



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

October 29, 2010

Mr. Regis T. Repko  
Vice President  
Duke Power Company, LLC  
McGuire Nuclear Station  
MCC01VP/12700 Hagers Ferry Road  
Huntersville, NC 28078-8985

SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000369/2010004, 05000370/2010004, EMERGENCY PREPAREDNESS INSPECTION REPORT 05000369/2010501 AND 05000370/2010501, AND INDEPENDENT SPENT FUEL STORAGE INSTALLATION CANISTER WELDING DEMONSTRATION INSPECTION REPORT 07200038/2010001

Dear Mr. Repko:

On September 30, 2010, 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 September 30, 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.

The report documents one NRC-identified finding of very low safety significance (Green) which was determined to involve a violation of NRC requirements and two Severity Level IV violations. However, because of the very low safety significance and categorization at Severity Level IV 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's 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.

DEC

2

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, 72-038  
License Nos.: NPF-9, NPF-17

Enclosure: NRC Integrated Inspection Report 05000369/2010004, 05000370/2010004,  
Emergency Preparedness Inspection Report 05000369/2010501 and  
05000370/2010501, and Independent Spent Fuel Storage Installation Canister  
Welding Demonstration Inspection Report 07200038/2010001 w/Attachment -  
Supplemental Information

cc w/encl: (See page 3)

DEC

2

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, 72-038  
License Nos.: NPF-9, NPF-17

Enclosure: NRC Integrated Inspection Report 05000369/2010004, 05000370/2010004, Emergency Preparedness Inspection Report 05000369/2010501 and 05000370/2010501, and Independent Spent Fuel Storage Installation Canister Welding Demonstration Inspection Report 07200038/2010001w/Attachment - Supplemental Information

cc w/encl: (See page 3)

PUBLICLY AVAILABLE       NON-PUBLICLY AVAILABLE       SENSITIVE       NON-SENSITIVE  
ADAMS:  Yes      ACCESSION NUMBER: \_\_\_\_\_       SUNSI REVIEW COMPLETE

|              |            |            |            |            |            |              |            |
|--------------|------------|------------|------------|------------|------------|--------------|------------|
| OFFICE       | RII:DRP    | RII:DRP    | RII:DRS    | RII:DRS    | RII:DRS    | RII:DRS      | RII:DRS    |
| SIGNATURE    | Via email  | Via email  | Via email  | Via email  | Via email  | BRB /RA for/ | Via email  |
| NAME         | JBrady     | JHeath     | CEven      | RPatterson | RWilliams  | LMiller      | RCarrion   |
| DATE         | 10/20/2010 | 10/21/2010 | 10/21/2010 | 10/26/2010 | 10/26/2010 | 10/20/2010   | 10/22/2010 |
| E-MAIL COPY? | YES NO     | YES NO     | YES NO     | YES NO     | YES NO     | YES NO       | YES NO     |

  

|              |            |            |            |            |            |        |        |
|--------------|------------|------------|------------|------------|------------|--------|--------|
| OFFICE       | RII:DRS    | RII:DRS    | RII:DRS    | RII:DRP    | RII:DRP    |        |        |
| SIGNATURE    | Via email  | Via email  | Via email  | Via email  | JHB /RA/   |        |        |
| NAME         | CFletcher  | CMorell    | BCollins   | EStamm     | JBartley   |        |        |
| DATE         | 10/21/2010 | 10/21/2010 | 10/20/2010 | 10/20/2010 | 10/26/2010 |        |        |
| E-MAIL COPY? | YES NO     | YES NO     | YES NO     | YES NO     | YES NO     | YES NO | YES NO |

OFFICIAL RECORD COPY      DOCUMENT NAME:  
HTTP://PORTAL.NRC.GOV/EDO/RII/DRP/BRANCH1/DOCUMENTS/MCGUIRE 2010-04 IIR FINAL.DOCX

DEC

3

cc w/encl:  
Steven D. Capps  
Station Manager  
Duke Energy Carolinas, LLC  
Electronic Mail Distribution

Dhiaa M. Jamil  
Group Executive and Chief Nuclear Officer  
Duke Energy Carolinas, LLC  
Electronic Mail Distribution

Peter Schuerger  
Training Manager  
Duke Energy Carolinas, LLC  
Electronic Mail Distribution

C. Jeff Thomas  
Fleet Regulatory Compliance & Licensing  
Manager  
Duke Energy Carolinas, LLC  
Electronic Mail Distribution

Kenneth L. Ashe  
Regulatory Compliance Manager  
Duke Energy Carolinas, LLC  
Electronic Mail Distribution

Lara Nichols  
Associate General Counsel  
Duke Energy Corporation  
Electronic Mail Distribution

Kathryn B. Nolan  
Senior Counsel  
Duke Energy Corporation  
526 South Church Street-EC07H  
Charlotte, NC 28202

David A. Repka  
Winston Strawn LLP  
Electronic Mail Distribution

County Manager of Mecklenburg County  
720 East Fourth Street  
Charlotte, NC 28202

W. Lee Cox, III  
Section Chief  
Radiation Protection Section  
N.C. Department of Environmental  
Commerce & Natural Resources  
Electronic Mail Distribution

DEC

4

Letter to Regis T. Repko from Jonathan H. Bartley dated October 29, 2010

SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT  
05000369/2010004, 05000370/2010004, EMERGENCY PREPAREDNESS  
INSPECTION REPORT 05000369/2010501 AND 05000370/2010501, AND  
INDEPENDENT SPENT FUEL STORAGE INSTALLATION CANISTER  
WELDING DEMONSTRATION INSPECTION REPORT 07200038/2010001

Distribution w/encl:

C. Evans, RII

L. Douglas, RII

OE Mail

RIDSNRDIRS

PUBLIC

RidsNrrPMMcGuire Resource

**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket Nos: 50-369, 50-370, 72-038

License Nos: NPF-9, NPF-17

Report Nos: 05000369/2010004, 05000370/2010004, 05000369/2010501,  
05000370/2010501 and 07200038/2010001

Licensee: Duke Energy Carolinas, LLC

Facility: McGuire Nuclear Station, Units 1 and 2

Location: Huntersville, NC 28078

Dates: July 1, 2010, through September 30, 2010

Inspectors: J. Brady, Senior (Sr.) Resident Inspector  
J. Heath, Resident Inspector  
C. Even, Reactor Inspector (Section 1R17)  
R. Patterson, Reactor Inspector (Section 1R17)  
R. Williams, Reactor Inspector (Section 1R17)  
L. Miller, Sr. Emergency Preparedness Inspector (Sections 1EP2, 1EP3,  
1EP4, 1EP5, and 4OA1)  
R. Carrion, Sr. Reactor Inspector (Section 4OA5)  
C. Fletcher, Sr. Reactor Inspector (Section 4OA5)  
C. Morell, Reactor Inspector (Section 4OA5)  
B. Collins, Reactor Inspector (Section 4OA5)

Accompanying Personnel: J. Montgomery, Reactor Inspector

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

Enclosure

## SUMMARY OF FINDINGS

IR 05000369/2010004, IR 05000370/2010004, IR 05000369/2010501, IR 05000370/2010501, IR 07200038/2010001; 7/1/2010 – 9/30/2010; McGuire Nuclear Station, Equipment Alignment, Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications, and Follow-up of Events.

The report covered a three month period of inspection by two resident inspectors and eight region based inspectors. One Green and two Severity Level (SL)-IV non-cited violations (NCVs) 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). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The cross-cutting aspect was determined using IMC 0310, "Components Within The Cross-Cutting Areas." The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

### Cornerstone: Initiating Events

- Green: An NRC-identified Green NCV of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for the licensee's failure to determine the cause of a significant condition adverse to quality involving both trains of Control Room Area Chilled Water System (CRACWS) being out of service at the same time. This resulted in insufficient corrective action to preclude repetition. The licensee reopened the root cause investigation to determine the cause and was resolving the high cycle fatigue issue on the hot gas bypass line.

