



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

January 23, 2014

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

**SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT  
05000369/2013005 AND 05000370/2013005 AND EMERGENCY  
PREPAREDNESS INSPECTION REPORT 05000369/2013502 AND  
05000370/2013502**

Dear Mr. Capps:

On December 31, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your McGuire Nuclear Station Units 1 and 2. On January 9, 2014, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

No NRC-identified or self-revealing findings were identified during this inspection. However, inspectors documented a licensee-identified violation which was determined to be of very low safety significance (Green) in this report. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy. If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; 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.

As a result of the Safety Culture Common Language Initiative, the terminology and coding of cross-cutting aspects were revised beginning in calendar year (CY) 2014. New cross-cutting aspects identified in CY 2014 will be coded under the latest revision to IMC 0310. Cross-cutting aspects identified in the last six months of 2013 using the previous terminology will be converted to the latest revision in accordance with the cross-reference in IMC 0310. The revised cross-cutting aspects will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the CY 2014 mid-cycle assessment review.

S. Capps

2

In accordance with Title 10 of the Code of Federal Regulations 2.390, "Public Inspections, Exemptions, Requests for Withholding," 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/*

Gerald J. McCoy, 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 05000369/2013005 and  
05000370/2013005 and Emergency Preparedness  
Inspection Report 05000369/2013502 and 05000370/2013502  
w/Attachment - Supplemental Information

cc w/encl: via Listserv

S. Capps

2

In accordance with Title 10 of the Code of Federal Regulations 2.390, "Public Inspections, Exemptions, Requests for Withholding," 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/**

Gerald J. McCoy, 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 05000369/2013005 and  
05000370/2013005 and Emergency Preparedness  
Inspection Report 05000369/2013502 and 05000370/2013502  
w/Attachment - Supplemental Information

cc w/encl: via Listserv

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	NRR	RII:DRP	RII:DRP	
SIGNATURE	Via email	Via email	Via email	Via email	GJM /RA for/	GJM /RA/	
NAME	JZeiler	JHeath	MMeeks	JLaughlin	CRapp	GMcCoy	
DATE	01/23/14	01/21/2014	01/15/2014	01/22/2014	01/23/2014	01/23/2014	
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY      DOCUMENT NAME: G:\DRPI\RPB1\MCGUIRE\REPORTS\MCGUIRE 201305.DOCX

S. Capps

3

Letter to Steven D. Capps from Gerald J. McCoy dated January 23, 2014

SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT  
05000369/2013005 AND 05000370/2013005 AND EMERGENCY  
PREPAREDNESS INSPECTION REPORT 05000369/2013502 AND  
05000370/2013502

DISTRIBUTION:

C. Evans, RII

L. Douglas, RII

OE Mail

RIDSNNRRDIRS

PUBLIC

RidsNrrPMMcGuire Resource

**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket Nos.: 50-369, 50-370

License Nos.: NPF-9, NPF-17

Report Nos.: 05000369/2013005, 05000370/2013005  
05000369/2013502, 05000370/2013502

Licensee: Duke Energy Carolinas, LLC

Facility: McGuire Nuclear Station, Units 1 and 2

Location: Huntersville, NC 28078

Dates: October 1, 2013, through December 31, 2013

Inspectors: J. Zeiler, Senior Resident Inspector  
J. Heath, Resident Inspector  
M. Meeks, Senior Operations Engineer (Section 1R11)  
J. Laughlin, Emergency Preparedness Inspector (Section 1EP4)

Approved by: Gerald J. McCoy, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

Enclosure

## **SUMMARY OF FINDINGS**

IR05000369/2013005, IR05000370/2013005, IR05000369/2013502, IR05000370/2013502;  
10/01/2013 – 12/31/2013; McGuire Nuclear Station; Routine Integrated Inspection Report.

The report covered a three month period of inspection by the two resident inspectors, a regional inspector, and a headquarters specialist. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4.

No findings were identified. One violation of very low safety significance (Green), which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee has been entered into the licensee's corrective action program (CAP). This violation and corrective action tracking number are listed in Section 4OA7 of this report.

Enclosure

## REPORT DETAILS

### Summary of Plant Status

Unit 1 operated at essentially 100 percent rated thermal power (RTP) until November 14, 2013, when a manual reactor trip was initiated due to multiple dropped control rods following loss of primary and backup power to the 1AC rod control cabinet. The unit was returned to 100 percent RTP on November 18 and operated at essentially full RTP for the remainder of the inspection period.

