



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

January 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
05000413/2009005, 05000414/2009005**

Dear Mr. Morris:

On December 31, 2009, 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 January 14, 2010, with you and other members of your staff.

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

This report documents one NRC-identified finding of very low safety significance (Green) which was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this violation as a non-cited violation (NCV) consistent with Section 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 United States Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at Catawba. In addition, if you disagree with the characterization of any finding 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. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

DEC

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

Sincerely,

/RA/

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

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

Enclosure: Integrated Inspection Report 05000413/2009005, 05000414/2009005
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

DEC

2

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

SUBJECT: CATAWBA NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000413/2009005, 05000414/2009005

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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.: 05000413/2009005 and 05000414/2009005

Licensee: Duke Energy Carolinas, LLC

Facility: Catawba Nuclear Station, Units 1 and 2

Location: York, SC 29745

Dates: October 1 through December 31, 2009

Inspectors: A. Hutto, Senior Resident Inspector
R. Cureton, Resident Inspector
P. Braxton, Reactor Inspector (Section 1R17)
F. Ehrhardt, Senior Operations Engineer (Section 1R11)
T. Fanelli, Construction Inspector Trainee (Section 1R17)
R. Fanner, Reactor Inspector (Section 1R17)
N. Karlovich, Construction Inspector Trainee (Section 1R17)
C. Kontz, Senior Project Engineer (Section 1R11)
M. Riches, Operations Engineer (Section 1R11)
R. Rodriguez, Senior Reactor Inspector (Section 1R17)
A. Sengupta, Reactor Inspector (Section 1R08)
S. Walker, Senior Reactor Inspector (Section 1R17)
R. Williams, Reactor Inspector (Section 1R08, 4OA5.4)

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

Enclosure

SUMMARY OF FINDINGS

IR 05000413/2009-005, 05000414/2009-005; 10/1/2009 - 12/31/2009; Catawba Nuclear Station, Units 1 and 2; Mitigating Systems

The report covered a three month period of inspection by the resident inspectors, two operations engineers, five reactor inspectors, a construction inspector, and a project engineer. One Green finding, which was determined to be a non-cited violation (NCV), was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The cross-cutting aspects were determined using IMC 0305, "Operating Reactor Assessment Program." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

Cornerstone: Mitigating Systems

- Green. A NRC-identified NCV of 10 CFR 50, Appendix B, Criterion III, was identified in that the installed emergency diesel generator (EDG) fuel oil storage tank vents did not meet the design basis of bending without crimping. The licensee completed corrective actions to install tornado missile protection to prevent crimping of the vents.

The licensee's failure to correctly translate the licensing basis into specifications for the vent piping was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone design control attribute and adversely impacted the cornerstone objective in that the vent piping could bend and completely crimp on impact of a tornado generated soft missile. A Phase 3 analysis was required because the finding involved the loss or degradation of equipment or function specifically designed to mitigate a severe weather initiating event. A qualitative assessment was performed to determine the risk significance because factors required for determining the risk were not easily quantifiable. Based on the qualitative assessment, the finding was determined to be of very low safety significance (Green). A cross-cutting aspect for this issue was not identified as it was determined to be a legacy design issue and not indicative of current licensee performance. (Section 4OA5.3)

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REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at approximately 100 percent Rated Thermal Power (RTP). On November 6, 2009, the unit was shutdown to commence refueling outage 1 End of Cycle (EOC) 18. The unit was restarted and reached 100 percent RTP on December 18, 2009, 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 Preparation: The inspectors reviewed the licensee's preparations for adverse weather associated with cold ambient temperatures. This included field walkdowns to assess the material condition and operation of freeze protection equipment (e.g., heat tracing, instrument box heaters, area space heaters, etc.), as well as other preparations made to protect plant equipment from freeze conditions. Safety and/or Risk significant systems reviewed included the standby shutdown facility, nuclear service water pump house, auxiliary building and the refueling water storage tanks. In addition, the inspectors conducted discussions with operations, engineering, and maintenance personnel responsible for implementing the licensee's cold weather protection program to assess the licensee's ability to identify and resolve deficient conditions associated with cold weather protection equipment prior to cold weather events. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

a. Inspection Scope

Partial Walkdowns: The inspectors performed partial system walkdowns during the two 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

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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 NS train while the 1B NS train was inoperable for planned maintenance
- B train of Controlled Area Chilled Water while protected for A train maintenance

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.

- Unit 2 Residual Heat Removal Pump Rooms, 522' Elevation
- Unit 2 Auxiliary Feedwater Pump Room, 543' Elevation
- Unit 2 Electrical Penetration Room, 577' Elevation
- Standby Shutdown Facility, 594' and 611' Elevations
- Unit 1 Electrical Penetration Room, 560' Elevation

Annual Inspection: As part of the annual fire brigade assessment, the inspectors evaluated the self-contained breathing apparatus (SCBA) program implemented by the licensee. The inspectors reviewed fire brigade training records, training lesson plans, maintenance procedures and observed storage conditions for the SCBAs relied upon for fire brigade use, to evaluate the adequacy of the licensee's program.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and flood analysis documentation and internal flood protection features associated with the

following internal plant area to determine the effect of flooding. Through observation and design review, the inspectors reviewed sealing of piping, sealing of room walls, testing of associated sump pump and discharge check valves, and potential flooding sources. Documents reviewed are listed in the Attachment.

- Unit 2 Auxiliary Feedwater System (CA) pump room

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection Activities

a. Inspection Scope

Piping Systems Inservice Inspection (ISI): The inspectors observed the following non-destructive examinations mandated by the American Society of Mechanical Engineers (ASME) Code Section XI to evaluate compliance with the ASME Code Section XI and Section V requirements and, if any indications and defects were detected, to evaluate if they were dispositioned in accordance with the ASME Code or an NRC-approved alternative requirement.