The performance deficiency was more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern in that failing to identify corrective actions to preclude repetition could result in the loss of safety function of more risk-significant equipment such as emergency diesel generators. This finding was determined to be of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding was associated with the cross-cutting aspect of supervisory and management oversight in the Work Practices component of the Human Performance area because management's establishment of the scope and reviews of the completed root cause evaluation failed to provide adequate oversight to ensure the cause of a significant condition adverse to quality was determined and corrective actions were taken to preclude repetition. [H.4(c)] (Section 4OA3)

### Cornerstone: Mitigating Systems

- SL IV: An NRC-identified SL-IV NCV was identified when the licensee did not update the Updated Final Safety Analysis Report (UFSAR) for a modification to the emergency diesel generator air start system (VG) on both units. This modification installed cross-connect piping between the two VG receivers on each emergency diesel generator to allow maintaining receiver pressure when an air compressor was out of service. Licensee corrective actions include updating the UFSAR and Design Basis Documents and processing a Technical Specification (TS) change to make the TS applicable to the cross-connected configuration. This violation is in the licensee's corrective action program as PIPs M-10-5299 and M-10-5504.

Enclosure

This performance deficiency was considered as traditional enforcement because not having an updated UFSAR hinders the licensee's ability to perform adequate 10 CFR 50.59 evaluations and can impact the NRC's ability to perform its regulatory function such as license amendment reviews and inspections. This violation was determined to be a SL-IV violation using Section 6.1 of the NRC's Enforcement Policy because the inaccurate information was not used to make an unacceptable change to the facility. Cross-cutting aspects are not assigned to traditional enforcement violations. (Section 1R04)

- SL IV: A NRC-identified SL-IV NCV of 10 CFR 50.71(e) was identified when the licensee failed to update the UFSAR following a modification that installed new protective functions for the emergency diesel generators (EDGs). This violation is in the licensee's corrective action program as PIP M-10-05718

This performance deficiency was considered as traditional enforcement because not having an updated UFSAR hinders the licensee's ability to perform adequate 10 CFR 50.59 evaluations and can impact the NRC's ability to perform its regulatory function such as license amendment reviews and inspections. This violation was determined to be a SL-IV violation using Section 6.1 of the NRC's Enforcement Policy because the inaccurate information was not used to make an unacceptable change to the facility. Cross-cutting aspects are not assigned to traditional enforcement violations. (Section 1R17)



## REPORT DETAILS

### Summary of Plant Status

Unit 1 began the inspection period at approximately 100 percent rated thermal power (RTP) and remained there for the rest of the period.

Unit 2 began the inspection period at approximately 100 percent RTP and remained there for the rest of the period.

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R01 Adverse Weather Protection

##### a. Inspection Scope

Seasonal Extreme Weather Condition: The inspectors reviewed the effectiveness of the licensee's hot weather protection program pertaining to the hot weather conditions experienced during the period from July 1 to September 30, 2010. This included field walkdowns to assess the equipment that might be susceptible to hot weather conditions including the Unit 1 and 2 EDG rooms. The inspectors discussed specific hot weather preparation measures with the responsible system engineer and the operations work planning manager to determine the scope of the preparations and to determine the effectiveness during hot weather periods. The inspectors also reviewed control room alarms and annunciators during this period to see how these may pertain to hot weather conditions. The inspectors attended the morning Site Direction Meeting where the station preparations for hot weather conditions were discussed. Documents reviewed are listed in the Attachment.

Impending Adverse Weather Condition: On July 12, 2010, a tornado warning and severe thunderstorm warning were experienced on site. The inspectors reviewed the plant preparations for the conditions to determine whether procedural requirements, compensatory actions, and operator actions and staffing were sufficient to protect risk significant systems. The inspectors toured the plant site and assessed the readiness of risk significant systems. The inspectors reviewed licensee actions associated with the preparation activities to determine whether these actions were sufficient to prevent unnecessary weather related Notices of Enforcement Discretion (NOEDs), and that risks associated with the weather related actions were properly managed to limit risk. Documents reviewed are listed in the Attachment.

##### b. Findings

No findings were identified.

Enclosure

## 1R04 Equipment Alignment

### a. Inspection Scope

Partial Walkdown: The inspectors performed a partial walkdown of the following six 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.

- 1B EDG with 1A EDG out of service on July 27
- 2B Auxiliary Feedwater pump with 2A Auxiliary Feedwater pump out of service for motor-inspection and leak repair on August 17
- Unit 2 Turbine-driven Auxiliary Feedwater pump with 2A Auxiliary Feedwater pump out of service for motor-inspection and leak repair on August 17
- 1B Safety Injection pump while 1A Safety Injection pump out of service for motor cooler heat exchanger cleaning and bearing oil cooler inspection on August 25
- 1B EDG during "A" Train Nuclear Service Water (RN) Supply and Return Header Flush on September 20
- 2B EDG during "A" Train RN Supply and Return Header Flush on September 20

Complete Walkdown: The inspectors conducted a detailed review of the 125 VDC/120 VAC Vital Instrument and Control Power System. To determine the correct system alignment, the inspectors reviewed the procedures, drawings, and the UFSAR. Items reviewed during the inspection included: (1) valves are correctly positioned, do not exhibit leakage, and are locked as required; (2) electrical power is available, (3) system components are correctly labeled, cooled lubricated, ventilated, etc.; (4) hanger and supports are correctly installed and functional; (5) essential system support systems are functional; (6) system performance is not hindered by debris; and (7) tagging clearances are appropriate. To determine the effect of outstanding design issues on the operability of the systems the inspectors reviewed the operator workaround list, the temporary modification list, system health reports, and other outstanding items tracked by the engineering department. In addition, the inspectors reviewed outstanding maintenance work requests/work orders and deficiencies that could affect the ability of the system to perform its function. Documents reviewed are listed in the Attachment.

### b. Findings

Introduction: An NRC-identified SL-IV NCV was identified when the licensee did not update the UFSAR for a modification to the VG system on both units. This modification installed cross-connect piping between the two VG receivers on each emergency diesel generator to allow maintaining receiver pressure when an air compressor was out of service.

Description: Following a plant walkdown of the emergency diesel generators, the inspectors reviewed the UFSAR and noted that the VG system was described as two independent sub-systems consisting of an air compressor, a receiver, and connecting piping. The inspectors found that the UFSAR description did not describe a cross-connection feature of the two air start receivers. The licensee found that a modification to add the cross-connection lines and valves was implemented in 1994; however, the updated UFSAR page and Design Basis Document changes from the modification package were never implemented. This information was important because it identified a method by which two independent sub-systems of the VG system could be cross-connected which would make them no longer independent. Additionally, the information was important because in the conversion to Improved TS, the licensee implemented a more restrictive plant specific change to Limiting Condition for Operation (LCO) 3.8.3, Condition D, which identified the two sub-systems as independent. This change to TS would likely not have been submitted, or if submitted, would likely not have been accepted by the NRC if the UFSAR had been correctly updated. Licensee corrective actions include updating the UFSAR and Design Basis Documents, and processing a TS change to make the TS applicable to the cross-connected configuration.

Analysis: The failure to update the UFSAR as required by 10 CFR 50.71(e) was a performance deficiency. This performance deficiency was considered as traditional enforcement because not having an updated UFSAR hinders the licensee's ability to perform adequate 10 CFR 50.59 evaluations and can impact the NRC's ability to perform its regulatory function such as license amendment reviews and inspections. This violation was determined to be a SL-IV violation using Section 6.1 of the NRC's Enforcement Policy because the inaccurate information was not used to make an unacceptable change to the facility. Cross-cutting aspects are not assigned to traditional enforcement violations.

Enforcement: 10 CFR 50.71(e) required, in part, that licensees shall update periodically the FSAR originally submitted as part of the application for the operating license to assure that the information included in the report contains the latest information developed. This submittal shall include the effects of all changes made in the facility or procedures as described in the FSAR. Contrary to the above, from September 1, 1994, to September 30, 2010, the licensee had not updated the UFSAR to include the latest information developed in that UFSAR changes for a 1994 modification to the emergency diesel generator air start system were not implemented. This violation is in the licensee's corrective action program as PIPs M-10-5299 and M-10-5504, and is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy: NCV 05000369,370/2010004-01, Failure to Update the UFSAR for a Modification to the VG System.

