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

January 26, 2018

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

SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000369/2017004 AND 05000370/2017004

Dear Mr. Ray:

On December 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your McGuire Nuclear Station Units 1 and 2. On January 11, 2018, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspectors did not identify any finding or violation of more than minor significance.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Frank Ehrhardt, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Docket Nos.: 50-369, 50-370
License Nos.: NPF-9, NPF-17

Enclosure:
IR 05000369/2017004 and 05000370/2017004
w/Attachment: Supplemental Information

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SUBJECT: MCGUIRE NUCLEAR STATION – NRC INTEGRATED INSPECTION REPORT 05000369/2017004 AND 05000370/2017004 January 26, 2018

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REGION II

Docket Nos.:	50-369, 50-370
License Nos.:	NPF-9, NPF-17
Report No.:	05000369/2017004; and 05000370/2017004
Licensee:	Duke Energy Carolinas, LLC
Facility:	McGuire Nuclear Station, Units 1 and 2
Location:	Huntersville, NC 28078
Dates:	October 1, 2017 through December 31, 2017
Inspectors:	A. Hutto, Senior Resident Inspector R. Cureton, Resident Inspector M. Meeks, Senior Operations Engineer (Section 1R11) R. Williams, Senior Reactor Inspector (Section 1R08) P. Cooper, Reactor Inspector (Section 1R08)
Approved by:	Frank Ehrhardt, Chief Reactor Projects Branch 1 Division of Reactor Projects

Enclosure

SUMMARY

IR 05000369/2017004, and 05000370/2017004; October 1, 2017, through December 31, 2017; McGuire Nuclear Station, Units 1 and 2; Integrated Inspection Report

The report covered a 3-month period of inspection by resident inspectors and regional inspectors. No findings were identified during this inspection period. The NRC's program for overseeing the safe operations of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

REPORT DETAILS

Summary of Plant Status

Unit 1: Began the inspection period shutdown for a scheduled refueling outage. The unit was placed online October 16, 2017, and was returned to 100 percent rated thermal power (RTP) on October 18. The unit was operated at essentially full power for the remainder of the inspection period.

Unit 2: Operated at approximately 100 percent RTP for the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

.1 Seasonal Extreme Weather Conditions

The inspectors conducted a detailed review of the station's adverse weather procedures written for extreme low temperatures. The inspectors verified that weather-related equipment deficiencies identified during the previous year had been placed into the work control process and/or corrected before the onset of seasonal extremes. The inspectors evaluated the licensee's implementation of adverse weather preparation procedures and compensatory measures before the onset of seasonal extreme (cold) weather conditions. Documents reviewed are listed in the attachment.

The inspectors evaluated the following risk-significant systems:

- Unit 1 and 2 freeze protection for refueling water storage tank level instrumentation
- Unit 1 and 2 main feedwater flow transmitter compartments
- Unit 1 and 2 freeze protection for interior and exterior doghouse equipment

.2 Readiness to Cope with External Flooding

The inspectors evaluated the licensee's implementation of flood protection procedures and compensatory measures during impending conditions of flooding or heavy rains. The inspectors reviewed the updated final safety analysis report and related flood analysis documents to identify those areas containing safety-related equipment that could be affected by external flooding and their design flood levels. The inspectors walked down flood protection barriers, reviewed procedures for coping with external flooding, and reviewed corrective actions for past flooding events. The inspectors verified that the procedures for coping with flooding could reasonably be used to achieve the desired results. For those areas where operator actions are credited, the inspectors assessed whether the flooding event could limit or prevent the required actions. Documents reviewed are listed in the attachment.