- Liquid Penetrant (PT) examination of Pressurizer 6" pipe to elbow weld, Class 1
- PT examination of Pressurizer 6" elbow to elbow weld, Class 1
- PT examination of Pressurizer 6" elbow to pipe weld, Class 1
- PT examination of Pressurizer 6" pipe to tee weld, Class 1
- Ultrasonic Testing (UT) examination of Pressurizer 6" pipe to elbow weld, Class 1
- UT examination of Pressurizer 6" elbow to elbow weld, Class 1
- UT examination of Pressurizer 6" elbow to pipe weld, Class 1
- UT examination of Pressurizer 6" pipe to tee weld, Class 1

The licensee did not identify any recordable indications during non-destructive surface and volumetric examinations performed since the previous refueling outage. Therefore, no NRC review was completed for this inspection procedure attribute.

The inspectors reviewed the following pressure boundary welds completed for risk-significant systems during the last Unit 1 refueling outage to evaluate if the licensee applied the pre-service non-destructive examinations and acceptance criteria required by the construction Code and the ASME Code Section XI. In addition, the inspectors reviewed the welding procedure specification and supporting weld procedure qualification records to evaluate if the weld procedure(s) were qualified in accordance with the requirements of Construction Code and the ASME Code Section IX.

- Weld #1NC 44-25, WO1722488 Replace Pressurizer Bypass Valve 1NC28, Class 1
- Weld #1NC 46-29, WO1722491 Replace Pressurizer Spray Valve 1NC29, Class 1

The inspectors reviewed the results of the visual examination for the bottom-mounted instrument penetrations to ensure examinations were being performed in accordance with the requirements of ASME Code Case N-722-1 and 10 CFR 50.55a(g)(6)(ii)(E).

Reactor Pressure Vessel Upper Head Penetration Inspection Activities: For the Unit 1 vessel head, a bare metal visual examination was required this outage pursuant to 10 CFR 50.55a(g)(6)(ii)(D). The inspectors reviewed records of the visual examination conducted on the Unit 1 reactor vessel head to evaluate if the activities were conducted in accordance with the requirements of ASME Code Case N-729-1 and 10 CFR 50.55a(g)(6)(ii)(D). The inspectors reviewed the following documentation and/or observed the following activities:

- Evaluated if the required visual examination scope/coverage was achieved and limitations (if applicable) were recorded in accordance with the licensee procedures.
- Evaluated if the licensee's criteria for visual examination quality and instructions for resolving interference and masking issues were adequate.

The licensee did not perform any welded repairs to vessel head penetrations since the beginning of the preceding outage for Unit 1. Therefore, no NRC review was completed for this inspection procedure attribute.

Boric Acid Corrosion Control: The inspectors performed an independent walkdown of portions of borated systems which recently received a licensee boric acid walkdown and evaluated if the licensee's boric acid corrosion control visual examinations emphasized locations where boric acid leaks could cause degradation of safety-significant components. The inspectors reviewed the following three licensee evaluations of reactor coolant system components with boric acid deposits to evaluate if degraded components were documented in the corrective action system. The inspectors also evaluated the corrective actions for any degraded reactor coolant system components against ASME Code Section XI and other licensee committed documents.

- Problem Investigation Process report (PIP) C-09-03192, 2NVFT5330 vent plug has an active leak
- PIP C-09-00123, Valve has active boron leak
- PIP C-09-04422, A slight packing leak detected on valve stem around packing gland for 2NMVA-431

The inspectors reviewed the following corrective actions related to evidence of boric acid leakage to evaluate if the corrective actions completed were consistent with the requirements of the ASME Code Section XI and 10 CFR Part 50, Appendix B, Criterion XVI.

- PIP C-09-06157, Multiple boron leaks discovered during performance of PT/1/A/4207/007 Leak Rate Determination for FW System
- PIP C-09-00390, Dried boron found during ISI VT-2 test
- PIP C-09-03325, Active Leak from valve 2NS-NV-0097

Steam Generator (SG) Tube Inspection Activities: For the Unit 1 SGs, no eddy current testing examinations were required pursuant to the Technical Specifications during the current refueling outage. However, the inspectors evaluated the licensee's review of the Degradation Assessment from the previous outage.

Identification and Resolution of Problems: The inspectors performed a review of ISI/SG related problems entered into the licensee's corrective action program and conducted interviews with licensee staff to determine if:

- the licensee had established an appropriate threshold for identifying ISI/SG related problems
- the licensee had performed a root cause (if applicable) and taken appropriate corrective actions
- the licensee had evaluated operating experience and industry generic issues related to ISI and pressure boundary integrity

The inspectors performed these reviews to evaluate compliance with 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

a. Inspection Scope

Quarterly Resident Review: The inspectors observed the following exercise to assess the performance of licensed operators during a license operator requalification simulator training session. The exercise included a dropped rod followed by an automatic make-up and pressurizer spray valve failures. The scenario progressed to a loss of condenser vacuum turbine trip/reactor trip and a loss of heat sink. 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.

- Active Simulator Exam ASE-25

Biennial Review: The inspectors reviewed documentation associated with the administration and implementation of that portion of the licensed operator requalification program related to implementation of the Unit 1 Emerson Ovation Distributed Control System (DCS) modification. The inspectors reviewed the methodology for incorporating the DCS modification in the facility licensee's requalification examinations, including both

written examinations and operating tests. The inspectors reviewed the extent to which differences/changes arising from the DCS modification were identified in training materials and the simulator as they were used in requalification training and examinations. The inspectors verified that operators received specific training on control system differences/changes. Each of the activities performed by the inspectors was done to assess the effectiveness of the facility licensee in implementing requalification requirements identified in 10 CFR Part 55, "Operators' Licenses." The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," and Inspection Procedure 71111.11, "Licensed Operator Requalification Program." Documentation reviewed included written examinations, Job Performance Measures, simulator scenarios, licensee procedures, operator feedback records, licensed operator qualification records, and remediation plans. The records were inspected using the criteria listed in Inspection Procedure 71111.11. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the sample 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). 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.

