



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

May 6, 2011

Mr. Regis T. Repko
Vice President
Duke Energy Carolinas, LLC
McGuire Nuclear Station
MG01VP/12700 Hagers Ferry Road
Huntersville, NC 28078

**SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000369/2011002 AND 05000370/2011002**

Dear Mr. Repko:

On March 31, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your McGuire Nuclear Station Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on April 4, 2011, with Steven Capps and other members of your staff.

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

This report documents one self-revealing finding of very low safety significance (Green), which was determined to involve a violation of regulatory requirements, and two NRC-identified Severity Level IV violations. Additionally, two licensee-identified violations, which were determined to be of very low safety significance, are listed in this report. However, because of the very low safety significance and because they were entered into your corrective action program, the NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any of these NCVs, you should provide a written response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at McGuire. 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 McGuire. 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.: 50-369, 50-370
License Nos.: NPF-9, NPF-17

Enclosure: NRC Integrated Inspection Report 05000369/2011002 and 05000370/2011002
w/Attachment - Supplemental Information

cc w/encl: (See page 3)

DEC

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cc w/encl: (See page 3)

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DEC

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Letter to Regis T. Repko from Jonathan H. Bartley May 6, 2011

SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000369/2011002 AND 05000370/2011002

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-369, 50-370

License Nos.: NPF-9, NPF-17

Report Nos.: 05000369/2011002, 05000370/2011002

Licensee: Duke Energy Carolinas, LLC

Facility: McGuire Nuclear Station, Units 1 and 2

Location: Huntersville, NC 28078

Dates: January 1, 2011, through March 31, 2011

Inspectors: J. Brady, Senior Resident Inspector
J. Heath, Resident Inspector
E. Stamm, Project Engineer (Sections 4OA1, 4OA2, 4OA3)
A. Vargas, Reactor Inspector (Section 1R08)

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

Enclosure

SUMMARY OF FINDINGS

IR05000369/2011-002, IR05000370/2011-002; 1/1/2011 – 3/31/2011; McGuire Nuclear Station, Licensed Operator Requalification Program, Follow-up of Events and Notices of Enforcement Discretion

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

Cornerstone: Mitigating Systems

- SL-IV: An NRC-identified SL-IV non-cited violation (NCV) of 10 CFR 50.71(e) was identified when the licensee did not update the Updated Final Safety Analysis Report (UFSAR) to reflect their response to Generic Letter (GL) 91-13, Essential Service Water System Failures at Multi-Unit Sites, which described capabilities in existing procedures for cross-connecting nuclear service water (RN) between units. Licensee corrective actions include submitting a license amendment and updating the UFSAR following amendment approval.

This performance deficiency (PD) was considered as traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. This PD was determined to be a SL-IV violation using Section 6.1 of the NRC Enforcement Policy because it did not result in a condition evaluated as having low-to-moderate or greater safety significance (i.e., White, Yellow, or Red). Cross-cutting aspects are not assigned to traditional enforcement violations. (Section 1R11.1)

- SL-IV: An NRC-identified SL-IV NCV of 10 CFR 50.59 was identified for making changes to the UFSAR, section 9.2, and Abnormal Procedure AP-20, Loss of RN, which required prior NRC approval. The changes allowed donating a train of nuclear service water to the unit experiencing a loss of service water (LOSW) event by opening the unit crossover valves. Licensee corrective actions include removing the steps from AP-20, submitting a license amendment request, and updating the UFSAR following amendment approval.

This PD was considered as traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. This PD was determined to be a SL-IV violation in accordance with Section 6.1 of the NRC Enforcement Policy because it did not result in a condition evaluated as having low-to-moderate or greater safety significance (i.e., White, Yellow, or Red). Cross-cutting aspects are not assigned to traditional enforcement violations. (Section 1R11.2)

Enclosure

- Green: A self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for the licensee's failure to correct a condition adverse to quality. The licensee had previously identified that the fish population in the Standby Nuclear Service Water Pond (SNSWP) had significantly increased but failed to perform the annual fish eradication of the SNSWP to prevent macro-fouling of the RN pump suction strainers. This resulted in the licensee declaring both trains of RN inoperable and entry into TS 3.0.3 for both units. Licensee corrective actions included chemically treating the SNSWP to eliminate the macro-fouling source, flushing the RN intake lines, and establishing a periodic chemical treatment of the SNSWP.

This PD was more than minor because it was associated with the equipment performance attribute and adversely impacted the Mitigating Systems cornerstone objective of ensuring the availability, reliability, and capability of the RN system to provide long term decay heat removal because the macro-fouling of the suction strainers rendered the RN pumps inoperable. This finding was evaluated using IMC 0609, Significance Determination Process, with an exposure time of greater than 30 days. A Phase 3 SDP analysis was required to be performed and determined the resultant core damage frequency (CDF) was $<1E-6$ (Green). This finding was determined to be directly related to the conservative assumptions aspect of the Decision Making component in the Human Performance cross-cutting area because the licensee's decisions to defer the macro-fouling treatment of the SNSWP were non-conservative [H.1(b)]. (Section 4OA3.3)

Violations of very low safety significance that were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at approximately 100 percent rated thermal power (RTP). Unit 1 shut down as required by Technical Specifications (TS) when both trains of RN were declared inoperable on January 20. The unit was returned to 100 percent RTP on January 24 and remained there for the rest of the period.

Unit 2 began the inspection period at approximately 100 percent RTP. Unit 2 shut down as required by TS when both trains of RN were declared inoperable on January 20. The unit was returned to 100 percent RTP on January 25. The unit was shut down for a refueling outage on February 26 and remained there for the rest of the period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

a. Inspection Scope

Partial Walkdowns: The inspectors performed a partial walkdown of the following eight systems to assess the operability of redundant or diverse trains and components when safety equipment was inoperable. The inspectors focused on discrepancies that could impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, walked down control systems components, and determined whether selected breakers, valves, and support equipment were in the correct position to support system operation. Documents reviewed are listed in the Attachment.

- 2A Diesel Generator (DG) while 2B DG was out of service for planned maintenance on January 18
- Unit 1 Turbine-driven Auxiliary Feedwater (TDAFW) pump as part of Mode 3 protective strategy on January 21
- Unit 2 TDAFW pump as part of Mode 3 protective strategy on January 21
- 1A RN pump when 1B RN pump was declared inoperable due to pinhole-leak on 1RN-879 discharge check bypass line on January 23
- 2A Residual Heat Removal (RHR) pump while Unit 2 was in Lowered Inventory on March 2
- 2B RHR pump while Unit 2 was in Lowered Inventory on March 2
- 2A DG while Unit 2 was in Lowered Inventory on March 3
- 2B DG while Unit 2 was in Lowered Inventory on March 3

Enclosure

b. Findings

No findings were identified.

1R05 Fire Protectiona. Inspection Scope

Fire Protection Walkdowns: The inspectors walked down accessible portions of the following five plant areas to determine if they were consistent with the UFSAR and the fire protection program for defense in depth features. The features assessed included the licensee's control of transient combustible material and ignition sources, fire detection and suppression capabilities, firefighting equipment, and passive fire features such as fire barriers. The inspectors also reviewed the licensee's compensatory measures for fire deficiencies to determine if they were commensurate with the significance of the deficiency. The inspectors reviewed the fire plans for the areas selected to determine if it was consistent with the fire protection program and presented an adequate fire fighting strategy. Documents reviewed are listed in the Attachment.

