



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

April 28, 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
05000413/2010002, 05000414/2010002**

Dear Mr. Morris:

On March 31, 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 April 5, 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.

Based on the results of this inspection, no findings of significance were identified. However, a licensee identified violation, which was determined to be of very low safety significance, is listed in this report. However, because of the very low safety significance and because it is entered into your corrective action program, the NRC is treating this violation as a non-cited violation (NCV) consistent with Section VI.A.1 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 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 the Catawba facility.

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, 72-45
License Nos.: NPF-35, NPF-52

Enclosure: Integrated Inspection Report 05000413/2010002, 05000414/2010002
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

DEC

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DEC

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Letter to J. R. Morris from Jonathan H. Bartley dated April 28, 2010

SUBJECT: CATAWBA NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000413/2010002, 05000414/2010002

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.: 05000413/2010002, 05000414/2010002

Licensee: Duke Energy Carolinas, LLC

Facility: Catawba Nuclear Station, Units 1 and 2

Location: York, SC 29745

Dates: January 1, 2010, through March 31, 2010

Inspectors: A. Hutto, Senior Resident Inspector
R. Cureton, Resident Inspector
E. Stamm, Project Engineer
M. Coursey, Reactor Inspector (Section 1R07)
G. Laska, Senior Operations Examiner (Section 1R11)

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

Enclosure

SUMMARY OF FINDINGS

IR 05000413/2010-002, 05000414/2010-002; 1/1/2010 - 3/31/2010; Catawba Nuclear Station, Units 1 and 2; Routine Integrated Report

The report covered a three month period of inspection by two resident inspectors, a reactor inspector, a senior operations examiner, and a project engineer. No findings of significance were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

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

Enclosure

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at 100 percent Rated Thermal Power (RTP). On February 17, 2010, the unit was shutdown to Mode 5 to repair a hot leg temperature instrument seal weld leak. The unit was returned to 100 percent RTP on February 24, 2010, where it remained until March 4, 2010, when a turbine runback to approximately 52 percent RTP occurred due to a switchyard breaker relay issue. Following repairs on March 5, 2010, the unit was returned to 100 percent RTP and remained there for the rest of the inspection period.

Unit 2 operated at or near 100 percent RTP for the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

Adverse Weather Conditions:

The inspectors reviewed the licensee's preparations and response for the two adverse weather conditions listed below to verify that the design features and implementation of the licensee's procedures protected mitigating systems from adverse weather effects. Documents reviewed are listed in the Attachment.

- The inspectors reviewed the effectiveness of the licensee's cold weather protection program pertaining to the cold weather conditions experienced on January 4, 2010. This included field walkdowns to assess the risk significant freeze protection equipment in the standby shutdown facility, refueling water storage tank and nuclear service water system. The inspectors discussed specific measures with operations and maintenance personnel to be taken when low ambient temperatures were experienced.
- The inspectors reviewed the licensee's severe weather actions following a tornado watch issued on March 28, 2010. This included a review of actions required by the Hazard Barrier Control Form for the Nuclear Service Water (RN) supply header Clean and Coat Project. The inspectors discussed specific measures to be taken with operations, maintenance and major projects when a tornado watch is issued.

b. Findings

No findings of significance 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 determine if there were any discrepancies that could impact the function of the system causing 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 2A and 2B motor driven auxiliary feedwater trains while the #2 turbine driven auxiliary feedwater pump was inoperable for preventative maintenance
- Walkdown of the 1B emergency diesel generator while the 1A emergency diesel generator was inoperable for damper preventive maintenance
- Walkdown of the 1A motor driven and the Unit 1 turbine driven auxiliary feedwater trains while the 1B motor driven auxiliary feedwater pump was inoperable due to annual maintenance

Complete System Walkdown: The inspectors conducted one detailed walkdown/review of the Unit 1 safety injection 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 Process 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 of significance 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.