- Unit 1 Diesel Generator maintenance down days

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the following four activities to determine whether 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 appropriate use of the licensee's risk assessment tool and risk categories in accordance with Nuclear System Directive 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 the Complex Plan for 2A1 and 2A2 Component Cooling Water Pump (KC) and 2A Residual Heat Removal Work Activities
- 1EOC18 Outage Risk Assessment
- 1B Diesel Generator Maintenance Outage Equipment Protection Plan
- Unit 2 Nuclear Service Water (RN) to Engine Cooling Water Dig #7A Complex Activity Plan

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors evaluated the technical adequacy of the following six evaluations 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 for the six operability evaluations listed below. 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 its intended function. Documents reviewed are listed in the Attachment.

- PIP C-09-06025, Operator Aid Computer Point for Controlled Area Chilled Water (YC) Chiller B Condenser Fouling Factor is not valid based on changes made during YC Chiller Controls Upgrade
- PIP C-09-06261, 2B Diesel Generator Starting Air leak was discovered in the copper instrument tubing
- PIP C-09-06277, 1A RN Pump flow decrease to less than 4000 gpm minimum when Unit 2 KC trains were swapped
- PIP C-09-00324, Unit 2 Standby Makeup Pump did not meet surveillance acceptance criteria

- PIP C-09-07146, Equipment used for de-watering the RN pit is still hanging and the affect on operability is questioned
- PIP C-09-07728, Wrong nut material used in the reassembly of a mechanical joint on the 3" vent line connected to the reactor head

b. Findings

No findings of significance were identified.

1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed the licensee's implementation of a new digital distributed control system (DCS) to confirm that the licensee had appropriately considered the conditions under which changes to the facility, Updated Final Safety Analysis Report (UFSAR), or procedures may be made, and tests conducted, without prior NRC approval in accordance with 10 CFR 50.59. The inspectors verified the following. Documents reviewed are listed in the Attachment.

- The DCS modification did not affect the safety functions of important safety systems,
- The design bases, licensing bases, and performance capability of risk significant SSCs have not been degraded through the DCS modification,
- The DCS modification performed during increased risk-significant configurations do not place the plant in an unsafe condition,
- Procedures, and design and license basis documentation affected by the DCS modification have been adequately updated, appropriately reflect the design change, and are still consistent with design requirements,
- The engineering assurance program and the verification and validation process were implemented consistent with licensee documents and industry standards,
- The post-modification testing was adequate in scope and conclusions.

b. Findings

Introduction: The inspectors identified an unresolved item (URI) regarding the licensee's 10 CFR Part 50.59 evaluation for a new process DCS. Additional inspection would be required to determine if the licensee's 50.59 evaluation properly addressed whether the modification resulted in more than a minimal increase in the likelihood of occurrence of a malfunction of an SSC important to safety previously evaluated in the UFSAR.

Description: The licensee replaced their Westinghouse 7300 analog control system with a Westinghouse Ovation DCS. The licensee was committed to follow NEI 96.07 to complete the 10 CFR 50.59 evaluation. The licensee concluded that the systems described in ED 78871 and EC 78914 have design functions described in the UFSAR. The licensee further concluded that the new DCS had several inherent risks.

The inspectors questioned whether the licensee had adequately addressed some of the risks associated with the DCS upgrade. The inspectors identified a potential increase in risk of fault propagation in the DCS system from common mode fault mechanism triggers. Other potential risks not addressed by the licensee included complete DCS failure across all systems, inaccurate scaled data across all four system channels, and different combinations of systems and channels failing at the same time.

The inspectors concluded that additional inspection would be required to understand both if the licensee's 50.59 evaluation properly addressed whether the modification resulted in more than a minimal increase in the likelihood of occurrence of a malfunction of an SSC important to safety previously evaluated in the UFSAR and the potential impact to the plant. The inspectors did not identify an immediate safety concern because the safety system(s) required to safely shutdown the plant during an event were unaffected by the modification. This issue was identified as URI 05000413/2009005-01, Review of 50.59 Evaluation for the DCS Modification.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following three plant modifications 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.

Temporary Modifications

- EC-102019, Temporary Mod to Document Unit 1 Auxiliary Feedwater Condensate Storage Tank Isolation
- EC-102195, Temporary Mod to Lower Component Cooling Temperature to 75°F

Permanent Modifications

- EC-78871, Unit 2 7300 Ovation Control System installation

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed the seven 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.

- Functional Test of the 2B Motor Driven Auxiliary Feedwater pump following planned maintenance
- Functional Test of the 2A1 and 2A2 Component Cooling Pumps following planned maintenance
- Functional test of the 'D' Instrument Air Compressor following preventative maintenance
- Post Maintenance Test of the 1B Diesel Generator following outage maintenance
- Comprehensive Test of the 1A Centrifugal Charging Pump following shaft replacement
- Power Ascension Testing following the Unit 1 7300 system replacement
- Zero Power Physics Testing following 1EOC18

b. Findings

No findings of significance 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 refueling outage 1EOC18 were reviewed for conformance to applicable procedures and selected activities were observed.

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

b. Findings

No findings of significance were identified.

