



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

July 27, 2012

Mr. Kelvin Henderson  
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  
05000413/2012003 AND 05000414/2012003**

Dear Mr. Henderson:

On June 30, 2012, 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 July 9, 2012, with Mr. Mike Glover 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 self-revealing finding of very low safety significance (Green) which was determined to involve a violation of NRC requirements. 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 a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at Catawba.

K. Henderson

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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 Agencywide Document Access and Management 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 05000413/2012003, 05000414/2012003  
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

K. Henderson

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K. Henderson

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Letter to Kelvin Henderson from Jonathan H. Bartley dated July 27, 2012

SUBJECT: CATAWBA NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT  
05000413/2012003, 05000414/2012003

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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.: 05000413/2012003, 05000414/2012003

Licensee: Duke Energy Carolinas, LLC

Facility: Catawba Nuclear Station, Units 1 and 2

Location: York, SC 29745

Dates: April 1, 2012, through June 30, 2012

Inspectors: A. Hutto, Senior Resident Inspector  
R. Cureton, Resident Inspector

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

Enclosure

## SUMMARY OF FINDINGS

IR 05000413/2012-003, 05000414/2012-003; 4/1/2012 – 6/30/2012; Catawba Nuclear Station, Units 1 and 2; Refueling and Other Outage Activities

The report covered a three month period of inspection by two resident inspectors. One Green finding, which was determined to involve a violation of NRC requirements, was identified. The significance of inspection findings is indicated by their color (Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP) dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within The Cross-Cutting Areas," dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated June 7, 2012. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4.

### **Cornerstone: Initiating Events**

- **Green:** A self-revealing non-cited violation (NCV) of TS 5.4.1, Procedures, was identified when the licensee failed to follow NSD 500, Red Tags/Configuration Control Tags. The licensee implemented a tagout that was not supported by plant conditions which resulted in the inoperability of the 2B ND train while in Mode 6 with refueling cavity level less than 23 feet. Immediate actions were taken to declare the 2B ND train inoperable and manually reopen the loop isolation valves inside containment. The issue was entered into the licensee's corrective action program (CAP) as Problem Identification Program (PIP) report C-12-2313.

The performance deficiency (PD) was more than minor because it was associated with the Mitigating Systems cornerstone attribute of equipment performance and adversely affected the cornerstone objective in that the isolation of reactor coolant system pressure SSPS relays prevented the opening of the 2B ND loop isolation valves resulting in the 2B ND train being inoperable. Using the screening criteria in IMC 0609, Appendix G, Attachment 1, Phase 1 Operational Checklist 3, PWR Cold Shutdown and Refueling Operation RCS Open and Refueling Cavity <23 feet, a Phase 2 risk analysis was required because the finding increased the likelihood of a loss of decay heat removal. A Phase 3 risk analysis determined the finding was of very low safety significance (Green) because of the less than one hour exposure time. The cause of this finding was related to the cross-cutting aspect of the need to keep personnel apprised of the operational impact of work activities as described in the Work Control component of the Human Performance cross-cutting area because the effect of the tagout on ND system operation was not adequately understood by operations personnel responsible for implementation. [H.3(b)] (Section 1R20)

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## REPORT DETAILS

### Summary of Plant Status

Unit 1 began the inspection period at or near 100 percent rated thermal power (RTP). On April 4, 2012, the unit tripped due to a reactor coolant pump cable fault. The unit was restarted on line on April 17 and reached 100 percent RTP on April 22 where it remained for the rest of the inspection period.

Unit 2 began the inspection period in a refueling outage. The unit was placed on line on April 17 and achieved 100 percent RTP on April 20 where it remained for the rest of the inspection period.

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R01 Adverse Weather Protection

##### a. Inspection Scope

Adverse Weather Preparation: The inspectors reviewed the licensee's preparations for adverse weather associated with hot ambient temperatures including a review of procedures and work orders implemented by the licensee to ensure plant equipment is adequately protected during the hot weather season. The inspectors also performed field walkdowns to assess the material condition and operation of ventilation and cooling equipment as well as other preparations made to protect plant equipment from high seasonal temperatures. In addition, the inspectors conducted discussions with operations, engineering, and maintenance personnel responsible for implementing the licensee's hot weather protection program to assess the licensee's ability to identify and resolve deficient conditions associated with hot weather protection equipment prior to seasonal high temperatures. Documents reviewed are listed in the Attachment.