- Unit 2 annulus (fire area 33 part I)
- Unit 2 reactor building pipe corridor (fire area 33 part II)
- Unit 2 reactor building lower containment (fire area 33 part III)
- Unit 1 interior doghouse (fire area 28)
- Unit 1 exterior doghouse (fire area 30)

b. Findings

No findings were identified.

1R07 Heat Sink Performancea. Inspection Scope

Annual Resident Inspection: The inspectors selected the 2B component cooling heat exchanger based on its risk significance and observed the inspections and/or performance tests or reviewed the results to determine if the heat exchangers were ready and available to perform their intended functions as described in the UFSAR. The inspectors evaluated if the frequency of inspection was sufficient to detect degradation prior to loss of heat removal capabilities below design requirements; that the inspection results were appropriately categorized against pre-established engineering acceptance criteria including the impact of tubes plugged on the heat exchanger performance; that the licensee had developed adequate acceptance criteria for bio-fouling controls; and that the heat exchanger was properly reassembled with regard to end-bell orientation. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R08 Inservice Inspection (ISI) Activities

a. Inspection Scope

Non-Destructive Examination (NDE) Activities and Welding Activities: The inspectors reviewed the implementation of the licensee's ISI program for monitoring degradation of the reactor coolant system (RCS) boundary and risk significant piping boundaries. The inspectors reviewed the following records of non-destructive examinations mandated by the ASME Code, Section XI to evaluate compliance with the Code requirements. The licensee did not identify any relevant indications that required evaluation for continued service since the last Unit 2 outage. The inspectors reviewed examination procedures, NDE reports, equipment and consumables certification records, personnel qualification records, and calibration reports (as applicable) for the following examinations.

Magnetic Particle Testing (MT)

- Component Cooling Water End Bell Hinge Weld

Bare Metal Visual (BMV)

- Reactor Vessel Head
- Reactor Vessel Control Rod Drive Mechanism (CRDM)

Liquid Penetrant Testing (PT)

- Residual Heat Removal Rigid Restraint
- Residual Heat Removal Mechanical Snubber
- Reactor Vessel Head CRDM Adapter to Housing Body

Ultrasonic Testing (UT)

- Steam Generator D Inlet Nozzle to Head Weld
- Steam Generator D Outlet Nozzle to Head Weld
- Pressurizer Head to Shell Weld
- Chemical and Volume Control Pipe Weld

The inspectors reviewed the welding activities listed below in order to evaluate compliance with procedures and the ASME Code. The inspectors reviewed work orders, repair and replacement plans, weld data sheets, welding procedures, procedure qualification records, welder qualification records, and NDE reports.

- Work Order #1851891: ASME Class 1 Safety Injection Kerotest Valve 2NI169, Replacement Welds NI2FW57-1 and NI2FW52-16
- Work Order #1837939: ASME Class 2 Reactor Coolant System Valve, Replacement Welds NC2FW17-12 and NC2FW17-13

PWR Vessel Upper Head Penetration (VUHP) Inspection Activities: A BMV examination of the Unit 2 reactor VUHP was required pursuant to 10 CFR 50.55a(g)(6)(ii)(D). The inspectors reviewed records of the visual examination to determine 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 confirmed that:

- the required visual examination scope/coverage was achieved and limitations (if applicable) were recorded in accordance with the licensee procedures
- the licensee criteria for visual examination quality and instructions for resolving interference and masking issues were adequate
- if indications of potential through-wall leakage were identified, the licensee entered the condition into the corrective action system and implemented appropriate corrective actions

The licensee did not identify any indications that required weld repair during the visual examination. Therefore, no NRC review was completed for this inspection procedure attribute.

Boric Acid Corrosion Control (BACC) Inspection Activities: The inspectors performed an independent walkdown of the Unit 2 containment, which had received a recent licensee boric acid walkdown and determined whether the licensee's BACC visual examinations emphasized locations where boric acid leaks can cause degradation of safety significant components. The inspectors reviewed the licensee the following Problem Investigation Program reports (PIPs) of reactor coolant system components with boric acid deposits to determine if degraded components were documented in the corrective action system.

- M-10-07904, 1-NV-VA-0170 Boron/Leakage at Manual Relief Valve Handle Connection to Valve
- M-10-07704, 2-KF-VA-0024 Excessive Dry Boron in Body Bonnet Gap
- M-11-00070, 2-FW-PU-0003 Excessive Boron on Drain Line Connection to Pump Housing
- M-11-00407, Minor Dry Boron on Tubing fitting on upstream side of valve

The inspectors reviewed the following PIPs related to evidence of boric acid leakage to determine 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.

- M-11-00798, Dried boron on floor below 1 NM-812 and 2 NM-812 (outlets to both Unit 1 and Unit 2 EMF)
- M-11-00657, Excessive boron at bottom left and right "T" fittings
- M-11-00208, 1-NV-LT-5740 dry boron at tubing fitting on top of remote bellows

Steam Generator (SG) Tube Inspection Activities: No SG eddy current testing or secondary side visual exams were scheduled for this outage. The inspectors reviewed the licensee's Degradation Assessment and Technical Review and Justification for Not Performing Primary or Secondary Inspections of the Steam Generators in Unit 2 Outage,

Revision 0, for compliance with the TS and Nuclear Energy Institute (NEI) 97-06, Steam Generator Program Guidelines.

Identification and Resolution of Problems: To evaluate compliance with 10 CFR 50, Appendix B, Criterion XVI, Corrective Action requirements the inspectors performed a review of ISI/SG related problems entered into the licensee's corrective action program (CAP) 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

Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program

a. Inspection Scope

On February 10, 2011, the inspectors observed operators in the plant's simulator during a licensed operator regualification training exercise for loss of RHR to determine the effectiveness of training required by 10 CFR 55.59 and the adequacy of operator performance. The inspectors focused on clarity and formality of communication, use of procedures, alarm response, control board manipulations, group dynamics, and supervisory oversight. The inspectors observed the post-exercise critique to determine if the licensee identified deficiencies and discrepancies that occurred during the simulator training. The inspectors also reviewed the two following PIPs to determine if the licensee identified and implemented appropriate corrective actions. Documents reviewed are listed in the Attachment.

- M-07-6207 - Associated with NCV 2008002-01: Failure to establish and maintain abnormal procedures for loss of Nuclear Service Water
- M-09-1381 - Associated with NCV 2009002-01: Failure to correct a condition adverse to quality associated with abnormal procedures for loss of Nuclear Service Water

b. Findings

- .1 Introduction: An NRC-identified SL-IV NCV of 10 CFR 50.71(e) was identified when the licensee did not update the UFSAR to reflect their response to GL 91-13, Essential

Service Water System Failures at Multi-Unit Sites, which described capabilities in existing procedures for cross-connecting RN between units.

Description: The inspectors reviewed the corrective actions associated with PIP M-07-6207 for NCV 2008002-01, which included the licensee's February 27, 1992, response to GL 91-13. The licensee's response described actions including aligning the RN unit crossover valves to allow RN from one unit to be provided to the other unit during a LOSW event. These sharing capabilities were not described in the UFSAR. TS 3.7.7 for RN specifically identified that these unit crossover valves were not shared between the units. Consequently, the opening of these valves for a LOSW event constituted a new licensing basis and was required under 10 CFR 50.71(e) to be included in the next UFSAR update. As part of the licensee's process for UFSAR updates, a 10 CFR 50.59 evaluation was required. However, because the 10 CFR 50.59 evaluation was not performed, the licensee did not identify that an NRC-approved license amendment (TS change) was required prior to implementation. Region II Task Interface Agreement (TIA) 2009-11, McGuire Nuclear Station Service Water System Unit Crossties Relative to Sharing/Donating in Abnormal Procedures (ML1104900600), identified that the activity described in the GL 91-13 response should have received a license amendment. Licensee corrective actions included submitting a license amendment and updating the UFSAR following amendment approval.