The inspectors conducted walkdowns of the following plant areas containing risk-significant structures, systems, and components that are below flood levels or otherwise susceptible to flooding:

- Unit 1 and 2 yard drains inside the protected area
- Unit 1 and 2 auxiliary building, service building, and fuel handling building rooftop drainage systems

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

.1 Partial Walkdown

The inspectors verified that critical portions of the selected systems were correctly aligned by performing partial walkdowns. The inspectors selected systems for assessment because they were a redundant or backup system or train, were important for mitigating risk for the current plant conditions, had been recently realigned, or were a single-train system. The inspectors determined the correct system lineup by reviewing plant procedures and drawings. Documents reviewed are listed in the attachment.

The inspectors selected the following three systems or trains to inspect:

- Unit 1, “B” train safety injection (NI) system while the “A” NI pump was out of service (OOS) for breaker maintenance
- Unit 1, “B” train component cooling water (KC) system while the “A” train was OOS for planned maintenance
- Unit 1, “A” train KC system while the “B” train was OOS for planned maintenance

.2 Complete Walkdown

The inspectors verified the alignment of the Unit 2 emergency diesel generator. The inspectors selected this system for assessment because it is a risk-significant mitigating system. The inspectors determined the correct system lineup by reviewing plant procedures, drawings, the updated final safety analysis report, and other documents. The inspectors reviewed records related to the system design, maintenance work requests, and deficiencies. The inspectors verified that the selected system was correctly aligned by performing a complete walkdown of accessible components.

To verify the licensee was identifying and resolving equipment alignment discrepancies, the inspectors reviewed corrective action documents, including condition reports and outstanding work orders. The inspectors also reviewed periodic reports containing information on the status of risk-significant systems, including maintenance rule reports and system health reports. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05AQ)

a. Inspection Scope

Quarterly Inspection

The inspectors evaluated the adequacy of selected fire plans by comparing the fire plans to the defined hazards and defense-in-depth features specified in the fire protection program. In evaluating the fire plans, the inspectors assessed the following items:

- control of transient combustibles and ignition sources
- fire detection systems
- fire suppression systems
- manual firefighting equipment and capability
- passive fire protection features
- compensatory measures and fire watches
- issues related to fire protection contained in the licensee's corrective action program

The inspectors toured the following four fire areas to assess material condition and operational status of fire protection equipment. Documents reviewed are listed in the attachment.

- Unit 1, motor generator (MG) set room 767' elevation, fire area 22
- Unit 2, MG set room 767' elevation, fire area 23
- Unit 1/2, service building basement, fire area SRV
- Unit 2, turbine building basement, fire area 44

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

Internal Flooding

The inspectors reviewed related flood analysis documents and walked down the areas listed below containing risk-significant structures, systems, and components susceptible to flooding. The inspectors verified that plant design features and plant procedures for flood mitigation were consistent with design requirements and internal flooding analysis assumptions. The inspectors also assessed the condition of flood protection barriers and drain systems. In addition, the inspectors verified the licensee was identifying and properly addressing issues using the corrective action program (CAP). Documents reviewed are listed in the attachment.

- Unit 1 and 2 turbine building/auxiliary building interface flood mitigation features

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08)

a. Inspection Scope

Non-Destructive Examination Activities and Welding Activities

From October 2, 2017, through October 6, 2017, the inspectors conducted an onsite review of the implementation of the licensee's inservice inspection (ISI) program for Unit 1. The ISI program is designed to monitor degradation of pressure retaining components in vital system boundaries. The scope of this program includes components within the reactor coolant system boundary, risk-significant piping boundaries, and containment system boundaries.

The inspectors either directly observed or reviewed the following non-destructive examination (NDE) activities. These activities were mandated by the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code of Record: 2008 Edition with 2000 Addenda). The inspectors evaluated the NDE activities for compliance with the requirements in Section XI and Section V of the ASME Code. The inspectors also evaluated if any identified indications or defects were dispositioned in accordance with either the ASME Code or an NRC-approved alternative requirement. Additionally, the inspectors reviewed the qualifications of the NDE technicians performing the examinations to determine if they were in compliance with ASME Code requirements.