Evaluation of Summer Readiness of Offsite and Alternate AC Power Systems: The inspectors reviewed the licensee's procedures and measures designed to monitor and maintain availability and reliability of both the offsite AC power system (grid) and the onsite alternate AC power systems prior to the onset of summer weather conditions and the resulting higher load demand on the grid. This included the review of the licensee's station, nuclear division, and power delivery group procedures defining the coordination of activities that could impact the on-site and offsite AC power systems and the communication protocols established between the power delivery group and Catawba to verify that the appropriate information is exchanged when issues arise that could impact the AC power systems. Documents reviewed are listed in the Attachment.

##### b. Findings

No findings were identified.

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## 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 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.

- 1A motor driven auxiliary feedwater train while the 1B train was unavailable for yearly preventive maintenance
- B train of control room chilled water and ventilation systems while the A train was unavailable for planned maintenance
- 1B nuclear service water train while the 1A train was unavailable for preventative maintenance

Complete System Walkdown: The inspectors conducted one detailed walkdown/review of the Unit 1 residual heat removal (ND) 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 Problem Investigation Program reports (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 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.

- Auxiliary Building 560' Elevation Equipment Area
- Unit 2 Spent Fuel Pool Ventilation Room 636' Elevation
- Auxiliary Building 594' Elevation Equipment Area
- Nuclear Service Water Pump House

### b. Findings

No findings were identified.

## 1R06 Flood Protection Measures

### a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report (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.

### b. Findings

No findings were identified.

1R11 Licensed Operator Requalification (LOR) Program and Licensed Operator Performance

a. Inspection Scope

Quarterly Resident Inspector LOR Activity Review: The inspectors observed Simulator Exercise S-26 to assess the performance of licensed operators during a license operator requalification simulator training session. The exercise scenario involved a loss of automatic rod control during a planned power reduction followed by a loss of main feed pump runback. The scenario concluded with a main steam line break with all four steam generators faulted due to the failure of the main steam isolation valves to close. 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.

Quarterly Resident Inspector Licensed Operator Performance Review: The inspectors observed operators in the main control room and assessed their performance during plant startup following Unit 2 outage 2EOC18. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

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-12-3343, Standby Shutdown Facility (SSF) diesel failed to achieve rated voltage
- PIP C-12-4196, With both units at power, 1AD-8 E/3, "F instrument air dryer trouble" was received

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the following four 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.

- Critical Activity Plan for Unit 2 reactor coolant system drain down to 8 percent
- Critical Activity Plan for Unit 2 distributed control system tuning
- Complex Activity Plan for auxiliary feedwater pump turbine #2 unavailability
- Risk Plan for unplanned Orange risk condition due to standby shutdown facility diesel unavailability

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments

a. 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 Nuclear System Directive (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-12-3343, SSF diesel generator voltage output at 430 volts after aligning to 1SLXG
- PIP C-12-3600, Review of calculation for SSF diesel generator and SSF auxiliary power systems loading and voltage brings into question the starting capability under fully loaded condition
- PIP C-12-4467, 2B nuclear service water pump lower bearing motor temperature high

- PIP C-12-4721, 2A diesel generator power factor intermittent decrease
- PIP C-12-5307, component cooling instrument impulse tubing expansion loops not per drawing

b. Findings

No findings were identified.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following permanent plant modification 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.

- EC 107531, Add external flood margin for Unit 2 diesel generator external doors

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.

- Zero power physics testing following 2EOC18
- 1B motor driven auxiliary feedwater pump following yearly preventative maintenance
- 1A diesel generator operability test following preventative maintenance
- Train A of control room area ventilation and chilled water system functional tests following preventive maintenance
- 1B ND pump following preventative maintenance

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) that mitigation strategies were in place for losses of key safety functions; and (4) the licensee adhered to operating license and TS requirements. The following activities related to the refueling outage were reviewed for conformance to applicable procedures and selected activities associated with each evaluation were witnessed. Documents reviewed are listed in the Attachment.

