

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

April 24, 2013

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

# SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000369/2013002 AND 05000370/2013002

Dear Mr. Capps:

On March 31, 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 April 8, 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. This finding was determined not to involve a violation of NRC requirements. Additionally, one licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy. If you contest the violation or 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. If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, to the Regional Administrator, Region II; and the NRC Resident Inspector at the McGuire Nuclear Station.

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 <u>http://www.nrc.gov/reading-rm/adams.html</u> (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 05000369/2013002 and 05000370/2013002 w/Attachment - Supplemental Information

cc w/encl: (See page 3)

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Letter to Steven D. Capps from Jonathan H. Bartley dated April 24, 2013

# SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000369/2013002 AND 05000370/2013002

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# U.S. NUCLEAR REGULATORY COMMISSION

# **REGION II**

Docket Nos.:	50-369, 50-370
License Nos.:	NPF-9, NPF-17
Report Nos.:	05000369/2013002, 05000370/2013002
Licensee:	Duke Energy Carolinas, LLC
Facility:	McGuire Nuclear Station, Units 1 and 2
Location:	Huntersville, NC 28078
Dates:	January 1, 2013, through March 31, 2013
Inspectors:	J. Zeiler, Senior Resident Inspector J. Montgomery, Acting Resident Inspector R. Kellner, Health Physicist Inspector (Section 2RS8) W. Loo, Senior Health Physicist (Section 2RS1)
Approved by:	Jonathan Bartley, Chief Reactor Projects Branch 1 Division of Reactor Projects

## **SUMMARY OF FINDINGS**

IR05000369/2013-002, IR05000370/2013-002; 01/01/2013 – 03/31/2013; 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 two 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: Mitigating Systems

 <u>Green</u>: A self-revealing finding was identified for the licensee's failure to follow the requirements of the station modification program manual EDM 601 during implementation of a high pressure turbine replacement modification revision. This resulted in Anticipated Transient Without Scram Mitigation System Actuation Circuitry (AMSAC) calibration procedures not being revised with the proper setpoints.

The performance deficiency (PD) was more than minor because it affected the Design Control attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective in that AMSAC actuated causing a turbine trip. The finding was determined to have very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The cause of this finding was related to the cross-cutting aspect of the need for work groups to maintain appropriate interfaces and communicate, coordinate with each other during important work activities as described in the Work Control component of the Human Performance cross-cutting area because necessary revisions to the AMSAC input device calibration procedures were not adequately communicated. [H.3(b)] (Section 4OA3.2)

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 is listed in Section 40A7 of this report.

# **REPORT DETAILS**

## Summary of Plant Status

Unit 1 operated at essentially 100 percent rated thermal power (RTP) until February 21, 2013, when an automatic reactor trip occurred due to a turbine trip. The unit was restarted on February 24 and returned to 90 percent RTP on February 28. The unit operated at or near 90 percent RTP until being shut down for a refueling outage on March 16.

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

Impending Adverse Weather Conditions: The inspectors reviewed the effectiveness of the licensee's cold weather protection program during cold weather conditions experienced January 25-27, 2013. This included walkdowns to assess the functionality and reliability of freeze protection equipment protecting risk significant level instrumentation associated with the Unit 1 and Unit 2 fueling water storage tank (FWST) and main feedwater and steam generator instrumentation in the Unit 1 and Unit 2 exterior doghouse. The inspectors verified the performance of applicable actions required in procedure PT/0/B/4700/070, On Demand Freeze Protection Verification Checklist, Revision (Rev.) 23. The inspectors discussed specific severe cold weather response actions and compensatory measures with licensee personnel responsible for implementing cold weather protection measures.

b. <u>Findings</u>

No findings were identified.

## 1R04 Equipment Alignment

a. Inspection Scope

<u>Partial Walkdowns</u>: The inspectors performed a partial walkdown of the following four 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.