Unit 2 operated at essentially 100 percent RTP for the entire inspection period.

#### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R01 Adverse Weather Protection

##### a. Inspection Scope

Readiness for Seasonal Extreme Weather Conditions: The inspectors reviewed the effectiveness of the licensee's cold weather protection program pertaining to their preparations for seasonal cold weather conditions experienced during the inspection period. The inspectors discussed the licensee's cold weather program with the assigned plant system engineer and verified that the licensee had implemented their cold weather preparation procedures. The inspectors walked down freeze protection equipment associated with the Unit 1 and Unit 2 refueling water storage tank, inside/exterior (main steam/feedwater piping) doghouses, main feedwater flow transmitter houses, and main fire pumps. These equipment/areas were selected because their important to safety-related functions could be affected by adverse weather (freezing conditions). The inspectors observed plant conditions and evaluated those conditions against the criteria in the monthly equipment freeze protection checkout procedure. 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

Enclosure

selected breakers, valves, and support equipment were in the correct position to support system operation. Documents reviewed are listed in the Attachment.

- 1A2 emergency diesel generator (EDG) starting air (VG) train while the 1A1 VG train was out of service for scheduled maintenance
- 2B motor driven auxiliary feedwater pump (MDCA) and turbine driven auxiliary pump (TDCA) while the 2A MDCA was out of service for scheduled maintenance
- 2B EDG while the 2A EDG was out of service for emergent repair of its emergency output breaker failure to close

Complete System Walkdown: The inspectors conducted a detailed review of the Unit 1 safety injection (SI) 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 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 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

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 they were consistent with the fire protection program and presented an adequate fire fighting strategy. Documents reviewed are listed in the Attachment.



- 2A and 2B EDG rooms (Fire Area 7 and 8)
- 2ETB essential power switchgear room and auxiliary building 733 elevation electrical penetration room (Fire Areas 10-12)
- Unit 2 MDCA and TDCA pump rooms (Fire Area 3 and 3A)
- Standby shutdown facility (SSF) (Fire Area Yard)
- HVAC room for 2ETA switchgear room (Fire Area 18A)

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 ascertain which plant areas were subject to internal flooding and contained safety-related equipment. The inspectors walked down the Unit 1 and Unit 2 EDG buildings to determine whether the area configuration, flood protection barriers, and flood protection 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 procedure(s), to determine whether the desired results could be achieved by the times credited in the flooding analysis. 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: The inspectors observed operators in the plant's simulator during an emergency preparedness drill conducted on November 13, 2013. The drill scenario involved a turbine trip due to a failed thrust bearing and a reactor coolant system leak and subsequent loss of subcooling. 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 examinations.

Quarterly Resident Inspector Licensed Operator Performance Review: On November 16, 2013, the inspectors observed and assessed the adequacy of Unit 1 control room operator performance during reactor restart from a manual reactor trip. The inspectors assessed overall crew performance, clarity and formality of communications, use of procedures, control board and plant computer alarm response, control board manipulations, group dynamics, thoroughness of pre-job briefings, and supervisory oversight. Documents reviewed are listed in the Attachment.

Annual Review of Licensee Regualification Examination Results: On November 20, 2013, the licensee completed the annual requalification operating examinations required to be administered to all licensed operators in accordance with 10 CFR 55.59(a)(2). The inspectors performed an in-office review of the overall pass/fail results of the individual operating examinations and the crew simulator operating examinations in accordance with Inspection Procedure (IP) 71111.11, "Licensed Operator Regualification Program." These results were compared to the thresholds established in Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," Appendix I, "Operator Regualification Human Performance Significance Determination Process."

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-13-02586, Power operated relief valve (PORV) block valve 1NV-33A failed to open following valve stroke timing on PORV 1NC-34A
- PIP M-13-05373, AC input breaker to vital battery charger EVCB tripped during swap from Unit 2 to Unit 1

b. Findings

No findings were identified.