## 1R05 Fire Protection

### a. Inspection Scope

Fire Protection Walkdowns: The inspectors walked down accessible portions of the following six 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

Enclosure

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.

- 1A EDG room (Fire Area 5)
- 1B EDG room (Fire Area 6)
- 1ETA Switchgear Room (Fire Area 17)
- HVAC Room for 1ETA Switchgear Room (Fire Area 17A)
- 2ETA Switchgear Room (Fire Area 18)
- HVAC Room for 2ETA Switchgear Room (Fire Area 18A)

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program

a. Inspection Scope

On July 21 and 28, 2010, the inspectors observed operators in the plant's simulator during licensed operator requalification training for a reactor coolant leak, steam generator tube rupture, dropped rod and steam break outside containment, to determine the effectiveness of licensed operator requalification 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 whether the licensee identified deficiencies and discrepancies that occurred during the simulator training. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the two activities listed below for items such as: (1) appropriate work practices; (2) identifying and addressing common cause failures; (3) scoping in accordance with 10 CFR 50.65(b) of the Maintenance Rule; (4) characterizing reliability issues for performance; (5) charging unavailability for performance; (6) balancing reliability and unavailability; (7) trending key parameters for condition monitoring; (8)

Enclosure

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. The inspectors also reviewed the corrective action document M-10-5299 to determine whether the licensee identified and implemented appropriate corrective actions. Documents reviewed are listed in the Attachment.

- Leaks in CRACWS refrigerant piping
- Installation of new bank capacitors (C1) and choke (L1) in Vital Inverter 1EVID

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 six 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.

- 2B Diesel generator maintenance overlap with 2B Containment Spray pump and 2B Charging pump maintenance on August 31
- Implementation of engineering change to replace 1EVID Vital Inverter C1 bank capacitors and L1 choke overlapped with planned 'H' Diesel Instrument Air compressor planned maintenance on September 1
- A planned ORANGE risk condition for 2A Nuclear Service Water system out of service for planned maintenance activities on September 7
- Work schedule changes to delay switchyard work due to an extension of maintenance work on shared transformer SATA to prevent entry into Orange risk on September 14
- Work schedule changes due to stopping of the A Train nuclear service water flush due to 2A strainer delta pressure transmitter problems on September 16-18
- Work schedule changes again due to stopping of the A Train nuclear service water flush due to 2A strainer delta pressure transmitter problems on September 22-23

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the six 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-10-4598, Foreign material found in check valve 2VI2087 during post mod testing for EC101546
- M-10-4339, SSPS Power Supply voltage recorded as out of specification
- M-10-1616, 1ND-2AC (RHR suction from NC Loop 3) failed to open electrically
- M-10-4743, 1ND-96 took 120 seconds to fully vent
- M-10-5489, 2B NI pump oil leak
- M-10-5203, Rotork Add-on-pack part 21

b. Findings

No findings were identified.

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

a. Inspection Scope

Triennial Review: The inspectors reviewed selected evaluations to confirm that the licensee had appropriately considered the conditions under which changes to the facility, UFSAR, or procedures may be made, and tests conducted, without prior NRC approval. The inspectors reviewed the evaluations for seven changes listed in the Attachment and supporting information, such as drawings, calculations, supporting analyses, the UFSAR, and TS, to confirm that the licensee had appropriately concluded that the changes could be accomplished without obtaining a license amendment. The inspectors also reviewed the 17 changes listed in the Attachment for which the licensee had determined that evaluations were not required to confirm that the licensee's conclusions to "screen out" these changes were correct and consistent with 10 CFR 50.59. The inspectors evaluated engineering design change packages for the following 11 material and design based modifications and the associated attributes to evaluate the

modifications for adverse effects on system availability, reliability, and functional capability.

- EC 76817, EDG Protective Relay Replacement U1 Mod, 12/07
  - Licensing Basis
  - Control Signals
  - Timing
  
- EC 97572, Modify AOV Control Circuit 1KC320 Mod, 08/08
  - Timing
  - Control Signals
  - Operations
  
- EC 97697, MD 201662-ND Suction Relief Valves Unit 2 Mod, 10/09
  - Materials Replacement
  - Flowpaths
  - Licensing Basis
  
- EC 100090, ME 102129-Replace 1NI-879,880, 04/10
  - Materials Replacement
  - Licensing Basis
  - Structural
  
- EC 100187, ME 202139 Replace Actuator on 2NI-118A MNT, 02/09
  - Energy Needs
  - Control Signals
  - Timing
  - Licensing Basis
  
- 3006.04-02-0001, ITW Paktron Q/QRL Series Suppression/Snubber, 01/10
  - Materials Replacement
  - Licensing Basis
  - Structural
  
- EC 99746, Improve CIV Margin for Penetration 2M-385, 10/09
  - Flowpaths
  - Operations
  - Licensing Basis
  - Failure Modes
  
- EC 95581, Replace/Modify 1RNFT5230 (RN to KD HX Flow), 08/07
  - Materials/Replacement Components
  - Flowpaths
  - Structural

- EC 101935, 2NV-110 Cut Out and Replace, 03/10
  - Materials/Replacement Components
  - Structural
  - Operations
  
- EC 103829, Change Mounting Requirements for Conax RTD's Used for NC Wide Range Temperature, 07/10
  - Structural
  - Control Signals
  - Failure Modes
  
- EC 42278, Replace EDG Surge Arrestors, 03/08
  - Materials/Replacement Components
  - Failure Modes
  - Licensing Basis

The inspectors also reviewed selected PIPs and the licensee's recent self-assessment associated with modifications and screening/evaluation issues to confirm that problems were identified at an appropriate threshold were entered into the corrective action process, and appropriate corrective actions had been initiated and tracked to completion. Documents reviewed are listed in the Attachment.

b. Findings

Introduction: A NRC-identified SL-IV NCV of 10 CFR 50.71(e) was identified when the licensee failed to update the FSAR following a modification that installed new protective functions for the emergency diesel generators (EDGs).

Description: Engineering Change 76817 replaced the instantaneous overcurrent, generator neutral ground, and reverse power analog protective relays with a digital multifunction relay on each EDG. The digital multifunction relay also added the protective functions of loss of excitation/field protection (40DGT), negative sequence protection (46Q), definite time overcurrent protection (51DGT), and overexcitation protection (24DGT). All of these functions provide tripping protection for the EDGs during testing and normal operation. During emergency operation of the diesel, all of these protective functions are bypassed and alarm locally and in the control room.

The inspectors reviewed the UFSAR description for EDG protective functions and identified that these additional protective functions were not adequately incorporated. The new relay functions provide protection for the EDGs during testing and normal operation from an event on the grid, the generator, or operational issues, which could cause damage to the stator and rotor windings, and prevent the EDGs from fulfilling their safety function. Therefore, these functions have a material impact on safety for the EDGs. The licensee initiated PIP M-10-05718 to describe the new tripping functions of the EDGs in the UFSAR. The inaccurate information in the UFSAR was not used to make an unacceptable change to the facility.



The licensee was committed to Regulatory Guide 1.70, Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants, as an acceptable means to implementing the UFSAR. Section 8.3, Onsite Power Systems, stated in part that those portions that are not related to safety need only be described in sufficient detail to permit an understanding of interactions with the safety related portions. Section 8.3 also stated that tripping devices for onsite power systems should be described in the UFSAR. Although these additional protective tripping functions were non-safety, it was necessary to describe the interactions of the non-safety related tripping functions with the safety-related tripping functions of the EDG.