- 2A emergency diesel generator (EDG) while the 2B EDG was out-of-service for planned preventive maintenance
- 1A residual heat removal (ND) system while the 1B ND system was out-of-service for planned preventive maintenance
- 2A safety injection (NI) system while the 2B NI system was out-of-service for planned preventive maintenance
- Unit 1 dedicated boration flowpath verification in Mode 5 while "B" train essential safety systems were out-of-service for refueling outage maintenance
- b. <u>Findings</u>

No findings were identified.

- 1R05 Fire Protection
  - a. Inspection Scope

<u>Fire Protection Walkdowns</u>: The inspectors walked down accessible portions of the following six fire areas to determine if they were consistent with the updated final safety analysis report (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 ETB essential power switchgear room and auxiliary building 733 elevation electrical penetration room (Fire Area 9-11)
- 1A and 1B motor driven auxiliary feedwater (MDCA) pumps and Unit 1 turbine driven auxiliary feedwater pump (Fire Areas 2 and 2A)
- 2A and 2B EDG rooms (Fire Areas 7 and 8)
- Unit 1 and Unit 2 exterior doghouses (Fire Areas 30 and 31)
- Unit 1 and Unit 2 auxiliary building 716 elevation (Fire Area 4)
- Unit 1 spent fuel pool area (auxiliary building 760/778 elevation) (Fire Area 26)
- b. Findings

No findings were identified.

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

## a. Inspection Scope

<u>LOR Activity Review</u>: On February 20, 2013, the inspectors observed licensed operators in the simulator during licensed operator requalification training to determine the effectiveness of the training required by 10 CFR 55.59 and the adequacy of operator performance. The training scenario involved a loss of letdown, containment incore instrumentation room sump high level alarm response, and a 1B steamline pipe break outside containment. 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 shift crew and training instructor post-training critique to determine whether the licensee identified deficiencies and weaknesses that occurred during the simulator training. Documents reviewed are listed in the Attachment.

<u>Licensed Operator Performance Review</u>: On February 21 and February 24, 2013, the inspectors observed licensed operators in the Unit 1 main control room and assessed their performance during response to an automatic reactor trip from full power and the subsequent restart of the reactor. Documents reviewed are listed in the Attachment.

b. <u>Findings</u>

No findings were identified.

## 1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the following two issues 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-12-03229, Kirk-key degradation resulted in delay in energizing safety-related motor control center 2EMXG
- PIP M-12-06899, Inability to open reactor coolant (NC) system hot leg loop isolation valve (2ND-1B) from the Control Room due to failure of valve position interlock permissive associated with FWST suction valve 2FW-27A

## 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 following five activities. The inspectors assessed if 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 valve actuator preventive maintenance on nuclear service water (RN) system valve 0RN-9B and planned 2B EDG complex work activity plan
- Yellow risk on Unit 1 for planned complex work plan on the 1B component cooling water and ND systems
- Orange risk on Unit 2 for opening of steam generator and pressurizer manways for emergent repair of "B" train hydrogen igniters
- Orange risk for unavailability of the 1B RN pump for planned cleaning of the pump motor cooler, motor breaker replacement, and associated valve preventive maintenance
- Yellow defense-in-depth risk on Unit 1 for initial NC system draindown to lowered inventory conditions during refueling outage
- b. <u>Findings</u>

No findings were identified.

## 1R15 Operability Determinations and Functionality Assessments

a. Inspection Scope

The inspectors reviewed the following five technical evaluations to determine if Technical Specifications (TS) operability was properly justified and the 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 if 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 if the measures resulted in changes to the licensing basis functions, as described in the UFSAR, and if a license amendment was required per 10 CFR 50.59. Documents reviewed are listed in the Attachment.

- PIP M-13-00182, Electrical ground on vital battery EVCD
- PIP M-13-00502, Fire and explosion of current transformer associated with switchyard breaker PCB-58
- PIP M-13-00522, Unit 2 "B" train hydrogen igniter failures in circuits 2 and 3
- PIPs M-13-01092 and M-13-01113, Degraded Unit 1 component cooling water and safety injection pipe support snubbers
- PIP M-13-02001, Unit 1 main turbine hydraulic oil leak at turbine front standard trip block connection
- b. <u>Findings</u>

No findings were identified.