1R22 Surveillance Testinga. Inspection Scope

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

Surveillance Tests

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

Ice Condenser Surveillance

- MP/0/A/7150/006, Ice Condenser Lower Inlet Doors Inspection and Testing, As Found Section, Rev. 29
- MP/0/A/7150/006, Ice Condenser Lower Inlet Doors Inspection and Testing, As Left Section, Rev. 29

Inservice Testing

- PT/1/A/4200/010 D, Residual Heat Removal Pump 1A Comprehensive Test, Rev. 002

Containment Isolation Valve Surveillance

- PT/1/A/4200/001 I, As Found Containment Isolation Leak Rate Test, Enclosure 13.18 Penetration M327 As Found Type C Leak Rate Test, Rev. 13

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 October 8, 2009. The inspectors reviewed licensee activities that occurred in the Technical Support Center during a simulated event. The NRC's 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

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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. Documents reviewed are listed in the Attachment.

- Drill conducted on October 8, 2009

b. Findings

No findings of significance 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 five indicators during periods listed below. To determine the accuracy of the PI data reported during that period, the inspectors compared the licensee's basis in reporting each data element to the PI definitions and guidance contained in Nuclear Energy Institute 99-02, Regulatory Assessment Indicator Guideline. Documents reviewed are listed in the Attachment.

Cornerstone: Initiating Events

- Unplanned Scrams, Unit 1
- Unplanned Power Changes, Unit 1

Cornerstone: Mitigating Systems

- Safety System Functional Failures, Unit 1
- Safety System Functional Failures, Unit 2

Cornerstone: Barrier Integrity

- Reactor Coolant System Leakage, Unit 2

The inspectors reviewed the licensee's procedures and methods for compiling and reporting the Performance Indicators 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 October 1, 2008, through September 30, 2009. The inspectors also independently screened Technical Specification 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

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history of PIPs for systems affecting the Mitigating Systems Performance Indicators listed below 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.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Daily Screening of Corrective Action Reports

In accordance with IP 71152, Identification and Resolution of Problems, and in order to help identify repetitive equipment failures or specific human performance issues for followup, the inspectors performed daily screening of items entered into the licensee's corrective action program. This review was accomplished by reviewing copies of PIPs, attending daily screening meetings, and accessing the licensee's computerized database.

.2 Focused Review

a. Inspection Scope

The inspectors performed an in-depth review of the following two issues within the public radiation cornerstone entered into the licensee's corrective action program. 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.
- PIP C-09-3779, a shipping cask was sent off site without the required leak testing of the secondary lid and vent port being performed
- PIP C-09-6498, a waste gas release was secured due to a breach in the system

b. Findings and Observations

No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

As required by IP 71152, "Identification and Resolution of Problems," the inspectors performed a review of the licensee's Corrective Action Program (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 July 2009, through December 2009, 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 and Observations

No findings of significance were identified. In general, the licensee has identified trends and has appropriately addressed the trends within their CAP and no new trends were identified. A trend was identified in inspection report 05000413/414/2009-03 related to weaknesses in the implementation of the Foreign Material Exclusion (FME) program in areas containing safety-related systems and components. Implementation of the site FME program during 1EOC18 was observed to be improved over previous performance. FME controls were noted to be in place and in accordance with the licensee's procedures during containment entries and auxiliary building walk-downs. The residents will continue to focus on FME during the next semiannual trend review period.

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 Operation of an Independent Spent Fuel Storage Installation (ISFSI)

a. Inspection Scope

Under the guidance of IP 60855.1, the inspectors reviewed selected completed procedures for physical inspection and inventory of the ISFSI (PT/0/A/0750/015 A, Inventory of Fuel Special Nuclear Material, Enclosure 13.13, ISFSI Inventory) and completed CNEI-400s to verify that records have been established for all spent fuel in storage in the ISFSI, duplicate records are maintained by the licensee, and that an inventory has been conducted on all spent fuel stored in the ISFSI at least every 12 months. The inspectors reviewed the following selected screening evaluation performed pursuant to 10 CFR 72.48 for 2009. There were no 72.48 evaluations performed during this period, as all document changes screened as not needing a 72.48 evaluation.

- Revision 2 of PT/0/4600/031, NAC-UMS Cask Surveillance

b. Findings

No findings of significance were identified.

.3 (Closed) Unresolved Item (URI) 0500413, 414/2008006-02, Underground Fuel Oil Storage Tank Missile Vent Protection

a. Inspection Scope

In NRC Problem Identification and Resolution Inspection Report 05000413, 414/2008006, the inspectors identified a URI for the tornado missile protection for EDG fuel oil storage tank vents. The issue was unresolved pending review of the licensee's operability determination.

b. Findings

Introduction: A Green NRC-identified NCV of 10 CFR 50, Appendix B, Criterion III, was identified in that the installed EDG fuel oil storage tank vents did not meet the design basis of bending without crimping.

Description: During a walkdown of the Unit 1 and Unit 2 EDG system, the inspectors questioned if the EDG fuel oil storage tanks vent lines had adequate tornado missile protection. The inspectors reviewed the UFSAR which stated that the day tank vent and fuel oil storage tank vents and fill connections "...are protected from tornado missiles due to the construction of the vents using heavy gauge pipe, anchored in a concrete slab. Should a tornado missile strike the vent the pipe will bend without crimping, to relieve impact loads." The concern was crimping of the vent could result in loss of venting capability causing a vacuum in the EDG fuel oil storage tanks leading to a loss of

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fuel to the EDGs causing a loss of electrical power and eventual core damage. The inspectors also reviewed PIP M-08-04098, which evaluated operating experience from the McGuire Nuclear Station which stated piping on top of the diesel fuel fill pad was not protected against the effects of a tornado as specified in the UFSAR. The PIP was dispositioned as not applicable to Catawba; however, the licensee did not perform an evaluation of the installed configuration or a review of the design requirements for the vents to justify their disposition.