Analysis: The failure to update the UFSAR as required by 10 CFR 50.71(e) was a performance deficiency. This performance deficiency was considered as traditional enforcement because not having an updated UFSAR hinders the licensee's ability to perform adequate 10 CFR 50.59 evaluations and can impact the NRC's ability to perform its regulatory function such as license amendment reviews and inspections. This violation was determined to be a SL-IV violation using Section 6.1 of the NRC's Enforcement Policy because the inaccurate information was not used to make an unacceptable change to the facility. Cross-cutting aspects are not assigned to traditional enforcement violations.

Enforcement: 10 CFR 50.71(e) required that licensees shall periodically update the FSAR, originally submitted as part of the application for the operating license, to assure that the information included in the report contains the latest information developed. This submittal shall include the effects of all changes made in the facility or procedures as described in the FSAR. Contrary to the above, from December 2007 to September 30, 2010, the licensee failed to update the UFSAR to assure that the information included in the report contained the latest information developed in that new protective tripping functions for the EDGs was not included. The failure to update the UFSAR as required by 10 CFR 50.71(e) is characterized as a Severity Level IV violation. This violation is in the licensee's corrective action program as PIP M-10-05718 and is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy: NCV 05000369,370/2010004-02, Failure to Update the UFSAR for New EDG Tripping Functions.

#### 1R19 Post Maintenance Testing

##### a. Inspection Scope

For the six 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 function(s). Documents reviewed are listed in the Attachment.

- 2B Diesel Generator functional test following rebuild of starting air solenoid on July 6
- EVCA Vital battery charger performance test following inspection, cleaning, and calibration of battery charger on August 16
- 2A Diesel Generator functional test following speed switch calibration on August 16

Enclosure

- 2A Auxiliary Feedwater Pump functional test following oil leak repair and motor cable repair on August 17
- 1A Component Cooling heat exchanger supply isolation valve (1RN-86A) functional tests following 1RN-86A adjustment/repair of manual clutch on August 24
- 1EVID Vital Inverter functional verification following installation of new C1 bank capacitors and L1 choke on September 1

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. Documents reviewed are listed in the Attachment.

Surveillance Tests

- PT/1/A/4350/002B, 1B Diesel Generator Operability Test
- PT/1/A/4350/002A, 1A Diesel Generator Operability Test
- PT/1/B/4700/0082, Unit 1 Primary Chemistry Periodic Surveillance for Ice Bed Sampling
- PT/2/B/4700/0082, Unit 2 Primary Chemistry Periodic Surveillance for Ice Bed Sampling

In-Service Tests

- PT/2/A/4252/002A, Auxiliary Feedwater Valve Stroke Timing – Quarterly 2A Motor Driven Pump Flowpath
- PT/2/A/4252/001A, 2A Auxiliary Feedwater Pump Performance Test

Reactor Coolant System Leakage

- PT/1,2/A/4150/001B, Reactor Coolant System Leakage Calculation

b. Findings

No findings were identified.

## Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Testinga. Inspection Scope

The inspector evaluated the adequacy of the licensee's methods for testing the alert and notification system in accordance with NRC Inspection Procedure 71114, Attachment 02, "Alert and Notification System Evaluation." The applicable planning standard 10 CFR Part 50.47(b)(5) and its related 10 CFR Part 50, Appendix E, Section IV.D requirements were used as reference criteria. The criteria contained in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, was also used as a reference. Documents reviewed are listed in the Attachment. This inspection activity satisfied one inspection sample for the alert and notification system on a biennial basis.

b. Findings

No findings were identified.

1EP3 Emergency Preparedness Organization Staffing and Augmentation Systema. Inspection Scope

The inspector reviewed the licensee's Emergency Response Organization (ERO) augmentation staffing requirements and process for notifying the ERO to ensure the readiness of key staff for responding to an event and timely facility activation. The qualification records of key position ERO personnel were reviewed to ensure all ERO qualifications were current. A sample of problems identified from augmentation drills or system tests performed since the last inspection were reviewed to assess the effectiveness of corrective actions. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 03, "Emergency Response Organization Staffing and Augmentation System." The applicable planning standard, 10 CFR 50.47(b)(2) and its related 10 CFR 50, Appendix E requirements were used as reference criteria. Documents reviewed are listed in the Attachment. This inspection activity satisfied one inspection sample for the ERO staffing and augmentation system on a biennial basis.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changesa. Inspection Scope

Since the last NRC inspection of this program area, revisions 09-02 and 10-01 of the Emergency Plan were implemented based on the licensee's determination, in

Enclosure

accordance with 10 CFR 50.54(q), that the changes resulted in no decrease in the effectiveness of the Plan, and that the revised Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The inspector conducted a sampling review of the Plan changes and implementing procedure changes made between July 1, 2009, and July 31, 2010, to evaluate for potential decreases in effectiveness of the Plan. This review was not documented in a Safety Evaluation Report and does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 04, "Emergency Action Level and Emergency Plan Changes." The applicable planning standard, 10 CFR 50.47(b)(4) and its related 10 CFR 50, Appendix E requirements were used as reference criteria. Documents reviewed are listed in the Attachment. This inspection activity satisfied one inspection sample for the emergency action level and emergency plan changes on an annual basis.

b. Findings

No findings were identified.

1EP5 Correction of Emergency Preparedness Weaknesses

a. Inspection Scope

The inspector reviewed the corrective actions identified through the Emergency Preparedness program to determine the significance of the issues and to determine if repeat problems were occurring. The facility's self-assessments and audits were reviewed to assess the licensee's ability to be self-critical, thus avoiding complacency and degradation of their emergency preparedness program. In addition, the inspector reviewed licensee self-assessments and audits to assess the completeness and effectiveness of all emergency preparedness related corrective actions. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 05, "Correction of Emergency Preparedness Weaknesses." The applicable planning standard, 10 CFR 50.47(b)(14) and its related 10 CFR 50, Appendix E requirements were used as reference criteria. Documents reviewed are listed in the Attachment. This inspection activity satisfied one inspection sample for the correction of emergency preparedness weaknesses on a biennial basis.

b. Findings

No findings were identified.

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors evaluated the conduct of the following two routine licensee emergency drills to identify any weaknesses or deficiencies in classification, notification, dose assessment and protective action recommendation development activities in accordance

Enclosure

with 10 CFR 50, Appendix E. The inspectors also attended the licensee critique of the drills to compare any inspector-observed weakness with those identified by the licensee in order to verify whether the licensee was properly identifying failures. The inspectors reviewed the licensee's performance indicator determinations for these drills to determine whether they were in conformance with the criteria contained in Nuclear Energy Institute (NEI) 99-02.

- Routine emergency drill conducted on July 28, 2010
- Routine emergency drill conducted on September 22, 2010

b. Findings

No findings were identified.

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors sampled licensee submittals for the 13 performance indicators (PIs) listed below for the period July 1, 2009 to June 30, 2010. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, was used to confirm the reporting basis for each data element. Documents reviewed are listed in the Attachment.

Emergency Preparedness Cornerstone

- Emergency Response Organization Drill/Exercise Performance
- ERO Drill Participation
- Alert and Notification System Reliability

For the specified review period, the inspectors examined data reported to the NRC, procedural guidance for reporting PI information, and records used by the licensee to identify potential PI occurrences. The inspectors verified the accuracy of the PI for ERO drill and exercise performance through review of a sample of drill and event records. The inspectors reviewed selected training records to verify the accuracy of the PI for ERO drill participation for personnel assigned to key positions in the ERO. The inspectors verified the accuracy of the PI for alert and notification system reliability through review of a sample of the licensee's records of periodic system tests. The inspectors also interviewed the licensee personnel who were responsible for collecting and evaluating the PI data.

Mitigating Systems Cornerstone

- Mitigating Systems Performance Index (MSPI) – Emergency Power (Units 1 and 2)
- MSPI – High Pressure Injection (Units 1 and 2)
- MSPI – Secondary Heat Removal (Units 1 and 2)
- MSPI – Residual Heat Removal (Units 1 and 2)
- MSPI – Cooling Water (Units 1 and 2)

The inspectors reviewed the documents listed in the Attachment to determine if the licensee had correctly calculated and reported the data for the above PIs. In addition, the inspectors reviewed any changes made in MSPI risk coefficients that were greater than 25 percent since the last review.