## 1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following two modifications to verify the adequacy of the modification packages and 10 CFR 50.59 screening(s). Each 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.

## Permanent Modification

 EC 109892, Addition of time delay and resistor circuit for Unit 2 hydrogen igniter controls

## **Temporary Modification**

- EC 109641, Defeat of control room position indication alarm associated with Unit 2 FWST suction valve 2FW-27A due to degraded stem mounted switch position indication
- b. <u>Findings</u>

No findings were identified.

## 1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following six post-maintenance tests 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 functions 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 functions. Documents reviewed are listed in the Attachment.

- 1B MDCA pump functional testing following repair of electrical ground in control switch
- Valve 0RN-9B functional testing following planned work activities
- Unit 2 "B" train hydrogen igniter functional testing following replacement of failures
- 1B ND pump functional testing following planned complex work activities
- 2B NI pump functional testing following planned preventive maintenance
- 2A RN pump functional testing following complex work activities

## b. Findings

No findings were identified.

#### 1R20 Refueling and Other Outage Activities

a. Inspection Scope

The inspectors conducted portions of the following inspection activities associated with the Unit 1 refueling outage. Documents reviewed are listed in the Attachment.

- Observed portions of the cooldown process to determine if TS cooldown restrictions were followed
- Walked down containment shortly after the shutdown to determine if there was indication of previously unidentified leakage from components containing reactor coolant
- Reviewed the licensee's responses to emergent work and unexpected conditions to determine if configuration changes were controlled in accordance with the outage risk control plan
- Observed outage activities to determine if the licensee maintained defense-in-depth commensurate with the outage risk control plan for the key safety functions and applicable TS
- Assessed outage activities that were conducted during short time-to-boil periods
- During lowered reactor coolant system inventory conditions, the inspectors reviewed the licensee's commitments to NRC Generic Letter 88-17 to determine if they were still in place and adequate
- Observed fuel handling operations (offload) and other ongoing fuel handling activities to determine if those operations and activities were being performed in accordance with TS and licensee procedures.
- Reviewed selected system lineups and/or control board indications to determine if TS, license conditions, and other requirements, commitments, and administrative procedure prerequisites for mode changes were met prior to changing modes or plant configurations

- Reviewed reactor coolant system boundary leakage data and observed/reviewed controls for establishing containment closure to determine if the NC system and containment boundaries were in place when necessary
- Reviewed items that had been entered into the licensee's CAP to determine if the licensee had identified problems related to outage activities at an appropriate threshold and had entered them into the CAP

### b. Findings

No findings were identified.

#### 1R22 <u>Surveillance Testing</u>

a. Inspection Scope

The inspectors witnessed testing and reviewed the test data for the following six surveillance tests to determine if the SSCs involved in these tests satisfied the requirements described in the TS, 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/2/A/4350/023B, Hydrogen Mitigation Igniter Current Verification, Train B, Rev. 22
- PT/1/A/4350/002B, Diesel Generator 1B Operability Test, Rev. 96
- PT/1/A/4350/036A, D/G 1A 24 Hour Run, Rev. 43
- PT/0/A/4150/047, 1/M Monitoring During Startup, Rev. 3
- PT/0/A/4250/037, Main Steam Safety Valve Setpoint Test Using Set Pressure Verification Device, Rev. 12

## In-Service Tests

- PT/2/A/4252/001B, 2B CA Pump Performance Test, Rev. 90
- b. <u>Findings</u>

No findings were identified.

