



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

July 29, 2013

Mr. Steven D. Capps
Site Vice President
Duke Energy Corporation
McGuire Nuclear Station
MG01VP/12700 Hagers Ferry Road
Huntersville, NC 28078

**SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000369/2013003 AND 05000370/2013003**

Dear Mr. Capps:

On June 30, 2013, 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 July 10, 2013, with you and other members of your staff.

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

One self-revealing finding of very low safety significance (Green) was identified during this inspection. If you contest the significance of the finding, 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 DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the McGuire Nuclear Station.

S. Capps

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 Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site 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 05000369/2013003 and 05000370/2013003
w/Attachment - Supplemental Information

cc w/encl: (See page 3)

S. Capps

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 Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site 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 05000369/2013003 and 05000370/2013003
w/Attachment - Supplemental Information

cc w/encl: (See page 3)

PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE NON-SENSITIVE
ADAMS: Yes ACCESSION NUMBER: _____ SUNSI REVIEW COMPLETE FORM 665 ATTACHED

OFFICE	RII:DRP	RII:DRP	RII:DRS	RII:DRS	RII:DRS	RII:DRP	
SIGNATURE	Via email	Via email	Via email	Via email	Via email	JHB /RA/	
NAME	JZeiler	JHeath	MEndress	JRivera-Ortiz	AVargas	JBartley	
DATE	07/25/2013	07/26/2013	07/27/2013	07/29/2013	07/25/2013	07/29/2013	
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: G:\DRPIIRPB1\MCGUIRE\REPORTS\MCG IIR 13-03.DOCX

S. Capps

3

cc:

Charles J. Morris III
Plant Manager
McGuire Nuclear Station
Duke Energy Corporation
Electronic Mail Distribution

Jeffrey J. Nolin
Design Engineering Manager
McGuire Nuclear Station
Duke Energy Corporation
Electronic Mail Distribution

H. Duncan Brewer
Organizational Effectiveness Manager
McGuire Nuclear Station
Duke Energy Corporation
Electronic Mail Distribution

Kenneth L. Ashe
Regulatory Compliance Manager
McGuire Nuclear Station
Duke Energy Corporation
Electronic Mail Distribution

Kay L. Crane
Senior Licensing Specialist
McGuire Nuclear Station
Duke Energy Corporation
Electronic Mail Distribution

Joseph Michael Frisco, Jr.
Vice President, Nuclear Design Engineering
General Office
Duke Energy Corporation
Electronic Mail Distribution

M. Christopher Nolan
Director - Regulatory Affairs
General Office
Duke Energy Corporation
Electronic Mail Distribution

David A. Cummings (acting)
Fleet Regulatory Compliance & Licensing
Manager
General Office
Duke Energy Corporation
Electronic Mail Distribution

Alicia Richardson
Licensing Administrative Assistant
General Office
Duke Energy Corporation
Electronic Mail Distribution

Lara S. Nichols
Deputy General Counsel
Duke Energy Corporation
Electronic Mail Distribution

David A. Cummings
Associate General Counsel
General Office
Duke Energy Corporation
Electronic Mail Distribution

Beth J. Horsley
Wholesale Customer Relations
Duke Energy Corporation
Electronic Mail Distribution

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

S. Capps

4

Letter to Steven D. Capps from Jonathan H. Bartley dated July 29, 2013

SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000369/2013003 AND 05000370/2013003

DISTRIBUTION:

C. Evans, RII

L. Douglas, RII

OE Mail

RIDSNRRDIRS

PUBLIC

RidsNrrPMMcGuire Resource

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-369, 50-370

License Nos.: NPF-9, NPF-17

Report Nos.: 05000369/2013003, 05000370/2013003

Licensee: Duke Energy Carolinas, LLC

Facility: McGuire Nuclear Station, Units 1 and 2

Location: Huntersville, NC 28078

Dates: April 1, 2013, through June 30, 2013

Inspectors: J. Zeiler, Senior Resident Inspector
J. Heath, Resident Inspector
M. Endress, Reactor Inspector (Section 1R08)
J. Rivera-Ortiz, Senior Reactor Inspector (Section 1R08)
A. Vargas-Mendez, Reactor Inspector (Section 1R08)

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

Enclosure

SUMMARY OF FINDINGS

IR05000369/2013-003, IR05000370/2013-003; 04/01/2013 – 06/30/2013; McGuire Nuclear Station Units 1 and 2; Follow-up of Events and Notices of Enforcement Discretion.

The report covered a three month period of inspection by the resident inspectors and three region based inspectors. One Green finding was identified. The significance of inspection findings are indicated by their color (Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, Significance Determination Process (SDP), dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, Components Within The Cross-Cutting Areas, dated October 28, 2012. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated June 7, 2012. 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:** A self-revealing finding was identified for the licensee's failure to implement adequate instructions for venting condensate booster pump (CBP) emergency low suction pressure trip instrumentation which resulted in air entrainment causing a non-conservative shift in the trip setpoint. During a subsequent secondary side transient involving a heater drain tank pump trip, the non-conservative trip setpoint resulted in a premature trip of all three CBPs ultimately causing a reactor trip.

The performance deficiency was more than minor because it affected the Procedure Quality attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective, in that, the inadequate venting allowed air entrainment in the instrumentation lines resulting in a reactor trip. This finding was determined to have very low safety significance (Green) because it did not contribute to the likelihood of both a reactor trip and that mitigation equipment or functions would not be available. No cross cutting aspect was identified. (Section 4OA3.2)

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period shut down for a refueling outage. The unit was returned to 100 percent rated thermal power (RTP) on April 26 and operated at essentially full power for the remainder of the inspection period.

Unit 2 began the inspection period at approximately 100 percent RTP. On June 27, a turbine load rejection and power reduction to 56 percent RTP occurred due to loss of one of the two offsite electrical circuits. Subsequently, power was reduced to 18 percent RTP to add oil to the 2D reactor coolant pump motor. The unit was returned to 100 percent RTP on June 30.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

Summer Readiness of Offsite & Alternate AC Power Systems: The inspectors evaluated plant features, procedures for operation, and continued availability of offsite and alternate AC power systems to determine if they were appropriate for the circumstances. The inspectors reviewed the licensee's procedures affecting these areas and the communications protocols between the transmission system operator and the plant to determine if the appropriate information was exchanged when issues arise that could impact the offsite power system. The inspectors discussed with system engineers any outstanding corrective work orders or corrective action documents with the offsite power and alternate AC power systems. The inspectors walked down the alternate AC system (standby shutdown facility) to determine system readiness for summer conditions. In addition, the inspectors walked down the offsite power system with the operations switchyard coordinator to review system deficiencies and their impact on the ability of the system to perform its intended function. Documents reviewed are listed in the Attachment.