Enclosure

### 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 and Unit 2 for planned complex activity involving excavation of underground Nuclear Service Water (RN) system piping to conduct pipe wear and coatings inspections
- Unplanned Yellow risk on Unit 2 for X-phase undervoltage relay actuation on 2ETA essential switchgear bus during normal train swap
- Yellow risk on Unit 2 for planned modification of TDCA pump turbine steam exhaust piping
- Unplanned Yellow risk on Unit 2 for emergent repair of the 2A EDG emergency breaker failure to close
- Yellow risk on Unit 2 for planned maintenance and testing of the 2A MDCA pump

#### b. Findings

No findings were identified.

### 1R15 Operability Determinations and Functionality Assessments

#### a. Inspection Scope

The inspectors reviewed the five technical evaluations listed below to determine whether Technical Specification (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-13-09305, Setpoints for AMSAC pressure switches and generator lockout were calculated incorrectly during MUR modification
- PIP M-13-09701, Received X-phase undervoltage alarm on 2ETA essential switchgear bus during start of 2A spent fuel pool pump

- PIP M-13-09820, Vital battery EVCA cell #45 exhibits cracks in positive plate grid strap
- PIP M-13-10547, 2B EDG sequencer test switch failure
- PIP M-13-10671, Volume of standby nuclear service water pond at specific elevations non-conservative with description in UFSAR

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing

a. 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.

- 1A EDG control air solenoid valve (1VG-5160) functional testing following planned valve replacement
- 2A EDG functional testing following planned replacement of local output breaker closing pushbutton and remote synchronization scope on/off switches
- 1A NI pump functional testing following preventive maintenance
- Unit 1 control rod drive functional testing following emergent replacement of multiple power supplies in rod control power cabinets
- 1A centrifugal charging (NV) pump functional testing following planned oil leak repair
- 2A MDCA pump functional testing following planned preventive maintenance

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities

a. Inspection Scope

The inspectors performed the inspection activities described below for the short duration unscheduled forced outage in Hot Standby (Mode 3) following the manual reactor trip on November 14, 2013, due to the loss of power to the 1AC rod control cabinet. The outage ended on November 16, with restart of the reactor and placing the unit online.

Enclosure

Documents reviewed are listed in the Attachment.

- The outage work schedule plan was reviewed to ensure that appropriate risk controls, defense-in-depth, and TS requirements were considered in the configuration of important plant safety equipment, and outage personnel resource scheduling took into consideration fatigue management requirements.
- The licensee's troubleshooting plans and failure investigation for the failed power supplies in the 1AC rod control cabinet were reviewed to ensure appropriate actions were taken to address the problem prior to reactor restart.
- The forced outage trip list was reviewed to verify that appropriate consideration was given to repair existing plant deficiencies during the forced outage.
- The scope of licensee containment entries to identify sources of reactor coolant system leakage were reviewed to verify that the licensee controlled the entries in accordance with procedural requirements for maintaining containment integrity, foreign material exclusion, security access, and radiological controls. The inspectors verified appropriate corrective actions were taken to address identified sources of leakage.
- The inspectors observed selected changing plant configurations, mode changes, reactor restart, and portions of the power escalation to verify that TS, license conditions, and licensee procedural requirements were met during these evolutions.
- The inspectors reviewed various problems or emergent issues that arose during the outage to verify that the licensee was identifying problems at an appropriate threshold and entering them into the CAP.

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 Technical Specifications, the Updated Final Safety Analysis Report, and applicable licensee procedures. In addition, the inspectors verified 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/2/A/4200/028A, Train A Slave Relay Test, Enclosure 13.3, Train 2A Safety Injection (K-611), Rev. 101
- PT/2/A/4208/001A, 2A NS Pump Performance Test, Rev. 76
- PT/2/A/4350/020, Diesel Generators Interdependence Test, Rev. 14
- PT/2/A/4200/019, ECCS Pumps and Piping Vent, Rev. 61

In-Service Tests

- PT/1/A/4403/002E, RN Train B Valve Stroke Timing – Quarterly Plant Evolution Valves, Rev. 26

Reactor Coolant System Leakage Testing

- PT/2/A/4150/001B, Reactor Coolant Leakage Calculation, Rev. 75

b. Findings

Introduction: An unresolved item (URI) was identified involving the licensee's identification of significant gas voiding in the Unit 2 emergency core cooling system (ECCS) piping. This issue remains unresolved pending completion of the licensee's evaluation to determine whether the NI/NV pumps would have been capable of performing their design basis accident function with the presence of the gas void and understanding of the mechanism leading to the large void formation without being detected by previous TS surveillance testing.