#### 2. RADIATION SAFETY (RS)

Cornerstones: Occupational Radiation Safety and Public Radiation Safety

#### 2RS1 Radiological Hazard Assessment and Exposure Controls

#### a. Inspection Scope

Hazard Assessment and Instructions to workers: During facility tours, the inspectors observed labeling of radioactive material and postings for radiation areas, high radiation areas (HRA), locked HRAs (LHRA), very HRAs (VHRAs), radioactive material storage areas, and contaminated areas established within the radiologically controlled area (RCA) of the Unit 1 and Unit 2 Auxiliary Buildings, Unit 1 lower containment, and radioactive waste processing and storage locations. The inspectors independently measured radiation dose rates or directly observed conduct of licensee radiation surveys for selected RCA areas in Unit 1 lower containment. The inspectors reviewed survey records for several plant areas including surveys for alpha emitters, airborne radioactivity, and pre-job surveys for selected Unit 1 refueling outage tasks. The inspectors also discussed changes to plant operations that could contribute to changing radiological conditions since the last inspection. For selected Unit 1 refueling outage jobs, the inspectors attended pre-job briefings and reviewed radiation work permit (RWP) details to assess communication of radiological control requirements and current radiological conditions to workers. Selected refueling outage work activities included Unit 1 lower containment engineering walkdowns, valves 1NC-27 and 1NC-29, NC Pump Motor Coolers, Regenerative Heat Exchangers, and scaffolding.

<u>Hazard Control and Work Practices</u>: The inspectors observed and evaluated access barrier effectiveness for selected LHRA and VHRA locations to include the Unit 1 and Unit 2 Auxiliary Buildings and Unit 2 lower containment. Changes to procedural guidance for LHRA and VHRA controls were discussed with radiation protection (RP) supervisors. Controls and their implementation for storage of irradiated material within the spent fuel pool were reviewed and discussed in detail. Established radiological controls (including airborne controls) were evaluated for selected tasks, including Unit 1 lower containment engineering walkdowns, 1NC-27 and 1NC-29, NC Pump Motor Coolers, Regenerative Heat Exchangers, and scaffolding. In addition, licensee controls for areas where dose rates could change significantly as a result of refueling operations were reviewed, observed, and discussed to include the access point for the fuel transfer canal in Unit 1 lower containment.

Occupational workers' adherence to selected RWPs and RP technician proficiency in providing job coverage were evaluated through direct observations and interviews with cognizant licensee staff. Electronic dosimeter (ED) alarm set points and worker stay times were evaluated against area radiation survey results. Worker response to select ED dose rate alarms was evaluated. For selected Unit 1 HRA and LHRA tasks involving significant dose rate gradients, the use and placement of whole body and extremity dosimetry to monitor worker exposure was discussed with knowledgeable licensee staff.

<u>Control of Radioactive Material</u>: The inspectors observed surveys of material and personnel being released from the RCA and Unit 1 lower and upper containments using portable radiation survey instruments, hand and foot monitors, small article monitors, personnel contamination monitors, and portal monitor instruments. The inspectors reviewed the last two calibration records for selected release point survey instruments and discussed equipment sensitivity, alarm setpoints, and release program guidance with knowledgeable RP staff. The inspectors also reviewed records of leak tests on selected sealed sources and discussed nationally tracked source transactions with cognizant RP staff.

<u>Problem Identification and Resolution</u>: Problem Investigation Program (PIP) documents associated with radiological hazard assessment and control were reviewed and assessed. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure NSD-208, Problem Investigation Program, Rev. 38. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results.

RP activities were evaluated against the requirements of UFSAR Section 12; Technical Specifications Section 5.7; 10 CFR Parts 19 and 20; and approved licensee procedures. Licensee programs for monitoring materials and personnel released from the RCA were evaluated against 10 CFR Part 20 and IE Circular 81-07, Control of Radioactively Contaminated Material. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

- 2RS8 <u>Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and</u> <u>Transportation</u>
  - a. Inspection Scope

<u>Waste Processing and Characterization</u>: During inspector walk-downs, accessible sections of the liquid and solid radioactive waste (radwaste) processing systems were assessed for material condition and conformance with system design diagrams. Inspected equipment included radwaste storage tanks; resin transfer piping, resin and filter packaging components; and abandoned evaporator equipment. The inspectors discussed component function, processing system changes, and radwaste program implementation with licensee staff.

The 2010 and 2011 Annual Radiological Effluent Release Reports and radionuclide characterizations for 2008, and 2011 - 2013 for selected waste streams were reviewed and discussed with Radioactive Material Control (RMC) staff. For primary resin, reactor coolant system filters, Powdex resin, and Dry Active Waste the inspectors evaluated analyses for hard-to-detect nuclides, reviewed the use of scaling factors, and examined quality assurance comparison results between licensee waste stream characterizations and outside laboratory data. Waste stream mixing and concentration averaging methodology for resins and filters was evaluated and discussed with RMC staff. The

inspectors also reviewed the licensee's procedural guidance for monitoring changes in waste stream isotopic mixtures.