- ultrasonic examination (UT) of weld 1RPV3-445E-SE, safe-end-to-nozzle weld, ASME Class 1 (observed)
- UT of weld 1NC1F-1-1, pipe-to-safe-end weld, ASME Class 1 (observed)
- UT of weld 1RPV3-445H-SE, safe-end-to-nozzle weld, ASME Class 1 (observed)
- UT of weld 1NC1F-4-1, pipe-to-safe-end weld, ASME Class 1 (observed)
- liquid penetrant examination (PT) of weld NI1F617, pipe-to-pipe weld, ASME Class 1 (reviewed)
- PT of weld NC1F147A, pipe-to-pipe weld, ASME Class 1 (reviewed)
- PT of weld NC1F147, pipe-to-pipe weld, ASME Class 1 (reviewed)
- visual examination (VE) of 1-RPV-BMI-Nozzles, reactor pressure vessel bottom-mounted instrument penetrations (reviewed)
- VE of 1-RPV-Head, reactor pressure vessel closure head outer surface (reviewed)

The inspectors either directly observed or reviewed the following welding activities. The inspectors evaluated these activities for compliance with site procedures and the requirements in Section IX and Section XI of the ASME Code. Specifically, the inspectors reviewed the work orders, repair or replacement plans, weld data sheets, welding procedures, procedure qualification records, welder performance qualification records, and NDE reports.

- Weld NI1F617, pipe-to-pipe weld, ASME Class 1 (reviewed)
- Weld NC1F147A, pipe-to-pipe weld, ASME Class 1 (reviewed)
- Weld NC1F147, pipe-to-pipe weld, ASME Class 1 (reviewed)
- Weld NV1F4316, pipe-to-pipe cap weld, ASME Class 2 (observed)

The inspectors reviewed the listing of non-destructive surface and volumetric examinations performed during the previous refueling outage. The inspectors verified that the licensee did not identify any relevant indications that were analytically evaluated and accepted for continued service.

PWR Vessel Upper Head Penetration Inspection Activities

The inspectors performed the following activities to verify that the requirements of the ASME Code and applicable licensee procedures were being met for the Unit 1 reactor vessel upper head:

- reviewed the Effective Degradation Years and Reinspection Years calculations to determine if a volumetric examination or bare metal visual examination of the penetration nozzles was required during the current outage
- reviewed the final examination report for the bare metal visual examination of ten upper head penetrations
- verified that the examinations were performed in accordance with the requirements of the ASME Code and that the frequency was consistent with ASME Code Case N-729-4

The inspectors verified that the licensee did not identify any indications that were accepted for continued service. Additionally, the inspectors verified that the licensee did not perform any welding repairs to the upper head penetrations since the last Unit 1 refueling outage.

Boric Acid Corrosion Control Inspection Activities

The inspectors reviewed the licensee's boric acid corrosion control program (BACCP) activities to determine if they were implemented in accordance with program requirements, applicable regulatory requirements, and industry guidance. Specifically, the inspectors performed the following activities:

- reviewed applicable procedures and the results of the licensee's most recent containment walkdown inspection
- interviewed the BACCP owner
- conducted an independent walkdown of accessible areas of the Unit 1 reactor building containment pipe chase
- verified that degraded or non-conforming conditions, such as boric acid leaks, were properly identified and corrected in accordance with the licensee's BACCP and the CAP
- reviewed engineering evaluations of components with boric acid leakage which verified that minimum wall thickness of those components was maintained

Steam Generator Tube Inspection Activities

The inspectors reviewed the Unit 1 steam generator maintenance program. This inspection schedule was verified with the requirements of the ASME Code, the licensee's technical specifications, and applicable industry guidance. For steam generators A, B, C and D, the inspectors performed the following activities to verify compliance with program requirements, regulatory requirements, and industry guidance:

- reviewed the scope of the eddy current (ET) examinations, and the implementation of scope expansion criteria
- reviewed documentation for a sample of ET data analysts, probes, and testers to verify that personnel and equipment were qualified to detect the applicable degradation mechanisms
- reviewed a sample of site-specific examination technique specification sheets (ETSS)