Readiness for Seasonal Extreme Weather Conditions: The inspectors reviewed the effectiveness of the licensee's preparations for upcoming hot weather. This included field walkdowns to assess the condition of equipment that might be susceptible to hot weather including the Unit 1 and Unit 2 emergency diesel generator (EDG) rooms, Unit 1 and 2 exterior doghouses, and Unit 2 feedwater transmitter house. The inspectors discussed hot weather preparation measures with the licensee to determine the scope of the preparations and to determine the effectiveness during hot weather. The inspectors reviewed the warm weather alignment procedure and verified actions were completed as required by the procedure. The inspectors attended plant management meetings prior to the onset of hot weather conditions to review the licensee's planning and discussions and actions to address potential equipment challenges. In addition, the inspectors

Enclosure

reviewed selected Problem Investigation Program (PIP) reports in the licensee's corrective action program (CAP) related to hot weather equipment challenges to ensure that adverse conditions were being identified and appropriately addressed commensurate with their significance. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment

a. Inspection Scope

Partial Walkdowns: The inspectors performed a partial walkdown of the following three 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 potentially increase risk. The inspectors reviewed applicable operating procedures and walked down control systems components to verify selected breakers, valves, and support equipment were in the correct position to support system operation. Documents reviewed are listed in the Attachment.

- 1A and 1B chemical and volume control (NV) system boron injection flowpaths during reduced inventory conditions
- 1A and 1B residual heat removal (ND) system during reduced inventory conditions
- 2A EDG and the 2ETA essential AC switchgear while the 2B EDG was out of service for a complex maintenance plan

Complete System Walkdown: The inspectors conducted a detailed review of the Unit 1 turbine driven auxiliary feedwater (TDCA) system. To determine the correct system alignment, the inspectors reviewed operating procedures, drawings, and the Updated Final Safety Analysis Report (UFSAR). Items reviewed during the inspection included: (1) valves were correctly positioned, did not exhibit leakage, and were locked as required; (2) electrical power was available, (3) system components were correctly labeled, cooled, lubricated, ventilated, etc.; (4) hanger and supports were correctly installed and functional; (5) essential support systems were functional; (6) system performance was not hindered by debris; and (7) tagging clearances were appropriate. The inspectors reviewed the operator workaround list, the temporary modification list, system health reports, and other outstanding items to determine the effect on the operability of the system. 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

No findings were identified.

1R05 Fire Protection

a. 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 firefighting strategy. Documents reviewed are listed in the Attachment.

- Unit 1 lower containment (Fire Area 32)
- Unit 1 TDCA pump room (Fire Area 2A)
- Unit 1 and Unit 2 cable spreading room (Fire Area 19 and 20)
- Unit 1 and Unit 2 auxiliary building 695 elevation (Fire Area 1)
- Unit 1 and Unit 2 control rod drive motor generator set rooms (Fire Areas 22 and 23)

Annual Fire Drill Observation: The inspectors observed the performance of a licensee fire drill on May 15, 2013, to evaluate the readiness of the plant fire brigade. The fire drill scenario involved an acetylene cylinder fire in the Unit 2 Exterior Doghouse. Specific attributes evaluated included: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate firefighting techniques; (4) sufficient firefighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of pre-planned strategies; and, (9) adherence to the pre-planned drill scenario and objectives. The inspectors verified that the licensee identified performance weaknesses in a self-critical manner during the drill critique and entered the issues into the CAP. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R06 Flood Protection Measures

a. Inspection Scope

Internal Flooding Reviews: The inspectors reviewed the UFSAR and the licensee's flooding analysis to determine which plant areas were subject to internal flooding and contained safety-related equipment. The inspectors walked down the Unit 1 and Unit 2 auxiliary building elevation 716, CA pump rooms, to determine if the area configuration and flood protection barriers and equipment were consistent with the descriptions and

assumptions described in UFSAR and licensee flooding analysis. The inspectors examined the state of functional readiness of important flood protection equipment (i.e., flood barriers, sump pumps, and sump level instrumentation) and reviewed historical maintenance records to confirm that the equipment was being properly maintained in a state of functional readiness. The inspectors reviewed the operator actions credited in the flooding analysis and contained in the licensee's flood mitigation procedures to determine if the desired results could be achieved within the times specified in the flooding analysis. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R07 Heat Sink Performance

a. Inspection Scope

Annual Resident Inspection: The inspectors selected the "A" train control area chilled water (YC) condenser heat exchanger based on its risk significance and either observed the inspections and/or performance tests or reviewed the results to determine if the heat exchanger was ready and available to perform its 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 heat exchanger inspection results were appropriately categorized against pre-established engineering acceptance criteria including the impact of plugged tubes; 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 Activities and Welding Activities: The inspectors conducted an on-site review of the implementation of the licensee's ISI Program for monitoring degradation of the reactor coolant system, emergency feedwater systems, risk-significant piping and components, and containment systems in Unit 1. The inspectors' activities included a review of non-destructive examinations (NDEs) to evaluate compliance with the applicable edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC), Section XI (Code of record: 1998 Edition with 2000 Addenda), and to verify that indications and defects (if present) were appropriately evaluated and dispositioned in accordance with the requirements of the ASME Code, Section XI, acceptance standards.

The inspectors directly observed the following NDE mandated by the ASME Code to evaluate compliance with the ASME Code Section XI and Section V requirements and, if any indications and defects were detected, to evaluate if they were dispositioned in accordance with the ASME Code or an NRC-approved alternative requirement.

- Ultrasonic Examination (UT) of pipe to pipe weld 1NVFW53-64, Work Order #02081354

The inspectors reviewed records of the following required NDEs to evaluate compliance with the ASME Code Section XI and Section V requirements and, if any indications and defects were detected, to evaluate if they were dispositioned in accordance with the ASME Code or an NRC-approved alternative requirement.

- Visual Examination (VT-1) of Containment Moisture Barrier and Shell Inside Surface Area, Work Order #02040602
- Visual Examination (VT-1) of Containment Bolted Connections, Work Order #02041226
- Liquid Penetrant Examination (PT) of 1B NC Pump Seal Water Injection Throttle, Work Order #01897292
- Visual Examination (VT-3) of Spring Hanger 1-MCR-NC-500, Work Order #2039926
- Visual Examination (VT-2) of ND Heat Exchanger 1A Nozzle Belt to Head Weld, Work Order #02044364

The inspectors reviewed associated documents for the welding activities referenced below in order to evaluate compliance with procedures and the ASME Code. The inspectors reviewed the work order, repair and replacement plan, weld data sheets, welding procedures, procedure qualification records, welder performance qualification records, and NDE reports.

- 1-NI-VA0389 Cutout and Replace with New Valve, Work Order #02004489
- 1-NV-44 Cutout and Reinstall Valve, Work Order #01897292

The inspectors reviewed the following examination records (volumetric or surface) with recordable indications that were analytically evaluated and accepted for continued service in accordance with the requirements of ASME Code Section XI.