<u>Radioactive Material Storage</u>: During walk-downs of indoor and outdoor radioactive material storage areas, the inspectors observed the physical condition and labeling of storage containers and the posting of Radioactive Material Areas. The inspectors also reviewed licensee procedural guidance for storage and monitoring of radioactive material.

<u>Transportation</u>: There were no significant shipments during the week of inspection; however, the inspectors did review shipping procedure requirements and discussed preparation of shipping documents, package marking and labeling, and interviewed shipping technicians regarding Department of Transportation (DOT) regulations.

Selected shipping records were reviewed for consistency with licensee procedures and compliance with NRC and DOT regulations. The inspectors reviewed emergency response information, DOT shipping package classification, waste classification, radiation survey results, and evaluated whether receiving licensees were authorized to accept the packages. Licensee procedures for handling shipping containers were compared to Certificate of Compliance requirements and manufacturer recommendations. In addition, training records for selected individuals currently qualified to ship radioactive material were reviewed.

Radwaste processing activities and equipment configuration were reviewed for compliance with the licensee's Process Control Program and UFSAR, Chapter 11. Waste stream characterization analyses were reviewed against regulations detailed in 10 CFR Part 20, 10 CFR Part 61, and guidance provided in the Branch Technical Position on Waste Classification (1983). Radioactive material and waste storage activities were reviewed against the requirements of 10 CFR Part 20. Transportation program implementation was reviewed against regulations detailed in 10 CFR Part 71, 49 CFR Parts 172-178, as well as the guidance provided in NUREG-1608. Training activities were assessed against 49 CFR Part 172 Subpart H. Documents reviewed are listed in the Attachment.

<u>Problem Identification and Resolution</u>: The inspectors reviewed PIPs in the area of radwaste processing and transportation. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure NSD-208, Rev. 38. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results. Licensee CAP documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

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

#### a. Inspection Scope

The inspectors sampled licensee data to confirm the accuracy of reported PI data for the following six indicators. 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 Nuclear Energy Institute 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.

## Initiating Events Cornerstone

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

The inspectors sampled licensee submittals relative to the PIs listed above for the period January 1, 2012, through December 31, 2012. The inspectors verified that the licensee had adequately identified the number of scrams and unplanned power changes greater than 20 percent that occurred during the previous four quarters. The inspectors compared this number to the number reported for the PI during the current quarter. The inspectors also reviewed the accuracy of the number of critical hours reported and the licensee's basis for determining that there were not complications for each of the reported reactor scrams. In addition, the inspectors interviewed licensee personnel associated with the PI data collection, evaluation, and distribution.

b. Findings

No findings were identified.

## 4OA2 Problem Identification and Resolution

a. Inspection Scope

<u>Review of Items Entered into the Corrective Action Program</u>: 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.

<u>Annual Sample Review of Operator Workarounds (OWAs)</u>: The inspectors reviewed the licensee's list of identified OWAs, equipment deficiencies, and plant concerns to determine whether any new items since the previous review conducted in 2012 would adversely affect any mitigating system function or affect the operator's ability to implement abnormal or emergency operating procedures. The inspectors reviewed the classification assigned to the identified OWAs to ensure they were properly prioritized Enclosure

based on the licensee's program requirements. For high priority OWAs where compensatory actions were developed, the inspectors verified the feasibility of implementing these prescribed actions. The inspectors verified that long term corrective actions were developed to adequately address the underlying issues identified in the OWAs. In addition, the inspectors attended a quarterly OWA meeting between operations, engineering, and chemistry personnel to discuss the status of open OWAs and new OWA candidates. Documents reviewed are listed in the Attachment.

<u>Annual Sample Reviews</u>: 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 if 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.