- reviewed the in-situ steam generator tube pressure testing screening criteria; the inspectors verified that the assumed NDE flaw sizing accuracy was consistent with data from the ETSS or other applicable performance demonstrations
- reviewed a sample of ET data for four steam generator tubes with a qualified data analyst (AR96C75, BR97C72, CR85C60, and DR34C7)
- verified that recordable indications were detected and sized in accordance with vendor procedures
- compared the latest ET examination results with the last Condition Monitoring and Operational Assessment report to assess the licensee's prediction capability for maximum tube degradation
- verified that that current examination results were bound by the operational assessment projections
- assessed the latest ET examination results to verify that new degradation mechanisms, if any, were identified and evaluated before plant startup
- reviewed the licensee's secondary side steam generator foreign object search and retrieval activities
- verified that primary-to-secondary leakage for Unit 1 in each steam generator remained below the detection or action level threshold during the previous operating cycle

Identification and Resolution of Problems

The inspectors reviewed a sample of ISI-related issues entered into the CAP. The inspectors evaluated if 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.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11)

a. Inspection Scope

.1 Resident Inspector Quarterly Review of Licensed Operator Requalification

On December 13, 2017, the inspectors observed a simulator scenario conducted as part of an emergency response organization drill. The scenario consisted of a loss of coolant accident with a failure of the 1B emergency diesel generator and 1A NI pump.

The inspectors assessed the following:

- licensed operator performance
- the ability of the licensee to administer the scenario and evaluate the operators
- the quality of the post-scenario critique
- simulator performance

Documents reviewed are listed in the attachment.

.2 Resident Inspector Quarterly Review of Licensed Operator Performance in the Actual Plant/Main Control Room

On October 16, 2017, the inspectors observed licensed operator performance in the main control room during Unit 1 reactor startup activities following a refueling outage.

The inspectors assessed the following:

- use of plant procedures
- control board manipulations
- communications between crew members
- use and interpretation of instruments, indications, and alarms
- use of human error prevention techniques
- documentation of activities
- management and supervision

Documents reviewed are listed in the attachment.

.3 Annual Review of Licensee Requalification Examination Results:

On July 20, 2017, the licensee completed the annual requalification operating examinations required to be administered to all licensed operators in accordance with Title 10 of the *Code of Federal Regulations* 55.59(a)(2), "Requalification Requirements," of the NRC's "Operator's Licenses." During the week of December 25, 2017, 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 Requalification Program." These results were compared to the thresholds established in Section 3.02, "Requalification Examination Results," of IP 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors assessed the licensee's treatment of the two issues listed below to verify the licensee appropriately addressed equipment problems within the scope of the maintenance rule (10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants"). The inspectors reviewed procedures and records to evaluate the licensee's identification, assessment, and characterization of the problems as well as their corrective actions for returning the equipment to a satisfactory condition. Documents reviewed are listed in the attachment.

- Unit 1, hydrogen skimmer fan, green off light dark on HVAC board
- Unit 1, 1ELXC-5C did not close during 1A ESF testing

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed the three maintenance activities listed below to verify that the licensee assessed and managed plant risk as required by 10 CFR 50.65(a)(4) and licensee procedures. The inspectors assessed the adequacy of the licensee's risk assessments and implementation of risk management actions. The inspectors also verified that the licensee was identifying and resolving problems with assessing and managing maintenance-related risk using the corrective action program. Additionally, for maintenance resulting from unforeseen situations, the inspectors assessed the effectiveness of the licensee's planning and control of emergent work activities. Documents reviewed are listed in the attachment.