The inspectors requested the documented technical basis showing that the installed vent piping met the UFSAR description. The licensee completed an operability determination and concluded that soft missiles could cause complete crimping of the pipe such that the venting function was lost. Evaluations completed by the licensee also identified similar vulnerabilities existed on the EDG fuel oil fill lines, crankcase vent lines, and lube oil vent lines. The licensee's corrective actions were to install tornado missile protection on the vent lines.

Analysis: The inspectors determined the licensee's failure to correctly translate the licensing basis into specifications for the vent piping was a performance deficiency. The inspectors determined the finding was more than minor because it was associated with the Mitigating Systems cornerstone design control attribute and adversely impacted the cornerstone objective in that the licensee determined the vent could bend and completely crimp on impact of a tornado generated soft missile. The inspectors reviewed IMC 0609, Significance Determination Process, Attachment 4, and determined that a Phase 3 analysis was required because the finding involved the loss or degradation of equipment or function specifically designed to mitigate a severe weather initiating event.

A Significance Determination Process Phase 3 analysis was performed by the regional Senior Reactor Analyst. The frequency for a tornado striking a one square kilometer area was derived from National Weather Service data for the area and was determined to be about 2×10^{-5} . Using other factors, the likelihood of a tornado that could generate tornado soft missiles large enough to impact and damage pipes the thickness of the vents was determined to be about $5 \times 10^{-6}/\text{km}^2$. In addition, a calculation was performed to estimate the run time of the EDGs given a pipe crimped by tornado generated soft missiles.

A qualitative assessment was performed to determine the risk significance because the other factors required for determining the risk were not easily quantifiable. Additional margin to core damage was provided by:

- the reduction in initiating event frequency when the small size of the targets are considered
- the small chance that the tornado missiles would strike all four pipes such that all would be completely crimped preventing the tanks from venting
- the long run times of the EDG given the deficiency likely exceeding 24 hours

- the chance of discovery of the damage and mechanically opening alternate vent paths
- given the long run time and the cues available for discovery

The qualitative assessment determined that the finding was of very low safety significance (Green) because of the additional risk reduction provided by the above factors would reduce the risk impact to less than 1×10^{-6} . A cross-cutting aspect for this issue was not identified as it was determined to be a legacy design issue and not indicative of current licensee performance.

Enforcement: 10 CFR 50, Appendix B, Criterion III, required in part that measures be established to assure that the design basis for applicable structures, systems, and components were correctly translated into specifications. Catawba's Safety Evaluation Report, Rev. 0 (NUREG-0954) stated that the design basis for the EDG tank vents' protection from tornado generated missiles was that the vent piping would bend without crimping. Contrary to the above, from original installation until December 23, 2008, the design basis for the EDG tank vents was not correctly translated into specifications. The licensee determined that the piping used for the EDG tank vents would deform up to completely bending and crimping on impact from a tornado generated missile. Because the violation is of very low safety significance and has been entered into the licensee's CAP as PIP C-08-7140, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000413,414/2009005-02, Inadequate Underground Fuel Oil Storage Tank Vent Tornado Missile Protection.

.4 Reactor Coolant System Dissimilar Metal Butt Welds (Temporary Instruction (TI) 2515/172, Revision 1) Unit 1

a. Inspection Scope

Based on the schedule of dissimilar metal butt weld examinations under MRP-139, no examinations were required or performed for the current Unit 1 refueling outage. Additionally, the licensee had not made any changes to the MRP-139 inspection program since the NRC previously reviewed this program.

b. Observations

In accordance with requirements of TI 2515/172, Revision 0, the inspectors evaluated and answered the following questions:

(1) Implementation of the MRP-139 Baseline Inspections

1. Have the baseline inspections been performed or are they scheduled to be performed in accordance with MRP-139 guidance?

The licensee did not perform baseline volumetric inspection activities for the six dissimilar metal butt welds (DMBW) on the Pressurizer for Unit 1, required to be completed per MRP-139 Section 1.2, due to the rough surface condition of the welds. The licensee directly applied full structural weld overlays for the mitigation

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and conducted a phased array UT after the completion of the full structural weld overlays on all six Pressurizer DMBWs during the 2006 refueling outage. This was documented in NRC Inspection Report 05000413/2008003.

2. Is the licensee planning to take any deviations from the MRP-139 baseline inspection requirements of MRP-139? If so, what deviations are planned, what is the general basis for the deviation, and was the NEI-03-08 process for filing a deviation followed?

No, the licensee had not taken any deviations nor submitted any requests for deviations from MRP-139 requirements

(2) Volumetric Examinations

This portion of the TI was not inspected during the period of this report.

(3) Weld Overlays

This portion of the TI was not inspected during the period of this report.

(4) Mechanical Stress Improvement

There were no stress improvement activities performed or planned by this licensee to comply with their MRP-139 commitments.

(5) Application of Weld Cladding and Inlays

There were no weld cladding or inlay activities performed or planned by this licensee to comply with their MRP-139 commitments.

(6) Inservice Inspection Program

1. Has the licensee prepared an MRP-139 inservice inspection program? If not, briefly summarize the licensee's basis for not having a documented program and when the licensee plans to complete preparation of the program.

No. The licensee did not have a stand alone MRP-139 in-service inspection program document. However, the licensee's MRP-139 inservice inspection program was included in their ASME Section XI ISI Program and also attached as augmented inspections to the inservice inspection program. The inspectors reviewed the Catawba Third Interval ISI Plan. The licensee had revised the Third Interval ISI Plan to reflect the examination methods and frequencies for the MRP-139 ISI requirements.