- Fire Area 1, Auxiliary building 522' level
- Fire Area 49, Unit 1 interior doghouse
- Fire Areas 27 & 43, Unit 2 diesel generator building and corridor
- Fire Area 18, Auxiliary building 577' level
- Fire Area 3, Unit 1 Auxiliary feedwater system (CA) pump room and motor driven CA pump pits

Fire Drill Observations: The inspectors observed one graded fire drill conducted by the on-shift fire brigade members. The drill on January 29, 2010, involved a simulated fire in the Unit 2 Electrical Penetration Room on the 560 foot elevation in the Auxiliary Building. The purpose of this inspection was to monitor the fire brigade's use of protective gear and fire fighting equipment; determine that fire fighting pre-plan procedures and appropriate fire fighting techniques were used; that the directions of the fire brigade leader were thorough, clear and effective, and that control room personnel responded appropriately to the simulated fire events. The inspectors also attended the subsequent drill critique to assess whether they were appropriately critical, included discussions of drill observations and identified any areas requiring corrective actions. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

Annual Review: The inspectors reviewed the performance of the Unit 2 'A' Containment Spray 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.

Triennial Review of Heat Sink Performance (71111.07T): The inspector reviewed operability determinations, completed surveillances, vendor manual information, associated calculations, performance test results and cooler inspection results associated with the emergency diesel generator engine cooling water (KD) Heat Exchanger 1B and the component cooling (KC) Heat Exchanger 2B heat exchanger/cooler. These heat exchangers/coolers were chosen based on their risk significance in the licensee's probabilistic safety analysis, their important safety-related mitigating system support functions and their relatively low margin.

For the KD Heat Exchanger 1B and the KC Heat Exchanger 2B, the inspector determined whether testing, inspection, maintenance, and monitoring of biotic fouling and macrofouling programs were adequate to ensure proper heat transfer. This was accomplished by determining whether the test method used was consistent with accepted industry practices, or equivalent, the test conditions were consistent with the selected methodology, the test acceptance criteria were consistent with the design basis values, and by reviewing results of heat exchanger performance testing. The inspector also determined whether the test results appropriately considered differences between testing conditions and design conditions, the frequency of testing based on trending of test results was sufficient to detect degradation prior to loss of heat removal capabilities below design basis values and test results considered test instrument inaccuracies and differences.

For the KD Heat Exchanger 1B and the KC Heat Exchanger 2B, the inspector reviewed the methods and results of heat exchanger performance inspections. The inspector determined whether the methods used to inspect and clean heat exchangers were consistent with as-found conditions identified and expected degradation trends and industry standards, the licensee's inspection and cleaning activities had established acceptance criteria consistent with industry standards, and the as-found results were recorded, evaluated, and appropriately dispositioned such that the as-left condition was acceptable.

In addition, the inspector determined whether the condition and operation of the KD Heat Exchanger 1B and the KC Heat Exchanger 2B were consistent with design assumptions in heat transfer calculations and as described in the final safety analysis report. This included determining whether the number of plugged tubes was within pre-established limits based on capacity and heat transfer assumptions. The inspector determined whether the licensee evaluated the potential for water hammer and established adequate controls and operational limits to prevent heat exchanger degradation due to excessive flow induced vibration during operation. In addition, eddy current test reports and visual inspection records were reviewed to determine the structural integrity of the heat exchanger.

The inspector determined whether the performance of ultimate heat sinks (UHS) and their subcomponents such as piping, intake screens, pumps, valves, etc. was appropriately evaluated by tests or other equivalent methods to ensure availability and accessibility to the in-plant cooling water systems.

The inspector determined whether the licensee's inspection of the UHS was thorough and of sufficient depth to identify degradation of the shoreline protection or loss of structural integrity. This included determination whether vegetation present along the slopes was trimmed, maintained and did not adversely impact the embankment. In addition, the inspector determined whether the licensee ensured sufficient reservoir capacity by trending and removing debris or sediment buildup in the UHS.