- Unit 1, October 30, 2017, equipment protection plan for B train spent fuel cooling during high decay heat
- Unit 1, December 12, 2017, equipment protection plan for the B train of KC being OOS for planned maintenance
- Unit 1, December 14, 2017, risk management actions associated with replacing 1CF-106AB (1C steam generator feed reg. bypass valve) distributed control system control room board control module

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

Operability and Functionality Review

The inspectors selected the five operability determinations or functionality evaluations listed below for review based on the risk-significance of the associated components and systems. The inspectors reviewed the technical adequacy of the determinations to ensure that technical specification operability was properly justified and the components or systems remained capable of performing their design functions. To verify whether components or systems were operable, the inspectors compared the operability and design criteria in the appropriate sections of the technical specification and updated final safety analysis report to the licensee's evaluations. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the attachment.

- Unit 1, 1RN-188 broken pipe, nuclear condition report (NCR) 2156405
- Unit 1, Equipment hatch leak rate test exceeded acceptance criteria, NCR 2158011
- Unit 1, Nylon rope found in exhaust tailpipe of 1SV-19AB, NCR 02162954
- Unit 2, "B" motor driven auxiliary feedwater pump local control panel door handle broken off, affecting the panel's flood barrier, NCR 02170999
- Unit 2, 2A strainer is overflowing the top catch containment, NCR 2158735

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors verified that the temporary plant modification listed below did not affect the safety functions of important safety systems. The inspectors confirmed the modification did not degrade the design bases, licensing bases, and performance capability of risk significant structures, systems and components. The inspectors also verified modifications performed during plant configurations involving increased risk did not place the plant in an unsafe condition. Additionally, the inspectors evaluated whether system operability and availability, configuration control, post-installation test activities, and changes to documents, such as drawings, procedures, and operator training materials, complied with licensee standards and NRC requirements. Documents reviewed are listed in the attachment.

- Engineering Change (EC) 409880, "Jumper Sliding Links B-17 and B-18 in 2AFP2B Panel"

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors either observed post-maintenance testing or reviewed the test results for the maintenance activities listed below to verify the work performed was completed correctly and the test activities were adequate to verify system operability and functional capability.

- Unit 1 outage activity 11132, core reload (physics acceptance testing), October 15, 2017
- Work Order (WO) 20164744, PM-2EQADE0001: MISC.2A diesel generator (DG) Work Downday, October 24, 2017
- WO 20201574, PM-2NVGX0016: Inspect 2B oil pump pins, November 7, 2017
- WO 20218497, 1CFSS6060: Investigate and Repair 1CF-160AB Controls, December 14, 2017
- WO 20201904, PM-2EQADE0001: 2A DG fluid check, December 19, 2017

The inspectors evaluated these activities for the following:

- acceptance criteria were clear and demonstrated operational readiness
- effects of testing on the plant were adequately addressed
- test instrumentation was appropriate
- tests were performed in accordance with approved procedures
- equipment was returned to its operational status following testing
- test documentation was properly evaluated

Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with post-maintenance testing. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

For the Unit 1 refueling outage from October 1, 2017, through October 16, 2017, the inspectors evaluated the following outage activities:

- refueling, heatup, and startup
- reactor coolant system instrumentation and electrical power configuration
- reactivity and inventory control
- decay heat removal and spent fuel pool cooling system operation
- containment closure

The inspectors verified that the licensee:

- controlled plant configuration per administrative risk reduction methodologies
- developed work schedules to manage fatigue
- developed mitigation strategies for loss of key safety functions
- adhered to operating license and technical specification requirements

The inspectors verified that safety-related and risk-significant structures, systems, and components not accessible during power operations were maintained in an operable condition. The inspectors also reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with outage activities. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the four surveillance tests listed below and either observed the test or reviewed test results to verify testing adequately demonstrated equipment operability and met technical specification and current licensing basis. The inspectors evaluated the test activities to assess for preconditioning of equipment, procedure adherence, and equipment alignment following completion of the surveillance. Additionally, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with surveillance testing. Documents reviewed are listed in the attachment.