Description: During the performance of Unit 2 ECCS pipe gas void inspections using ultrasonic test (UT) equipment, a large gas void was found in a 5 foot section of 8 inch diameter piping at high point vent valve 2NV-1056. 2NV-1056 was located on the suction side of both trains of the NI and NV pumps downstream of valve 2ND-58A, which is opened during design basis accident conditions involving cold-leg recirculation to provide the piggyback alignment from the residual heat removal (ND) system. Excessive gas accumulation at 2NV-1056 could result in gas being drawn into the NI/NV pumps causing pump degradation or failure. The licensee vented the piping by opening 2NV-1056, which returned the ECCS piping to water solid conditions. Additional ECCS piping locations were checked for possible gas accumulation and none were identified. The licensee implemented increased frequency UT monitoring for gas accumulation at 2NV-1056 (every 6 hours and subsequently every 12 hours) to ensure timely detection of abnormal gas accumulation until the source was determined.

Based on the UT measurements, the licensee determined the size of the gas void to be approximately 2 ft<sup>3</sup>, which exceeded the existing 0.35 ft<sup>3</sup> maximum allowable void volume for this location. The licensee initiated a past operability evaluation to determine if the NI/NV pumps would have been capable of performing their safety function during design basis accident conditions with the void in the piping. In addition, on December 18, the inspectors observed how licensee personnel were conducting the increased frequency UT measurements at location 2NV-1056 using Enclosure 13.7, Supplemental Venting, of procedure PT/2/A/4200/019, ECCS Pumps and Piping Vent. The inspectors noted that personnel were conducting the UT measurement on the 1.5 inch diameter vent piping associated with 2NV-1056 versus the 8 inch ECCS header piping that the vent valve is connected to. The procedure contained a note stating that "UT measurement is performed at piping adjacent to valve due to flow being limited by 1/8 inch diameter hole in piping header." The 2NV-1056 vent piping was previously added via a modification to enhance the licensee's ECCS piping gas management program. It was installed using a wet tap with a 1/8 inch drilled hole into the top of the header piping with a coupling welded over the hole to connect the vent piping. Due to the small 1/8 inch opening, water tension and/or small trash/debris can inhibit the proper

Enclosure

communication of water between the ECCS header pipe and the vent piping. It appeared to the inspectors that the note was directing that the UT measurement needed to be conducted on the ECCS header piping and not the vent piping due to concerns that the vent piping might remain water solid while the ECCS header piping could be voiding. Following discussions with the licensee regarding this note, personnel were directed to conduct the UT measurement in the ECCS header piping. The licensee initiated PIP M-13-11297 to address this issue and to investigate how prevalent past UT measurements were conducted in the vent piping versus the header piping.

This issue remains unresolved pending completion of the licensee's evaluation of the impact that the gas void would have on the operation of the NI/NV pumps during design basis accident conditions and investigation into the mechanism that resulted in the excessive gas voiding not being identified during routine surveillances designed to identify such conditions. This issue is identified as URI 05000370/2013005-01, Evaluation of Gas Void Identified in Unit 2 ECCS Piping.

Cornerstone: Emergency Preparedness

#### 1EP4 Emergency Action Level and Emergency Plan Changes

##### a. Inspection Scope

The NSIR headquarters staff performed an in-office review of the latest revisions of various Emergency Plan Implementing Procedures (EPIPs) and the Emergency Plan located under ADAMS accession numbers ML13024A407, ML130020495, and ML13102A070 as listed in the Attachment.

The licensee determined that in accordance with 10 CFR 50.54(q), the changes made in the revisions resulted in no reduction 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 NRC review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, these revisions are subject to future inspection. 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.

#### 4. OTHER ACTIVITIES

##### 4OA1 Performance Indicator (PI) Verification

##### a. Inspection Scope

The inspectors sampled licensee data to confirm the accuracy of reported PI data for the following four indicators. To determine the accuracy of the PI data reported for the

Enclosure

specified review period, the inspectors compared the licensee's basis in reporting each data element to the PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Indicator Guideline," Rev. 7, as well as the licensee's procedural guidance for reporting PI information. Documents reviewed are listed in the Attachment.