The inspector performed a system walkdown of the service water intake structure to determine whether the licensee's assessment on structural integrity and component functionality was adequate and that the licensee ensured proper functioning of traveling screens and strainers, and structural integrity of component mounts. In addition, the inspector determined whether service water pump bay silt accumulation was monitored, trended, and maintained at an acceptable level by the licensee, and that water level instruments were functional and routinely monitored. The inspector also determined whether the licensee's ability to ensure functionality during adverse weather conditions was adequate.

In addition, the inspector reviewed condition reports related to the heat exchangers/coolers and heat sink performance issues to determine whether the licensee had an appropriate threshold for identifying issues and to evaluate the effectiveness of the corrective actions. Documents reviewed are listed in the Attachment.

These inspection activities constituted two heat sink inspection samples as defined in IP 71111.07-05.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

a. Inspection Scope

Residents Review: The inspectors observed Active Simulator Exam ASE - 7 to assess the performance of licensed operators during a license operator requalification simulator training session. The exam scenario involved a steam generator tube rupture followed by a loss of coolant accident inside containment. 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.

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Annual Review of Licensee Requalification Examination Results: On August 14, 2009, the licensee completed the annual requalification operating tests required to be administered to all licensed operators in accordance with 10 CFR 55.59(a)(2). The inspectors performed an in-office review during the first quarter of 2010 of the overall pass/fail results of the individual operating tests and the crew simulator operating tests. These results were compared to the thresholds established in Manual Chapter 609 Appendix I, Operator Requalification Human Performance Significance Determination Process.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the two activities listed below for items as applicable: (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.

- Implementation of engineering change (EC) 93747 to clean and coat the A RN main supply header
- Implementation of EC 101793 to replace fast acting fuses with slow blow fuses in certain circuits following a failure in the Containment Air Return System

b. Findings

No findings of significance 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 Nuclear Site

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Directive (NSD) 415, "Operational Risk Management (Modes 1-3)," for appropriate guidance to comply with 10 CFR 50.65(a)(4). Documents reviewed are listed in the Attachment.

- Review of Critical Plan and Equipment Protection for "A" RN Loop Clean and Coat Work Activities
- Unit 1 Forced Outage Defense-in-Depth Review
- Switchyard Yellow Risk Activities with Potential Inclement Weather (Icing Conditions)
- Risk Management review and protected equipment walkdown while the Standby Shutdown facility was out-of-service
- E instrument air compressor performance test while the B station air compressor was out of service for modification work
- Review of Complex Plan for activities associated with heavy lift of the replacement 2ATC transformer

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors evaluated the technical adequacy of the six 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 Updated Final Safety Analysis Report (UFSAR) to determine that the systems and components remained available to perform their intended function. Documents reviewed are listed in the Attachment.

- PIP C-10-0077, Design basis values of Control Room dilution factors contains incorrect values
- CNC-1144.03-00-0016, Evaluation of Pressurizer Hatches with one Hold Down Bolt Removed
- PIP C-10-0445, The exemption of an American Society of Mechanical Engineers XI Code pressure test on 1WL-850 was questioned
- PIP C-10-0746, Condensation from the 1D lower containment ventilation unit is being diverted from the ventilation unit condensate drain tank to the 1B CF&E Sump, Evaluate the impact of the ventilation unit condensate drain tank ability to measure 1 gallon per minute as required by Technical Specification 3.4.15.
- PIP C-10-1535, Diver inspection of nuclear service water and standby nuclear service water pond intake structures
- PIP C-10-1690, 1EMF 38 aligned to all areas as opposed to Lower Containment only for reactor coolant system (RCS) leakage calculation

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b. Findings

No findings of significance were identified.