Analysis: The failure to update the UFSAR as required by 10 CFR 50.71(e) for the licensee's response to GL 91-13 was a PD. This PD was considered as traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. This PD was determined to be a SL-IV violation using Section 6.1 of the NRC Enforcement Policy because it did not result in a condition evaluated as having low-to-moderate or greater safety significance (i.e., White, Yellow, or Red). Cross-cutting aspects are not assigned to traditional enforcement violations.

Enforcement: 10 CFR 50.71(e) required, in part, that licensees shall periodically update the Final Safety Analysis Report originally submitted as part of the application for the license, to assure that the information included in the report contains the latest information developed. This submittal shall contain all the changes necessary to reflect information and analyses submitted to the Commission by the licensee since the submittal of the last update to the UFSAR. Contrary to the above, from February 27, 1992, to June 16, 2009, the licensee did not update the UFSAR to include the information submitted in response to GL 91-13 pertaining to the cross-connecting of RN between units. Because this violation was determined to be a SL-IV violation and is in the licensee's CAP as PIP M-11-1802, it is being treated as an NCV in accordance with Section 2.3.2 of the NRC Enforcement Policy and is identified as NCV 05000369,370/2011002-01, Failure to update the UFSAR for GL 91-13.

- .2 Introduction: An NRC-identified SL-IV NCV of 10 CFR 50.59 was identified for making changes to the UFSAR, section 9.2, and Abnormal Procedure AP-20, Loss of RN, which required prior NRC approval. The changes allowed donating a train of RN to the unit experiencing a LOSW event by opening the unit crossover valves.

Description: The inspectors found that the licensee made changes to the UFSAR and AP-20 to allow donating one train of RN to the unit that was experiencing a LOSW event. This donation was accomplished by opening the unit crossover valves which were specified as locked closed on drawings and in operating procedure system lineup sheets and identified in the TS bases as components that were not shared between units. The provisions specified for the donating unit were that both trains must be operable prior to declaring the donated train inoperable and opening the unit crossover valves placing the donating unit in TS LCO 3.7.7, Condition A.

The inspectors reviewed the licensee's June 16, 2009, 10 CFR 50.59 evaluation associated with this change and found that the licensee concluded that a license amendment (TS change) was not required. The inspectors reviewed TS 3.0.2 and its bases. The TS bases stated "...intentional entry into Actions should not be made for operational convenience." Examples of acceptable intentional entry included surveillances, preventive maintenance, corrective maintenance, modifications, or investigation of operational problems. The bases also stated that unacceptable reasons for intentionally relying on TS Actions were those done for operational convenience which included entering TS Actions by removing a system or component from service intentionally if it is done in a manner that compromises safety. Opening of the RN cross-connect valves would place both units in a plant configuration that was not previously analyzed which could compromise safety. Therefore, voluntary entry into TS LCO 3.7.7, Condition A, for the purpose of donating one train of RN to the unit experiencing a LOSW was prohibited by TS 3.0.2. This issue was the subject of Region II TIA 2009-11. The NRC concluded that donating one train of RN from one unit to the other unit in an LOSW event, as specified in the change, was outside the licensing basis as described in the UFSAR. Consequently, the licensee should have submitted a license amendment (TS change) for this change. Licensee corrective actions include removing the steps from AP-20, submitting a license amendment request, and updating the UFSAR following license amendment approval.

Analysis: The failure to obtain a license amendment prior to implementing a change to the abnormal procedures and the UFSAR to allow sharing of RN between units during a LOSW event was a PD. This PD was considered as traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. This PD was determined to be a SL-IV violation in accordance with Section 6.1 of the NRC Enforcement Policy because it did not result in a condition evaluated as having low-to-moderate or greater safety significance (i.e., White, Yellow, or Red). Cross-cutting aspects are not assigned to traditional enforcement violations.

Enforcement: 10 CFR 50.59(c)(1) stated, in part, that a licensee may make changes in the procedures as described in the Final Safety Analysis Report (as updated) without obtaining a license amendment pursuant to 10 CFR 50.90 only if the change does not require a change to the TSs and does not meet any of the criteria in 10 CFR 50.59(c)(2). Contrary to the above, on June 16, 2009, the licensee made changes to procedures described in the UFSAR that required a change to the TSs. The licensee changed UFSAR, section 9.2, and AP-20, Loss of RN, to allow one train of RN to be donated from one unit to the unit that was experiencing a LOSW event without obtaining a license amendment (TS change). Because this violation was determined to be a SL-IV violation

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and was placed in the CAP as PIP M-11-1802, it is being treated as an NCV in accordance with Section 2.3.2 of the NRC Enforcement Policy and is identified as NCV 05000369, 370/2011002-02, Failure to Obtain a License Amendment for RN Sharing Between Units.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the two activities listed below for items such as: (1) appropriate work practices; (2) identifying and addressing common cause failures; (3) scoping in accordance with 10 CFR 50.65(b) of the Maintenance Rule; (4) characterizing reliability issues for performance; (5) charging unavailability for performance; (6) balancing reliability and unavailability; (7) trending key parameters for condition monitoring; (8) classification and reclassification in accordance with 10 CFR 50.65(a)(1) or (a)(2); and (9) appropriateness of performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified as (a)(1). For each item selected, the inspectors performed a detailed review of the problem history and surrounding circumstances, evaluated the extent of condition reviews as required, and reviewed the generic implications of the equipment and/or work practice problem. Documents reviewed are listed in the Attachment.

- Feed breaker EVDB-3E to Vital Inverter 1EVIB tripped unexpectedly resulting in loss of power to CH 2 Vital I&C Power Panelboard 1EKVB
- Operating Experience Smart Sample 2010-01: Recent Inspection Experience for Components Installed Beyond Vendor Recommended Service Life

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's risk assessments and the risk management actions used to manage risk for the plant configurations associated with the five activities listed below. The inspectors assessed whether the licensee performed adequate risk assessments, and implemented appropriate risk management actions when required by 10 CFR 50.65(a)(4). For emergent work, the inspectors verified that any increase in risk was promptly assessed, that appropriate risk management actions were promptly implemented, and that work activities did not place the plant in unacceptable configurations. Documents reviewed are listed in the Attachment.

- Unit 2 unplanned entry into Orange condition due to delays on 7300 calibration card work on January 6

- Unit 2 protected equipment for emergent Orange condition on January 19
- Unit 1 risk mitigation actions following 1B and 2B RN trains declared inoperable on January 18
- Planned Unit 1 Orange condition for unavailability of 1A Train RN on February 7
- Emergent tornado watch that caused Unit 1 risk to change to Yellow and Unit 2 Defense in Depth to change to Yellow on power availability on February 28 (Unit 2 safety buses were being supplied from Unit 1 at the time)

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the five technical evaluations listed below to determine whether Technical Specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors reviewed any compensatory measures taken for degraded SSCs to determine whether the measures were in-place and adequately compensated for the degradation. For the degraded SSCs, or those credited as part of compensatory measures, the inspectors reviewed the UFSAR to determine whether the measures resulted in changes to the licensing basis functions, as described in the UFSAR, and whether a license amendment was required per 10 CFR 50.59. Documents reviewed are listed in the Attachment.

