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

June 18, 2013

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

SUBJECT: CATAWBA NUCLEAR STATION - NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000413/2013007 AND 05000414/2013007

Dear Mr. Henderson:

On May 9, 2013, 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 May 9, 2013, with you and other members of your staff.

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

The enclosed report documents one NRC-identified finding of very low safety significance (Green) that 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 the violation or significance of this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Catawba Nuclear Station. In addition, if you disagree with the cross-cutting aspects assigned to the findings 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, RII, and the NRC Resident Inspector at the Catawba Nuclear Station.

You are not required to respond to this letter. 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

Michael F. King, Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure: Inspection Report 05000413/2013007
and 05000414/2013007 w/Attachment:
Supplemental Information

cc: (See page 3)

U.S. NUCLEAR REGULATORY COMMISSION (NRC)

REGION II

Docket Nos.:	50-413 & 414
License Nos.:	NPF-35, NPF-52
Report Nos.:	05000413/2013007, 05000414/2013007
Licensee:	Duke Energy Carolinas, LLC
Facility:	Catawba Nuclear Station, Units 1 and 2
Location:	York, SC 29745
Dates:	April 22 – 26, 2013 (Week 1) May 6 – 9, 2013 (Week 2)
Inspectors:	P. Braxton, Reactor Inspector J. Dymek, Reactor Inspector D. Jones, Senior Reactor Engineer (Lead Inspector) O. López, Senior Reactor Inspector (Training) S. Sanchez, Senior Project Engineer M. Singletary, Reactor Inspector (Training)
Approved by:	Michael F. King, Chief Engineering Branch 2 Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000413/2013007 and 05000414/2013007; 04/22 – 26/2013 and 05/06 – 09/2013; Catawba Nuclear Station Units 1 and 2; Fire Protection (Triennial).

This report covers an announced two-week period of inspection by a triennial fire protection team composed of six regional inspectors of which two where trainees. One Green 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) dated 06/02/11. Cross-cutting aspects are determined using IMC 0310, "Components Within The Cross-Cutting Areas," dated 10/28/11. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated 01/28/13. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings
Cornerstone: Mitigating Systems

Green. The inspectors identified a Green non-cited violation (NCV) of 10 CFR Part 50.65, Maintenance Rule, for the licensee's failure to identify and correct deficiencies in the 8-hour emergency light preventive maintenance program. The licensee entered the issues into their corrective action program as PIPs-C-13-03973, C-13-00996, C-13-03536 and C-13-03537. The deficiency will be mitigated by the operator's use of flashlights until the deficiencies are corrected.

The licensee's failure to identify and correct deficiencies in the emergency light preventive maintenance program was a performance deficiency. The performance deficiency was more than minor because it adversely affected the Mitigating Systems cornerstone of protection against external events. Specifically, the high failure rate of emergency light testing resulted in a lack of reasonable assurance that adequate lighting would be available during fire events. The inspectors determined the finding to be of very low safety significance (Green) because the inspectors noted that operators were required to obtain and carry flashlights. The inspectors identified a cross-cutting aspect in the corrective action program component of the problem identification and resolution area. [P.1(b)] (Section 1R05.08)

B. Licensee Identified Violations

None

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R05 Fire Protection

This report presents the results of a triennial fire protection inspection of the Catawba Nuclear Station Units 1 and 2. The inspection was conducted in accordance with NRC Inspection Procedure (IP) 71111.05T, "Fire Protection (Triennial)," issued January 31, 2013. The objective of the inspection was to review a sample of four risk-significant fire areas to verify implementation of the fire protection program (FPP) and to verify site specific implementation of one B.5.b mitigating strategy as well as the storage, maintenance, and testing of B.5.b mitigating equipment. The four fire areas (FAs) were selected after reviewing risk information analyzed by a Senior Reactor Analyst from Region II, as well as previous inspection results, plant walk downs of fire areas, relational characteristics of ignition sources to targets, and location of equipment needed to achieve and maintain safe shutdown (SSD) of the reactor. In selecting the B.5.b mitigating strategy sample, the team reviewed licensee submittal letters, safety evaluation reports, licensee commitments, B.5.b implementing procedures, and previous NRC inspection reports. The IP specifies a minimum sample size of three fire areas and one B.5.b implementing strategy for addressing large fires and explosions. This inspection fulfilled the requirements of the procedure. The specific FAs chosen for review were:

1. FA 3, Unit 1, Motor Driven Auxiliary Feedwater Pump Room (Elevation 543')

2. FA 9, Unit 2 Battery Room (Elevation 554')

3. FA 10, Unit 1 Battery Room (Elevation 554')

4. FA 14, Unit 2, 4160V Essential Room, (Elevation 577')

The team evaluated the licensee's FPP against applicable requirements, including Catawba Unit 1 and 2 Operating License Condition 2.C.5, "Fire Protection"; 10 CFR 50.48; commitments to Branch Technical Position Chemical Engineering Branch (CMEB) 9.5.1, Fire Protection for Nuclear Power Plants; Catawba Units 1 and 2 Updated Final Safety Analysis Report (UFSAR); related NRC safety evaluation reports (SERs); Technical Specifications and Selected Licensee Commitments (SLC). The review of the B.5.b mitigating strategies was based on the Catawba B.5.b submittal letters, related NRC SERs, licensee commitments, B.5.b implementing procedures, and previous NRC inspection reports. The team evaluated all areas of this inspection, as documented below, against these requirements. Specific licensing bases documents reviewed are listed in the Attachment.

.01 Protection of Safe Shutdown Capabilities

a. Inspection Scope

For the selected FAs, the inspectors performed physical walk-downs to observe: (1) the material condition of fire protection systems and equipment; (2) the storage of permanent and transient combustibles; (3) the proximity of fire hazards to cables relied upon for SSD; and (4) the licensee's implementation of procedures and processes for limiting fire hazards, housekeeping practices, and compensatory measures for inoperable or degraded fire protection systems and credited fire barriers. The specific documents reviewed are listed in the Attachment.

Methodology

The team evaluated the potential for fires, the combustible fire load characteristics, and the potential fire severity exposure for the selected FAs. The team reviewed Design Basis Documents (DBD), the UFSAR, applicable SERs, and plant administrative procedures that (1) established and implemented controls and practices to prevent fires and (2) controlled ignition sources and the storage of permanent and transient combustible materials. These evaluations were performed to ensure that the objectives established by the NRC approved FPP were satisfied and to ensure that the licensee had properly characterized in-situ combustible fire loads and limited transient fire hazards in a manner consistent with the plant administrative and FPP procedures.

For each of the selected FAs the team reviewed the fire hazards analysis, SSD analyses and supporting drawings and documentation to verify whether the shutdown methodology had properly identified and protected the components necessary to achieve and maintain SSD conditions for equipment in the FAs selected for review.

Operational Implementation

The inspectors reviewed applicable sections of abnormal and emergency procedures, to verify that the shutdown methodology properly identified the systems and components necessary to achieve and maintain SSD conditions. The inspectors performed a walk-through of abnormal procedure steps to verify implementation and human factors adequacy of the procedures. The inspectors verified that licensee personnel credited for procedure implementation had procedures available, were trained on implementation, and were available in the event a fire occurred. The inspectors also reviewed selected operator actions to verify that the operators could reasonably be expected to perform the specific actions within the time required to maintain plant parameters within specified limits.

b. Findings

No findings were identified.

.02 Passive Fire Protection

a. Inspection Scope

For the selected FAs, the inspectors verified the adequacy of fire barrier walls, ceilings, floors, mechanical and electrical penetration seals, fire doors, and fire dampers. The inspectors walked down accessible portions of the selected FAs to observe material condition of the passive barriers and to identify degradation or nonconformances. The inspectors compared the installed configurations to the approved construction details and supporting fire endurance test data to assure that the respective fire barriers met the requirements of Branch Technical Position CMEB 9.5.1, Fire Protection for Nuclear Power Plants. In addition, the inspectors reviewed licensing bases documentation to verify that passive fire protection features met license commitments. A sample of completed surveillance and maintenance procedures for selected fire doors, fire dampers, and penetration seals were reviewed to ensure that these passive fire barriers were being properly inspected and maintained. Specific barriers reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.03 Active Fire Suppression