- Reactor Vessel Head AHA Weld No. 1NI1FW38-1

PWR Vessel Upper Head Penetration (VUHP) Inspection Activities: The inspectors reviewed a sample of ultrasonic NDEs (i.e. non-visual) of the VUHPs to verify they were implemented in accordance with the ASME Code Case N-729-1, as incorporated by reference in 10 CFR 50.55a(g)(6)(ii)(D). The inspectors reviewed the plant specific scan plan and vendor examination procedures to verify the ultrasonic examination method met the requirements in Code Case N-729-1. The inspectors also reviewed personnel and procedure qualification records to verify they were qualified through a blind demonstration process as required by 10 CFR 50.55a(g)(6)(ii)(D)(4).

The inspectors observed ultrasonic data acquisition for VUHPs number 54, 66, and 71 and reviewed ultrasonic data examination results for VUHPs numbers 32, 54, and 66. The inspectors interviewed vendor and licensee staff to verify that the disposition of indications was consistent with Code Case N-729-1, as modified by 10 CFR 50.55a. For VUHPs 32, 54, and 66, the inspectors verified that essentially 100 percent of the required volume was examined and that the ultrasonic examination included a leak path assessment through the J-groove welds. The inspections also verified that ultrasonic equipment settings and calibration for VUHPs 32, 54, and 66 were consistent with the essential variables described in the demonstrated procedures. The inspectors' review of ultrasonic data also included a comparison of current results with ultrasonic data for the same penetrations from non-visual examinations performed in 2007.

Additionally, the inspectors reviewed licensee plans to perform a bare metal visual (BMV) examination of the vessel upper head area during the ongoing outage to verify this activity would be conducted in accordance with ASME Code Case N-729-1, as modified by 10 CFR 50.55a(g)(6)(ii)(D). The inspectors reviewed examination procedures and interviewed licensee staff to verify the criteria for confirming visual examination quality and instructions for resolving interference or masking issues were consistent with the ASME Code Case. The inspectors also verified that adequate examination coverage would be obtained and that limitations in coverage would be properly recorded based on procedural guidance. The inspectors were not able to directly observe the BMV examination; however, the inspectors reviewed the post examination report, including personnel qualifications, to verify compliance with the ASME Code Case requirements.

The inspectors also interviewed the licensee and vendor staff about the disposition of any relevant indications (visual or volumetric) that were going to be accepted for continuous service to verify that the licensee's acceptance was in accordance with ASME Code Case requirements and 10 CFR 50.55a(g)(6)(ii)(D), or an NRC approved alternative. The inspectors also reviewed the last ultrasonic and BMV examination reports to identify any indications that required follow-up during the ongoing refueling outage. The inspectors were informed that the licensee did not identify any relevant indications requiring further evaluation for continuous service.

The inspectors followed-up any weld repairs to verify that the welding process and welding examinations were performed in accordance with ASME Code requirements and 10 CFR 50.55a(g)(6)(ii)(D), or an NRC approved alternative. The inspectors were informed that no welding repairs were required based on the examination results.

The inspectors reviewed the licensee's evaluation of effective degradation years and re-inspection years to verify that the inspection frequencies for the volumetric and bare metal examinations were consistent with ASME Code Case N-729-1.

Boric Acid Corrosion Control (BACC) Inspection Activities: The inspectors reviewed the licensee's BACC program activities to ensure implementation with commitments made in response to NRC Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary," and applicable industry guidance documents. Specifically, the inspectors performed an on-site record review of procedures and the results of the

Enclosure

licensee's containment walk-down inspections performed during the current spring refueling outage (1EOC22). The inspectors also interviewed the BACC program owner, conducted an independent walk-down of containment to evaluate compliance with licensee's BACC program requirements, and verified that degraded or non-conforming conditions, such as boric acid leaks, were properly identified and corrected in accordance with the licensee's BACC and corrective action programs.

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

- M-12-03839, Boron accumulation on 1-NV-VA-0920
- M-12-10293, Excessive Boron on 1-NC-FT-5050
- M-12-10635, Active boron leakage on 1-NV-PG-5490

The inspectors reviewed the following engineering evaluations completed for evidence of boric acid identified in systems containing borated water to determine if degraded components were documented in the corrective action program. The inspectors also evaluated corrective actions for any degraded components to determine if they met the ASME Section XI Code and/or NRC approved alternative.

- M-13-02617, Minor dry boron crystals found on valve 1ND-18

Steam Generator (SG) Tube Inspection Activities: The inspectors reviewed the Unit 1 eddy current (EC) examination activities in SG A and the Unit 1 EC examination activities in SGs A and C, to evaluate the inspection activities against the licensee's Technical Specifications, NRC commitments, ASME Section XI, and Nuclear Energy Institute (NEI) 97-06, Steam Generator Program Guidelines. The inspectors reviewed the scope of the EC examinations to verify it included the applicable potential areas of tube degradation and also verified that it met the requirements from Electric Power Research Institute (EPRI) SG Examination Guidelines for inspection. The inspectors also verified that appropriate inspection scope expansion criteria were planned based on inspection results. Additionally, the inspectors reviewed EC examination status reports to ensure that all tubes with relevant indications were appropriately screened for in-situ pressure testing. Based on the EC examination results, no new degradation mechanisms were identified, no EC scope expansion was required, and none of the SG tubes examined met the criteria for in-situ pressure testing.

The inspectors reviewed the last Condition Monitoring and Operational Assessment report to assess the licensee's prediction capability for maximum tube degradation. The inspectors review also included the licensee's repair criteria and repair process to ensure they were consistent with plant Technical Specifications (TS) and industry guidelines. No tubes met the criteria for repair or plugging for Unit 1. The inspectors also reviewed the primary to secondary leakage (e.g., SG tube leakage) history for the last operating cycle. The inspectors noted that primary to secondary leakage was below the detection threshold during the previous operating cycle.

In addition, the inspectors reviewed documentation to ensure that data analysts, EC probes, and equipment configurations were qualified to detect the existing and potential SG tube degradation mechanisms. The inspectors' review included a sample of site-specific Examination Technique Specification Sheets (ETSSs) to ensure that their qualification was consistent with Appendix H or I of the Electric Power Research Institute Pressurized Water Reactor Steam Generator Examination Guidelines, Revision 7. The inspectors also directly observed a sample of EC data acquisition in all SG's (Cold Leg and Hot Leg sides) for Unit 1. Furthermore, the inspectors reviewed a sample of EC data with a qualified data analyst for the following tubes: SG A (R60C47, R84C59, R113C62, R112C65, R109C66, R106C67, R112C69, R85C72, and R94C73), SG B (R89C78, R78C79, R95C80, and R92C87), SG C (R80C61, R88C67, and R96C67) and SG D (R89C78, R97C80, R88C81 and R97C82). Finally, the inspectors reviewed the licensee's corrective actions for indications (either from EC or secondary side visual inspections) of potential loose parts on the SG primary and secondary side, including direct observation of Foreign Object Search and Retrieval (FOSAR) activities.