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: The inspectors selected PIPs M-10-0185, M-09-0966 and M-09-7675 associated with the B Train CRACWS chiller refrigerant leak for detailed review. The inspectors reviewed these documents to determine whether the licensee identified the full extent of the issue, performed an appropriate evaluation, and specified and prioritized appropriate corrective actions. The inspectors evaluated the licensee documents against the requirements of the licensee's corrective action program and implementing procedures, and 10 CFR 50, Appendix B. Documents reviewed are listed in the Attachment.

b. Findings and Observations

The inspectors determined that the licensee had mixed results in disposition of the B Train CRACWS chiller refrigerant leak problems. The inspectors determined that the licensee performed a reasonable apparent cause evaluation and identified appropriate corrective actions for the two leaks that were documented in PIPs M-09-0966 and M-09-7675. The inspectors noted that one of the corrective actions identified in PIP M-09-7675 was to replace the B Train CRACWS hot gas bypass refrigerant piping, even though the piping leak had already been weld repaired. The apparent cause for both 2009 PIPs identified vibration as a likely cause for the leaks. Consequently, piping replacement was an appropriate corrective action for the result of vibration (high cycle fatigue cracks). This corrective action had not been completed prior to the removal of the A Train CRACWS for scheduled annual preventative maintenance in January 2010. The inspectors concluded that the licensee's decision to remove the A Train CRACWS chiller from service for annual preventive maintenance (PM) prior to completing planned corrective actions for the B Train CRACWS chiller contributed to the resulting LCO 3.0.3 entry when the B Train CRACWS chiller subsequently experienced a refrigerant leak.

The root cause evaluation for PIP M-10-0185 was thorough in determining why the B Train CRACWS chiller leak recurred and appropriate corrective actions were identified. However, the inspectors determined that the evaluation was narrowly focused on the repetitive nature of the B Train CRACWS chiller leaks. The inspectors found that the cause evaluation did not identify why the licensee allowed themselves to get into the LCO 3.0.3 power reduction situation. Consequently, no corrective actions to preclude repetition were identified. This aspect is further discussed in Section 4OA3.

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

(Closed) LER 05000369/2010-001, Power reduction on two units due to entry into LCO 3.0.3 caused by the inoperability of both trains of the Control Room Area Chilled Water System

(Closed) Unresolved Item (URI) 50000369,370/2010002-004, Power Reduction on Both Operating Units Due to Entry into TS Limiting Condition for Operation 3.0.3 Caused by the Inoperability of Both Trains of the Control Room Area Chilled Water System

##### a. Inspection Scope

As documented in NRC Inspection Report 50000369,370/2010002, NOED 10-2-001 was issued on January 20, 2010. The inspectors reviewed the LER and associated licensee PIP M-10-0185 which included the root cause investigation and identified corrective actions. Documents reviewed are listed in the Attachment.

##### b. Findings

Introduction: An NRC-identified Green NCV of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for the licensee's failure to determine the cause of a significant condition adverse to quality involving both trains of CRACWS being out of service at the same time. This resulted in insufficient corrective action to preclude repetition.

Description: On March 11, 2010, the licensee reported that they reduced power on both units as required by TS 3.0.3 when the B Train CRACWS chiller was found to have a refrigerant leak while the A Train CRACWS chiller was out of service for maintenance (PIP M-10-0185, categorized as Level 1). The licensee performed a root cause evaluation but did not identify the cause(s) for why the licensee had removed the A Train CRACWS chiller from service for maintenance when the B Train CRACWS chiller had a known reliability problem for which corrective actions had not been completed. The inspectors found that the licensee adequately determined that the B Train CRACWS chiller refrigerant leak was due to high cycle fatigue of the hot gas bypass (HGBP) piping. A leak in the B Train CRACWS chiller HGBP line previously occurred on February 22, 2009, (PIP M-09-0966) and on December 29, 2009, (PIP M-09-7675). In both cases, a weld repair on the B Train CRACWS chiller HGBP line was accomplished to repair the leak and the chiller was declared operable. Both of the apparent cause evaluations for the 2009 leaks identified vibration as one of the potential causes. Engineering experience indicated that vibration was a primary cause for high cycle

Enclosure

fatigue failures. Consequently, one of the corrective actions for the December 2009 leak was to replace the HGBP piping. The licensee decided to remove the A Train CRACWS chiller from service on January 12, 2010, for its annual scheduled PM, although the corrective action to replace the HGBP piping had not been implemented. The root cause evaluation did not address the decision to proceed with the annual PM on the A Train CRACWS chiller. Consequently, the cause of the LCO 3.0.3 condition reported in the LER was not determined; therefore, associated corrective actions to preclude repetition were not identified in PIP M-10-0185. The inspectors found that the management reviews associated with determining the scope and adequacy of the root cause evaluation failed to identify that the root cause evaluation did not adequately address the cause(s) of both trains of CRACWS being out of service at the same time.

Analysis: The failure to determine the cause for a significant condition adverse to quality was determined to be a performance deficiency. The performance deficiency was more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern in that failing to identify corrective actions to preclude repetition could result in the loss of safety function of more risk-significant equipment such as EDGs. This finding was determined to be of very low safety significance (Green) using IMC 0609, Attachment 4, because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding was associated with the cross-cutting aspect of supervisory and management oversight in the Work Practices component of the Human Performance area because management's establishment of the scope and reviews of the completed root cause evaluation failed to provide adequate oversight to ensure the cause of a significant condition adverse to quality was determined and corrective actions were taken to preclude repetition. [H.4(c)]

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, required that conditions adverse to quality be promptly identified and corrected. For significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective actions taken to preclude repetition. Contrary to the above, from March 23, 2010, to September 30, 2010, the licensee's cause determination (root cause analysis) for a significant condition adverse to quality failed to determine why both trains of CRACWS were out of service at the same time in that the licensee's cause analysis did not determine why the A Train CRACWS chiller was taken out of service on January 12, 2010, for preventive maintenance when the reliability of the B Train CRACWS chiller was questionable. Consequently, associated corrective actions to preclude repetition were not identified. This Green violation is in the licensee's corrective action program as PIP M-10-4862, and is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy: NCV 05000369,370/2010004-03, Failure to Determine the Cause and Take Corrective Action to Preclude Repetition for CRACWS.

#### 4OA5 Other Activities

- .1 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

Enclosure



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.

.2 Independent Spent Fuel Storage Installation (ISFSI) Canister Welding Demonstration

a. Inspection Scope

On July 14 and 15, 2010, the licensee demonstrated its ability to weld and conduct non-destructive examination (NDE) on a mockup of a NAC MAGNASTOR canister (CoC 72-1031) in preparation to begin operations of loading and storing its spent fuel on the ISFSI. The inspection was to confirm the adequacy of procedures, personnel training/qualification, and the equipment to be used during normal ISFSI operations.