2. In the MRP-139 inservice inspection program, are the welds appropriately categorized in accordance with MRP-139? If any welds are not appropriately categorized, briefly explain the discrepancies.

Yes. The welds were appropriately categorized by the licensee responsible engineer.

3. In the MRP-139 inservice inspection program, are the inservice inspection frequencies, which may differ between the first and second intervals after the MRP-139 baseline inspection, consistent with the inservice inspections frequencies called for by MRP-139?

Yes. The licensee inspection frequencies for welds in the MRP-139 ISI program were consistent with the requirements of MRP-139.

4. If any welds are categorized as H or I, briefly explain the licensee's basis of the categorization and the licensee's plans for addressing potential primary water stress corrosion cracking.

As previously reported in NRC Inspection Report 05000413/2008003, the licensee temporarily classified six DMBWs on the pressurizer nozzles as category H without performing the baseline volumetric examinations prior to applying based on the permission of Section 6.8 of the MRP-139. The six DMBWs on the pressurizer were reclassified as category C after the full structural weld overlays were applied. Therefore, no DMBWs are categorized as H or I.

5. If the licensee is planning to take deviations from the MRP-139 inservice inspection guidelines, what are the deviations and what are the general bases for the deviations? Was the NEI 03-08 process for filing deviations followed?

The licensee had not planned to take any deviations from MRP-139 requirements.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On January 14, 2010, the resident inspectors presented the inspection results to Mr. Jim Morris, Catawba Site Vice President, and other members of licensee management, who acknowledged the findings. The inspectors confirmed that any proprietary information provided or examined during the inspection period had been returned.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

T. Arlow, Emergency Planning Manager
D. Brenton, Operations Superintendent
T. Brooks, Licensed Operator Requalification Supervisor
W. Byers, Security Manager
J. Caldwell, Modifications Engineering Manager
D. Cantrell, Chemistry 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. Helton, Radiation Protection
T. Jackson, Regulatory Compliance
T. Jenkins, Maintenance Manager
K. Lyall, Engineering
J. McConnell, Shift Operations Manager
J. Morris, Catawba Site Vice President
C. Orton, Operations Training Manager
K. Phillips, Safety Assurance Manager
T. Ray, Engineering Manager
M. Sawicki, Regulatory Compliance Engineer
S. Tripi, Licensed Operator Initial Supervisor
D. Ward, Civil Engineering Supervisor
R. Weatherford, Training Manager

NRC personnel

A. Hutto, Senior Resident Inspector
J. Thompson, Project Manager, Office of Nuclear Reactor Regulation (NRR)

LIST OF ITEMS OPENED, CLOSED, AND REVIEWED

Opened

05000413/2009005-01	URI	Inadequate 50.59 Evaluation for the DCS Modification (Section 1R17)
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Opened and Closed

05000413,414/2009005-02	NCV	Inadequate Underground Fuel Oil Storage Tank Vent Tornado Missile Protection (Section 4OA5.3)
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Closed

05000413,414/2008006-02 URI Inadequate Underground Fuel Oil Storage Tank
Vent Tornado Missile Protection (Section
4OA5.3)

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

PT/0/B/4700/038, Cold Weather Protection, Rev. 29
IP/0/B/3560/008, Preventative Maintenance and Operational Check of Freeze Protection Heat
Trace and Instrument Box Heaters, Rev. 054
NSD 317, Freeze Protection Program, Rev. 3

Section 1R04: Equipment Alignment - Partial Walkdown

OP/0/A/6450/011, Control Room Ventilation/Chilled Water Systems, Enclosure 4.9 Valve
Checklist, Rev. 129
Drawings CN-1578-2.0-2.4, Flow Diagram of Control Area Chilled Water System, Rev. 11
Drawing CN-1563-1.0, Flow Diagram of Containment Spray System, Rev. 37

Section 1R05: Fire Protection

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, RHR Pump Rooms
Fire Strategy Area 12, Unit 2 Electrical Penetration Room
Fire Strategy Area 2, Unit 2 CA Pump Room and Motor Driven CA (2A, 2B) Pump Pits
Fire Strategy AX, Standby Shutdown Facility Elevation 611'
Fire Strategy AW, Standby Shutdown Facility Elevation 594'
Fire Strategy Area 6, Unit 1 Electrical Penetration Room
RA/0/1600/001, Controls for Respiratory Protection Equipment, Rev. 4
SCBA Monthly QA Reports, November 2009
SH/0/B/2003/001, Respiratory Protection, Rev. 2
Lesson Plan HS0113, Advanced Basic Respiratory Initial

Section 1R06: Flood Protection Measures

UFSAR Section 3.4.1, Flood Protection
UFSAR Section 3.6.1, Postulated Piping Failures in Fluid Systems Inside and Outside
Containment
AP/0/A/5500/030, Plant Flooding, Rev. 8
PT/2/A/4700/020, WL Sump Pump Check Valve In-service Test, Rev. 8

Section 1R08: Inservice Inspection Activities

Procedures
MP-0-A-7150-042-D, Rev 004, Reactor Vessel Head Penetration Visual Inspection
MP-0-A-7150-042-E, Rev 004, Reactor Vessel Bottom Head Visual Penetration Inspection
MP-0-A-7650-040, Rev 019, Inspection, Evaluation and Cleanup of Boric Acid on Plant
Materials