Identification and Resolution of Problems: The inspectors reviewed a sample of ISI-related problems which were identified by the licensee and entered into the corrective action program to confirm the licensee had appropriately described the scope of the problem and had initiated corrective actions. The review also included the licensee's consideration and assessment of operating experience events applicable to the plant. The inspectors performed this review to ensure compliance with 10CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification (LOR) Program and Licensed Operator Performance

a. Inspection Scope

Quarterly Resident Inspector LOR Activity Review: On May 22, 2013, the inspectors observed operators in the plant's simulator during licensed operator requalification training. The training scenario involved a failed open pressurizer power operated relief valve, blackout on the "B" train essential bus, and a steam generator tube rupture. The inspectors assessed overall crew performance, clarity and formality of communications, 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.

Quarterly Resident Inspector Licensed Operator Performance Review: On April 21-22, 2013, the inspectors observed and assessed Unit 1 control room operators performance during reactor startup and reactor physics testing. The inspectors assessed overall crew performance, clarity and formality of communications, use of procedures, alarm response, control board manipulations, group dynamics, and supervisory oversight. 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) 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). 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.

- PIP M-13-00522, Multiple igniter failures in the 2B hydrogen mitigation system
- PIP M-13-04811, 1B nuclear service water (RN) strainer backwash supply isolation valve (1RN-25B) failed to actuate on local demand signal

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.

- Yellow risk on Unit 1 for the spent fuel pool cooling system during full reactor core offload
- Orange risk on Unit 1 for planned reactor coolant system (RCS) draindown to reduced inventory conditions to remove SG nozzle dams and install diaphragms and manways
- Yellow risk on Unit 1 for the 1A EDG out of service for planned maintenance
- Yellow risk on Unit 2 for the TDCA pump out of service for planned maintenance
- Yellow risk on Unit 2 for the 2A EDG and 2A motor driven auxiliary feedwater (MDCA) pump out of service for planned maintenance

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments

a. Inspection Scope

The inspectors reviewed the six technical evaluations listed below to determine whether TS 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.

- PIP M-13-04222, 1A RN flow balance test failed to pass new acceptance criteria while aligned to SNSWP
- PIPs M-13-04797 and M-13-04922, Containment debris/materials identified during Mode 4 cleanliness walkdown
- PIP M-13-04844, 1C reactor coolant pump (RCP) seal injection check valve (1NV-61) bonnet leakage and leak sealant injection repair
- PIP M-13-04894, 1B RCP #2 pump seal standpipe level high alarm and seal leakage
- PIP M-13-05559, Unit 1 ice condenser lower inlet door opening alarms received
- PIP M-13-05935, Non-conservative auxiliary feedwater (CA) pump suction transfer pressure switch setpoints

b. Findings

No findings were identified.

1R18 Plant Modificationsa. Inspection Scope

The inspectors reviewed the following temporary plant modification to verify the adequacy of the modification package and 10 CFR 50.59 screening. The modification was evaluated against the TS, UFSAR, and licensee design bases documents for the systems affected to ensure the modification did not adversely affect the availability, reliability, and functional capability of important SSCs. Documents reviewed are listed in the Attachment.

- EC 110635, Installation of temporary jumper around damaged sliding link associated with Unit 2 TDCA flow control valve 2CA-48AB to the “C” SG

b. Findings

No findings were identified.

1R19 Post-Maintenance Testinga. Inspection Scope

The inspectors reviewed the six post-maintenance tests listed below to determine if procedures and test activities ensured system operability and functional capability. The inspectors reviewed the licensee’s test procedures to determine if the procedures adequately tested the safety function(s) that may have been affected by the maintenance activities, that the acceptance criteria in the procedures were consistent with information in the applicable licensing basis and/or design basis documents, and that the procedures had been properly reviewed and approved. The inspectors also witnessed the tests and/or reviewed the test data to determine if test results adequately demonstrated restoration of the affected safety function(s). Documents reviewed are listed in the Attachment.

- 1B annulus ventilation functional testing following planned minor maintenance
- 2B spent fuel pool pump functional testing following planned complex maintenance
- 1A EDG functional testing following planned complex maintenance activities
- 2B EDG loss of voltage trip actuation device functional testing following planned calibrations of undervoltage relays
- 2A EDG fuel oil storage tank outlet isolation valve 2FD-67 functional testing following planned redesign of remote handwheel operator
- Unit 1 TDCA functional testing following planned complex maintenance activities

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities

a. Inspection Scope

The inspectors conducted the following inspection activities associated with the Unit 1 refueling outage that completed April 22, 2013. Documents reviewed are listed in the Attachment.

- Observed activities to verify that the licensee maintained defense-in-depth commensurate with the outage risk control plan for key safety functions and applicable TS when taking equipment out of service
- Reviewed the licensee's responses to emergent work and unexpected conditions to verify that resulting configuration changes were controlled in accordance with the outage risk control plan
- Periodically reviewed the setting and maintenance of containment integrity to establish that the reactor coolant system and containment boundaries were in place and had integrity when necessary
- Observed fuel handling operations during reactor core reload including review of the videotape core loading verification and alignment to verify that those operations and activities were being performed in accordance with TS and procedural guidance
- Observed aspects of the reactor vessel head reinstallation and upper internals to ensure the lifts were conducted in accordance the station procedures and heavy lift guidance
- Reviewed system lineups and/or control board indications to substantiate that TS, license conditions, and other requirements, commitments, and administrative procedure prerequisites for mode changes were met prior to changing modes or plant configurations
- Conducted containment walkdowns to inspect for overall cleanliness and material condition of plant equipment after the licensee completed their closeout inspection prior to restart
- Observed the approach to criticality, portions of reactor physics testing and power ascension activities
- Reviewed the items that had been entered into the CAP to verify that the licensee had identified outage related problems at an appropriate threshold

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the six surveillance tests identified below, the inspectors witnessed testing and reviewed the test data, to determine if the SSCs involved in these tests satisfied the requirements described in the TS, the UFSAR, and applicable licensee procedures. In

addition, the inspectors verified that the tests demonstrated that the SSCs were capable of performing their intended safety functions.