- M-10-3022, Issues associated with Electronic Calibration of 1B Containment Hydrogen Analyzer on Dec 27, 2010
- M-10-0724, Unplanned entry into TS Selected Licensee Commitment 16.13.4 Minimum Station Staffing Requirements on Dec. 29, 2010
- M-11-0884, Foreign material in Unit 2 refueling cavity deep end
- M-11-0371, Non-Quality Assurance parts used in constant level oilers, pipe nipples, and associated sight glasses for Auxiliary Feedwater, Nuclear Service Water, Component Cooling, Control Area Chilled Water and Chemical and Volume Control
- M-11-0767, Non-Quality Assurance parts used for pipe nipple and tee were installed on TDAFW pump gearbox

b. Findings

No findings were identified.

1R18 Plant Modificationsa. Inspection Scope

The inspectors reviewed the one permanent modification and one temporary modification listed below and the associated 10 CFR 50.59 review to determine whether the modifications satisfied the requirements of 10 CFR 50, Appendix B, and compared each against the UFSAR and TS to determine whether the operability or availability of SSCs were affected by completion of the modification. The inspectors reviewed each modification to ensure that it was installed in accordance with the modification documents and reviewed post-installation (and/or removal testing for temporary modifications) to verify that the actual impact on permanent systems was adequately verified by the tests. In addition, the inspectors determined whether the appropriate procedures, design documents, and licensing documents were updated to reflect the installation of the modification. Documents reviewed are listed in the Attachment.

Permanent Modification

- EC# 102984 for replacing 1CA-128 Turbine Driven Auxiliary Feedwater Pump Suction Relief Valve

Temporary Modification

- EC# 97667 Temporary Loop System for Unit 2 DCS Modification

b. Findings

No findings were identified.

1R19 Post Maintenance Testinga. Inspection Scope

For the five maintenance tests listed below, the inspectors determined the safety functions described in the UFSAR and TS that were affected by the maintenance activity. The inspectors witnessed the post-maintenance tests listed and/or reviewed the test data to determine whether the test results adequately demonstrated restoration of the affected safety functions. Documents reviewed are listed in the Attachment.

- PT/1/A/4403/001B, Retest on B Train Nuclear Service Water on Standby Nuclear Service Water Pond suction
- Functional verification on 1A Nuclear Service Water Pump Breaker (1ETA-12) following planned maintenance (auxiliary switch replacements)
- PT/1/A/4350/002B, 1B DG Operability Test (various preventive maintenance on lube oil, air start, and solid state controls)
- PT/1/A/4200/038, Venting of the Auxiliary Feedwater System Suction Piping following chemical cleansing of 1RN-1066 (RN Supply to 1CA-162 Continuous Vent)
- PT/2/A/4403/005B, RN Train 2B Head Curve Verification (2B RN pump overhaul)

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b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities

a. Inspection Scope

Prior to the Unit 2 refueling outage, the inspectors reviewed the licensee's outage risk control plan to determine if the licensee had adequately considered risk in developing the outage schedule. The inspectors reviewed the procedures listed in the Attachment to determine if they contained mitigation/response strategies for losses of decay heat removal, inventory control, power availability, and containment. The inspectors observed portions of the following activities when Unit 2 entered the refueling outage. Additional documents reviewed are listed in the Attachment.

- Observed the cooldown process to determine if TS cooldown restrictions were followed
- Walked down containment after the shutdown to determine if there was indication of unidentified leakage from the RCS
- Reviewed the licensee's responses to emergent work and unexpected conditions, to determine if configuration changes were controlled in accordance with the outage risk control plan
- Observed outage activities to determine if the licensee maintained defense-in-depth commensurate with the outage risk control plan for the key safety functions and applicable TS
- Assessed outage activities that were conducted during short time-to-boil periods
- During reduced inventory or mid-loop conditions, the inspectors reviewed the licensee's commitments to Generic Letter 88-17, to determine if they were properly implemented and observed control room operations during this period to determine if distractions were minimized
- Observed fuel handling operations (removal and insertion) and other ongoing activities, to determine if those operations and activities were being performed in accordance with TS and licensee procedures
- Prior to mode changes, the inspectors reviewed selected system lineups and/or control board indications to determine if TS, license conditions, and other requirements, commitments, and administrative procedure prerequisites for mode changes were met prior to changing modes or plant configurations
- Reviewed reactor coolant system boundary leakage data and observed the setting of containment integrity to determine if the reactor coolant system and containment boundaries were in place and had integrity when required. The inspectors performed a containment walkdown to determine that no debris remained that would affect the containment sump and that no reactor coolant leakage existed
- Reviewed reactor coolant system heat-up rates to determine whether they were within required values
- Reviewed items that had been entered into the licensee's corrective action program to determine if the licensee had identified problems at an appropriate threshold and

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had entered them into the corrective action program. For the significant problems, the inspectors reviewed the results of the licensee's investigations to determine if the licensee had determined the root cause and implemented appropriate corrective actions.

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the seven surveillance tests identified 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 Technical Specifications, the Updated Final Safety Analysis Report, and applicable licensee procedures, and that the tests demonstrated that the SSCs were capable of performing their intended safety functions. The inspectors also reviewed selected PIPs to determine if the licensee identified and implemented appropriate corrective actions. Documents reviewed are listed in the Attachment.

Surveillance Tests

- PT/0/A/4350/008E, SCI Vital I&C Battery Charger Performance Test
- PT/1/A/4403/001B, 1B Nuclear Service Water Pump Performance Test
- PT/2/A/4403/001B, 2B Nuclear Service Water Pump Performance Test
- PT/2/A/4350/036A, Diesel Generator 24 Hour Run
- PT/2/A/4200/009B, Engineered Safety Features Actuation Test Train B

In-Service Tests

- EC102984, Lift Setpoint Pressure Test on 1CA-128 Turbine Driven Auxiliary Feed Pump Suction Relief Valve following valve replacement on January 7

Ice Condenser Systems Testing

- PT/0/A/4200/018, Ice Bed Analysis

b. Findings

No findings were identified.

40A1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors sampled licensee data to confirm the accuracy of reported PI data for the following six indicators during the four quarters of 2010. 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 NEI 99-02, Regulatory Assessment Indicator Guideline, Rev. 4.

Initiating Events Cornerstone

- Unplanned Scrams per 7000 Critical Hours (Units 1 and 2)
- Unplanned Scrams with Complications (Units 1 and 2)
- Unplanned Power Changes per 7000 Critical Hours (Units 1 and 2)

The inspectors reviewed the documents listed in the Attachment to determine if the licensee had adequately identified the number of scrams and unplanned power changes greater than 20 percent that occurred during the previous four quarters. The inspectors compared this number to the number reported for the PI during the current quarter. The inspectors also reviewed the accuracy of the number of critical hours reported and the licensee's basis for determining that there were not complications for each of the reported reactor scrams. In addition, the inspectors interviewed licensee personnel associated with the PI data collection, evaluation, and distribution.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution

a. Inspection Scope

Routine Review: As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed screening of items entered into the licensee's corrective action program. This was accomplished by reviewing copies of condition reports, attending some daily screening meetings, and accessing the licensee's computerized database. Documents reviewed are listed in the Attachment.

Selected Issue Follow-Up Inspection (Operator Workarounds): The inspectors selected operator workarounds (OWAs) as the sample for selected issue follow-up. The inspectors reviewed the four category one through three OWAs listed in the licensee's December 2010 OWA report to determine if the OWAs were identified in the CAP and corrective actions were properly identified and dates established for completion. In some cases the review included the PIPs associated with the OWA and a review of the system health report for the associated system. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA3 Follow-up of Events and Notices of Enforcement Discretion

.1 Event Follow-Up

a. Inspection Scope

The inspectors reviewed the licensee's actions associated with the events that occurred on January 20, 2011. The inspectors observed plant parameters for mitigating systems, evaluated performance of systems and operators, and confirmed proper classification and reporting of the event.