Routine Surveillance Tests

- PT/1/A/4200/001 C "Isolation Valve Leak Rate Test, Enclosure 13.14 Test Sheet for Penetration M-302 (NI)"
- PT/0/A/4200/032, "Periodic Inspection of Ice Condenser Lower Inlet Doors"
- PT/2/A/4350/002 A, "2A Diesel Generator Operability Test"

In-Service Tests (IST)

- PT/2/A/4252/001 A, "2A CA pump Performance Test"

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors reviewed a sample of the performance indicator (PI) data, submitted by the licensee, for the Unit 1 and Unit 2 PIs listed below. The inspectors reviewed plant records compiled between October 2016 and September 2017 to verify the accuracy and completeness of the data reported for the station. The inspectors verified that the PI data complied with guidance contained in Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," and licensee procedures. The inspectors verified the accuracy of reported data that were used to calculate the value of each PI. In addition, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with PI data. Documents reviewed are listed in the attachment.

Cornerstone: Barrier Integrity

- reactor coolant system leak rate
- reactor coolant system specific activity

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Routine Review

The inspectors screened items entered into the licensee's CAP to identify repetitive equipment failures or specific human performance issues for follow-up. The inspectors reviewed nuclear condition reports, attended screening meetings, or accessed the licensee's computerized corrective action database.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors reviewed issues entered in the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues and human performance trends, but also considered the results of inspector daily nuclear condition report screenings, licensee trending efforts, and licensee human performance results. The review nominally considered the 6-month period of July 2017 through December 2017 although some examples extended beyond those dates when the scope of the trend warranted. The inspectors compared their results with the licensee's analysis of trends. Additionally, the inspectors reviewed the adequacy of corrective actions associated with a sample of the issues identified in the licensee's trend reports. The inspectors also reviewed corrective action documents that were processed by the licensee to identify potential adverse trends in the condition of structures, systems, and/or components as evidenced by acceptance of long-standing non-conforming or degraded conditions. Documents reviewed are listed in the attachment.

b. Findings and Observations

No findings of significance were identified. In general, the licensee has identified trends and has appropriately addressed the trends with their CAP. However, the inspectors identified a trend associated with nuclear service water system (RN) health related to corrosion and external leakage. Prior to the 6-month review period, leakage was noted near 1RN-884 which was determined to be attributed to galvanic corrosion and an extent of condition identified wall thinning near 1RN-883 (NCR 2032731). These conditions were repaired during refueling outage M1R25. During M1R25 (October 2017), two instances of RN system corrosion were identified by the licensee (NCRs 2156395, 2156405). The first was through-wall leakage in RN test loop piping welds 1RNWEFW-12/15 and was a result of microbial induced corrosion. The second was significant wall thinning on a vent line on the 1A RN/KC heat exchanger (1RN-188) that was attributed to general corrosion. In November 2017, the inspectors identified leakage coming from the 2B RN strainer backwash piping (NCR 2169010) that was determined to be a result of a leaking mechanical coupling. None of the issues discussed challenged operability. Although the above examples are attributed to different causes, collectively they represent a degradation of RN system health.

The licensee's corrective actions included extent of condition visual inspections and non-destructive testing at similar RN piping locations, and additional flushes of stagnant sections of RN piping. The inspectors will continue to monitor and assess the long term effectiveness of corrective actions. The documents reviewed and used as the basis for this trend statement are listed in the attachment to this report.

.3 Annual Followup of Selected Issues

a. Inspection Scope

The inspectors conducted a detailed review of NCR 02115752, "2ND-14B/2ND-29A operating opposite of label."

The inspectors evaluated the following attributes of the licensee's actions:

- complete and accurate identification of the problem in a timely manner
- evaluation and disposition of operability and reportability issues
- consideration of extent of condition, generic implications, common cause, and previous occurrences
- classification and prioritization of the problem
- identification of root and contributing causes of the problem
- identification of any additional condition reports
- completion of corrective actions in a timely manner

Documents reviewed are listed in the attachment.

b. Findings and Observations

No findings were identified.