1R18 Plant Modificationsa. Inspection Scope

Permanent Modifications: The inspectors reviewed one permanent plant modification, CD 501244, RN Main Supply Header Clean and Coat, to verify the adequacy of the modification package, and to evaluate the modification for adverse effects on system availability, reliability and functional capability. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testinga. 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.

- Post maintenance test of #2 Auxiliary Feedwater Pump following planned maintenance
- Post maintenance test of valve 1FW-27A following planned maintenance
- Post maintenance test of Containment Air Return Fan 2B following a fuse replacement after a failed test
- PT/0/A/4400/008 A, RN Flow Balance Train A, following A RN header clean and coat
- Post maintenance test of Containment Spray Pump 1B following planned maintenance on the motor

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activitiesa. Inspection Scope

Unit 1 Forced outage due to RCS Leakage: 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 Unit 1 forced outage commencing February 17, 2010, were reviewed for conformance to applicable procedures and selected activities were observed.

- Outage risk management plan/assessment
- Mode 3 containment walk down
- Plant cool down
- Mode changes from Mode 1 (power operation) to Mode 5
- Shutdown decay heat removal
- Plant heat up/mode changes from Mode 5 to Mode 1
- Power Escalation

b. Findings

No findings of significance were identified.

1R22 Surveillance Testinga. 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 A; Auxiliary Safeguards Test Cabinet Periodic Test, Rev. 195
- IP/1/A/3200/001 A; Solid State Protection System (SSPS) Train A Periodic Testing, Rev. 015
- PT/2/A/4350/002 A; Diesel Generator 2A Operability Test, Rev. 091 (24 Hr. Run)

Reactor Coolant System Activity Sampling

- OP/1/A/6200/032; Primary Sampling Using a Rheodyne Model 7010 Valve, Rev. 10 and CP/0/B/8200/006; Determination of Dose Equivalent Iodine -131, Rev. 14

In-Service Tests

- PT/1/A/4250/003 C; Turbine Driven Auxiliary Feedwater Pump #1 Performance Test, Rev. 99
- PT/2/A/4200/004 C; Containment Spray Pump 2B Performance Test , Rev. 37

b. Findings

No findings of significance 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 January 21, 2010. The inspectors reviewed licensee activities that occurred in the Simulator and 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 of significance 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 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: Initiating Events

- Unplanned Scrams with Complications, Units 1 & 2

Cornerstone: Mitigating Systems

- Cooling Water Systems, Units 1 & 2

Cornerstone: Barrier Integrity

- Reactor Coolant System Activity, Units 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 January 1, 2009, through December 31, 2009. 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 2008-2009. 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 of significance were identified.

4OA2 Problem Identification and Resolution.1 Daily Screening of Corrective Action Reports

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 daily screening of items entered into the licensee's corrective action program. This was accomplished by reviewing copies of PIPs, attending daily screening meetings and accessing the licensee's computerized database.

.2 Annual Sample Reviewa. Inspection Scope

The inspectors reviewed the cumulative effects of deficiencies that constituted operator workarounds to determine whether or not they could: affect the reliability, availability, and potential for misoperation of a mitigating system; affect multiple mitigating systems; or affect the ability of operators to respond in a correct and timely manner to plant transients and accidents. The inspectors also assessed whether operator workarounds were being identified and entered into the licensee's corrective action program at an appropriate threshold.

b. Findings

No findings of significance were identified.

.3 Focused Reviewa. 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-09-4202, Potential for the transport of entrained air to the CA pumps due to auxiliary feedwater condensate storage tank (CACST) Vortexing

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 of significance were identified.

4OA3 Follow-up of Events and Notices of Enforcement Discretiona. Inspection Scope

The inspectors evaluated the two licensee events listed below 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; (3) evaluated performance of mitigating systems and licensee actions; (4) confirmed that the licensee properly classified the event in accordance with emergency action level procedures and made timely notifications to NRC and state/county governments, as required (10 CFR Parts 20, 50.9, 50.72); (5) communicated details regarding the event to management, risk analysts and others in the Region and Headquarters as input to their determining the need for an Incident Investigation Team, Augmented Inspection Team, or Special Inspection Team.