- Clearance activities
- Reactor coolant system instrumentation
- Shutdown decay heat removal and inventory control
- Containment closure
- Plant heatup/mode changes from No Mode to Mode 1
- Core physics testing
- Power escalation

b. Findings

Introduction: A Green self-revealing NCV of TS 5.4.1, Procedures, was identified when the licensee failed to follow NSD 500, Red Tags/Configuration Control Tags. The licensee implemented a tagout that was not supported by plant conditions which resulted in the inoperability of the 2B ND train while in Mode 6 with refueling cavity level less than 23 feet.

Description: On March 12, 2012, the licensee implemented a tagout to de-energize solid state protection system (SSPS) relays to support relay replacement work. The scope of the tagout included the wide range reactor coolant (NC) system pressure relays which failed to a high pressure condition when de-energized. On March 15, the 2A ND train was in operation for decay heat removal and the 2B ND train was in operation to fill the refueling cavity in preparation for core offload. TS 3.9.5 required two trains of ND to be operable with one train in operation when the unit is in Mode 6 and the refueling cavity water level is below 23 feet. A train was considered operable if the loop isolation valves were capable of being opened from the control room. As directed by the refueling cavity fill procedure, the 2B ND loop isolation valves were shut when the refueling cavity was filled to 81 percent. The cavity fill continued using the 2B ND pump from the refueling water storage tank until the target level of 97.2 percent (23 feet) was achieved. After filling the cavity, the operators attempted to realign the 2B ND train by re-opening the 2B ND loop isolation valves and closing the refueling water storage tank suction valves from

the control room. However, with the NC system pressure relays failed to a high pressure condition, the 2B ND loop isolation valves would not re-open due to an interlock on high NC pressure. The 2B ND train was declared inoperable until operators manually reopened the loop isolation valves inside containment. The 2B ND train was inoperable for approximately 27 minutes from the time the valves were closed until refueling cavity water level was 23 feet.

NSD 500, section 4.3.4 stated, "...if the plant can not be configured to allow work, based on plant condition, then work must be deferred until the plant is placed in the required position." The tagout to isolate the SSPS relays was not deferred nor modified to allow reopening of the loop suction valves following Unit 2 refueling cavity filling using the 2B ND pump resulting in the inoperability of the 2B ND train.

Analysis: The inspectors determined that the licensee's failure to implement NSD 500 was a PD. The PD was more than minor because it was associated with the Mitigating Systems cornerstone attribute of equipment performance and adversely affected the cornerstone objective in that the isolation of NC system pressure SSPS relays prevented the opening of the 2B ND loop isolation valves resulting in the 2B ND train being inoperable between 81 percent and 97.2 percent of cavity level. Using the screening criteria in IMC 0609, Appendix G, Shutdown Operations Significance Determination Process, Attachment 1, Phase 1 Operational Checklist 3, PWR Cold Shutdown and Refueling Operation RCS Open and Refueling Cavity <23 feet, a Phase 2 risk analysis was required because the finding increased the likelihood of a loss of decay heat removal. The regional Senior Reactor Analyst performed a Phase 3 risk analysis using the worksheets in IMC 0609, Attachment 2, Phase 2 Significance Determination Process Template for PWR During Shutdown. The plant condition of POS2, vented was selected. An adjustment to the initiating event likelihood (IEL) for a loss of ND (specified RHR in the worksheet) was performed to reflect the loss of the backup train of RHR and worksheet 9 was solved. Event RHR-R was also assumed to be successful because it was in progress at the time of the failure. The dominant accident sequence was a loss of RHR, failure to recover RHR prior to boiling, and failure of the alternate feed path. Because of the less than one hour exposure time, the screening analysis resulted in a characterization of very low safety significance (Green). The cause of this finding was related to the cross-cutting aspect of the need to keep personnel apprised of the operational impact of work activities as described in the Work Control component of the Human Performance cross-cutting area because the effect of the tagout on ND system operation was not adequately understood by operations personnel responsible for implementation. [H.3(b)]