- Dual unit shutdown to comply with TS LCO 3.0.3 due to all RN trains inoperable on January 20.
- U1 manual Reactor trip during shutdown to mode 3 on January 20. Operators initiated a manual trip when the 1B Main Feedwater Pump tripped while transferring its steam supplies, after the 1A Main Feedwater Pump was secured.

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report (LER) 05000369/2010-002-0, Unit 1 "A" Containment Spray (NS) pump past inoperable due to an oil leak from pump

On April 29, 2010, the Unit 1 "A" Train NS pump was declared inoperable when an oil leak on the pump motor lower bearing sight glass was discovered. The licensee determined that the cause of the leak was due to an inadequate maintenance procedure. A subsequent evaluation completed May 12, 2010, determined past operability could not be justified for a period of fourteen days, which exceeded TS LCO 3.6.6 for an inoperable train of NS. The licensee's immediate corrective actions were to repair the sight glass and place procedures controlling oil additions on technical hold. In addition, Nuclear System Directive (NSD) 203, Operability/Functionality, was not used to perform an Immediate Determination of Operability of the 1A NS pump following continued additions of oil which contributed to the licensee exceeding TS LCO 3.6.6. The licensee reported this issue as a condition prohibited by TS per 10 CFR 50.73(a)(2)(i)(B) and a condition that could have prevented fulfillment of the safety function per 10 CFR 50.73(a)(2)(v)(C). The inspectors reviewed the LER, licensee's root cause analysis, and corrective action documents to verify the accuracy of the LER and that the corrective actions were appropriate. The enforcement aspects of the event are discussed in Section 4OA7. This LER was in the licensee's CAP as PIP M-10-3332.

.3 (Closed) LER 05000369/2011-001-0, Shutdown of two units due to entry into LCO 3.0.3 caused by the inoperability of all four trains of the nuclear service water system due to Strainer Macro-Fouling

a. Inspection Scope

On January 18, 2011, during testing of the 1B RN pump while aligned to the SNSWP, the pump was stopped after approximately 15 minutes due to low pump suction indications concurrent with high strainer differential pressure. The licensee determined that the suction strainer was fouled with small bluegill fish. Both units' B RN trains share a common suction pipe upstream of the pump suction strainer which resulted in the licensee declaring both units' B RN trains inoperable. The A RN trains were in service and aligned to the intake from Lake Norman. However, based upon the fouling conditions in the SNSWP, which was the seismically-qualified ultimate heat sink (UHS), the licensee also declared both units' A RN trains inoperable. Therefore, the licensee entered TS LCO 3.0.3 for a total loss of RN which required a dual unit shutdown. The A RN trains continued to provide cooling from the Lake Norman intake. The inspectors reviewed the LER and the root cause evaluation contained in PIP M-11-0329. The licensee identified that the causes of this event were lack of an effective macro-fouling barrier in the SNSWP, deferral of the fish elimination in 2010, and lack of risk recognition. The SNSWP was chemically treated to eliminate the macro-fouling and the RN intake lines were flushed. This LER was in the licensee's CAP as PIP M-11-0329.

b. Findings

Introduction: A self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for the licensee's failure to correct a condition adverse to quality. The licensee had previously identified that the fish population in the SNSWP had significantly increased but failed to perform the annual fish eradication of the SNSWP to prevent macro-fouling of the RN pump suction strainers. This resulted in the licensee declaring both trains of RN inoperable and entry into TS 3.0.3 for both units.

Description: The UFSAR stated that Lake Norman was the normal cooling water source for both trains of RN and was provided through a single common supply header from the Cowan's Ford Dam low level intake (LLI). The ultimate heat sink (UHS) was the SNSWP, which was qualified for a Safe Shutdown Earthquake. Each RN train suction supply from the SNSWP shares a common header between units. On an ESF signal, the B RN train supply automatically realigns to the SNSWP and supplies the B RN header for the unit with the ESF signal. On an ESF signal, the A RN train supply automatically aligns to the LLI supply from Lake Norman and supplies the A RN header for either unit. Following a loss of the Cowan's Ford Dam, the A RN train would be manually transferred to the SNSWP.

As identified in LER 05000369/2007-004, and addressed in NRC Inspection Report 05000369, 370/2008009 as Notice of Violation (NOV) EA-08-220, macro-fouling of the RN strainers had previously occurred. The licensee's responses to the NOV provided the licensee's interim basis for operability of the RN system until the strainer backwash function could be restored in 2012. The interim actions, identified in PIPs M-08-3371

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and M-09-3526, included controlling macro-fouling in the SNSWP through the use of chemicals to eliminate fish on an annual frequency. The licensee deferred the annual fish elimination on the SNSWP as scheduled in July 2010 and then again in August/September 2010. Consequently, the failure to perform the annual fish elimination resulted in the inoperability of both trains of RN.

LER 05000369/2011-001 stated that the SNSWP estimated fish population was 25,869 on September 14, 2010. Post event surveys performed on January 19, 2011, indicated an estimated SNSWP fish population of 19,935. The inspectors determined from these survey results that the fish population was relatively constant from September 2010 through the event in January 2011. However, after review of additional licensee information, the NRC determined that the fish concentrated in sufficient quantities to cause fouling of the RN strainers after the onset of severe cold weather on December 6, 2010. Therefore, the RN suction strainers were susceptible to macro-fouling during the period from December 6, 2010, until January 19, 2011.

Analysis: The licensee's failure to promptly correct the RN macro-fouling condition in the SNSWP was a PD. This PD was more than minor because it was associated with the equipment performance attribute and adversely impacted the Mitigating Systems cornerstone objective of ensuring the availability, reliability, and capability of the RN system to provide long term decay heat removal because the macro-fouling of the suction strainers rendered the RN pumps inoperable. This finding was initially evaluated using IMC 0609 using an exposure time of greater than 30 days. The result of the Phase 1 screening was that a Phase 2 SDP analysis was required because the finding resulted in the actual loss of safety function of a single train of RN for greater than its TS Allowed Outage Time. A Phase 2 SDP analysis was performed using the site-specific pre-solved table for both a loss of a single train of RN and a loss of both trains of RN. In both cases the, the safety significance was potentially greater than Green. Consequently, a Phase 3 SDP analysis was required to be performed.

A senior risk analyst (SRA) determined that the PD would foul 1) the B RN train strainers under scenarios that automatically start the RN system, and 2) both RN train strainers for seismic events. The NRC's SPAR model was used to assess the risk significance of fouling either and both RN strainer(s) on demand. The SRA determined that recovery credit of an RN train was appropriate and applied a recovery factor to those sequences where operators would have time to clear the strainers during an event. The SRA used an exposure time starting with December 6, 2010, when severe cold weather had moved into the area and applied T/2 to account for the random nature of the macro-fouling. The dominant sequences for internal events were losses of electrical AC buses where the opposite train component cooling water pumps were unavailable (e.g., test and maintenance or an independent failure) leading to a reactor coolant pump seal loss of coolant accident and subsequent core damage. The CDF from external events (i.e., seismic events where the Cowan's Ford Dam fails and both RN trains are supplied from the SNSWP) was determined to be $<1E-6$ (Green). There was no immediate safety concern because the licensee treated the SNSWP to eliminate the macro-fouling and increased the treatment frequency from annual to semi-annual. This finding was determined to be directly related to the conservative assumptions aspect of the Decision Making component in the Human Performance cross-cutting area because the

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licensee's decisions to defer the macro-fouling treatment of the SNSWP were non-conservative [H.1(b)].