a. Inspection Scope

For the selected FA's, the inspectors performed in-plant observations to verify the material condition and operational lineup of the fire water intake structure; the electric motor driven fire pumps; the fire protection water supply distribution piping including sprinklers, manual fire hose, and standpipe systems; and installed fire extinguishers. The inspectors reviewed engineering drawings and specifications to verify that the as-built configuration of fire suppression equipment was adequately maintained. Internal standpipe and hose stations, and heat and smoke detection systems were reviewed against specifications, drawings and engineering calculations to verify that the fire detection and suppression methods were appropriate for the types of fire hazards that existed in the FAs. The inspectors also verified that the suppression equipment met applicable National Fire Protection Association (NFPA) standard(s). The inspectors reviewed Catawba Nuclear Station (CNS) evaluations addressing concerns of NRC Information Notice 2009-29, "Potential Failure of Fire Water Supply Pumps to Automatically Start Due to a Fire." The inspectors reviewed completed surveillance testing and maintenance procedures to verify that the equipment was adequately maintained. The inspectors reviewed fire fighting pre-plans to verify that the strategies were adequate. The inspectors observed the fire brigade staging and dress out areas to assess the condition of fire fighting and smoke control equipment. In addition, the inspectors verified the capabilities of the fire brigade by reviewing staffing, qualification, and training records. The "Letters of Agreement" with off-site emergency responders were reviewed to verify the availability of additional resources to combat fires. Fire hose stations and permanently installed fire extinguishers that were inspected are listed in the attachment.

b. Findings

No findings were identified.

.04 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

The inspectors evaluated whether manual water-based fire fighting activities or heat and smoke migration from fires within the selected FAs could adversely affect equipment credited for SSD, inhibit access to alternate shutdown equipment, or adversely affect local operator actions required for SSD. The inspectors reviewed CNS evaluations addressing concerns identified in Information Notice 1998-31, "Fire Protection System Design Deficiencies and Common Mode Flooding of Emergency Core Cooling System Rooms at Washington Nuclear Project Unit 2" and Information Notice 2003-003, "Potential Flooding Through Unsealed Concrete Floor Cracks." Fire Strategies (pre-fire plans); fire brigade training procedures; heating, ventilating and air conditioning (HVAC) drawings; and abnormal procedures for fires were also reviewed to verify that inter-area migration of water or the ventilation of heat and smoke were addressed and would not adversely affect SSD equipment or the performance of operator manual actions.

b. Findings

No findings were identified.

.05 Alternative Shutdown Capability

a. Inspection Scope

Methodology

The licensee credited an alternative shutdown capability for a postulated fire in FAs 3, 9 and 10. The inspectors reviewed UFSAR Section 9.5.1, the Catawba FPP, and corresponding abnormal procedures to ensure that appropriate controls provided reasonable assurance that alternative shutdown equipment remained operable, available, and accessible when required. In cases where local operator manual actions (OMA) were credited in lieu of cable protection of SSD components, the inspectors performed a walk-through of the procedures to determine if the operators could reasonably be expected to perform the alternative safe shutdown procedure actions and that equipment labeling was consistent with the alternate safe shutdown procedures. The inspectors reviewed applicable process and instrumentation diagrams to gain an understanding of credited equipment's flow path and function. The inspectors reviewed applicable licensee calculations to ensure the alternative shutdown methodology properly identified systems and components to achieve and maintain safe-shutdown for the FAs selected for review. Reviews also included verification that alternative shutdown could be accomplished with or without offsite power.

The team reviewed procedures, work orders and completed surveillances to verify that the alternative shutdown transfer capability was periodically tested. Additionally, the team reviewed electrical schematics and one line diagrams to ensure that the transfer of safe shutdown control functions to the alternate shutdown facility included sufficient

instrumentation to safely shutdown the reactor. This review also included verification that shutdown from outside the main control room could be performed both with and without the availability of offsite power.

Operational Implementation

The inspectors reviewed procedure AP-45, “Plant Fire”, to verify the adequacy of this procedure to mitigate a fire in each of the selected FAs. The inspectors reviewed selected training materials for licensed and non-licensed operators to verify that training reinforced the shutdown methodology that is utilized in the FPP and abnormal procedures for fires. The inspectors also reviewed shift manning and training records to verify that personnel required for SSD using alternative shutdown systems and procedures were trained and available onsite, exclusive of those assigned as fire brigade members.

The inspectors performed a walk-through of procedure steps with operations personnel to assess the implementation and human factors adequacy of the procedures and shutdown strategy to evaluate the ambient conditions, difficulty, and operator familiarization associated with each OMA. The inspectors reviewed the systems and components credited for use during this shutdown method to verify that they would remain free from fire damage. The inspectors reviewed selected operator actions to verify that the operators could reasonably be expected to perform the specific actions within the time required to maintain plant parameters within specified limits.

b. Findings

No findings were identified.