PT-1-A-4150-001H, Rev 014, Duke Energy Catawba Nuclear Station Inside Containment Boric Acid Check
 Engineering Support Document, Rev 008, Boric Acid Corrosion Program: Catawba Nuclear Station
 NDE-B, Rev 031, Training, Qualification and Certification of Nondestructive Examination Personnel
 NDE-10, Rev 024, General Radiography Procedure
 NDE-12, Rev 013, General Radiography Procedure for Preservice and Inservice Inspection
 NDE-35, Rev 022, Liquid Penetrant Examination
 NDE-68, Rev 002, VT-2, Visual Examination for Leakage and Boric Acid Corrosion Control
 NDE-640, Rev 005, Ultrasonic Examination Using Longitudinal Wave and Shear Wave, Straight Beam Techniques
 NSD-322, Rev 001, Boric Acid Corrosion Program
 PDI-UT-2, Rev C, PDI Generic Procedure for the Ultrasonic Examination of Austenitic Pipe Welds

Corrective Action Documents

C-06-7959, Documentation of the Unit 1 Reactor Vessel Head Bare Metal Visual Inspection Performed during 1EOC16
 C-08-02793, Valve 1NV-34 shows evidence of bonnet to body boron leakage
 C-08-05041, During a meeting with the ANII (Authorized Nuclear InService Inspector) on 8/20/08, engineering was informed that Catawba did not meet the requirements of the ASME XI Code. The specific issue was related to the pressure testing of a recent 2" half coupling repair to the RN piping after a wood plug to isolate thru wall leakage was left in place
 C-09-00123, Valve has active boron leak
 C-09-00390, Dried boron found during ISI VT-2 test
 C-09-03192, 2NVFT5330 vent plug has an active leak
 C-09-04422, A slight packing leak detected on valve stem around packing gland for 2NMVA-431
 C-09-06157, Multiple boron leaks discovered during performance of PT/1/A/4207/007 Leak Rate Determination for FW System
 C-09-07089, Documentation for not inspecting the steam generators during EOC18 as required by the Steam Generator Management Program Manual section 2.6.4
 C-09-07212, Existing 8" schedule 10, P-8 welds do not have complete penetration
 G-09-01232, Procedure clarification needed for liquid penetrant procedure NDE-35

Other

CISI-1462.10-0030 – 1EOC17-RPT, Catawba Nuclear Station – Unit 1 EOC17 Inservice Inspection Report
 CISI-1462.10-0030 – GEN REQ, Rev 1, Third Interval Inservice Inspection Plan Catawba Nuclear Station Units 1 and 2 General Requirements Revision 1
 CISI-1462.10-0030 – UNIT 1, Rev 1, Catawba Nuclear Station Unit 1 – Third Inspection Interval Inservice Inspection NDE Plan Revision 1
 CNC-1201.01-00-0055-001, 1EOC16 Reactor Pressure Vessel Inspection Report
 Engineering Support Document, Boric Acid Corrosion Program, Rev 8
 Nuclear Services Directive 322, Rev 1, Boric Acid Corrosion Program
 Work Order Package #1722488 Replace Pressurizer Bypass Valve 1NC28
 Work Order Package #1722491 Replace Pressurizer Spray Valve 1NC29
 Work Order Package #1860939

Krautkramer Transducer Certificate of Conformity serial numbers: 01VT85, 01VT81
 UT Calibration Report Nos. CAL-09-254, CAL-09-255, CAL-09-256
 Ultrasonic Instrument Linearity Report Nos. L-09-059, L-09-063
 Certified Test Report SII006-07-03-06491-2
 Certificate of Compliance for PO# 00084269, 00094465REV1, 00084269, 00101943
 Magnaflux Certificate of Conformity for Batch Nos. 05J06K, 07J09K, 03E04K, 03H10K

Section 1R11: Licensed Operator Requalification Program

Records

LORP Training Attendance records (4)
 Remedial Training Records (3)
 Remedial Training Examinations (3)
 Shift Training Week Summary - Segments 7 (all), 8 (all), and 9 (shifts C, E)

Written Examinations

LOR0909ER, LOR E Shift 09 Segment 8 RO
 LOR0908BR, LOR B Shift 09 Segment 8 RO

Scenario Examination Packages

OP-CN-ASE-25, Active Simulator Exam
 OP-CN-ASE-34, Active Simulator Exam

Procedures

OP-CN-TAD, Training Need and Task Analysis and Design, Rev. 03
 Operations Management Procedure (OMP) 2-51, Control of Restricted Licenses, Rev.000

Simulator Problem Reports & Design Change Requests

List of Simulator Discrepancy Reports for DCS, 8/09 – 12/09
 List of Simulator Work Requests for DCS, 8/09 – 12/09
 List of DCS Field Change Notices, 12/09

Lesson Plans

OP-CN-EI-44, DCS System Change Overview Training
 OP-CN-IC-IRX/DCSU1, Reactor Control System (IRX), Rev. 3
 OP-CN-CF-IFE(DCS)U1, SGWL & Feed Pump Speed Control, Rev. 1
 OP-CN-STM-IDE(DCS), STM Dump Control, Rev. 3
 OP-CN-PS-NV, Chemical and Volume Control System, Rev. 02

Simulator Guides

OP-CN-LOP-S-DCS, DCS Overview, Rev. 02
 OP-CN-LOP-S-DCS2, DCS Overview 2, Rev. 02
 OP-CN-LOP-S-03, Simulator Exercise Guide, Rev. 11
 OP-CN-LOP-S-18, Simulator Exercise Guide, Rev. 11
 OP-CN-LOP-S-25, Simulator Exercise Guide, Rev. 10
 OP-CN-LOP-S-28, Simulator Exercise Guide, Rev. 07
 OP-CN-LOP-S-39, Simulator Exercise Guide, Rev. 39
 OP-CN-LOR-S DCS, Simulator Exercise Guide (DCS), Rev. 02
 OP-CN-EI-55, DCS Control(s) Manipulation, Rev. 0

OP-CN-EI-55, DCS Control(s) Manipulation, Rev. 1
 OP-CN-SFAM-NV (DCS), NV System Familiarization, Rev. 0