4OA5 Other Activities

Operation of an Independent Spent Fuel Storage Installation (60855.1)

a. Inspection Scope

The inspectors performed a walkdown of the onsite independent spent fuel storage installation (ISFSI). The inspectors reviewed changes made to the ISFSI programs and procedures, including associated 10 CFR 72.48, "Changes, Tests, and Experiments," screens and evaluations to verify that changes made were consistent with the license or certificate of compliance. The inspectors reviewed records to verify that the licensee recorded and maintained the location of each fuel assembly placed in the ISFSI. The inspectors also reviewed surveillance records to verify that daily surveillance requirements were performed as required by technical specifications. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On January 11, 2018, the resident inspectors presented the inspection results to Mr. Tom Ray and other members of the licensee's staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
S. Cloninger, Weld Planning
S. Gibby, Maintenance Manager
J. Glenn, Organizational Effectiveness Manager
L. Grass, ISI Planning
M. Hatley, SG Inspection Program
J. Hussey, Licensing Engineer
M. Kelly, Training Manager
K. Kinard, Security Manager
N. Kunkel, Engineering Manager
S. Mooneyhan, Radiation Protection Manager
T. Paglia, Work Control Manager
E. Pigott, Operations Manager
T. Ray, Vice President, McGuire Nuclear
J. Smith, Boric Acid Corrosion Control Program Owner
S. Snider, Plant Manager
J. Thomas, Regulatory Affairs Manager
P.T. Vu, Regulatory Affairs

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

AD-WC-ALL-0230, Seasonal Readiness
PT/0/B/4700/038, Cold Weather Protection
PT/0/B/4700/070, On Demand Freeze Protection Verification Checklist
McGuire Winter Readiness Details Report (of freeze protection program from September – December 2017)
UFSAR Section 2.4, Hydrology
MCS-1465.00-00-0012, Design Basis Specification for Flooding from External Sources
MCC-1100.00-00-0002, McGuire Probable Maximum Precipitation Flood Analysis
Drawing No. MC-1022-01.00, Grading Plan, Plant Area
AP/0/A/5500/044, Plant Flooding

Section 1R04: Equipment Alignment

OP/2/A/6350/002, "Diesel Generator"
MCFD-2573-01.00, "Flow Diagram of Component Cooling System (Unit 2)"
MCFD-1573-01.00, "Flow Diagram of Component Cooling System (Unit 1)"
OP/1/A/6400/005 A, "Component Cooling Water System Valve and Power Supply Checklists"

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MCS-1465.00-00-0022, Appendix R Safe Shutdown Analysis
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FS/2/B/9000/023, Unit 2 MG set room 767' elevation, Fire Strategy 23
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AR 02047008, Increased corrosion rate at 1RN-884
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Work Orders (WO)/Work Requests (WR)
WO 20202500, 1NV Piping Weld Cap (Weld NV1F4316)
WO 2178270, 1NI-126 I/R Seat Leakage

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
SOMP 01-07, Control Room Oversight
Active Simulator Examination ASE-17
EP/1/A/5000/E-0, Reactor Trip or Safety injection
EP/1/A/500/E-1, Loss of Reactor or Secondary Coolant

Resident Inspector Quarterly Review of Licensed Operator Performance in the Actual Plant/Main Control Room
AD-OP-ALL-1000, Conduct of Operations
SOMP 01-07, Control Room Oversight
OP/1/A/6100/003, Controlling Procedure for Unit Operation
OP/1/A/6100/SU-19, Heatup to 557 Degrees F
OP/1A/6100/SU-20, Modes 1 and 2 Checklist
PT/0/A/4150/028, Initial Criticality and Zero Power Physics Testing