Enforcement: TS 5.4.1 required that procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide (RG) 1.33. RG 1.33, Appendix A, Section 1, Administrative Procedures, recommended procedures for equipment control (e.g., locking and tagging). NSD 500, Red Tags/Configuration Control Tags, implements guidelines for equipment control. Contrary to the above, on March 15, 2012, procedures established for equipment control as recommended in RG 1.33, Appendix A, Section 1 were not implemented. The licensee failed to adequately implement NSD 500 resulting in one train of ND being inoperable for approximately 21 minutes. Because the finding was determined to be of very low safety

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significance and was entered into the licensee's CAP as PIP C-12-2313, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000414/2012003-01, Failure to Adequately Implement Tagout Procedures.

1R22 Surveillance Testing

a. Inspection Scope

For the six 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. Documents reviewed are listed in the Attachment.

Surveillance Tests

- PT/2/A/4200/009, Engineered Safety Features Actuation Periodic Test, Rev. 158
- IP/1/A/3313/001, Reactor Coolant Pump Monitor System Undervoltage/Underfrequency Monitor Trip Actuating Device Test, Rev. 023
- PT/2/A/4550/004, Diesel Generator Fuel Oil Storage Tank Water Inspection, Rev. 21
- PT/1/A/4200/009 A, Auxiliary Safeguards Test Cabinet Periodic Test, Enclosures 13.1 and 13.4, Main Steam Line Isolation Trains A and B, Rev. 239

In-Service Tests

- PT/1/A/4200/010 B, Residual Heat Removal Pump 1B Performance Test, Rev. 091

Ice Condenser Test

- MP/0/A/7150/006, Ice Condenser Lower Inlet Doors Inspection and Testing (As Left), Rev. 031

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

a. Inspection Scope

The inspectors sampled licensee data to confirm the accuracy of reported performance indicator (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. 5.



Cornerstone: Mitigating Systems

- Emergency AC Power, Unit 1 & 2
- High Pressure Safety Injection, Unit 1 & 2
- Auxiliary Feedwater, 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 April 1, 2011, through March 31, 2012. 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 2011-2012. 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. The inspectors reviewed Nuclear Energy Institute 99-02, Regulatory Assessment Performance Indicator Guideline, to verify that industry reporting guidelines were applied. 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 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-12-3105, Unit 2 manipulator crane snagged and broke shoe horn rope deflecting the trolley positioning encoders

The inspectors reviewed the actions taken to determine if the licensee had adequately addressed the following attributes:

- 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

Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

As required by IP 71152, Problem Identification and Resolution, the inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screenings discussed in Section 4OA2.1 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the six month period of January 2012 through June 2012, although some examples expanded beyond those dates when the scope of the trend warranted. The review also included issues documented outside the normal CAP in major equipment problem lists, plant health team vulnerability lists, focus area reports, system health reports, self-assessment reports, maintenance rule reports, and Safety Review Group Monthly Reports. The inspectors compared and contrasted their results with the results contained in the licensee's latest quarterly trend reports. Corrective actions associated with a sample of the issues identified in the licensee's trend report were reviewed for adequacy.

b. Findings

No findings of significance were identified. In general, the licensee has identified trends and has appropriately addressed the trends with their CAP. However, the inspectors identified a negative trend associated with multiple failures of the technical support center (TSC) room cooling. The TSC was located in the Service Building between the Unit 1 and 2 Turbine Buildings, and loss of air conditioning cooling could result in TSC ambient temperatures in excess of 90 degrees F. Although room cooling was not specified in the licensee's emergency plan to be required for TSC functionality, high

temperatures during an event response could affect equipment and human performance. The air conditioning cooling deficiencies involved loss of refrigerant issues and a failed condenser fan that indicate that additional licensee emphasis on TSC support equipment may be warranted. This trend was identified based on inspector observations of activities performed on-site as well as the review of corrective action documents. Observations included:

- PIP C-12-1397 – In January, 2012, the inspectors noted that TSC cooling had been lost for several weeks and there was no emergent priority placed on repairs. The licensee made repairs and initiated a PIP to document prior TSC cooling issues over the previous five months
- PIP C-12-2286 – On March 14, 2012, the inspectors identified the TSC cooling was not working during a routine check of the NRC TSC phones. The licensee initiated an emergent work request to repair the system.
- PIP C-12-5141 – The licensee identified the TSC cooling was not functioning properly and a work request to make repairs was initiated.