PIPs

C-09-06166, DCS Training
 C-09-07482, Physical Barriers for DCS Workstations

Other

EC78871/CD100607, 7300 Process Control System Replacement Project, Rev. 1
 Training Request 090PS06, Comprehensive DCS Needs Analysis
 OP-CN-TAD, Rev. 3, Att. 7.1, Training Needs Analysis for DCS Control System Replacement
 OP-CN-TAD, Rev. 3, Att. 7.3, Enabling Objective Development Worksheets (various)
 DCS Electronic Parking Lot Database 11/8/09
 DCS Electronic Parking Lot Database 12/15/09
 Call-In Database - DCS Open Items 12/15/09

Section 1R12: Maintenance Effectiveness

Emergency Diesel Generator Health Report – 2009Q2
 EDG Super System Maintenance Rule Summary Report
 PIP C-09-7800, 1B EDG was operated for an extra hour
 PIP C-09-7099, Minor spalling damage on 1B fuel pump cam lobe
 PIP C-09-7081, Diesel output breaker closed unsuccessfully

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

SOMP 02-02 Operations Roles in Risk Management, Rev 007
 Complex Activity Plan for 2A1 and 2A2 KC Pump and 2A Residual Heat Removal Work Activities
 Complex Activity Plan for RN to KD Dig 7A
 Hazard Barrier Control Form for RN to KD Dig 7A Contingency Actions
 1EOC18 Independent Review Team Outage Risk Assessment

Section 1R15: Operability Evaluations

PT/0/A/4450/008 E, Control Room Area Chillers Performance Test, Rev. 076
 Catawba Technical Specification 3.7.11, Control Room Area Chilled Water System
 Catawba Technical Specification 3.8.3, Diesel Fuel Oil, Lube Oil, and Starting Air
 Catawba Technical Specification 3.7.8, Nuclear Service Water System
 SLC 16.7-9, Standby Shutdown System
 CNS-1574.RN-00-0001, Design Basis Specification for the Nuclear Service Water System (RN), Rev. 52
 CN-1492-RN-.00-008, Auxiliary Building Pumphouse Nuclear Service Water, Pipe Isometric, Rev. 9

Section 1R17: Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

Modification Documents

EC 78871/CD100607, 7300 Process Control System Replacement Project, Rev. 1
 EC 78871/CD100607, CNS DCS EDM Appendix U Verification Matrix
 EC 78871 001 EC 78914 DCS FSD Rev. 1 Catawba Unit 1 Final Scope Document

Procedures

EDM-105, Guidelines for Performing a Failure Modes and Effects Analysis and Single Failure Analysis, Rev. 0
 EDM 601, Appendix U – Verification Matrix
 OP-CN-STM-IDE, Steam Dump Control (IDE) Lesson Plan, Rev. 25

Calculations

CNC-1399.03-00-0027, FMEA of the IXE Network Infrastructure and DCS Balance of Scope, Rev. 0
 CNM 1201.00-0039 001, Precautions, Limitations and Setpoints for Nuclear Steam Supply Systems
 CDSS-0806-EI-0001, CNS EIA (DCS) System and IDE Control Infrastructure (DSS), Rev. 0
 CNS-1399.03-00-0001, NSSS Control System Upgrade, Rev. 2
 CNS1_POST_FAT_07_03_08, Rev 1
 CDSS-0806-EIA-0001 Appendix C, CNS DCS Requirements Traceability Matrix - All Records

Design Documents

Updated Finals Safety Analysis Report
 CNS-1591.CF-00-00001, Design Basis Specification for Feedwater System (CF), Rev. 25
 CNS-1592.CA-00-00001, Design Basis Specification for Auxiliary Feedwater System, Rev. 37
 CNS-1561.ND-00-0001, Design Basis Specification for the Residual Heat Removal (ND) System, Rev. 29

Drawings

CNM-1399.03-06060-001-Process Control System Architecture
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Section 1R18: Plant Modifications

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Section 1EP6: Drill Evaluation

Scenario Guide for Emergency Response Organization (ERO) Drill 09-09

Emergency Response Organization (ERO) Drill 09-05 Critique package

Catawba ERO Drill 09-05 Emergency Notification Forms

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: 854.03-2, RCS Identified Leak Rate

Section 4OA2: Identification and Resolution of Problems

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SH/0/B/2004/002, Preparation and Shipment of Radioactive Waste, Rev. 7

Section 4OA5: Other Activities

PT/0/A/4550/015A, Inventory of Special Nuclear Material, Rev. 9

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LIST OF ACRONYMS USED

ASME	- American Society of Mechanical Engineers
CA	- Auxiliary Feedwater System
CAP	- Corrective Action Program
CFR	- Code of Federal Regulations
DCS	- Distributed Control System
DMBW	- Dissimilar Metal Butt Welds
EDG	- Emergency Diesel Generator
EOC	- End of Cycle
ISFSI	- Independent Spent Fuel Storage Installation
ISI	- Inservice Inspection
KC	- Component Cooling Water
NCV	- Non-Cited Violation
NRC	- Nuclear Regulatory Commission
NSD	- Nuclear System Directive
PI	- Performance Indicator
PIP	- Problem Investigation Process report
PT	- Liquid Penetrant
RN	- Nuclear Service Water
RTP	- Rated Thermal Power
SCBA	- Self-Contained Breathing Apparatus
SG	- Steam Generator
SSC	- Structures, Systems, and Components
TI	- Temporary Instruction
TS	- Technical Specifications
UFSAR	- Updated Final Safety Analysis Report
URI	- Unresolved Item
UT	- Ultrasonic Testing
YC	- Controlled Area Chilled Water