For the multi-purpose canister welding operations, the inspectors observed welding and NDE of the inner top cover and vent and siphon port covers. A majority of the welding was done with the Automatic Welding System using the gas-shielded tungsten arc welding (GTAW) process. The use of manual GTAW welding was also demonstrated for the welding of the vent and siphon port covers. The application of visual examination and dye penetrant testing NDE methods on the welds was inspected. A comparison of the welding procedures and NDE procedures to their respective work practices was made. In addition, welding procedure documentation, welder performance qualification, and NDE procedures and NDE personnel qualifications were verified against their respective Code and procedural requirements.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On September 30, 2010, the resident inspectors presented the inspection results to Mr. Regis T. Repko and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

Ashe, K., Manager, Regulatory Compliance  
Austin, M., Manager, Fleet Emergency Preparedness  
Barry, K., Project Manager, Major Projects  
Black, D., Manager, Security  
Boyle, J., Manager, Mod Engineering  
Brenton, D., Superintendent, Plant Operations  
Brewer, D., Manager, Safety Assurance  
Bryant, J., Engineer, Compliance/Licensing  
Capps, S., Station Manager  
Crane, K., Regulatory Compliance  
Curry, C., Manager, Engineering  
Englebert, D., Maintenance - Welding  
Gabbert, J., Manager, Chemistry  
Hicks, J., Superintendent, Maintenance  
Keene, M., Maintenance  
Kunkel, N., Superintendent, Work Control  
Leisure, M., Regulatory Compliance  
Mohr, N., Nuclear Technical Services  
Mooneyhan, S., Manager, Radiation Protection  
Murray, K., Manager, Emergency Preparedness  
Nolin, J., Manager, Mechanical and Civil Engineering  
Nudi, H., Engineer, Engineering Support  
Repko, R., Site Vice President, McGuire Nuclear Station  
Rowe, P. J., Mods Manager - Steel  
Sarver, T., Engineer, Engineering Support  
Schuerger, P., Manager, Training  
Snider, S., Manager, Reactor and Electrical Systems Engineering  
Waldrop, K., Spent Fuel Management

#### NRC personnel

Thompson, J., Project Manager, NRR

### **LIST OF REPORT ITEMS**

#### Opened and Closed

|                         |     |  |
|-------------------------|-----|--|
| 05000369,370/2010004-01 | NCV | Failure to Update the UFSAR For a Modification to the VG System (Section 1R04) |
| 05000369,370/2010004-02 | NCV | Failure to Update the UFSAR For New EDG Tripping Functions (Section 1R17)      |

05000369,370/2010004-03

NCV Failure to Determine  
the Cause And Take Corrective Action to  
Preclude Repetition For Control Room Area  
Chilled Water System (Section 4OA3)

Closed

05000369/2010-001

LER Power  
Reduction On Two Units Due to Entry Into  
LCO 3.0.3 Caused by the Inoperability of  
Both Trains of The Control Room Area  
Chilled Water System (Section 4OA3)

50000369,370/2010002-004

URI Power Reduction on  
Both Operating Units Due to Entry Into TS  
Limiting Condition for Operation 3.0.3  
Caused by the Inoperability Of Both Trains  
of the Control Room Area Chilled Water  
System (Section 4OA3)

## DOCUMENTS REVIEWED

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

#### Seasonal Extreme Weather Condition

PT/0/B/4700/039, Warm Weather Equipment Checkout

#### Impending Adverse Weather Condition

RP/0/A/5700/006, Natural Disasters

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

#### Partial Walkdown

MCFD-1609-03.01, Flow Diagram of Diesel Generator Fuel Oil System (FD)  
MCFD-1609-01.01, Flow Diagram of Diesel Generator Cooling Water System (KD)  
MCFD-1609-04.00, Flow Diagram of Diesel Generator Starting Air System  
MCFD-2609-03.01, Flow Diagram of Diesel Generator Fuel Oil System (FD)  
MCFD-2609-01.01, Flow Diagram of Diesel Generator Cooling Water System (KD)  
MCFD-2609-04.00, Flow Diagram of Diesel Generator Starting Air System  
MCFD-2592-01.01, Flow Diagram of Auxiliary Feedwater System (CA)  
MCFD-1562-03.01, Flow Diagram of Safety Injection (NI)  
MCFD-1562-01.01, Flow Diagram of Safety Injection (NI)

#### Complete Walkdown

WO 01872596

EC 104249 Document

IP/0/A/3061/006E, Vital Inverter Maintenance, Alignment and Troubleshooting

OP/0/A/6350/001A, 125 VDC/120 VAC Vital Instrument and Control Power System

PIP M-10-3700, Loss of Power to 1EKVB panelboard results in a Red qualitative PRA condition

PIP M-10-0205, Entry Conditions for AP-15, Loss of Vital or Aux Control Power

PIP M-10-03111, EVDB-3E DC Feeder Breaker to 1EVIB opened unexpectedly resulting in an

Attachment

unplanned PRA Orange Condition  
 PIP M-10-03655, EVDB-3E tripped open causing a loss of power to 1EKVB powerpanel board  
 NOED 01-2050 Request from enforcing TS LCO 3.8.7 Condition A.1 to allow repair of 1EVIB  
 inverter on April 21, 2001

**Section 1R05: Fire Protection**

MCS-1465.00-00-0008, Design Basis Specification for Fire Protection  
 FS/1/B/9000/017, 1ETA Room Fire Strategy #17  
 FS/2/B/9000/018, 1ETA Room Fire Strategy #18  
 FS/1/B/9000/017A, HVAC Room for 1ETA Fire Strategy #17A  
 FS/2/B/9000/018A, HVAC Room for 2ETA Fire Strategy #18A

**Section 1R11: Licensed Operator Requalification Program**

EP/1/A/5000/E-0, Reactor Trip or Safety Injection  
 AP/1/A/5500/010, NC System Leakage within Capacity of Both NV Pumps  
 EP/1/A/5000/E-3, Steam Generator Tube Rupture  
 EP/1/A/5000/E-2, Faulted Steam Generator  
 AP/1/A/5500/014, Rod Control Malfunction

**Section 1R12: Maintenance Effectiveness**

EC 104249, Document Newly Designed L1 Choke and C1 Capacitors for use in Vital Inverters  
 YC Chillers: M-01-3554, M-04-5784, M-05-0256, M-07-5532, M-08-2932, M-09-0996, M-09-  
 7675, M-10-0185, M-10-0643, M-10-5059, A-1 list, VC system health report

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

NSD 213, Risk Management Process  
 EC104249, Document Newly Designed L1 Choke and C1 Capacitors for use in Vital Inverters  
 WO 0193236201  
 WO 0194330001

**Section 1R15: Operability Evaluations**

NSD 203, Operability/Functionality  
 EC101546  
 GL 88-14  
 PT/2/A/4453/009  
 M-10-4591  
 MCS-1399.03-RPS-0001, Design Basis Specification for the Protection System  
 UFSAR Sections 7.2 and 7.3  
 MCFD-1561-01.00, Flow Diagram of Residual Heat Removal System (ND)

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

**Full Evaluations**

AR 00238551, Unit 1 Cycle 20 Core Design, 09/08  
 EC 76817, EDG Protective Relay Replacement, 12/07  
 AR 256925, UFSAR Control Room Dose Update, 03/09  
 AR 00273738, DPC-NE-3002-A, Revision 4a, Methodology Report Revision, 06/09

AR 00289680, Evaluation of Alternative Shutdown Boron Concentration Methodology For Revision 2a to DPC-NF-2010, 12/09  
 AR 00284688, Penetration 2M-385 CIV AOV Margin Upgrade, 09/09  
 AR 00243703, Main Generator Protective Relaying, 11/08

#### Screened Out Items

EC 97572, Modify AOV Control Circuit 1KC320 Mod, 08/08  
 EC 97697, ND Suction Relief Valves Unit 2 Mod, 10/09  
 EC 100090, Replace 1NI-879,880, 04/10  
 EC 100187, Replace Actuator on 2NI-118A MNT, 02/09  
 3006.04-02-0001, ITW Paktron Q/QRL Series Suppression/Snubber, 01/10  
 EC 97276, Replace Drain VLV-2A RN Strainer, 01/08  
 EC 97551, Revise Anchors for S/R 2MCA-ND-5682, 03/08  
 EC 98830, Unit 1&2 Fuel Oil Unloading Station Pad, 08/08  
 EC 96580, DG Voltage Regulator Control Amp Meters, 10/07  
 EC 102725, Revise MCM-1205.02-0793.001 to Allow Seal Welding of 1WG-122, 12/09  
 EC98817, Replace relief valves 2NI-52, 63, 74, 86, 05/10  
 EC 99711, RN pump shaft sleeve with anti-rotation pin NO F/W, 12/08  
 EC 98403, Removal of discharge piping-1KC-330, 06/08  
 EC 95581, Replace/Modify 1RNFT5230 (RN to KD HX Flow), 08/07  
 EC 101935, 2NV-110: Cut Out and Replace, 03/10  
 EC 95733, Alternate Power from SSF to Hydrogen Igniters, 02/09  
 EC 42278, Replace EDG Surge Arrestors, 03/08

