxiliary Building Safety Injection System, Rev. 12  
 CN-1492-NI014, Auxiliary Building Safety Injection System, Rev. 4  
 CN-1492-NI015, Auxiliary Building Safety Injection System, Rev. 4  
 CN-1491-NS018, Containment Spray System, Rev. 1

#### Procedures

OP/0/B/6700/017, Ultrasonic Tester Operation, Rev. 0  
 PT/1/A/4200/006B, ECCS Valve Lineup Verification, Rev. 55  
 OP/1/A/6200/007M, Draining the Containment Spray Header, Rev. 28  
 OP/1/A/6200/004M, Residual Heat Removal System Drain, Fill, and Vent, Rev. 31  
 PT/2/A/4600/002A, Enclosure 13.1, Periodic Surveillance Items Data  
 OP/2/A/6100/002, Controlling Procedure for Unit Shutdown, Rev. 151  
 OP/2/A/6200/004, Residual Heat Removal System, Rev. 100  
 OP/1/A/6200/004, Enclosure 4.12 ND Pump Operation in Recirculation in Standby Alignment  
 OP/1/A/6200/004, Residual Heat Removal System, Rev. 128  
 OP/1/A/6200/004 M, Residual Heat Removal System Drain, Fill, and Vent, Rev. 31  
 OP/1/A/6200/006 M, Safety Injection System Drain, Fill, and Vent, Rev. 23  
 PT/2/A/4200/013 G, NI Valve In-service Test, Rev. 35

Calculations

CNC-1223.12-00-0076, Evaluation of Systems for Generic Letter 2008-01 Response, Rev. 2  
 CNC-1223.11-00-0050, Evaluations of Gas Transport in Catawba ND Pump Suction Piping, Rev. 0  
 CNC-1223.12-00-0078, Gas Voids Pressure Pulsation Program, Rev. 1  
 CNC-1223.11-00-0048, Evaluation of Potential Steam Voids in ECCS Alignments, Rev. 1  
 CNC-1223.152-00-0077, Determination of Water Hammer Force on Unit 1 NI cold Leg Injection Piping, Rev. 1  
 CNC-1223.12-00-0079, Acceptable Gas Volumes for PT/1(2)/A/4200/0068, Rev. 1  
 CNC-1223.11-00-0046, Areva Metrology Services ECCS Slope Pipe Measurement Results for Catawba Units 1 & 2

Other

Engineering Support Document, Safety Injection System, Rev. 6  
 Engineering Support Document, Residual Heat Removal System, Rev. 7  
 Duke Energy Letter, Generic Letter 2008-01, 9-Month Response, Dated 10/13/2008  
 Duke Energy Letter, 9-Month Supplemental Response to NRC Generic Letter 2008-01, Dated 07/15/20089  
 Duke Energy Letter, Generic Letter 2008-01, 3-Month Response, Dated 05/08/2008  
 SOMP 02-01, Safety Tagging and Configuration Control

PIPs

PIP C-10-4076, Gas Void Found in Vertical Piping Upstream of 2NV-860  
 PIP C-09-4637, A Change in ND Pump Pressure Trend  
 PIP C-08-2439, Engineering reviews in response to Generic Letter 2008-01  
 PIP C-08-3856, ECCS pumps and piping vent  
 PIP C-08-5192, Corrective actions required to drive completion of Generic Letter 2008-01 activities  
 PIP C-09-0301, Approximately 3 seconds of air observed while venting at 1NS-5  
 PIP C-09-2543, Air vented at 2NVA-285 and 2NVA-19  
 PIP C-09-7597, Gas vented at 1ND-86 and 1ND-89  
 PIP C-10-4076, Gas void found in vertical piping upstream of 2NV-860  
 PIP C-10-4114, Gas void detected at 1NV-860

Catawba Docutricks

2009-00859  
 2009-00863  
 2009-00865  
 2009-00866  
 2009-01730

## LIST OF ACRONYMS

EDG	-	Emergency Diesel Generator
EOC	-	End-of-Cycle
FPP	-	Fire Protection Program
IP	-	Inspection Procedure
KD	-	Emergency Diesel Generator Engine Cooling Water
LER	-	Licensee Event Report
NCV	-	Non-Cited Violation
NEI	-	Nuclear Energy Institute
NOED	-	Notice of Enforcement Discretion
NSD	-	Nuclear System Directive
PI	-	Performance Indicator
PIP	-	Problem Investigation Program report
RN	-	Nuclear Service Water
RTP	-	Rated Thermal Power
SSCs	-	Structures, Systems and Components
TI	-	Temporary Instruction
TS	-	Technical Specifications
UFSAR	-	Updated Final Safety Analysis Report
URI	-	Unresolved Item