.06 Circuit Analyses

a. Inspection Scope

The inspectors reviewed the licensee’s post-fire safe shutdown analysis to verify that the licensee had identified both required and associated circuits that may impact safe shutdown. On a sample basis, the inspectors verified that the cables of equipment required for achieving and maintaining shutdown conditions, in the event of a fire in the selected fire zones, had been properly identified. In addition, the inspectors verified that these cables had either been adequately protected from the potentially adverse effects of fire damage or analyzed to show that fire induced faults (e.g. hot shorts, open circuits, and short to ground) would not prevent safe shutdown. In order to accomplish this, the inspectors reviewed electrical schematics and cable routing data for power and control cables associated with each of the selected components. In addition, on a sample basis, the adequacy of circuit protective coordination for safe shutdown systems’ electrical power and instrumentation busses were evaluated.

b. Findings

No findings were identified.

.07 Communications

a. Inspection Scope

The inspectors reviewed the adequacy of the communication system to support plant personnel in the performance of alternative safe shutdown functions and fire brigade duties. The inspectors verified that portable radios, repeaters, the plant address system and fixed emergency communications systems were available, adequate, and operable for the performance of the designated activities. The inspectors also verified that the electrical power source for the emergency sound powered phone system would allow it to remain functional following a fire in the selected fire areas.

b. Findings

No findings were identified.

.08 Emergency Lighting

a. Inspection Scope

The inspectors reviewed maintenance and design aspects of the fixed 8-hour battery pack emergency lighting units (ELUs) required by the licensee's approved FPP. The inspectors performed plant walkdowns of the post-fire SSD procedures for the selected FAs to observe the placement and coverage area of the ELUs throughout the selected FAs. The inspectors also evaluated the adequacy of the ELUs to illuminate access and egress pathways, and any equipment requiring local operation and/or instrumentation monitoring for post-fire SSD. The inspectors reviewed preventive maintenance procedure IP/0/B/3540/002, "Emergency Battery Lighting Periodic Maintenance and Testing," Revision 36 to verify that adequate surveillance testing was in place. The inspectors reviewed the completed 8-hour capacity test records to verify that the ELUs were capable of meeting their mission time. The inspectors also discussed the maintenance rule status of the emergency lighting system with the licensee to verify that the ELUs were appropriately monitored.

b. Findings

Introduction: The inspectors identified a Green non-cited violation (NCV) of 10 CFR Part 50.65, Maintenance Rule, for the licensee's failure to identify and correct deficiencies in the 8-hour emergency light preventive maintenance program.

Description: The emergency direct current lighting system consists of self-contained units with each unit containing a battery, lamps, and related electronics for unit operation and monitoring. Emergency light units (ELU) provide illumination of equipment and pathways used in fire protection safe shutdown procedures. Approximately three hundred emergency lights were scoped into the licensee's maintenance rule program because they are required by the fire protection program. The licensee's maintenance rule program allowed a 5% failure rate that was determined through monthly and annual testing. The monthly test confirms the functionality of the ELUs for 30 seconds; and the annual test confirms the capability of the ELUs to perform their design bases function for the required 8-hours. The inspectors noted that the licensee replaced the batteries every three years.

The inspectors identified an adverse trend in ELU failures during the review of 8-hour capacity test records. The inspectors noted that approximately 39% of the ELUs failed during 2012. During the inspection, the licensee reviewed additional test data and determined that approximately 42% and 39% of the ELUs failed the 8-hour test in 2010 and 2011. Additionally, the inspectors noted that the licensee's maintenance strategy of replacing batteries on a three year frequency did not include a requirement to perform as-found testing on batteries removed from service. Because the oldest batteries were not tested, it is reasonable to assume that the failure rates were significantly higher.

The inspectors also determined that the performance monitoring criteria in the maintenance rule program was inadequate to provide reasonable assurance that appropriate preventive maintenance was being performed. The inspectors determined that a high number of 8-hour test failures occurred without a functional failure being recorded in the maintenance rule program. The inspectors noted that the performance criteria (5% failure rate) was inadequate because it was based on the combined results of the monthly and annual test. For example, when applying the 5% failure criteria to 300 ELUs that are tested 13 times per year (12 monthly test plus 1 annual test), a failure of 195 tests is allowed before a maintenance functional failure is declared. This method would potentially allow 65% of the ELUs to fail the 8-hour test without a functional failure being declared. This method allowed the failure rates discussed above to exist without any maintenance rule functional failures being declared in 2010, 2011, or 2012.

Analysis: The licensee's failure to identify and correct deficiencies in the ELU preventive maintenance program as required by the "Maintenance Rule" was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the high failure rate of battery capacity test resulted in a lack of reasonable assurance that the ELU would perform its design function of providing illumination for 8 hours during fire events.