Surveillance Tests

- PT/0/A/4150/028, Initial Criticality and Zero Power Physics Testing, Rev. 63 (Unit 1)
- PT/2/A/4250/004C, Turbine Overspeed Protection Controller and Mechanical Overspeed Trip Test, Rev. 17

In-Service Tests

- PT/2/A/4252/003B, CA Train B Valve Stroke Timing - Quarterly Turbine Driven Pump Flowpath, Rev. 22

Reactor Coolant System Leakage Testing

- PT/1/A/4150/001B, Reactor Coolant Leakage Calculation, Rev. 81 (performed on April 23, 2013)

Containment Isolation Valve Testing

- PT/1/A/4200/001Q, Penetration Leak Rate Test, Rev. 44 (Enclosure 13.1 for penetration M118)

Ice Condenser Systems Testing

- PT/0/A/4200/032, Periodic Inspection of Ice Condenser lower Inlet Doors, Rev. 21

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

Quarterly Site Emergency Preparedness Training Drill: On May 8, 2013, the inspectors reviewed and observed the performance of a quarterly licensee emergency preparedness training drill involving an outside containment feedwater pipe break and subsequent loss of all power to essential buses. The inspectors assessed the licensee emergency procedure usage, emergency plan classifications, and notifications conducted from the simulator control room and Technical Support Center. The inspectors evaluated the adequacy of the licensee's conduct of the drill and post-drill critique performance. The inspectors verified that the drill critique identified drill performance weaknesses and entered these items into the licensee's CAP. Documents reviewed are listed in the Attachment.

Licensed Operator Simulator Emergency Preparedness Training: On May 22, 2013, the inspectors observed the performance of a simulator-based licensed operator requalification exam that required implementation of emergency preparedness actions for the declaration of a Site Area Emergency. The simulator exam scenario involved a failed open pressurizer power operated relief valve, blackout on the “B” train essential bus, and a steam generator tube rupture. The inspectors assessed emergency procedure usage, emergency plan classifications, notifications, and protective action recommendation development. The inspectors evaluated the adequacy of the licensee’s conduct of the simulator examination and critique performance and verified that, as appropriate, performance weaknesses were captured in the licensee’s operator training program or CAP.

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 eight indicators. To determine the accuracy of the PI data reported for the specified review 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. 6, as well as the licensee’s procedural guidance for reporting PI information. Documents reviewed are listed in the Attachment.

Mitigating Systems Cornerstone

- Safety System Functional Failures (Units 1 and 2 - April 2012 to March 2013)
- Mitigating Systems Performance Index (MSPI) - Emergency Power (Units 1 and 2 - April 2012 to March 2013)
- MSPI - High Pressure Injection (Units 1 and 2 - April 2012 to March 2013)
- MSPI - Cooling Water (Units 1 and 2 - July 2012 to March 2013)

b. Findings

No findings were identified.

40A2 Problem Identification and Resolution

a. Inspection Scope

Review of Items Entered into the Corrective Action Program: As required by Inspection Procedure 71152, Problem Identification and Resolution, and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed 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 CAP database.

Semi-Annual Review to Identify Trends: As required by IP 71152, the inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screenings, licensee trending efforts, and licensee human performance results. This review nominally considered the six month period of January 2013 through June 2013 although some examples expanded beyond those dates when the scope of the trend warranted. The review also included issues documented outside the normal CAP in major equipment problem lists, focus area reports, system health reports, self-assessment reports, and department PIP trending reports. The inspectors compared and contrasted their results with the results contained in the licensee's latest quarterly trend reports. Documents reviewed are listed in the Attachment.

Annual Sample Reviews: The inspectors reviewed the issue listed below in detail to evaluate the effectiveness of the licensee's corrective actions for important safety issues. The inspectors assessed whether the issues were properly identified; documented accurately and completely; properly classified and prioritized; adequately considered extent of condition, generic implications, common cause, and previous occurrences; adequately identified root causes/apparent causes; and identified appropriate and timely corrective actions. The inspectors evaluated the licensee documents against the requirements of the licensee's CAP and implementing procedures, and 10 CFR 50, Appendix B. Documents reviewed are listed in the Attachment.

- PIP M-13-01728, Unit 1 Reactor Trip

b. Findings

No findings were identified. In general, the licensee has appropriately identified trends and addressed the trends in their CAP. The inspectors identified one weakness with the licensee's corrective actions associated with PIP M-13-01728. Corrective action #18 was opened for the work planning department to review the current guidance in work order tasks for venting instrumentation to determine if the tasks include adequate instructions for ensuring that proper system conditions exist prior to and during the performance of the venting task. This corrective action was important to address the extent of conditions; however, it was noted that the action was closed with a statement that the work planning department does not possess the knowledge to conduct the proposed actions. Action item closure documentation in this manner does not meet the guidance of the licensee's CAP. The inspectors determined this discrepancy was not a violation of NRC regulatory requirements because PIP M-13-01728 was still open and subsequent licensee reviews would have identified the discrepancy.

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

.1 Event Follow-Up

a. Inspection Scope

Response to Plant Events: On June 27, 2013, the inspectors evaluated the licensee's response to a Unit 2 load rejection and automatic reactor power reduction to 56 percent RTP due to loss of the 2A switchyard bus line. As appropriate, the inspectors: (1) observed plant parameters and status including mitigating systems/components required to maintain the plant in a safe configuration and in accordance with TS requirements; (2) evaluated if alarms/conditions preceding and following the transient were as expected; (3) evaluated the performance of plant systems and operator actions; and, (4) confirmed proper event classification and NRC reporting of the event.

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report (LER) 05000369/2013-001-00, Valid Actuation of Unit 1 Reactor Protection and Auxiliary Feedwater Systems

a. Inspection Scope

On February 21, 2013, an automatic reactor trip occurred on Unit 1 from full power as a result of a main turbine trip following the unexpected trip of both main feedwater pumps on low suction pressure. The transient was initiated when an operator inadvertently pushed the local pump stop pushbutton for the 1C3 heater drain tank pump. All three of the CBPs tripped about 80 seconds later which resulted in both main feedwater pumps tripping on low suction pressure. The root cause was identified as substantial air entrainment in the CBP emergency low suction pressure instrumentation causing all three CBPs to trip before reaching their design trip setpoint. Immediate corrective actions included removing the entrained air in the CBP instrument lines and limiting operator interactions with light bulbs associated with equipment having transient/trip potential. The inspectors verified the accuracy of the LER and the appropriateness of completed corrective actions.

b. Findings

Introduction: A self-revealing Green finding was identified for the licensee's failure to implement adequate instructions for venting CBP emergency low suction pressure trip instrumentation which resulted in air entrainment causing a non-conservative shift in the trip setpoint. During a subsequent secondary side transient involving a heater drain tank pump trip, the non-conservative trip setpoint resulted in a premature trip of all three CBPs ultimately causing a reactor trip.

Description: During the Fall 2011 Unit 1 refueling outage, the condensate and feedwater systems were removed from service and the piping drained. During this period, maintenance personnel calibrated and vented the CBP emergency low suction pressure trip instrumentation. These activities resulted in a significant amount of air becoming entrained in the CBP emergency low suction pressure trip instrumentation when the condensate system was subsequently refilled and pressurized. This entrained air caused a non-conservative shift in the pressure switch trip setpoint resulting in the actuation of the CBP emergency low suction pressure trip during a secondary transient on February 21, 2013.