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, required, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. NSD 208, Problem Investigation Program, implemented the requirements of Criterion XVI. PIPs M-08-3371 and M-09-3526 identified corrective actions to control macro-fouling sources in the SNSWP to compensate for the nonfunctioning RN suction strainer backwash capability and prevent fouling of the RN pump suction strainers. The corrective actions included periodically treating the SNSWP on an annual frequency to eliminate fish from the SNSWP. Contrary to the above, from July 2010 through January 18, 2011, the licensee failed to promptly correct a condition adverse to quality. Specifically, the licensee deferred the periodic treatment to eliminate fish from the SNSWP as scheduled in July 2010 and then again deferred the treatment in August/September 2010. Consequently, the failure to perform the periodic treatment resulted in the inoperability of both trains of RN for Unit 1 and Unit 2. Because of the very low safety significance, and because it was placed in the CAP as PIP M-11-00329, this violation is being treated as an NCV in accordance with Section 2.3.2 of the NRC Enforcement Policy and is identified as NCV 05000369,370/2011002-03, Inadequate Corrective Action to Maintain RN Operability when Aligned to the SNSWP.

.4 Personnel Performance

a. Inspection Scope

Operator performance was evaluated in planned and unplanned non-routine events and transients. The initiating cause was examined as well as the response to determine if the response was appropriate and in accordance with procedures.

- Dual unit shutdown to comply with TS LCO 3.0.3 due to all RN trains inoperable on January 20
- Unit 2 shutdown for Refueling outage

b. Findings

No findings were identified.

.5 Notice of Enforcement Discretion (NOED) Review

a. Inspection Scope

On January 18, the 1B RN pump was started to perform a pump performance test. Approximately fifteen minutes into the test, the 1B RN pump was stopped due to low pump suction pressure associated with high strainer differential pressure. Following additional evaluation, it was determined that the high strainer differential pressure was due to strainer fouling as the result of a large number of small fish from the standby nuclear service water pond. Due to this condition, both RN trains for both units were

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subsequently declared inoperable and required immediate entry into TS limiting condition for operation 3.0.3.

The licensee commenced a shutdown of Unit 1 and Unit 2 in accordance with the TS action statements. On January 20 the licensee requested enforcement discretion until January 25 in order to allow time to restore the affected RN trains to an Operable status.

The NRC verbally granted NOED 11-2-001 at 11:36 p.m. on January 20, 2011. The licensee subsequently returned both trains of RN for both units to an Operable status on January 23, which was within the completion time approved in the NOED.

The inspectors reviewed NOED 11-2-001 and related documents to determine the accuracy and consistency with the licensee's assertions and implementation of the licensee's compensatory measures and commitments, those of which included protecting the turbine driven auxiliary feedwater pumps, Standby Shutdown Facility standby makeup pump, G & H Diesel Instrument Air compressors, and the containment ventilation cooling water pumps and associated breakers.

The licensee issued LER 369/2011-001, Shutdown for two units due to entry into LCO 3.0.3 caused by inoperability of all four trains of the RN system due to strainer macro-fouling for this dual-unit NOED. This LER is addressed in section 4OA3.3. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA5 Other Activities

a. Inspection Scope

Quarterly Resident Inspector Observations of Security Personnel and Activities: 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 review and inspection activities.

b. Findings

No findings were identified.

40A6 Meetings, Including Exit

On April 4, 2011, the resident inspectors presented the inspection results to Mr. Steven Capps and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

40A7 Licensee-Identified Violations

The following Severity Level IV violations were identified by the licensee and are violations of NRC requirements which met the criteria of the NRC Enforcement Policy for being dispositioned as a Non-Cited Violations.

- Technical Specification 5.4.1.a required, in part, that written procedures shall be established, implemented, and maintained covering activities recommended in Regulatory Guide (RG) 1.33, Revision 2, Appendix A, February 1978. RG 1.33, Revision 2, Appendix A, Section 7 listed Radiation Surveys as an activity that should be covered by written procedures. Duke Health Physics procedure HP/2/B/1006/024, Revision 11, Refueling Outage Controls and Surveillance, Enclosure 5.3, required a daily dose rate survey of the 1202 Area located in the auxiliary building. Contrary to the above, on October 7, 2006, written procedures recommended in RG 1.33, Revision 2, Appendix A, were not implemented in that a daily dose rate survey of the 1202 Area was not performed as required by Duke Procedure HP/2/B/1006/024, Enclosure 5.3. A Lead Radiation Protection Technician became aware of the missed radiation survey, falsified the contents of a different radiation survey, and submitted the falsified document on October 10, 2006. The underlying technical issue screened as a minor violation using IMC 0612, Appendix B, Issue Screening, in that the proper radiological controls were established and radiological conditions existed such that the dose to an uninformed worker was not likely to exceed an unplanned dose greater than 10 millirem. The violation did not rise to the level of the SL-IV Health Physics examples from Section 6.7 of the NRC Enforcement Policy. However, the NRC determined that the violation should be classified as a SL-IV violation because of the willful aspects involved. This violation is being treated as a NCV in accordance with Section 2.3.2 of the NRC Enforcement Policy because the licensee identified and reported the violation to the NRC, was an isolated act of an individual in a low-level position without management involvement, and the licensee took significant remedial action. This condition was documented in the licensee's CAP as PIP M-08-2975.
- TS 5.4.1.a stated that written procedures shall be established, implemented, and maintained covering activities recommended in RG 1.33, Rev. 2, Appendix A, February 1978. RG 1.33, Rev. 2, Appendix A recommended procedures for maintenance that can affect the performance of safety-related equipment. Contrary to the above, from initial plant licensing to April 29, 2010, the licensee failed to establish an adequate procedure for performing maintenance on safety-related equipment. Procedure MP/0/A/7300/052, On-line Oil Sampling of Components With Oil Sample Valves, did not contain adequate instructions for reseating of the 1A NS pump motor lower bearing sight glass which resulted in the 1A NS train being inoperable for greater than allowed by TS LCO 3.6.6. This violation was determined

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not to be greater than very low safety significance (Green) because it did not represent an actual open pathway in the physical integrity of reactor containment or involve an actual reduction in the function of hydrogen ignitors. This condition was placed in the licensee's CAP as PIP M-10-3332.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

K. Ashe, Manager, Regulatory Compliance
D. Black, Security Manager
R. Branch, Inspection Services Manager
D. Brenton, Superintendent, Plant Operations
D. Brewer, Manager, Safety Assurance
S. Capps, Station Manager
K. Crane, Regulatory Compliance
C. Curry, Engineering Manager
G. Cutri, BACCP Program Owner
J. Hicks, Superintendent, Maintenance
N. Kunkel, Superintendent, Work Control
S. Mooneyhan, Radiation Protection Manager
T. Moore, RPVH Inspection Program Owner
J. Nolin, Manager, Mechanical and Civil Engineering
R. Repko, Site Vice President, McGuire Nuclear Station
P. Schuerger, Training Manager
W. Scott, Chemistry Manager
S. Snider, Manager, Reactor and Electrical Systems Engineering

NRC personnel

J. Thompson, Project Manager, NRR
E. Stamm, Project Engineer, RII

LIST OF REPORT ITEMS

Opened and Closed

| | | |
|-------------------------|-----|---|
| 05000369,370/2011002-01 | NCV | Failure to update the UFSAR for GL 91-13 (Section 1R11.1) |
| 05000369,370/2011002-02 | NCV | Failure to obtain a license amendment for RN sharing between units (Section 1R11.2) |
| 05000369,370/2011002-03 | NCV | Failure to eliminate fish in the SNSWP (Section 4OA3.3) |