The significance of this finding was evaluated using IMC 0609, Appendix F, "Fire Protection Significance Determination Process (dated 02/28/05)," because the performance deficiency affected fire protection defense-in-depth strategies involving post-fire safe shutdown. The finding was assigned a low degradation rating since the finding minimally impacted the performance and reliability of the fire protection program element. Specifically, the inspectors noted that operators were required to obtain and carry flashlights. Therefore, the finding screened as having very low safety significance (Green).

The inspectors identified a cross-cutting aspect in the corrective action program component of the problem identification and resolution area because the licensee did not adequately trend and assess information to identify programmatic and common cause problems. Specifically, the licensee's maintenance and engineering personnel failed to identify the adverse trend of ELU capacity test failures that occurred in 2010, 2011, and 2012. [P.1(b)]

Enforcement: Title 10 of the Code of Federal Regulations, Part 50, Section 65, (a)(1), requires, in part, that licensees shall monitor the performance or conditions of structures, systems, or components (SSCs) within the scope of the maintenance rule as defined by

10 CFR 50.65 (b), against licensee established goals, in a manner sufficient to provide reasonable assurance that such SSCs are capable of fulfilling their intended functions. Title 10 of the Code of Federal Regulations, Part 50, Section 65, Paragraph (a)(2) states, in part, that monitoring as specified in 10 CFR 50.65 (a)(1) is not required where it has been demonstrated that the performance or condition of a SSC is being effectively controlled through the performance of appropriate preventive maintenance, such that the SSC remains capable of performing its intended function.

Contrary to the above, since 2010, the licensee failed to demonstrate that the performance of the ELUs was being effectively controlled through the performance of appropriate preventive maintenance, which resulted in the failure to establish goals in a manner sufficient to provide reasonable assurance that the ELUs were capable of fulfilling their functions. Specifically, the licensee failed to identify the high failure rate of ELUs which resulted in a failure to monitor the emergency lighting system as required by the maintenance rule. This deficiency will be mitigated by the operator's use of flashlights until the deficiencies are corrected. This violation is being treated as an NCV, consistent with section 2.3.2 of the NRC Enforcement Policy. The violation was entered into the licensee's corrective action program as PIP-C-13-03973, C-13-00996, C-13-03536 and C-13-03537. NCV 05000413 and 05000414/2013007-01, Failure to Identify and Correct Deficiencies in the Emergency Lighting System Preventive Maintenance Program.

09. Cold Shutdown Repairs

a. Inspection Scope

The inspectors reviewed the Catawba FPP and abnormal procedures to verify that the licensee identified repairs needed to reach and maintain cold shutdown and had dedicated repair procedures, equipment, and materials to accomplish these repairs after a fire event, assuming no offsite power was available. The inspectors verified that the fire damage repair procedures were current and adequate. The inspectors reviewed the inventory inspection work order records and compared them to the equipment and tool lists to verify that all required replacement parts and equipment were being accounted for and were available for use.

b. Findings

No findings were identified.

.10 Compensatory Measures

a. Inspection Scope

The team reviewed administrative controls for out-of-service, degraded and/or inoperable fire protection features (e.g. detection and suppression systems and passive fire barriers) as well as hot work from cutting, welding and grinding activities. The inspectors reviewed the operator compensatory actions log (dated April 25, 2013) and the fire protection impairment log for RF/RY systems (dated May 06, 2013). The CNS supporting calculations were reviewed to verify the adequacy of FPP interim compensatory measures for suppression system inoperability for a major internal fire protection sprinkler and standpipe cleaning activity. The team observed performance of

a fire protection roving fire watch activity in the Unit 2 Battery Room (FA 9). Fire Watch personnel were interviewed for familiarity with job requirements.

b. Findings

No findings were identified.

.11 Review and Documentation of Fire Protection Program Changes

a. Inspection scope

The inspectors reviewed modifications associated with the FPP to verify that changes were in accordance with the fire protection license condition and had no adverse affect on the ability to achieve SSD. Modifications reviewed are listed in the Attachment.

b. Findings

No findings were identified

.12 Control of Combustibles and Ignition Sources

a. Inspection Scope

The inspectors conducted walkdowns of numerous plant areas that were important to reactor safety, including the selected FAs, to verify the licensee's implementation of fire protection requirements as described in procedures NSD 313, Control of Transient Fire Loads; NSD 314, Hot Work Authorization and Portable Heater Control; and NSD 316, Fire Protection Impairment and Surveillance. The inspectors verified that the licensee had properly evaluated transient fire hazards, controlled hot-work activities, and maintained general housekeeping consistent with administrative control procedures and the fire hazards analysis. For the selected FAs, the inspectors evaluated the potential for fires and explosions, and potential fire severity. Hot work, associated with activities being performed under work order 2002430, was observed as part of the inspection. Fire watch and craft personnel were interviewed for familiarity with job requirements.

b. Findings

No findings were identified.