The inspectors determined that the instructions were not adequate to ensure the proper venting of the CBP emergency low suction pressure trip instrumentation. These instructions did not provide detailed steps for accomplishing the venting activities nor provide precautions for ensuring the condensate process piping system was filled and pressurized.

Analysis: The inspectors determined that the licensee's failure to implement adequate instructions for venting CBP emergency low suction pressure trip instrumentation was a PD. The PD was more than minor because it affected the Procedure Quality attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective, in that, the inadequate venting allowed air entrainment in the instrumentation lines resulting in a reactor trip. Using IMC 0609, dated June 2, 2011, this finding was determined to have very low safety significance (Green) because it did not contribute to the likelihood of both a reactor trip and that mitigation equipment or functions would not be available. No cross cutting aspect was identified.

Enforcement: Because this finding does not involve a violation of regulatory requirements, was of very low safety significance, and has been entered into the licensee's CAP as PIP-M-13-01728, it is identified as FIN 05000369/2013003-01, Failure to Implement Adequate Venting Instructions for Condensate Booster Pump Trip Instrumentation Resulting in Reactor Trip.

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.

Enclosure

4OA6 Meetings, Including Exits

On July 10, 2013, 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.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

D. Brewer, Organizational Effectiveness Manager
S. Capps, Vice President, McGuire Nuclear
K. Crane, Senior Licensing Specialist
J. Gabbert, Chemistry Manager
J. Hicks, Maintenance Superintendent
M. Kelly, Outage and Scheduling Manager
S. Mooneyhan, Radiation Protection Manager
C. Morris, Station Manager
J. Nolin, Engineering Manager
J. Robertson, Regulatory Compliance Manager
S. Russ, Security Manager
P. Schuerger, Training Manager
S. Snider, Superintendent of Operations

LIST OF REPORT ITEMS

Opened and Closed

05000369/2013003-01 FIN Failure to Implement Adequate Venting Instructions for Condensate Booster Pump Trip Instrumentation Resulting in Reactor Trip (Section 4OA3.2)

Closed

05000369/2013-001-00 LER Valid Actuation of Unit 1 Reactor Protection and Auxiliary Feedwater Systems (Section 4OA3.2)

DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Summer Readiness of Offsite & Alternate AC Power Systems

Nuclear Switchyard Interface Agreement, Rev. 5
Nuclear Switchyard Operating Guidelines, Rev. 9
NSD 417, Generation Risk Management Process, Rev. 15
OMP 13-02, Control of Switchyard Activities, Rev. 5
AP/1/A/5500/05, Generator Voltage and Electrical Grid Disturbances, Rev. 11
AP/2/A/5500/05, Generator Voltage and Electrical Grid Disturbances, Rev. 7

Readiness for Seasonal Extreme Weather Conditions-Hot

Hot Weather PM Work Orders and Corrective Work Orders (4/17/13, 5/1/13, and 6/25/13 Updates)
PT/0/B/4700/039, Warm Weather Equipment Checkout, Rev. 18
M-13-05003, Hot Weather items not scheduled to be completed prior to June 1, 2013.

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

PT/1/A/4200/006B, Boron Injection Valve Lineup, Rev. 40
 OP/1/A/6100/SD-6A, Placing Train A ND in Service, Rev. 44
 OP/1/A/6100/SD-6B, Placing Train B ND in Service, Rev. 43
 OP/1/A/6100/SO-8, ND Pump Operation in No Mode or Mode 6, Rev. 31
 OP/2/A/6350/002, Diesel Generator, Rev. 99

Complete System Walkdown

UFSAR Section 10.4.10, Auxiliary Feedwater System, Rev. 16
 MCFD-1592-01.00, Flow Diagram of Auxiliary Feedwater System, Rev. 7
 MCFD-1592-01.01, Flow Diagram of Auxiliary Feedwater System, Rev. 24
 MCFD-1592-01.02, Flow Diagram of Auxiliary Feedwater System, Rev. 8
 MCFD-1592-02.00, Flow Diagram of Auxiliary Feedwater System, Rev. 5
 OP/1/A/6250/002, Auxiliary Feedwater System, Rev. 117
 McGuire CA Unit 1 System Health Report, 2013 Q1
 MNS OPS Work Around List, March 2013

Section 1R05: Fire Protection**Fire Protection Walkdowns**

MCS-1465.00-00-0008, Design Basis Specification for Fire Protection, Rev. 14
 NSD 104, Material Condition/Housekeeping, Foreign Material Exclusion and Seismic Concerns, Rev. 33
 NSD 313, Control of Transient Fire Loads, Rev. 13
 MFSD-001, Aux 695, Rev. 0
 MFSD-009.011, 1ETB/733 Electrical Penetration Room, Rev. 1
 MFSD-019.20, 750 Auxiliary South Entry, Rev. 0
 MFSD-032, Unit 1 Lower Annulus/Containment, Rev. 0
 MFSD-020, 750 Auxiliary Cable Room 801C, Rev. 0
 MFSD-022, Unit 1 Motor Generator Set Room, Rev. 0
 MFSD-023, Unit 2 Motor Generator Set Room, Rev. 0
 FS/1/B/9000/032, Unit 1 Lower Annulus/Containment Fire Strategy #32, Rev. 1
 FS/1/B/9000/019, 750 Unit 1 Aux Cable Room 801 Fire Strategy #19, Rev. 1
 FS/0/B/9000/001, (Aux 695) Fire Strategy #1, Rev. 0
 FS/1/B/9000/022, Unit 1 MG Set Room Fire Strategy #22, Rev. 0
 FS/2/B/9000/023, Unit 2 MG Set Room Fire Strategy #23, Rev. 1
 FS/2/B/9000/020, 750 Unit 2 Aux Cable Room 801C Fire Strategy #20, Rev. 1

Annual Fire Drill Observation

PT/0/B/4600/121, Fire Drill, Rev. 6
 NSD 112, Fire Brigade Organization, Training and Responsibilities, Rev. 11
 RP/0/A/5700/025, Fire Brigade Response, Rev. 19
 FS/2/B/9000/031, Unit 2 Exterior Doghouse Fire Strategy #31, Rev. 3
 OP/1/A/6100/010N, Annunciator Response for Panel 1AD-13, Rev. 75
 PIP M-13-05617

Section 1R06: Flood Protection Measures

UFSAR 3.4, Water Level (Flood) Design, Rev. 17

UFSAR 3.6, Protection Against Dynamic Effects Associated with the Postulated Rupture of Piping, Rev. 17

NUREG-800, Standard Review Plan, Section 3.6.2, Determination of Rupture Locations and Dynamic Effects Associated with the Postulated Rupture of Piping, Rev. 1

Regulatory Guide 1.59, Design Basis Floods for Nuclear Power Plants, Rev. 2

MCC-1206.47-69-1001, Auxiliary Building Flooding Analysis, Rev. 17

MCS-1206.00-00-0001, McGuire Pipe Rupture Analysis Criteria Specification, Rev. 3