Section 1R12: Maintenance Effectiveness

AD-EG-ALL-1204, Single Point Vulnerability Identification, Elimination and Mitigation
AD-EG-ALL-1206, Equipment Reliability Classification
AD-EG-ALL-1209, System, Component, and Program Health Reports and Notebooks
AD-EG-ALL-1210, Maintenance Rule Program
AD-EG-ALL-1211, System Performance Monitoring and Trending
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Section 1R13: Maintenance Risk Assessments and Emergent Work Control
NSD-213, "Risk Management Process"
NSD-415, "Operational Risk Management (Modes 1–3) per 10 CFR 50.65(a)(4)"
SOMP 02-02, "Operations Roles in the Risk Management Process"
OMP 13-7, "Operational Control of Protected Equipment"
AD-OP-ALL-0201, "Protected Equipment"

Section 1R15: Operability Determinations and Functionality Assessments
AD-OP-ALL-0102, "Operability Decision Making"
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Section 1R18: Plant Modifications
EC 409880, "Jumper Sliding Links B-17 and B-18 in 2AFP2B Panel"
Applicability Determination AR2151825 for EC 409880
AD-EG-ALL-1137, "Engineering Change Product Selection"

Section 1R19: Post-Maintenance Testing
AD-EG-ALL-1155, Post Modification Testing
PT/2/A/4350/002 A, "Diesel Generator 2A Operability Test"
PT/0/A/4150/028, "Initial Criticality and Zero Power Physics Testing"
OP/2/A/6200/001 B, "Chemical and Volume Control System Charging"

Section 1R20: Refueling and Other Outage Activities
McGuire 2EOC24 Refueling Outage Schedule
OP/2/A/6100/SD-16, "Preparing for NC System Drain"
OP/2/A/6100/SD-20, "Draining the NC System"
OP/2/A/6100/SO-1, "Maintaining NC System Level"
OP/1/A/6100/003, Controlling Procedure for Unit Operation
OP/1/A/6100/SO-1, Maintaining NC System Level
OP/1/A/6100/SO-10, Controlling Procedure for LTOP Operation
OP/1/A/6100/SU-2, Refueling and Replacing Reactor Vessel Head
OP/1/A/6100/SU-5, Filling the NC System
OP/1/A/6100/SU-6, Venting the NC System
OP/1/A/6100/SU-8, Heatup to 200 Degrees F
OP/1/A/6100/SU-9, Mode 4 Checklist
OP/1/A/6100/SU-13, Heatup to 350 Degrees F
OP/1/A/6100/SU-14, Removing ND from Service
OP/1/A/6100/SU-15, Mode 3 Checklist
OP/1/A/6100/SU-19, Heatup to 557 Degrees F
OP/1A/6100/SU-20, Modes 1 and 2 Checklist
PT/0/A/4150/033, Total Core Reloading
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PT/0/A/4150/047, 1/M Monitoring During Startup

Section 1R22: Surveillance Testing
AD-EG-ALL-1202, "Preventive Maintenance and Surveillance Testing Administration"
AD-WC-ALL-0250, "Work Implementation and Completion"
AD-EG-ALL-1720, "In-service Testing (IST) Program Implementation"

Section 4OA1: Performance Indicator (PI) Verification
AD-LS-ALL-0004, "NRC Performance Indicators and Monthly Operating Report"
AD-PI-ALL-0100, "Corrective Action Program"

Section 4OA2: Problem Identification and Resolution
AD-PI-ALL-0100, "Corrective Action Program"
AD-PI-ALL-0101, "Root Cause Evaluation"
AD-PI-ALL-0102, "Apparent Cause Evaluation"
AD-PI-ALL-0103, "Quick Cause Evaluation"
AD-PI-ALL-0104, "Prompt Investigation Response Team"
AD-PI-ALL-0105, "Effectiveness Reviews"
AD-LS-ALL-0006, "Notification/Reportability Evaluation"

Section 4OA5: Other Activities
Operation of an Independent Spent Fuel Storage Installation (60855.1)
PT/1/A/4600/003B, "Daily Surveillance Items"
PT/0/A/4150/034, "Fuel Assembly – Component Verification"