The licensee initiated PIP C-12-6046 to document the identified trend and to perform a problem evaluation to fully evaluate the effectiveness in maintaining TSC support systems. The inspectors will continue to monitor this area and assess the corrective actions. Documents reviewed are listed in the Attachment.

#### 4OA3 Follow-up of Events and Notices of Enforcement Discretion (NOED)

##### a. Inspection Scope

Response to Plant Events: On April 4, 2012, the inspectors responded to and evaluated the licensee's response to a dual unit loss of offsite power and notice of unusual event for plant status and mitigating actions. As appropriate, the inspectors: (1) observed plant parameters and status, including mitigating systems/trains and fission product barriers; (2) determined alarms/conditions preceding or indicating the event; and (3) evaluated performance of plant systems and licensee actions. Documents reviewed are listed in the Attachment.

##### b. Findings

No findings were identified.

#### 4OA5 Other Activities

##### 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.

Enclosure

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.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On July 9, 2012, the resident inspectors presented the inspection results to Mr. Mike Glover, Catawba Station Manager, 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

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

T. Arlow, Emergency Planning Manager  
W. Byers, Security Manager  
J. Caldwell, Work Control Manager  
D. Cantrell, Chemistry Manager  
J. Ferguson, Mechanical, Civil Engineering Manager  
M. Glover, Station Manager  
T. Hamilton, Engineering Manager  
G. Hamrick, Catawba Site Vice President  
R. Hart, Regulatory Compliance Manager  
T. Jenkins, Superintendent of Maintenance  
K. Phillips, Training Manager  
S. Putnam, Safety Assurance Manager  
R. Simril, Operations Superintendent  
J. Smith, Radiation Protection Manager  
W. Suslick, Modifications Engineering Manager

### **LIST OF REPORT ITEMS**

#### **Opened and Closed**

05000414/2012003-01	NCV	Failure to Adequately Implement Tagout Procedures (Section 1R20)
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### **LIST OF DOCUMENTS REVIEWED**

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

DPC 1381.06-00-0001/CNC-1381.06-00-0062, Degraded Grid Voltage Alarm Setpoints for Real Time Contingency Analysis Initiation, Revs. 14 & 15  
PIP C-12-01972, Update for 2012 Degraded Grid Voltage alarm values for the OAC  
NSD 417, Nuclear Facilities/Generation Status Communications, Rev. 15  
NSD 415, Operational Risk Management (Modes 1-3) per 10 CFR 50.65(a)(4), Rev. 7  
AP/1(2)/A/5500/037, Generator Voltage and Electric Grid Disturbances, Rev. 002  
OP/0/B/6700/015, Weather Related Activities, Rev. 001  
PT/0/B/4700/039, Hot Weather Protection, Rev. 018

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

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-1578-1.0, Flow Diagram of Control Room Area Ventilation, Rev. 30  
CN-1578-2.0, Flow Diagram of Control Area Chilled Water System, Rev. 12  
UFSAR Section 9.2.1, Nuclear Service Water System  
CN-1592-1.0, Unit 1 Flow Diagram of Auxiliary Feedwater System, Rev. 31  
OP/1/A/6200/004, Residual Heat Removal System, Rev. 133

Attachment

CNS-1561.ND-00.0001, Design Basis Specification for the Residual Heat Removal System (ND), Rev. 034  
PIPs C-12-1672 and C-12-3462

**Section 1R05: Fire Protection**

Station Fire Impairment Log  
NSD 313, Control of Combustible and Flammable Material, Rev. 12  
SLC 16.9-4, Fire Hose Stations  
SLC 16.9-6, Fire Detection Instrumentation

**Section 1R06: Flood Protection Measures**

UFSAR Section 3.6.1, Postulated Piping Failures in Fluid Systems Inside and Outside Containment  
CNS-1465.00-00-0020, Design Basis Specification for Flooding from Internal Sources, Rev. 0