- Unit 1 emergent shutdown due to pressure boundary leakage (PIP C-10-1020)
- Unit 1 turbine runback to 48 percent power (PIP C-10-1351)

b. Findings

No findings of significance were identified.

4OA5 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 of significance were identified.

.2 (Closed) Severity Level IV Notice of Violation 05000413,05000414/2009007-02, Inaccurate Fire Watch Records (IP 92702)

This severity level IV violation identified on September 25, 2009, stated that contrary to 10 CFR 50.9(a), between August 5, 2007, and February 12, 2008, multiple contract fire watch employees of DZ Atlantic Group at Catawba Nuclear Station created information, required to be maintained by the licensee, which was inaccurate by deliberately pre-signing the Impairment and Compensatory Measures forms and not performing the watch that was signed for. By letter dated October 22, 2009, Catawba responded to the Notice of Violation. The licensee determined the cause of this violation to be inadequate management oversight. To correct this issue, the licensee implemented multiple corrective actions including an independent review of the fire watch logs and badge records, immediate implementation of increased supervisory oversight of contract fire watch employees, denial of site access to individuals involved, process changes to ensure supervisor involvement in fire watch briefings, activities and record keeping, records review following implementation of interim corrective actions, notification of the Duke Energy fleet, and changes to the administrative procedure and associated training. The inspector reviewed the corrective actions outlined in the October 22, 2009, letter as well as the associated apparent cause evaluation documented in PIP C-08-01036. The inspector concluded that the cause analysis was thorough and complete. Additionally, corrective actions taken were appropriate and timely. Documents reviewed are listed in the Attachment.

40A6 Meetings, Including Exit

Exit Meeting Summary

On April 5, 2010, the resident inspectors presented the inspection results to Mr. Jim Morris, Catawba 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.

40A7 Licensee-Identified Violations

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

10 CFR 50, Appendix B, Criterion XVI, requires that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. Contrary to the above, from May 1997 to July 2009, CACST vortexing, a condition adverse to quality, was not promptly identified and corrected. The licensee determined that CACST vortexing, identified in 1997, could result in air entrainment and subsequent damage to the CA pumps during high flow conditions. The licensee recognized that the 1997 operability determination lacked sufficient rigor and initiated an action for engineering to quantify the amount of air that would reach the pumps, which led to the discovery of the deficiency. As an immediate corrective action, the licensee isolated the CACST from the CA pumps, removing it as a suction source. The inspectors determined that the finding was of very low safety significance (Green) using the site specific Phase 2 Risk-Informed Inspection Notebook for main steam line break scenarios per IMC 0609, Appendix A, Determining the Significance of Reactor Inspection Findings for At-Power Situations. A Phase 3 risk analysis performed by a Senior Risk Analyst confirmed this result. This issue was documented in the licensee's corrective action program as PIP C-09-4202.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

T. Arlow, Emergency Planning Manager
D. Brenton, Operations Superintendent
W. Byers, Security Manager
J. Caldwell, Modifications Engineering Manager
H. Cantrel, Chemistry Manager
S. Coy, Operations Training Manager
J. Ferguson, Mechanical, Civil Engineering Manager
J. Foster, Radiation Protection Manager
T. Hamilton, Work Control Manager
G. Hamrick, Station Manager
R. Hart, Regulatory Compliance Manager
M. Hogan, Fire Protection Engineer
T. Jenkins, Superintendent of Maintenance
J. Morris, Catawba Site Vice President
K. Phillips, Safety Assurance Manager
T. Ray, Engineering Manager
M. Sawicki, Regulatory Compliance Engineer
R. Weatherford, Training Manager