.13 B.5.b Inspection Activities

a. Inspection Scope

The inspectors reviewed procedures to verify the adequacy of procedural guidance for the manual depressurization of the steam generators and use of portable pump strategy. The inspectors performed walkdowns to verify the feasibility of implementing the guidance provided in the procedures; and to verify that the apparatus required by the procedure was adequately staged. The inspectors reviewed records to verify that personnel were appropriately trained; and to verify that appropriate preventive

maintenance was performed on a recurring basis. The inspectors reviewed a calculation to verify that the minimum required flow for the strategy was achievable.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed recent independent audits and evaluations to verify that the licensee was performing appropriate assessments of the FPP. In addition, a sample of fire protection nonconformances were reviewed to verify that deficiencies were identified, entered into, and resolved by the licensee's corrective action program. The problem identification reports (PIP) were reviewed with regard to the adequacy of the evaluation, appropriateness of the proposed corrective actions, and the timeliness of implementing the corrective actions.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On May 9, 2013, the inspection team leader presented the preliminary inspection results to Mr. K. Henderson and other members of the licensee's staff. The licensee acknowledged the results. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

P. Simbrat, Regulatory Affairs Lead
T. Pasour, Regulatory Affairs
M. Hogan, Fire Protection Program Manager
G. Carpenter, Fire Protection Engineer
R. Smith, Safe Shutdown/NFPA 805 Contract Support
B. Weaver, PRA Engineer

NRC personnel

M. King, Chief, Engineering Branch 2, Division of Reactor Safety, Region II
A. Hutto, Senior Resident Inspector, Catawba Nuclear Station

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000413&414/2013007-01	NCV	Failure to Identify and Correct Deficiencies in the Emergency Lighting System Preventive Maintenance Program (Section 1R05.08)

Discussed

None

LIST OF DOCUMENTS REVIEWED

LIST OF FIRE BARRIER FEATURES INSPECTED
(Refer Report Section 1R05.02 and 1R05.03)

Fire Damper Identification	Description / Location
1BRX-FD-01	AUX/E 554 / EE 54
2BRX-FD-22B	AUX/E 554 / EE 60
2BRX-FD-11	AUX/E 554 / BB 57
2SGR-FD-2	AUX/E 577 / AA 62

Fire Door Identification	Description
T-527	AUX/E 543 / CC 52
AX-419	AUX/E 554 / DD 57
AX 260E	AUX/E 554 / CC 51
AX 534	AUX/E 577 / BB 68
AX 535A	AUX/E 577 / BB 61

Fire Barrier Penetration Seal Identification	Description
B-AX-217-W-001	FA 40 to 3
B-AX-217-W-002	FA 40 to 3
J-AX-535-M-15	AUX/E 577 / BB 67
J-AX-535-M-16	AUX/E 577 / BB 67

Wall, Ceiling, Floor Identifications	Description
Unit 1 CA Pump Room and Pump Pits	FA 3 (El. 543)
Unit 2 Battery Rooms	FA 9 (El. 554)
Unit 1 Battery Rooms	FA 10 (El. 554)
Unit 2 Essential Switchgear Room	FA 14 (El. 577)

Fire Extinguishers Inspected	Description
AUX 543-1	AUX/E 543 / CC 51
AUX 543-2	AUX/E 543 / BB 52
AUX 554-1	AUX/E 554 / AA 53
AUX 554-6	AUX/E 554 / AA 60
AUX 554-7	AUX/E 554 / BB 61
AUX 418	AUX/E 554 / BB 57
AUX 577-30	AUX/E 577 / BB 69
AUX 577-31	AUX/E 577 / AA 63
AUX 577-32	AUX/E 577 / AA 63

Fire Hose Stations Inspected	Description
1RF A64	AUX/E 543 / CC 52
1RF 484	AUX/E 554 / BB 58
1RF 478	AUX/E 577 / BB 69
1RF 993	AUX/E 577 / AA 63

LIST OF COMPONENTS REVIEWED
(Refer to Report Sections 1RO5.05- and 1RO5-.06)