Closed

| | | |
|---------------------|-----|---|
| 05000369/2010-002-0 | LER | Unit 1 "A" Containment Spray (NS) pump past inoperable due to an oil leak from pump (Section 4OA3.2) |
| 05000369/2011-001-0 | LER | Shutdown for two units due to entry into LCO 3.0.3 caused by inoperability of all four trains of the Nuclear Service Water (RN) System due to strainer macro-fouling (Section 4OA3.3) |

DOCUMENTS REVIEWED**Section 1R04: Equipment Alignment**Partial System Walkdown

Emergency Diesel Generator 2A:

Drawing MCFD-2609-04.00, Flow Diagram of the Diesel Generator Starting Air System

Drawing MCFD-2609-03.00, Flow Diagram of the Diesel Generator Engine 2A Fuel Oil System

Drawing MCFD-2609-02.00, Flow Diagram of the Diesel Generator Engine Lube Oil System

Drawing MCFD-2609-01.00, Flow Diagram of the Diesel Generator Engine Cooling Water System

Emergency Diesel Generator 2B:

Drawing MCFD-2609-04.00, Flow Diagram of the Diesel Generator Starting Air System

Drawing MCFD-2609-03.01, Flow Diagram of the Diesel Generator Engine 2B Fuel Oil System

Drawing MCFD-2609-02.00, Flow Diagram of the Diesel Generator Engine Lube Oil System

Drawing MCFD-2609-01.00, Flow Diagram of the Diesel Generator Engine Cooling Water System

Residual Heat Removal

MCFD-2561-01.00, Flow Diagram of Residual Heat Removal System (ND)

Turbine Driven CA

MCFD-1592-01.00, Flow Diagram of Auxiliary Feedwater (CA)

MCFD-1592-01.01, Flow Diagram of Auxiliary Feedwater (CA)

MCFD-2592-01.00, Flow Diagram of Auxiliary Feedwater (CA)

MCFD-2592-01.01, Flow Diagram of Auxiliary Feedwater (CA)

Section 1R05: Fire Protection

MCS-1465.00-00-0008 Design Basis Specification for Fire Protection

NSD 314, Hot Work Authorization

Section 1R07: Heat Sink Performance

PIP M-11-1778, Eddy current results of the 2B KC HX requires 1 tube to be plugged.

Section 1R08: Inservice Inspection (ISI) Activities**Procedures**

PT/0/A/4150/046, McGuire Nuclear Station Containment Walkdown Procedure, Rev. 422164-10, Revision 004, Eddy Current Guidelines for Duke Energy Company's CFR-80 Steam Generators

McGuire Engineering Support Document: Boric Acid Corrosion Program, Rev. 4

MP-0-A-7150-153, Rx Vessel Head Bare Metal Inspection, Rev. 007

NDEMAN-PDI-UT-1-FC08-05, Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds PDI-UT-1 Revision D Field Change 08-05, Rev. 0

MP-0-A-7700-080, Inspection and Cleanup of Boric Acid on Plant Materials, Rev. 012

NDE-35A, Liquid Penetrant Examination Report for F-8 Canopy Seal Weld, dated 10/05/08

NDE-35A, Liquid Penetrant Examination Report for F-8 Canopy Seal Weld, dated 10/08/08

NDEMAN-NDE-25, Magnetic Particle Examination, Rev. 024

NDEMAN-NDE-35, Liquid Penetrant Examination, Rev. 022

NDEMAN-NDE-600, Ultrasonic Examination of Similar Metal Welds in Ferritic and Austenitic Piping, Rev. 017

NDEMAN-NDE-68, Visual Examination for Leakage and Boric Acid Corrosion Control, Rev. 2

NDEMAN-PDI-UT-2-FC08-04, Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds PDI-UT-1 Revision C Field Change 08-04, Rev. 0

NSD 322, Duke Energy Boric Acid Corrosion Program, Rev. 2

PT-0-A-4150-046, Containment Walkdown, Rev. 003

QAP 9.6, Welding Services, Inc. Liquid Penetrant Inspection Procedure, Rev. 11

Corrective Action Documents

PIP M-11-00798, Dried boron on floor below 1 NM-812 and 2 NM-812 (outlets to both Unit 1 and Unit 2 EMF)

PIP M-11-00657, Excessive boron at bottom left and right "T" fittings

PIP M-11-00208, 1-NV-LT-5740 dry boron at tubing fitting on top of remote bellows

Section 1R11: Licensed Operator Regualification

Licensed Operator Continuing Training (SRT-103) Loss of ND Simulator Exercise

OP/1/A/61--/002, Controlling Procedure for Unit Shutdown

AP/1/A/5500/019, Loss of ND or ND System Leakage

OP/1/A/6100/010, Annunciator Response Procedures

Section 1R12: Maintenance Effectiveness

M-10-31111, EVDB-3E DC Feeder Breaker to 1EVIB opened unexpectedly resulting in an unplanned PRA Orange Condition

EDM-210, Engineering Responsibilities for Maintenance Rules

EC 103952, replace 1EVIB C1 Capacitors

WO 1921359

WO 1932362

Operating Experience Smart Sample:

Calculation DPC-1381.05-00-0015, Struthers Dunn Model 219 Service Life Analysis

Calculation DPC-1381.05-00-0018, Cutler Hammer Relay Qualified Life Analysis

Standard PM models for various components

NUREG-1772, SER related to the License Renewal of McGuire Nuclear Station, Units 1 and 2, and Catawba Nuclear Station, Units 1 and 2

Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation

PIP M-11-00078 (7300 card work)

PIP M-10-7452 (Tornado warning while 1B DG OOS)

SAA Short Form #280 ICCDP/ICLERP for Tornado Watch with Diesel Generator 1B OOS and ICCDP/ICLERP for CA TDP/RPS Channel #3 OOS

NSD 403, Shutdown Risk Management (Mode 4,5,6,and No-Mode) per 10 CFR 50.65(a)4

NSD 213, Risk Management Process

PIPs generated from this inspection: M-11-00823, NRC concerns regarding 6.9 kV switchgear excluded from normal protection scheme when protecting equipment from offsite to essential switchgear busses.

Section 1R15: Operability Evaluations

NSD 203, Operability/Functionality

TSAIL #M1-10-03022, Hydrogen Monitor Train 1B

IP/0/A/3250/069 Containment Hydrogen Analyzer 18-month Calibration

WO 01953918, PM 1MILP6860 Functional Test and Loop Calibration (1B H2 Analyzer)

M-10-0724 (16.13.4 Minimum Staffing Requirements)

M-11-884: TS 3.5.2, 3.5.3, 3.6.6, 3.6.15; and bases

M-11-371 &M-11-767: TS 3.7.6, 3.4.6, 3.4.7, 3.4.8, 3.5.2, 3.5.3, 3.9.5, 3.9.6; and associated bases; 10CFR50 Appendix A Criterion 1 and 10CFR50 Appendix B

Section 1R18: Plant Modifications

NSD 301 Engineering Change Program

A/R #00335167 (Replace 2CA-128)

E/C 102990 (2CA-128 Replace TD CA pump suction relief valve)

A/R #00335155 (Equivalent change / Replace 1CA-128)

E/C 102984 (2CA-128 Replace TD CA pump suction relief valve)

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PIPs generated from this inspection: M-11-1567, Need to evaluate need to pretest the leakage of feed regulation valves prior to restart.