LIST OF ITEMS OPENED, CLOSED, AND REVIEWED

Closed

05000413,414/2009007-02	VIO	Inaccurate Fire Watch Records (Section 40A5.2)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

IP/0/B/3560/009, Operational Check for Winter Months and Extreme Cold Weather Surveillance of Freeze Protection Heat Trace and Instrument Box Heaters Systems, Rev. 012
Work Order 01855451, Perform Extreme Freeze Protection Survey
RP/0/A/5000/007, Natural Disaster and Earthquake, Rev. 31
Hazard Barrier Control Form, RN supply headers A and B Clean and Coat Project, Rev. 2
PIP-C-10-01871, Tornado Watch Issued for York County

Section 1R04: Equipment Alignment

OP/1/A/6200/006, Safety Injection System, Enclosure 4.3 Valve Checklist, Rev. 55
Design Basis Specification, CNS-1562.NI-00-0001, Safety Injection System, Rev. 40
Design Basis Specification, CNS-1592.CA-00-0001, Auxiliary Feedwater System, Rev. 37
TS 3.5.2, ECCS - Operating
TS 3.8.1, AC Sources - Operating

Attachment

UFSAR Section 6.3, Emergency Core Cooling Systems
 Drawing CN-1562-1.2, Flow Diagram of Safety Injection System (Unit 1), Rev. 30
 PIP C-09-0708, GL89-10 MOV Calcs, NI System
 PIP C-09-5501, 1A NI pump DP below required action low value
 PIP C-09-6329, Rejectable indications on 1NI-416
 PIP C-09-7215, Check valve 1NI-116 did not seat following surveillance test
 WO 1900299, 1NI-132: I/R valve not stroking from test panel
 WO 1900293, 1NI LT 5060/5070: I/R level indication
 WO 1814846, 1NI-72: I/R seat leakage
 OP/1/A/6250/002, Auxiliary Feedwater System, Rev. 141
 OP/2/A/6250/002, Auxiliary Feedwater System, Rev. 127

Section 1R05: Fire Protection

NSD 112, Fire Brigade Organization, Training and Responsibilities, Rev. 8
 Station Fire Impairment Log
 NSD 313, Control of Combustible and Flammable Material, Rev. 7
 NSD 314, Hot Work Authorization, Rev. 7
 Fire Strategy Area 1, Auxiliary Building 522' Level
 Fire Strategy Area 49, Unit 1 Interior Doghouse
 Fire Strategy Areas 27 and 43, Unit 2 Diesel Generator Building and Corridor
 Fire Strategy Area 18, Auxiliary Building 577' Level
 Fire Strategy Area 3, Unit 1 Auxiliary Feedwater Pump Room

Section 1R07: Heat Sink Performance

PT/2/A/4400/006 A, NS Heat Exchanger 2A Heat Capacity Test, Rev. 37
 CNS-1574.RN-00-0001, Design Basis Specification for the RN Rev. 52
 CNS-1150.04-00-0001, Design Basis Spec. for the Nuclear Service Water Structures, Rev. 7
 SWSPM-R9.PDF, Service Water System Program Manual, Rev. 9
 Service Water Pipe Inspection Program, Rev. 9
 PIP C-09-07026, Documentation of Civil inspection of RN pump supports in "B" pit.
 PIP C-09-07020, Civil Engineering structural inspection of RN pump structure "B" pump and valve pits
 PIP C-09-04797, As found conditions on the RN Lake Return Header
 PIP C-09-01967, ECT tube exam in 2EC16 of KC HX 2A identified 2 tubes to plug
 PIP C-08-05404, When removing pipe cap to utilize as a vent path, the connection to the condenser sheared
 PIP C-08-03245, Maintenance found black substance/coating in water box and on tube sheet of 1A KD HX when opened to clean and test HX
 PIP C-07-01998, Foreign material found in 2B KC HX water box and on tube sheet
 PIP C-08-01023, Report of Industry Users Group Meeting Proceedings, HXPUG, Heat Exchanger Performance Users Group, Meeting Dates: February 5th and 7th, 2008
 PIP C-08-04411, Monthly Service Water Report for CNS indicates possible Corbicula production and record high water temperatures in the SNSWP. SOER 07-2 requested increased formal communications of these reports to site groups
 PIP C-09-0202, Monthly service water report for January has been received and a summary is documented in the Detailed Problem Description. SOER 07-2 requires that reports concerning conditions that may impact cooling water intakes be formally communicated to site groups