Components Sampled

1CA VA0174, RC to CA Suction Isolation
1CA VA0178, RC Supply to CA Pumps Isolation
1CA VA0175, RC to CA Suction Isolation
1RN VA0250A,1A RN Supply Header to CA Pumps Isolation
1RN VA0310B,1B RN Supply Header to CA Pumps Isolation
1CA VA 0015A,CA Pump 1A Suction from RN Isolation
1CA VA 0018B, CA Pump 1B Suction from RN Isolation
2B Diesel Generator Ventilation Fans 2B1 and 2B2
Cable 2EXS588 associated with the 2CNVACU0001 Condenser Unit 2B Ventilation

LIST OF DOCUMENTS REVIEWED

Audits and Self Assessment Reports

RF/RY System 4th Quarter 2012 Health Report
12-011 (INOS) (FP) (CNS) Independent Nuclear Oversight Audit-Catawba Fire Protection
09-24 (INOS) (TFP) (CNS) Independent Nuclear Oversight Audit-Catawba Triennial Fire Protection
C-MNT-SA-12-02, Compliance with Fire Protection Program (NSD 313, Transient Fire Loads)

Cable Wiring Diagrams

Cable Block Diagrams for 2EQC-DGMISCB
Cable Block Diagrams for 2VD SFA1DSF
Cable Block Diagrams for 2VD SFB1DSF
Cable Block Diagram for 1CA VA0174
Cable Block Diagram for 1CA VA0178
Cable Block Diagram for 1CA VA0175
Cable Block Diagram for 1RN VA0250A
Cable Block Diagram for 1RN VA0310B
Cable Block Diagram for 1CA VA 0015A
Cable Block Diagram for 1CA VA 0018B

CALCULATIONS

CNC-1112.11-00-0031, Unit 1 Assoc. Circuit Analysis for Post Fire Safe Shutdown, Rev. 1 & 2
CNC-1112.22-00-0032, Unit 2 Associated Circuit Analysis for Post Fire Safe Shutdown, Rev. 3
CNC-1112.11-00-0033, Safe Shutdown Review, Rev. 5
CNC-1223.02-00-0022, Pressure Drop Calculation for Alternate Makeup/Spray Capabilities, Rev. 1
CNC-1223.49-00-0003, Unit 1 Battery Room Sprinkler System Demand Calculation, Rev. 0
CNC-1223.49-02-0010, Aux. Bldg. Cable Shaft Fire Protection Sprinkler System Battery Room Unit 1, Rev.0
CNC-1223.49-02-0016, Aux. Bldg. Cable Shaft Fire Protection Sprinkler System Battery Room Unit 2, Rev.0
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PT/0/4400/001D, Fire Protection Functional Capability Test, dated 1/27/13
PT/0/4400/001D, Fire Protection Functional Capability Test, dated 2/02/13
PT/0/4400/001S, RY Fire Protection Flow (Underground) Periodic Test, dated 5/11/09
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WO 1902345, Channel Calibration Unit 2 S/G B Wide Range Level, dated 10/5/10
WO 1902346, Channel Calibration Unit 2 S/G C Wide Range Level (SSF), dated 10/5/10
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EC 00000991590, New Office Complex, dated 08/26/10
EC 0000099364, Install Odorizers for the Unit 1 and 2 EDG Rooms and CA Pump Pits CO2 Systems, dated 09/22/10
EC 0000099898, Replace H2 House Cylinder Rupture Disks, dated 10/24/12
EC 0000099902, Replace U1 RF CO2 Under Ground Piping to U1 DG's 10-1, dated 09/24/09
EC 0000100031, Remove Unused Section of Cable Tray in Unit 2 Lower Containment, dated 06/09/09