Barrier Integrity Cornerstone

- Reactor Coolant System (RCS) Specific Activity (Units 1 and 2)
- RCS Leak Rate (Units 1 and 2)

The inspectors reviewed the PI results for October 1, 2012, through September 30, 2013. The inspectors compared the licensee-reported PI data with records developed by the licensee that contained daily calculated values for RCS activity and leak rates. The inspectors interviewed the licensee personnel who were responsible for collecting and evaluating the PI data.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution

a. Inspection Scope

Review of Items Entered into the Corrective Action Program: As required by IP 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, Problem Identification and Resolution, 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 July 2013 through December 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.

Enclosure



- PIP M-13-06633, Unit 2 load rejection and automatic reactor power runback to 56 percent RTP due to loss of the 2A switchyard busline

The inspectors assessed whether the issue was 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.

b. Findings

No findings were identified.

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

.1 Unit 1 Dropped Control Rods

a. Inspection Scope

On November 14, 2013, the inspectors evaluated the licensee's response to the Unit 1 manual reactor trip from 100 percent RTP due to indications of multiple dropped control rods as a result of loss of primary and backup power to the 1AC rod control cabinet. 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 whether alarms/conditions preceding and following the trip were as expected; 3) evaluated the performance of plant systems and operator actions; and, 4) confirmed proper NRC classification and reporting of the event. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report (LER) 05000369/2013-002-00, Inoperable Auxiliary Feedwater Components Resulting in Technical Specification Prohibited Operation or Condition

On May 29, 2013, the licensee identified that the calibration procedure for the Unit 1 CA pressure switch 1CAPS5390 used the incorrect water leg value, resulting in the non-conservative setpoint for the pressure switch actuation. The pressure switch realigns the Unit 1 TDCA pump suction from its normal alignment to its assured water source, the RN supply header. As a result of the error, the setpoint limits required by TS 3.3.2, Engineering Safety Feature Actuation System, were not met rendering both the channel and the TDCA pump inoperable. The licensee determined the cause of the event was a weakness in the program for controlling the measurement and calculation of water leg

Enclosure

setpoint corrections. The inspectors verified the accuracy of the LER, the adequacy of the licensee's causal evaluation, and the appropriateness of completed and proposed corrective actions. This LER was entered into the licensee's CAP as PIP M-13-05935. The enforcement aspects of this violation are discussed in Section 4OA7.

.3 (Closed) LER 05000369/2013-001-01, Valid Actuation of Unit 1 Reactor Protection and Auxiliary Feedwater Systems

The inspectors reviewed the subject LER revision and PIP M-13-01728 to verify the LER accuracy and appropriateness of corrective actions. The supplement to this LER corrected a minor editorial error involving the LER page numbering. No new findings were identified.

4OA5 Other Activities

a. Inspection Scope

Quarterly Resident Inspector Observations of Security Personnel and Activities: During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours. These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exits

On January 9, 2014, 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.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which met the criteria of the NRC Enforcement Policy for being dispositioned as a NCV.

- TS 3.3.2, Function 6.f, requires that all four instrumentation channels of the TDCA pump suction transfer function be operable in Modes 1, 2, and 3. TS 3.3.2, Condition N, specifies if one or more of the pressure switch instrumentation channels are inoperable, the channel must be restored to operability within 48 hours or the associated TDCA pump must be declared inoperable. Contrary to this requirement, from September 1993 to May 30, 2013, the channel associated with pressure switch

Enclosure

1CAPS5390 was inoperable and the licensee failed to declare the Unit 1 TDCA inoperable within the required TS completion time. This violation was determined to be of very low safety significance (Green) because the channel would still have been capable of actuating and aligning the TDCA to its assured water source within the timeframe necessary for the pump to perform its intended safety function. This violation was documented in the licensee's CAP as PIP M-13-05935.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

B. Anderson, Superintendent of Operations  
D. Black, Security 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. Robertson, Regulatory Compliance Manager  
P. Schuerger, Training Manager  
S. Snider, Engineering Manager

### **REPORT ITEMS**

#### Opened

05000370/2013005-01	URI	Evaluation of Gas Void Identified in Unit 2 ECCS Piping (Section 1R22)
---------------------	-----	--

#### Closed

05000369/2013-002-00	LER	Inoperable Auxiliary Feedwater Components Resulting in Technical Specification Prohibited Operation or Condition (Section 4OA3.2)
05000369/2013-001-01	LER	Valid Actuation of Unit 1 Reactor Protection and Auxiliary Feedwater Systems (Section 4OA3.3)