#### Design Change Packages

MD 100006, EDG Protective Relay Replacement U1, Rev. 3  
 MD 101518, Modify AOV Control Circuit 1KC320, Rev. 1  
 MD 201662, ND Suction Relief Valves U2, Rev. 3  
 ME 102129, Replace 1NI-879, 880, Rev. 1  
 ME 202139, Replace Actuator on 2NI-118A, Rev. 1  
 NG 0002ET, ITW Paktron Q/QRL Series Suppression/Snubber, Rev. 3  
 MD 201127, Design Input Review Document, Rev. 01  
 MD 202048, Improve CIV Margin for Penetration 2M-385, 10/09  
 MD 100632, Replace/Modify 1RNFT5230 (RN to KD HX Flow), 08/07  
 EC 101935, 2NV-110, Cut Out and Replace, 03/10  
 EC 103829, Change Mounting Req's for Conax RTD's Used for NC Wide Range Temp, 07/10  
 EC 102725, Revise MCM-1205.01-0793.001 to allow seal welding of 1WG-122, 12/09  
 MD 201901, Replace Relief Valves 2NI-52, 63, 74, 86, 05/10  
 ME 302003, RN Pump Shaft Sleeve with Anti-Rotation Pin, 12/08  
 MD 101787, Removal of Discharge Piping-1KC-330, 06/08  
 MD 101345, Alternate Power from SSF to Hydrogen Igniters, 02/09  
 EC 42278, Replace EDG Surge Arrestors, 03/08

#### Condition Reports

M-09-03888, "EC99746: Vendor documents have not been processed into NEDL to support EC99746," 07/25/09

M-09-06288, "RTD 2NCRD5930 was not installed per the manufacturer's installation requirements," 10/08/09

#### Completed Test Procedures

PT/1/A/4252/003B, CA Valve Stroke Timing-Quarterly, 07/29/2010  
 PT/2/A/4204/001A, 2A ND Pump Performance Test, 04/28/2010  
 PT/1/A/4403/002A, RN Train A Valve Stroking Timing-Quarterly, 08/21/2010  
 PT/1/A/4403/010, 1A RN to CA Check Valve 1RN401 Leakage Test, 04/12/2010  
 TT/1/A/9100/609D/G 1A DGRC1A Protective Relaying, 10/22/2008  
 PT/1/A/4401/003A, KC Train A Valve Stroke Timing – Shutdown, 04/07/2010

#### Work Orders

WO 01786003 54, Install CA Pipe/1RN0069A Valve Connect Wiring, 02/22/2008  
 WO 01786003 30, CA/RN Viper Test 1RN0069A Actuator, 02/23/2008  
 WO 01804411 09, 1CA0086A/Valve Replacement, 10/13/2008  
 WO 01839580 04, Modify AOV Control Circuit 1KC320A, 04/03/2010

#### Calculations

EDM-101, Interim Calculation Change MCC1381.05-00-0194, Rev. 376  
 MCC-1381.05-00-0260, U1 4.16kV Essential Aux Power Loading Analysis, ICCF.03B  
 MCC-1381.05-00-0257, U1/2 AC Aux Power System ETAP, ICCF.13D  
 MCC-1381.05-00-0260, U1, 6.9, 4.16kV 600V Aux Power Voltage Analysis, ICCF. 04E  
 DPC-1393.00-00-0082, "Seismic Qualification of a Conax Fast Response RTD (Trentec S9025.1)," Revision 0  
 DPC-1552.08-00-0256, "McGuire and Catawba UFSAR Chapter 15 Transient Analysis Methodology – DPC-NE-3002-A Rev. 4a," 04/08/09

#### Drawings

MCFD-1562-03.01, Safety Injection Flow Diagram(NI), Rev. 10  
 CBV-A5-04-0031, ½" SCH. 40 Socket Weld Check Valve, Rev. C  
 MC-2414-03.41-01, Rev. 12B  
 MCTC-1561-ND.0001-01, Rev. 05  
 MCTC-1561-ND.V011-01, Rev. New  
 MCTC-1561-ND.V003-002/003, Rev. 0  
 2-MCA-S-NC-501-02, C-F, Rev. B, C, D  
 MCEE-115-00.15-05, 4160V Switchgear #1ETA Unit 14, Rev. 8  
 MCEE-115-00.15-02, 4160V Switchgear #1ETA Unit 14, Rev. 8  
 MCEE-115-00.15-03, 4160V Switchgear #1ETA Unit 14, Rev. 13  
 MCCD-1702-00.00, U1 One Line Diagram, Rev. 4  
 MCEE-0142-00.15, Elementary Diagram 1KC320A, Rev. 1  
 MCFD-1573-03.01, Flow Diagram Component Cooling Water, Rev. 8  
 MC-2418-22.21-01, "Piping Layout (RV) System Sections Upper Containment Reactor Building," Revision 13A  
 MC-2418-22.43-00, "Piping System Layout RV Plan & Section @ Ele. 750'-0" Auxiliary Building," Revision 13  
 MCFD-2604-03.00, "Flow Diagram of Containment Ventilation Cooling Water System (RV)," Revision 9  
 MCFD-2562-02.00, "Flow Diagram of Safety Injection System (NI)," Revision 7

MCFD-2562-02.01, "Flow Diagram of Safety Injection System (NI)," Revision 3  
 A74625, "Sleeve, Spacer Finish Machine Drawing," 10/19/05  
 A71134, "Sleeve, Spacer Finish Machine Drawing," 04/22/98  
 MCFD-1573-03.01, "Flow diagram of component cooling system (KC)," Revision 6  
 MCFD-1573-04.00, "Flow diagram of component cooling system (KC)," Revision 13

#### Other Documents

NP-2129, Radiation Effects on Organic Materials, 11/01/1981  
 MCLL-1703-04.01, Electrical Load List, Rev. 043  
 MD101518, Modification Test Plan for Engineering Changes, Rev. 0  
 CCW-0018, Simulator Update for 1KC320A, 04/2009  
 Letter from H.B. Barron to U.S. Nuclear Regulatory Commission, "McGuire Nuclear Station Docket No. 50-369/50-370 Request for Additional Information Related to Generic Letter 96-06," 09/30/98  
 Letter from M.S. Tuckman to U.S. Nuclear Regulatory Commission, "Catawba Nuclear Station Units 1 & 2 Docket Nos. 50-413, 414, McGuire Nuclear Station Units 1 & 2 Docket Nos. 50-369, 370, Oconee Nuclear Station Units 1, 2, & 3 Docket Nos. 50-269, 270, 287 Response to Generic Letter 96-06: Assurance of Equipment Operability and Containment Integrity During Design-Basis Conditions," 01/28/97  
 DPM-1393.01-0032, "Environmental Qualification Test Summary For Rosemount 1159 Pressure Transmitter Remote Seal System," Revision 0  
 AR00285634, "Applicability Determination for EC 101935," 09/19/09  
 AR2319, "Equipment Minor Revision Comparison for EC0000101935," Revision 0  
 MCM-1336.02-0022.001, "Conax Fast Response Unitized RTD Assy for Catawba & McGuire Nuclear Stations Units 1 & 2," 12/20/83  
 AR00294272, "Applicability Determination for EC 102725," 12/09/09  
 AR00307710, "Change to Evaluation Methodology in Support of Revision of UFSAR Section 6.2.1.2, UFSAR Table 6-53 and Engineering Change 103500 regarding Inspection Port Covers Remaining in Place During Power Operation (Modes 1-4)," 04/08/10  
 MCC-2206.02-82-2001, "Boron Recycle Line from PEN-M259 to NV/WL Systems," 11/24/09

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

##### 2A D/G PMs

WO 1906280  
 IP/2/A/3250/016A, 2A D/G Dynalco SST-2400A Speed Switch Calibration and MAG Pickup Check