MCS-1240.03-00-0001, Plant Environmental Parameters, Rev. 6

AP/0/5500/044, Plant Flooding, Rev. 13

PIPs M-12-3198, M-13-0454

Section 1R07: Heat Sink Performance

MP/0/A/7450/040, Control Room Chiller Condenser Corrective Maintenance, Rev. 16

MCC 1211.00-17.0025, YC Control Area Chiller Performance Analysis, Rev. 7

MCM 1211.00-2019.00, "A" Control Room Chiller Condenser HX Tube Layout and Plugging Record, Rev. 4

PIP M-13-05874

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

NSD-322, Boric Acid Corrosion Control Program, Rev. 3

MP/0/A/7700/080, Inspection, Assessment, and Cleanup of Boric Acid on Plant Material, Rev. 16

NDE-66, Visual Examination (VT-3) of Hangers, Restraints, Supports, and Snubbers, Rev. 3

MP/0/A/7650/076, Controlling Procedure for System Pressure Testing of ASME Piping Systems, Rev. 26

NDE-68, Visual Examination for Leakage, Rev. 4

NDE-35, Liquid Penetrant Examination, Rev. 24

54-ISI-603-006, Automated Ultrasonic Examination of RPV Closure Head Penetrations Containing Thermal Sleeves, Rev. 6

54-ISI-604-011, Automated Ultrasonic Examination of Open Tube RPV Closure Head Penetrations, Rev. 11

NDEMAN-NDE-70, Visual Examination of Reactor Pressure Vessel Upper Head Penetrations, Rev. 0

MRS-SSP-2735-DCP/DAP/DBP, Remote Examination and Removal of Foreign Objects from Steam Generator Secondary Side at Catawba Unit 1 and McGuire Units 1 & 2, Rev. 1

MRS-SSP-2742-DCP/DAP/DBP, Steam Drum Visual Inspection for Catawba Unit 1 and McGuire Units 1 & 2, Rev. 1

MCC-1201.37-00-0074, CFR 80 Steam Generator Tube Integrity Assessment, Rev. 0

Drawings

MCFD-1561-01.00, Flow Diagram of Residual Heat Removal System (ND), Rev. 20

MCFD-1562-03.00, Flow Diagram of Safety Injection System (NI), Rev. 14

MCFD-1554-01.00, Flow Diagram of Chemical and Volume Control System (NV), Rev. 9

Corrective Action Documents

PIPs M-13-02768, M-13-02580, M-12-10293, M-13-03402, M-13-02617, M-13-01343, M-13-03457, M-13-03110, M-13-03129, M-13-03332, M-13-03453, M-10-01688, M-11-06833, M-12-01357, M-13-03558, M-13-01847, G-12-0114

Areva CR-6031895, Loose part in SG C, 22.32" or greater in length, 3/2004

Work Orders

WO 2081354, UT on 1NVFW53-64, 3/26/13

WO 2039926, VT-3 examination of spring hanger 1-MCR-NC-500, 3/21/13

WO 2044364, VT-2 examination of 1RHR1A Heat Exchanger Nozzle belt to Head Weld, 3/17/13

WO 2041226, VT-1 examination of containment bolted connections, 3/18/13

WO 2040602, VT-1 examination of containment moisture barrier and shell inside surface area, 3/19/13

WO 1897292, 1NV-44 Cutout-reinstall valve for boroscope inspection, 9/29/11

WO 02045502-03, PM 1NC-RX-59 Perform Vessel Head Bare Metal Inspection, 03/28/2013

Other Documents

MISI-1462.10-0040, Fourth Interval Inservice Inspection Plan McGuire Nuclear Station Unit 1, Rev. 0

Boric Acid Corrosion Control ESD, Rev. 6

NDE Personnel Certification/Qualification Records for WO 2044364

NDE Personnel Visual Acuity Records for WO 2044364

NDE Personnel Certification/Qualification Records for WO 2081354

NDE Personnel Visual Acuity Records for WO 2081354

NDE Personnel Certification/Qualification Records for WO 2039926

NDE Personnel Visual Acuity Records for WO 2039926

NDE Personnel Certification/Qualification Records for WO 2041226

NDE Personnel Visual Acuity Records for WO 2041226

NDE Personnel Certification/Qualification Records for WO 2040602

NDE Personnel Visual Acuity Records for WO 2040602

NDE Personnel Certification/Qualification Records for WO 1897292

NDE Personnel Visual Acuity Records for WO 1897292

Welding Qualification Records for WO 1897292

51-9198188-000, McGuire Unit 1, RVCH Penetration Coverage Assessment for Spring 2013 (1EOC22) Outage, 10/18/2010

Acceptance Test Report for Double TOFD Axial and Circumferential Blade Probe Serial No. 1215-0022 DNN

Letter from T. Washburn, Areva Asst. NDE Certification Administrator to B. Warner, Project Manager, Subject: Personnel Certifications – Submittal #1, 01/24/2013

Performance Demonstration Program Qualification Records for Examiners ID# 6710838, 9722177, 3699017, 7717081, and 4071518

Performance Demonstration Qualification Sheet (PDQS) No. 1048, Areva Procedure 54-ISI-603, Automated Ultrasonic Examination of RPV Closure Head Penetrations Containing Thermal Sleeves, Rev. 5, 02/19/2010

PDQS No. 1119, Areva Procedure 54-ISI-604, Automated Ultrasonic Examination of Open Tube RPV Closure Head Penetrations, Rev. 11, 03/05/12

VT-13-857, Visual Examination for Boric Acid Detection – RPV Closure Head Outer Surface, 03/31/13

WCAP-13493, Reactor Vessel Closure Head Penetration Key Parameters Comparison, 09/1992
Code Case N770-2, Alternative Examination Requirements and Acceptance Standards for
Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS
W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities Section
XI, Division I, Approval Date June 9, 2011

McGuire Unit 1EOC22 Degradation Assessment, 2/20/13

McGuire Unit 1 & Unit 2 Model CFR 80 Tri-Pitch Steam Generators, Secondary Side Integrity
Plan, Rev. 2

Westinghouse Personnel Certifications: C. Chiplaskey, G. Gallant, S. Koesner, J. McElhinny, T.
Parris

Rolls Royce Personnel Certifications: N. Bates, A. Shaw, D. Hawley. J. Lamons

Section 1R11: Licensed Operator Requalification Program and Licensed Operator Performance