PIP C-09-06277, 1A RN Pump flow decrease to less than 4000 gallon per minute when Unit 2 KC trains were swapped

PIP C-09-05483, Valves 1&2 RN VA-49A and 1&2 RN VA -50B moved unexpectedly during circuit isolation for Optical Isolator replacement

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

PT/2/A/4400/006 D, KC Heat Exchanger 2B Heat Capacity Test

RN System Sketch (Normal Alignment), 1/5/10

Section 1R11: Licensed Operator Requalification Program

Active Simulator Exam ASE-7

AP/1/A/5500/010, Reactor Coolant Leak

EP/1/A/5000/E-0, Reactor Trip or Safety Injection

EP/1/A/5000/E-3, Steam Generator Tube Rupture

EP/1/A/5000/ECA-3.1, Steam Generator Tube Rupture with Loss of Reactor Coolant – Subcooled Recovery Desired

RP/0/A/5000/001, Classification of Emergency

Section 1R12: Maintenance Effectiveness

PT/2/A/4450/005 B, Containment Air Return Fan 2B and Hydrogen Skimmer Fan Performance Test, Rev. 037

Engineering Change 101793

PT/1/A/4200/004 C, Containment Spray Pump 1B Performance Test, Rev. 066

Maintenance Rule SSC Summary Report, RN System

Maintenance Rule SSC Summary Report, VX System

Nuclear Service Water System Health Report – 2009Q4

Containment Air Return and Hydrogen Skimmer System Health Report – 2009Q4

PIP C-10-0496, RN coatings applied out of temperature range

PIP C-10-1064, RN coated surface does not meet acceptable condition

PIP C-10-1078, Curing temperatures out of specification

PIP C-10-0916, 2B Containment Air Return Fan failed to start

PIP C-08-4169, Containment Air Return Fan 2B failed to continue to run during performance of PT

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

SOMP 02-02, Operations Roles in Risk Management, Rev 007

Critical Plan for “A” RN Loop Supply Header Clean and Coat Work Activities

Hazard Barrier Control Form for RN Supply Headers “A” and “B” Clean and Coat Project

Complex Plan for lifting the 2ATC replacement transformer

Outage Command and Control Defense-in-Depth Status for Unit 1 Forced Outage

Section 1R15: Operability Evaluations

NSD 203, Operability/Functionality, Rev. 19

CNC-1144.03-25-0006, Catawba Nuclear Station Leakage Area between Upper and Lower Containment

Design Basis Specification, CNS-1574.RN-00-0001, Nuclear Service Water System, Rev. 53

UFSAR Section 6.2, Containment Systems

UFSAR Section 2.3.5, Long Term Diffusion Estimates

UFSAR Table 2-105, Design Basis Values of Control Room X/Q's
 TS 3.7.10, Control Room Area Ventilation System
 TS 3.6.14, Divider Barrier Integrity
 TS 3.4.15, Leakage Detection Instrumentation
 TS 3.7.8, Nuclear Service Water System

Section 1R18: Plant Modifications

CD 501244, RN Main Supply Header Clean and Coat
 UFSAR Section 9.2.1, Nuclear Service Water System
 OP/0/A/6400/006 M, Nuclear Service Water System Unwatering Procedure, Rev. 54