##### 2CA Pump PMs

WO 01919908  
 WO 01922682  
 WO 01917340

##### EVCA Battery PMs

WO 01906987  
 IP/0/A/3061/005A, SCI Vital I&C Battery Charger Preventive and Corrective Maintenance  
 PT/0/A/4350/008E, SCI Vital I&C Battery Charger Performance Test

##### 2B D/G PMs

WO 01813344  
PT/2/A/4350/002B, 2B Diesel Generator Operational Test

1RN-86A  
WO 01889050  
WO 01911932  
1EVID Vital Inverter  
WO 01932362

**Section 1R22: Surveillance Testing**

PT/1/A/4350/002B, Diesel Generator 1B Operability Test  
PT/1/B/4700/082, Unit 1 Primary Chemistry Periodic Surveillance for Ice Bed Sampling  
PT/2/B/4700/082, Unit 2 Primary Chemistry periodic Surveillance for Ice Bed Sampling  
PT/1/A/4150/001D, Identifying NC System Leakage  
PT/1/A/4150/055, NC System Unidentified Leakage OAC Point Determination

**Section 1EP2: Alert and Notification System Testing**

Procedures

Emergency Planning Functional Area Manual, Section 3.3 Alert and Notification System (Siren Program)  
Federal Signal 2001 AC Siren installation and maintenance manual  
PT/0/A/4600/103C, Siren System Annual Preventive Maintenance Review, Rev. 1 and 2

Records and Data

Siren availability test records for July 2008 to June 2010  
Siren system annual preventive maintenance documentation completed July 6, 2009

**Section 1EP3: Emergency Preparedness Organization Staffing and Augmentation System**

Procedures

Emergency Planning Functional Area Manual, Section 3.19 Drill and Exercises  
MTP-7111.0, Emergency Response (ER) Training Program, Rev. 8

Records and Data

McGuire Emergency Response Organizational Chart, August 12, 2010  
Training records of multiple personnel were reviewed.  
Full scale off-hours Augmentation drill

PIPs

M-10-05361, ERO training overrides allowed per TP7111.0, Emergency Response Training Program

**Section 1EP4: Emergency Action Level and Emergency Plan Changes**

Procedures

Emergency Planning Functional Area Manual, Section 3.1 Administration of the Emergency Plan and Emergency Plan Implementing Procedures, Rev. 9  
Emergency Planning Functional Area Manual, Section 3.10 - 10 CFR 50.54(q) Evals, Rev. 10



Records and Change Packages

McGuire Emergency Plan, Rev. 09-02 and 10-01  
 RP/0/A/5700/000, Classification of Emergency, Rev. 15 and 16

PIPs

M-10-5333, Page D. 8 of the Emergency Plan has a superseded value for EMF 51A and B in section 4.1.C.5

**Section 1EP5: Correction of Emergency Preparedness Weaknesses**Audits and Self-Assessments

09-102 (INOS)(EP)(MNS), 2009 Emergency Planning Performance Review, January 19 – February 6, 2009  
 10-09 (INOS)(EP)(MNS), Independent Nuclear Oversight – Audit, May 17 – 27, 2010

Records and Data

02/20/08 Drill team 2 and Ops crew D drill 2008-01-D2  
 11/12/08 Drill team 5 and Ops crew C drill 2008-04-C1  
 02/11/09 Drill team 3 and Ops crew E drill 2009-01-E3  
 05/06/09 Drill team 5 and Ops crew A drill 2009-03-A5  
 06/02/09 Drill team 4 and Ops crew B drill 2009-02-B4  
 02/18/10 Drill team 1 and Ops crew C drill 2010-01-C1  
 07/28/10 Drill team 4 and Ops crew B drill 2010-03-B4

PIPs

M-08-07629, Offsite Agency cornerstone JPM  
 M-09-00620, 16 SCBAs needed for fire brigade emergency use  
 M-09-00634, Silent test results for Gaston county printed from MNS siren server  
 M-09-00676, Foam nozzle carts not filled with foam  
 M-09-01097, Software glitch caused the system report to indicate >25% siren failure  
 M-09-02973, Areas of concern for June 2, 2009 unannounced augmentation drill  
 M-09-04493, Emergency Planning to include siren repair raw data in monthly siren records  
 M-09-04531, Software glitch caused the system report to indicate 34 siren failures  
 M-09-04548, Question of site evacuation and release of non-essential personnel  
 M-10-01106, Site assembly was not started in a timely manner  
 M-10-02673, Low free drive space resulted in incomplete siren test Mecklenburg County  
 M-10-02774, JPM failures have adverse affect on Drill/Exercise Performance NRC PI  
 M-10-03595, Site assembly and accountability not satisfactorily demonstrated  
 M-10-03705, Revise PT/0/B/4600/097, Procedure for Preparing and Conducting Emergency Exercises/Drills  
 M-10-04673, Manpower shortage during site assembly when people are unaccounted for  
 M-10-04678, 7/14/10 Quarterly Full Cycle Siren Test results not printed at McGuire or Toddville  
 M-10-05049, Site assembly area signs outside the protected area causing confusion

**Section 40A1: Performance Indicator (PI) Verification**Procedures

Emergency Planning Functional Area Manual, Section 3.7 Performance Indicator Guideline –  
 Emergency Preparedness Cornerstone, Rev. 16

Records and Data

Documentation of PI data July 1, 2009, to June 30, 2010, for Drill/Exercise Performance, Alert and Notification System Testing, and ERO

**Section 40A2: Problem Identification and Resolution**

NSD 208, Problem Investigation Program (PIP)

NSD 201, Reporting Requirements

NSD 202, Reportability

NSRB discussion on July 21

PIP M-10-3554

PIPs generated from this inspection: M-10-4862, M-10-5906

**Section 40A3: Follow-up of Events and Notices of Enforcement Discretion**

LER/NOED: PIP M-10-0185

**Section 40A5.2: Independent Spent Fuel Storage Installation (ISFSI) Canister Welding Demonstration**

Procedures

NGD Welding Manual – Guidelines for Controlling Station Welding and Associated Processes, effective date: 01/01/2010

Specifications

Welding Procedure Specification (WPS) number GTOO0808-01, Revision 7

Drawings

TSC Weld Mock-Up, 71165, Sheets 1 through 5, Revision 1

Other

Weld Document Instructions for Weld Document Number 100769, Work Order: Mock-Up Dry Cask

Problem Investigation Process (PIP) M-10-03735, Hair Line Cracks and Top End Shrinkage Cracks in MAGNASTOR Vertical Concrete Casks

PIP M-10-04463, Lifting Lugs of MAGNASTOR Casks may not meet the ACI Code requirements

MAGNASTOR System FSAR, Revision 0, February 2009

Qualification records of welding personnel, including Welder Continuity Reports

Certificate of Method Qualification records of NDE personnel

Material Issue Record for Weld 100769

**LIST OF ACRONYMS**

|        |   |   |
|--------|---|---|
| CRACWS | - | Control Room Area Chilled Water System      |
| EDG    | - | Emergency Diesel Generator                  |
| ERO    | - | Emergency Response Organization             |
| GTAW   | - | Gas-shielded Tungsten Arc Welding           |
| HGBP   | - | Hot Gas Bypass Piping                       |
| ISFSI  | - | Independent Spent Fuel Storage Installation |
| LCO    | - | Limiting Condition for Operation            |
| LER    | - | Licensee Event Report                       |

|       |   |   |
|-------|---|---|
| NCV   | - | Non-Cited Violation                         |
| NDE   | - | Non-destructive Examination                 |
| NEI   | - | Nuclear Energy Institute                    |
| NOED  | - | Notice of Enforcement Discretion            |
| PI    | - | Performance Indicator                       |
| PIP   | - | Problem Investigation Program report        |
| PM    | - | Preventive Maintenance                      |
| RN    | - | Nuclear Service Water                       |
| SSC   | - | Structures, Systems and Components          |
| TS    | - | Technical Specifications                    |
| UFSAR | - | Updated Final Safety Analysis Report        |
| VG    | - | Emergency Diesel Generator Air Start System |