Section 1R19: Post-Maintenance Testing

PT/0/A/4350/021, Nordberg Diesel Engine Periodic Maintenance

WO 1911741

IP/0/A/2001/004I, Refurbishment, replacement And Alignment of Auxiliary Switches in Medium Voltage Switchgear Compartments.

Drawing No. MCFD-1574-01.00 Flow Diagram of RN Rev 11

Section 1R20: Refueling and Other Outage Activities

OP/2/A/6200/003, Controlling Procedure for Unit Operation

MC-INOS-09-011, Independent Review Team review of 2EOC19 outage schedule

NSD 403, Shutdown Risk Management

OP/2/A/6100/SO-1, Maintaining NC System Level

AP/2/A/5500/019, Loss of ND or ND System Leakage

AP/2/A/5500/007, Loss of Electrical Power

AP/2/A/5500/020, Loss of RN
 AP/2/A/5500/021, Loss of KC
 AP/2/A/5500/025, Spent Fuel Damage
 AP/2/A/5500/041, Loss of Spent Fuel Cooling or Level
 AP/2/A/5500/009, Natural Circulation
 AP/2/A/5500/015, Loss of Vital or Aux Control Power
 AP/2/A/5500/034, Shutdown LOCA
 AP/2/A/5500/035, ECCS Actuation during Plant Shutdown
 AP/2/A/5500/040, Loss of Refueling Cavity Level
 OP/2/A/6100/SD-2, Cooldown to 400 degrees F
 OP/2/A/6100/SD-4, Cooldown to 240 degrees F
 OP/2/A/6100/SD-6A, Placing Train A ND in Service
 OP/2/A/6100/SO-1, Maintaining NC System Level
 OP/2/A/6100/SO-2, Filling the Refueling Cavity
 MCEI-0400-41, McGuire 2 Cycle 17 Final Core Map, Rev. 12
 PT/0/A/4150/033, "Core Verification, Rev. 15
 PT/0/A/4150/033, Total Core Reloading, Rev. 43
 MP/2/A/7150/073, Rod Cluster Control Assembly Heavy Drive Rod Unlatching and Latching, Rev. 14
 MCEI-0400-47, Unit 2 Cycle 19 Core Operating Limits Report
 OP/2/A/6100/SU-3, Mode 5 Checklist
 OP/2/A/6100/SD-22, Removal of Reactor Vessel Head
 MP/2/A/7150/057A, Reactor Vessel Head Removal
 UFSAR 9.1.5
 MP/2/A/7150/057B, Reactor Vessel Head Installation
 MP/0/A/7700/096, Quarterly/Annual Inspection and Servicing of Overhead and Gantry Cranes
 NRC letter dated September 5, 2008 transmitting SER on NEI 08-05, Industry Initiative on Control of Heavy Loads
 EC 104513, Elimination of Water Follow when using the Polar Crane for Reactor Vessel head Lifts
 50.59 evaluation for EC 104513
 Whiting Crane Report 50674-10-002, Revision 1, NEI Initiative 08-05 Evaluation and Recommendation for Duke Energy McGuire Nuclear Station U1 and U2 Polar Cranes Whiting S/N's 10448 and 10449
 Worker Outage schedules
 PIP M-11-2510, MCC Breaker 2EMXD-3D breaker did not shunt trip during 2B SI/BO
 PIP M-11-2567, During the 2A ESF Safety Injection/Blackout Test the C VL Fan did not start
 PIP M-11-2572, Shortly following initiation of 2A ESF S/I and B/O portion testing, both trains of 1.47 bypass panels went into alarm.
 PIP M-11-1371, Documentation of Ice Condenser walkdown inspection
 PIP M-11-1362, 2EOC20 Mode 3 walkdown after shutdown results and M-11-1798, fatigue rule EmpCenter

Section 1R22: Surveillance Testing

IST: DWG No. MCTC-1592-CA.V019-01 Rev 1

Section 4OA1: Performance Indicator (PI) Verification

PIP M-10-0185

PIP M-10-4089

PIP M-10-4111

McGuire Nuclear Station NRC Performance Indicator History - Unit 1 - Indicator: Unplanned Scrams per 7000 Critical Hours

McGuire Nuclear Station NRC Performance Indicator History - Unit 2 - Indicator: Unplanned Scrams per 7000 Critical Hours

McGuire Nuclear Station NRC Performance Indicator History - Unit 1 - Indicator: Unplanned Scrams with Complications (USwC)

McGuire Nuclear Station NRC Performance Indicator History - Unit 2 - Indicator: Unplanned Scrams with Complications (USwC)

McGuire Nuclear Station NRC Performance Indicator History - Unit 1 - Indicator: Unplanned Power Changes >20%

McGuire Nuclear Station NRC Performance Indicator History - Unit 2 - Indicator: Unplanned Power Changes >20%

PIP M-10-0185

PIP M-10-4089

PIP M-10-4111

Section 4OA2: Identification and Resolution of Problems

NSD 208, Problem Investigation Program (PIP)

NSD 201, Reporting Requirements

NSD 202, Reportability

OWA Y10-04: PIP M-10-6322, PIP M-10-6632, PIP M-10-7433

OWA Y09-07: PIP M-09-3411

OWA Y09-05: PIP M-09-2290, PIP M-10-3749, PIP M-10-4738, WO# 01927522

OWA Y07-12: PIP M-07-1163

PIPs generated from this inspection: M-10-1470 (2 PIPs improperly coded as NCAQ); M-11-2743, inadequate SSF battery charger mod

Section 4OA3: Event Follow-up

PIP M-10-3332

EP/2/A/5000/E-0 Rx Trip or Safety Injection

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

LER 05000369-2010-002-00, Unit 1 "A" Containment Spray (NS) pump past inoperable due to an oil leak from pump motor oil sight glass

PIP M-10-3332

MP/0/A/7300/052, On-line Oil Sampling of Components With Oil Sample Valves

LIST OF ACRONYMS

| | | |
|------|---|------------------------------|
| BACC | - | Boric Acid Corrosion Control |
| BMV | - | Bare Metal Visual |
| CA | - | Auxiliary Feedwater |
| CAP | - | Corrective Action Program |
| CDF | - | Core Damage Frequency |
| ISI | - | Inservice Inspection |

| | | |
|-------|---|--------------------------------------|
| LCO | - | Limiting Condition for Operation |
| LER | - | Licensee Event Report |
| LLI | - | Lower Level Intake |
| LOSW | - | Loss of Service Water |
| MT | - | Magnetic Particle Testing |
| NCV | - | Non-Cited Violation |
| NDE | - | Non-Destructive Examination |
| NOED | - | Notice of Enforcement Discretion |
| NOV | - | Notice of Violation |
| NS | - | Containment Spray |
| NSD | - | Nuclear System Directive |
| OWA | - | Operator Workaround |
| PD | - | Performance Deficiency |
| PI | - | Performance Indicator |
| PIP | - | Problem Investigation Program |
| PT | - | Liquid Penetrant Testing |
| RCS | - | Reactor Coolant System |
| RG | - | Regulatory Guide |
| RN | - | Nuclear Service Water |
| RTP | - | Rated Thermal Power |
| SDP | - | Significance Determination Process |
| SG | - | Steam Generator |
| SRA | - | Senior Risk Analyst |
| SSC | - | Structures, Systems, and Components |
| TS | - | Technical Specifications |
| UFSAR | - | Updated Final Safety Analysis Report |
| UT | - | Ultrasonic Testing |
| VUHP | - | Vessel Upper Head Penetration |