**Section 1R11: Licensed Operator Requalification**

Annual Simulator Exam, ASE-26  
RP/0/A/5000/001, Classification of Emergency, Rev. 027  
AP/1/A/5500/015, Rod Control Malfunction, Rev. 14  
EP/1/A/5000/E-0, Reactor Trip or Safety Injection, Rev. 40  
EP/1/A/5000/E-2, Faulted Steam Generator, Rev. 13  
OP/2/A/6100/001, Controlling Procedure for Unit Startup, Rev. 155  
PT/0/A/4150/001 J, Zero Power Physics Testing, Rev. 010

**Section 1R12: Maintenance Effectiveness**

EDM 210, Engineering Responsibilities for the Maintenance Rule, Rev. 24  
CNM 1210.03-0171 001, "Instillation, Operation, and Maintenance Manual VI System Dryer Package Model 2500 CHA-F21-Special"  
Instrument Air System Health Report Q1  
SSF Maintenance Rule Summary Report  
PIPs C-12-3343, C-12-0357, C-12-2705

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

NSD 213, Risk Management Process, Rev. 11  
SOMP 02-02 Operations Roles in Risk Management, Rev 007

**Section 1R15: Operability Evaluations**

NSD 203, Operability/Functionality, Rev. 24  
NSD 122, Temporary Configuration Changes, Rev. 00

**Section 1R18: Plant Modifications**

NSD 209, 10 CFR 50.59 Process, Rev. 14  
EC 107531, Add external flood margin for Unit 2 diesel generator external doors

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

PT/0/A/4150/001 J, Zero Power Physics Testing, Rev. 010  
PT/1/A/4250/003 B, Auxiliary Feedwater Motor Driven Pump 1B Performance Test, Rev. 051  
PT/1/A/4350/002 A, Diesel Generator 1A Operability Test, Rev. 123

OP/0/A/6450/011, Control Room Area Ventilation/Chilled Water System, Rev. 135  
 PT/1/A/A/4200/010 B, Residual Heat Removal Pump 1B Performance Test, Rev. 091

**Section 1R20: Refueling and Other Outage Activities**

OP/2/A/6150/006 Draining the Reactor Coolant System, Rev. 80  
 Catawba Nuclear Site Directive 3.1.30, Unit Shutdown Configuration Control, Rev. 37  
 NSD 500, Red Tags / Configuration Control Tags; Rev. 29  
 OP/2/A/6100/001, Controlling Procedure for Unit Startup, Rev. 155  
 PT/2/A/4200/002 C, Containment Closure Verification (Part I), Rev. 68  
 PT/0/A/4550/003 C, Post Refueling Core Verification, Rev. 14  
 PT/0/A/4150/022, Total Core Reloading, Rev. 49

**Section 1R22: Surveillance Testing**

PIP C-12-3544, Ice Condenser Lower Inlet Door Failure  
 IP/1/A/4971/012, Reactor Coolant Pump Motor Undervoltage Protective Relay RIS Type 90634-100 Calibration Procedure, Rev. 006  
 IP/1/A/4971/013, Reactor Coolant Pump Motor Underfrequency Protective Relay RIS Type 90634-100A Calibration Procedure, Rev. 008

**Section 4OA1: Performance Indicator Verification**

NSD 225, NRC Performance Indicators, Rev. 5  
 NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 6  
 Catawba Master File CN: 854.02-1, MSPI Emergency AC Power  
 Catawba Master File CN: 854.02-4, MSPI Safety Injection  
 Catawba Master File CN: 854.02-3, MSPI Heat Removal

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

NSD 208, Problem Investigation Program, Rev. 35  
 NSD 212, Cause Analysis, Rev. 24  
 PIP C-12-3105, Unit 2 manipulator crane snagged and broke shoe horn rope deflecting the trolley positioning encoders

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

RP/0/A/5000/001, Classification of Emergency, Rev. 027  
 RP/0/A/5000/002, Notification of Unusual Event, Rev. 041  
 PT/0/A/4150/002 A, Transient Investigation, Rev. 9