Section 1R19: Post Maintenance Testing

PT/2/A/4250/003 C, Turbine Driven Auxiliary Pump #2 Performance Test, Rev. 081
 MP/0/A/7300/005, Auxiliary Feedwater Turbine/Pump Preventative Maintenance, Rev. 013
 PT/1/A/4200/009 H, ND Pump Suction from FWST Swapover ESF Actuation, Enclosure 13.1
 Stroke of 1FW-27A (ND Pump 1A Suction from FWST)
 PT/2/A/4450/005 B, Containment Air Return Fan 2B and Hydrogen Skimmer Fan Performance
 Test, Rev. 037
 PIP-C-08-04169, Containment Air Return Fan 2B failed to continue to run during performance of
 PT/2/A/4450/005B
 PIP-C-00916, 2B Containment Air Return Fan Failed to start
 Engineering Change 101793
 PT/1/A/4200/004 C, Containment Spray Pump 1B Performance Test, Rev. 066
 PT/0/A/4400/008 A, RN Flow Balance Train A, Rev. 53

Section 1R22: Surveillance Testing

PT/2/A/4200/009 A, Auxiliary Safeguards Test Cabinet Periodic Test, Rev. 195
 IP/1/A/3200/001 A, Solid State Protection System (SSPS) Train A Periodic Testing, Rev. 015
 PT/2/A/4350/002 A, Diesel Generator 2A Operability Test, Rev. 091 (24 Hr. Run)
 OP/1/A/6200/032, Primary Sampling Using a Rheodyne Model 7010 Valve, Rev. 10
 CP/0/B/8200/006, Determination of Dose Equivalent Iodine -131, Rev. 14
 PT/1/A/4250/003 C, Turbine Driven Auxiliary Feedwater Pump #1 Performance Test, Rev. 99
 PT/2/A/4200/004 C, Containment Spray Pump 2B Performance Test , Rev. 37

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: 854.03-1, RCS Activity
 Catawba Master File CN: 854.02-4, MSPI Cooling Water Systems

Section 4OA2: Problem Identification and Resolution

NSD 208, Problem Investigation Process
 NSD 212, Cause Analysis
 Action Register Report for PIP C-09-4202
 PIP C-07-1579, Vortex formation at outlet of CACST could lead to air intrusion
 PIP C-97-1579, Review of design inputs of the CA suction low pressure transfer to RN
 Drawing CN-1490-CS.00-038, Turbine Building Condensate Storage System, Rev. 2A

Section 40A5: Other Activities

Letter from James R. Morris, "Response to Notice of Violation EA-09-198," dated October 22, 2009

Nuclear System Directive 316, Fire Protection Impairment and Surveillance, Revs. 8, 9, and 10
Impairment No: CN-2010-42, Zone 90 Unit #2 SFP Area, dated 2/23/10

CNS Fire Impairment Log, dated 2/23/10

TTC740-N, Fire Impairments and Compensatory Measures (Computer Based Training), dated 2/24/10

PIPs reviewed:

C-08-01036

C-08-01123

C-08-02190

C-09-03214

C-09-05741

C-10-00673

PIPs generated as a result of this inspection:

C-10-01163

LIST OF ACRONYMS USED

CA	-	Auxiliary Feedwater System
CACST	-	Auxiliary Feedwater Condensate Storage Tank
CFR	-	Code of Federal Regulations
EC	-	Engineering Change
KC	-	Component Cooling
KD	-	Emergency Diesel Generator Engine Cooling Water
NCV	-	Non-Cited Violation
NRC	-	Nuclear Regulatory Commission
NSD	-	Nuclear Site Directive
PI	-	Performance Indicator
PIP	-	Problem Investigation Process report
RCS	-	Reactor Coolant System
RN	-	Nuclear Service Water
RTP	-	Rated Thermal Power
SSC	-	Structures, Systems, and Components
TS	-	Technical Specifications
UFSAR	-	Updated Final Safety Analysis Report
UHS	-	Ultimate Heat Sink