EC 0000101780, Allow for U1 Transformer Deluge Detectors to Have 275 F, dated 09/08/12
EC 0000102499, Change Photoelectric Detector Substitution from SLR-24H, dated 04/19/12
EC 0000103296, Remove Lighting Unit in TB2 Basement, dated 05/18/11
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C-03-3979, Operating Experience Evaluation, NRC IN-2003-08
C-04-04276, 3 NRC Unresolved Items Discussed in the Triennial Fire Protection Report
C-05-3746, Operating Experience Evaluation, NRC-IN-2005-11
C-07-03911, Re-testing of an Emergency Lighting (ELD) 8-hour Battery Pack Unit, Subsequent to a Lighting Unit Battery Capacity Test Failure
C-08-02394, NRC Identified Two Findings with the Same Safety Culture Cross-Cutting Aspect within the Past 12 Months
C-09-05931, Operating Experience Evaluation, NRC-IN-2009-09
C-09-05273, Fire Area analysis for Post Fire Safe Shutdown Reconstitution
C-10-02815, Question Need of Emergency Lighting in Support of Performing Actions Outside of the Control Room
C-11-08560, Aux. Bldg. Fire Protection RHR Loop did not Meet Acceptance Criteria
C-12-04670, Recommendation for Performance Improvement Identified During the 2012 Catawba Fire Protection Audit, 12-11
C-12-06392, Issues with Doors AX714B, AX416 and AX700B Found During Door Inspection
G-05-00306, NSD-112 does not Address Responsibilities and Regulatory Requirements for the Fire Brigade Response Strategies
G-09-01222, Operating Experience Evaluation, NRC-IN-2009-09
G-13-00507, C-09-05931, Operating Experience Evaluation, NRC-IN-2013-006

List of PROBLEM IDENTIFICATION REPORTS (PIP) Generated as a Result of this Inspection

C-13-00996, Review PIP M-13-0980 and Evaluate the Adequacy of the CNS Maintenance Rule Performance Criteria for Emergency Lighting to Effectively Monitor System Performance
C-13-03469, Fire Brigade Drills not Performed in the Unit 1 & 2 Battery Room Areas
C-13-3474, Evaluate AP/0/A/5500/045 for Enhancements to Guidance for Isolating Letdown during a Fire
C-13-3479, Security Barrier Installed Outside Unit 1 MG Set Room Blocking Preferred Route for Operators to the SSFC-13-03538, Issues Identified With Performance of Plant Fire Procedure AP-45
C-13-3536, Missed Opportunity to Gather Maintenance Rule Performance Data During Emergency Light Testing per IP/0/B/3540/002
C-13-3537, Recommendation for Maintenance Rule Data Trending for Emergency Light System
C-13-3538, Identified Issues with Performance of Fire Procedure AP/0/A/5500/45
C-13-3829, Editorial Errors in Fire Protection Equipment Drawings
C-13-3844, Corrective Work Requests and Work Orders Associated with the Hale Pump do not Consistently Document Work Performed
C-13-03853, RY Heat Trace is not Included in Extreme Weather Procedure

C-13-03855, Documentation Could not be Located to Satisfy the NRC Inspection Request to Show NRC Approval for the SSF Battery Lights Deviation from the 8 hour Commitment for Emergency Lighting Battery Supply
C-13-03856, Fire Brigade Strategies Need to be Updated
C-13-03881, Relief Valve Shutoff Valve for Hale Pump was Found Stored at the Hale Pump Instead of Being Stored in the EDM Hose Trailer as Indicated by the Inventory Performed per PT/0/A/4400/002 F
C-13-03944, Question on When Clock Starts for Operator Time Critical Actions
C-13-03917, Fire Brigade Repeaters are Not Routinely Tested
C-13-03972, Completed Procedure PT/6/B/4460/001Y, (6/07/11) did not Have Approval
C-13-03973, Emergency Lighting (ELD) 8-hour Battery Pack Unit 100% Capacity Test Result - Monitoring / Trending PIP

LIST OF ACRONYMS AND ABBREVIATIONS

BTP	Branch Technical Position
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CMEB	Chemical Electrical Branch
CNS	Catawba Nuclear Station
DBD	Design Bases Document
DC	Direct Current
DSP	Dedicated Shutdown Procedure
ELU	Emergency Lighting Unit
FA	Fire Area
FHA	Fire Hazards Analysis
FPM	Fire Protection manual
FPP	Fire Protection Program
FZ	Fire Zone
HVAC	Heating, Ventilation, and Air Condition
IMC	Inspection Manual Chapter
IP	NRC Inspection Procedure
LER	Licensee Event Report
NUREG	an explanatory document published by the NRC
NCR	Nuclear Condition Report
NCV	Non Cited Violation
NFPA	National Fire Protection Association
NRC	United States Nuclear Regulatory Commission
OMA	Operator Manual Actions
P&IDs	Piping and Instrumentation Diagrams
PIP	Problem Identification Report
PORV	Power Operated Relief Valve
Rev	Revision
SCBA	Self-Contained Breathing Apparatus
SDP	Significance Determination Process
SER	Safety Evaluation Report
SLC	Selected Licensee Commitments
SSC	Systems, Structures and Components
SSD	Safe Shutdown
UFSAR	Updated Final Safety Analysis Report
WO	Work Order