### **DOCUMENTS REVIEWED**

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

##### Readiness for Seasonal Extreme Weather Conditions

NSD 317, Freeze Protection Program, Rev. 4  
PT/0/B/4700/038, Verification of Freeze Protection Equipment and Systems, Rev. 28  
PT/0/B/4700/070, On Demand Freeze Protection Verification Checklist, Rev. 24  
IP/1/B/3250/059B, Monthly Check of Freeze Protection, Rev. 6  
IP/2/B/3250/059B, Monthly Check of Freeze Protection, Rev. 6  
Action Register Update Details Reports (of freeze protection program from Sept. – Nov. 2013)  
PIPs M-12-06505, M-12-08228, M-12-10658, M-13-07425, M-13-08297, M-13-10225, M-13-10612, and M-13-10622

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

MCFD-1609-04.00, Flow diagram of diesel generator starting air system, Rev. 15  
 WO 02094709, 1A1 VG membrane dryer and filter change-out  
 OP/2/A/6250/002, Auxiliary Feedwater System, Rev. 85  
 OP/2/A/6350/002, Diesel Generator, Rev. 104

**Complete System Walkdown**

UFSAR Section 6.3, Emergency Core Cooling System, Rev. 17  
 MCS-1562.NI-00-0001, NI System, Rev. 20  
 MCFD-1562-01.00, Flow Diagram of Safety Injection System, Rev. 4  
 MCFD-1562-03.00, Flow Diagram of Safety Injection System, Rev. 15  
 MCFD-1562-03.01, Flow Diagram of Safety Injection System, Rev. 12  
 OP/1/A/6200/006, Safety Injection System, Rev. 67  
 McGuire Unit 1 NI System Health Report, 2013 Q3-Q4  
 MNS OPS Work Around List, December 2013

**Section 1R05: Fire Protection**

MCS-1465.00-00-0008, Design Basis Specification for Fire Protection, Rev. 16  
 NSD 104, Material Condition/Housekeeping, Foreign Material Exclusion and Seismic Concerns,  
 Rev. 33  
 NSD 313, Control of Transient Fire Loads, Rev. 14  
 IMP-MC-2013-00430, 2A and 2B D/G halon inoperable due to DCB1-1F red-tagged open for  
 maintenance  
 FS/2/B/9000/012, 2ETB Room Fire Strategy #12, Rev. 1  
 FS/0/B/9000/004, (Aux 716) Fire Strategy #4, Rev. 0  
 FS/2/B/9000/018A, HVAC Room for 2ETA Fire Strategy #18A, Rev. 0  
 FS/1/B/9000/070, Unit 1 Outside Yard Fire Strategy #70, Rev. 0  
 MFSD-010.012, 2ETB/733 Electrical Penetration Room, Rev. 1  
 MFSD-044, Unit 2 Turbine Building Basement, Rev. 1  
 MFSD-004, Auxiliary Building 716, Rev. 0  
 MFSD-016.018, 2ETA/750 Electrical Penetration Room, Rev. 0  
 MFSD-070, Unit 1 Outside Yard, Rev. 0

**Section 1R06: Flood Protection Measures**

UFSAR Section 3.4, Water Level (Flood) Design  
 MCS-1154.00-0004, Design basis specification for auxiliary building structures, Rev. 10  
 PT/1/A/4355/001C, 1A3 Diesel Generator Room Sump Performance Test, Rev. 14  
 MCC-1206.47-69-1001, Flooding of the Diesel Generator Area (Section 9.2.3), Rev. 0  
 MCC-1139.01-00-0268, Turbine Building Design Basis Flooding Analysis, Rev. 2  
 MP/0/A/7700/118, Inspection and Adjustment of Flood Doors, Rev. 2  
 AP/0/A/5500/044, Plant Flooding, Rev.14  
 WOs 405427 & 425428, Internal flood barrier inspections

**Section 1R11: Licensed Operator Regualification Program and Licensed Operator Performance**

Quarterly Resident Inspector Licensed Operator Performance Review

NSD 509, Site Standards in Support of Operational Focus, Rev. 7  
 OP/1/A/6100/003, Controlling Procedure for Unit Operation, Rev. 185  
 PT/0/A/4150/028, Initial Criticality and Zero Power Physics Testing, Rev. 63  
 AP/1/A/5500/014, Rod Control Malfunction, Rev. 16  
 91-01/Complex/Critical Activity Plan for Unit 1 Forced Outage Reactor Startup