Quarterly Resident Inspector LOR Activity Review

NSD 509, Site Standards in Support of Operational Focus, Rev. 7

SOMP 01-07, Control Room Oversight, Rev. 1

Active Simulator Exam 109

AP/1/A/5500/11, Pressurizer Pressure Anomalies, Rev. 11

AP/1/A/5500/07, Loss of Electrical Power, Rev. 32

EP/1/A/5000/E-0, Reactor Trip or Safety Injection, Rev. 33

EP/1/A/5000/E-3, Steam Generator Tube Rupture, Rev. 23

Quarterly Resident Inspector Licensed Operator Performance Review

OP/1/A/6100/001, Controlling Procedure for Unit Startup, Rev. 185

OP/1/A/6100/003, Controlling Procedure for Unit Operation, Rev. 184

PT/0/A/4150/028, Initial Criticality and Zero Power Physics Testing, Rev. 63

Section 1R12: Maintenance Effectiveness

NSD 310, Requirements for the Maintenance Rule, Rev. 12

EDM 201, Risk Category Scoping, Health Grouping and ER Strategy, Rev. 15

EDM 210, Engineering Responsibilities for the Maintenance Rule, Rev. 26

SSC Function Scoping Database

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

NSD 213, Risk Management Process, Rev. 11

NSD 403, Shutdown Risk Management (Modes 4, 5, 6, and No-Mode) Per 10CFR50.65 (a)(4),
Rev. 27

NSD 415, Operational Risk Management (Modes 1–3) per 10 CFR 50.65(a)(4), Rev. 7

SOMP 02-02, Operations Roles in the Risk Management Process, Rev. 13

Section 1R15: Operability Determinations and Functionality Assessments

NSD 203, Operability/Functionality, Rev. 26

NSD 515, Operational Decision Making, Rev. 8

PT/1/A/4403/007, RN Train 1A Flow Balance, Rev 077.

PIPs M-13-4222, M-13-4543, M-13-4554, M-13-4605

Section 1R18: Plant Modifications

NSD 301, Engineering Change Program, Rev. 41
 EDM 601, Engineering Change Manual, Rev. 19
 OMP 10-2, Temporary Engineering Changes, Rev. 13
 SOMP 02-04, Engineering Change Implementation Process, Rev. 0

Section 1R19: Post-Maintenance Testing

NSD 408, Testing, Rev. 16
 PT/1/A/4350/002A, 1A D/G operability Test Rev. 96
 PT/1/A/4250/004C, Turbine OPC and Mechanical Overspeed Trip Test, Rev. 17
 IP/0/A/4971/010, Brown Boveri ITE27D Relay Calibration, Rev. 12
 PT/2/A/4350/004, 4KV Loss of Voltage Trip Actuating Device Operational Test, Rev. 17
 PT/2/A/4350/004A, 2A D/G Periodic and Load Sequencer Test, Rev. 26

Section 1R20: Refueling and Other Outage Activities

OP/1/A/6100/SO-1, Maintaining NC System Level, Rev. 57
 OP/1/A/6100/SO-10, Controlling Procedure for LTOP Operation, Rev. 34
 OP/1/A/6100/SU-1, Mode 6 and Core Alterations Checklist, Rev. 44
 OP/1/A/6100/SU-3, Mode 5 Checklist, Rev. 28
 OP/1/A/6100/SU-5, Filling the NC System, Rev. 51
 OP/1/A/6100/SU-6, Venting the NC System, Rev. 30
 OP/1/A/6100/SU-7, Fill and Vent Valve Checklist, Rev. 17
 OP/1/A/6100/SU-8, Heatup to 200 Degrees F, Rev. 49
 OP/1/A/6100/SU-9, Mode 4 Checklist, Rev. 62
 OP/1/A/6100/SU-10, Heatup Checklist, Rev. 13
 OP/1/A/6100/SU-13, Heatup to 350 Degrees F, Rev. 51
 OP/1/A/6100/SU-15, Mode 3 Checklist, Rev. 47
 OP/1/A/6100/SU-19, Heatup to 557 Degrees F, Rev. 56
 OP/1/A/6100/SU-20, Modes 1 and 2 Checklist, Rev. 37
 OP/1/A/6300/001, Turbine Generator Startup/Shutdown, Rev. 95
 OP/1/A/6300/003, Controlling Procedure for Unit Operation, Rev. 180
 PT/1/A/4150/021, Post Refueling Controlling Procedure for Criticality, Zero Power Physics, & Power Escalation Testing, Rev. 113
 PT/0/A/4150/028, Initial Criticality and Zero Power Physics Testing, Rev. 63
 PT/0/A/4150/033, Total Core Reloading, Rev. 64
 PT/0/A/4150/046, Containment Walkdown, Rev. 4
 PT/0/A/4150/047, 1/M Monitoring During Startup, Rev. 3
 PT/1/A/4200/002C, Containment Closure, Rev. 80
 PT/0/A/4550/003C, Core Verification, Rev. 26
 MP/1/A/7150/124, Unit 1 Containment Vessel Equipment Hatch Opening and Closure, Rev. 17
 MP/0/A/7650/141, Fuel Transfer System Operation, Rev. 17
 MP/0/A/7650/146, Operation of Rx Building Manipulator Crane, Rev. 26
 MP/0/A/7650/148, Operation of Fuel Building Manipulator Crane, Rev. 39
 MP/0/A/7650/161, Fuel Handling and Core Alterations Prerequisites Procedure, Rev. 13
 MSD 585, Reactor Building Personnel Access and Material Control, Rev. 15

Section 1R22: Surveillance Testing

WO 02084840, performed on 5/12/2013

MP/0/A/7150/141, Ice Condenser Lower Inlet Door Inspection and Corrective Maintenance,
Rev. 9

Section 1EP6: Drill Evaluation**Quarterly Site Emergency Preparedness Training Drill**

RP/0/A/5700/000, Classification of Emergency, Rev. 20

RP/0/B/5700/029, Notifications to Offsite Agencies from the Control Room, Rev. 10

RP/0/A/5700/002, Alert, Rev. 28

RP/0/A/5700/003, Site Area Emergency, Rev. 29

RP/0/A/5700/010, NRC Immediate Notification Requirements, Rev. 19

RP/0/A/5700/012, Activation of the Technical Support Center, Rev. 40

Licensed Operator Simulator Emergency Preparedness Training

RP/0/A/5700/000, Classification of Emergency, Rev. 20

RP/0/B/5700/029, Notifications to Offsite Agencies from the Control Room, Rev. 10

Section 4OA1: Performance Indicator (PI) Verification

NSD 225, NRC Performance Indicators, Rev. 5

SRPMP 10-1, NRC Performance Indicator Data Collection, Validation, Review and Approval,
Rev. 6

Section 4OA2: Problem Identification and Resolution

NSD 202, Reportability, Rev. 23

NSD 208, Problem Investigation Program (PIP), Rev. 38

NSD 212, Cause Analysis, Rev. 27

NSD 220, UFSAR Revision Process, Rev. 14

NSD 223, PIP Trending Program, Rev. 7

NSD 506, Operator Workarounds and Control Room Deficiencies, Rev. 5

NSD 607, Self-Assessments and Benchmarking, Rev. 17