**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. 27  
 SSC Function Scoping Database  
 Dwg No: MCTC-1553-NC.V002-01, Pressurizer PORV Block Valves 1/2NC-31B,-33A,-35B,  
 Rev. 1

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

NSD 213, Risk Management Process, Rev. 13  
 NSD 415, Operational Risk Management (Modes 1–3) per 10 CFR 50.65(a)(4), Rev. 8  
 SOMP 02-02, Operations Roles in the Risk Management Process, Rev. 14  
 NSD 213 Complex Plan 13W28, Testing new PCB 52 CTs with 525 kV Yellow Bus out of  
 service  
 PIP M-13-09776, 2ETA undervoltage relay not placed in trip condition

**Section 1R15: Operability Determinations and Functionality Assessments**

NSD 203, Operability/Functionality, Rev. 26  
 NSD 515, Operational Decision Making, Rev. 8

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

NSD 408, Testing, Rev. 16  
 MCTC-1609-VG.V009-01, 1/2VG-5160 Valve Design Criteria, Rev. 1  
 WO 02082278, 1VGVA5160 solenoid valve assembly replacement  
 MCID-1499-VG.03 D.G. Pneumatic/Hydraulic Control Schematic, Rev. 1A  
 PIP M-13-10176  
 MCEE-215-00.18, 4160V Switchgear #2ETA Synchroscope Circuits, Rev. 2  
 MCEE-215-00.02-03, 4160V Switchgear #2ETA, Unit #2 Diesel Generator 2A Feeder Breaker  
 (Part #4), Rev. 12

**Section 1R20: Refueling and Other Outage Activities**

NSD 200, Work Hour Guidelines and Limits, Rev. 16  
 NSD 415, Operational Risk Management (Modes 1–3) per 10 CFR 50.65(a)(4), Rev. 8  
 MSD 585, Reactor Building Personnel Access and Material Control, Rev. 15  
 OP/1/A/6100/003, Controlling Procedure for Unit Operation, Rev. 185  
 PT/0/A/4150/047, 1/M Monitoring During Startup, Rev. 3  
 IP/0/B/3211/001A, Westinghouse Control Rod Drive System Power Cabinet Power Supplies  
 Calibration, Rev. 10

**Section 1R22: Surveillance Testing**

PT/2/A/4150/001A, Reactor Coolant System Leak Test, Rev. 8

IP/0/B/3050/017A, Containment Ventilation Condensate Drain Tank Level Calibration and Functional Test, Rev.19

IP/0/B/3050/016, Containment Floor and Equipment Sump Level Calibration and Functional Test, Rev. 24

WO 2045420, Performance of Unit 1 RCS leak test

WO 2016174, Performance of Unit 2 RCS leak test

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

Emergency Plan, Revision 12-4

Evacuation Time Estimate Study Update

Emergency Plan, Revision 13-1

**Section 4OA1: Performance Indicator (PI) Verification****Barrier Integrity Cornerstone**

NSD 225, NRC Performance Indicators, Rev. 6

SRPMP 10-1, NRC Performance Indicator Data Collection, Validation, Review and Approval, Rev. 4

Chemistry Daily Status Reports between October 2012 through September 2013

Chemistry NuclearIQ database between October 2012 through September 2013

**Section 4OA2: Problem Identification and Resolution**

NSD 202, Reportability, Rev. 25

NSD 208, Problem Investigation Program (PIP), Rev. 40

NSD 212, Cause Analysis, Rev. 27

NSD 220, UFSAR Revision Process, Rev. 14

NSD 223, PIP Trending Program, Rev. 7

NSD 607, Self-Assessments and Benchmarking, Rev. 18

**Section 4OA3: Follow-Up of Events and Notices of Enforcement Discretion**

AP/1/A/5500/014, Rod Control Malfunction, Rev. 16

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

EP/1/A/5500/ES-0.1, Reactor Trip Response, Rev. 36

RP/0/A/5700/000, Classification of Emergency, Rev. 19

PT/0/A/4700/045, Reactor Trip Investigation, Rev. 28

NSD 505, Response to Reactor Trips, Significant Transients, or Unit Threat, Rev. 9