- PIP M-11-05201, Ultrasonic testing of high head safety injection piping at vent valve 2NV-1056 did not indicate water solid conditions
- b. <u>Findings</u>

No findings were identified.

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

- .1 Event Follow-UP
  - a. Inspection Scope

<u>Response to Plant Events</u>: On February 21, 2013, the inspectors responded to and evaluated the licensee's response to a Unit 1 automatic reactor trip and turbine trip above 50 percent RTP as a result of both main feedwater pumps automatically tripping. 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.

b. <u>Findings</u>

No findings were identified.

## .2 (Closed) LER 05000370/2012-002-00, Automatic Actuation of the Auxiliary Feedwater and Nuclear Service Water Systems

#### a. <u>Inspection Scope</u>

On December 1, 2012, a main turbine trip occurred from 39 percent RTP due to the unexpected actuation of the AMSAC. In addition to the automatic turbine trip, AMSAC also initiated an automatic start of the 2A and 2B MDCA pumps which resulted in the automatic start of the 2B RN pump. All safety equipment responded as expected during the transient and the reactor was stabilized at 15 percent RTP. The licensee determined the root cause of this event was the failure to update applicable calibration procedures associated with new AMSAC setpoint values following implementation of a high pressure turbine replacement modification. Immediate corrective actions included correcting the AMSAC setpoints, verifying all other modification setpoint changes were correct, and ensuring modification revisions were reviewed by all the appropriate groups. The inspectors verified the accuracy of the LER, the appropriateness of completed and planned corrective actions, and reviewed the licensee's cause evaluation.

b. <u>Findings</u>

<u>Introduction</u>: A self-revealing Green finding was identified for the licensee's failure to follow the requirements of the station modification program manual EDM 601 during implementation of a high pressure turbine replacement modification revision. This resulted in AMSAC high pressure turbine inlet pressure switch calibration procedures not being revised with the proper setpoints.

Description: During the 2012 Unit 2 refueling outage, the licensee implemented modification EC 105123 associated with the high pressure turbine replacement. As part of this modification, it was recognized that new AMSAC turbine inlet pressure switch setpoints needed to be implemented. However, at the time Rev. 0 and Rev. 1 of EC 105123 were issued, the new setpoint values were still unknown. In the interim, the licensee revised known aspects of the new AMSAC turbine inlet pressure switch calibration procedure, IP/2/B/3250/013F, with the understanding that additional changes would be necessary when the new turbine inlet pressure setpoint was finalized. EC 105123, Rev. 2, was issued on August 31, 2012, and included the new AMSAC setpoint value of 358.52 psig. EDM 601, Section 601.6.5, EC Revisions to Design and Equivalent Changes, required that all EC revisions be reviewed for any impact and the appropriate changes were made to implementation procedures, testing procedures and work order tasks. However, due to the failure to communicate this EC revision, IP/2/B/3250/013F was not updated with the new AMSAC setpoints. Subsequently, when calibration of the AMSAC turbine inlet pressure switches was performed using IP/2/B/3250/013F, the lower setpoint of 290 psig versus the new setpoint of 358.52 psig was used. As a result, the AMSAC circuitry armed earlier than expected as power was being increased on December 1, resulting in the unexpected actuation.

<u>Analysis</u>: The inspectors determined that the licensee's failure to implement the requirements of EDM 601 was a PD. The PD was more than minor because it affected the Design Control attribute of the Initiating Events Cornerstone and adversely affected

the cornerstone objective in that AMSAC actuated causing a turbine 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 both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The cause of this finding was related to the cross-cutting aspect of the need for work groups to maintain appropriate interfaces and communicate, coordinate with each other during important work activities as described in the Work Control component of the Human Performance cross-cutting area because revisions affecting calibration procedure IP/2/B/3250/013F were not adequately communicated and coordinated. [H.3(b)]

<u>Enforcement</u>: The AMSAC feature was not safety-related; therefore, no violation of NRC requirements occurred. Because this finding does not involve a violation and was of very low safety significance, it is identified as FIN 05000370/2013002-01, Failure to Revise Turbine Inlet Pressure Calibration Procedures During Implementation of High Pressure Turbine Replacement Design Modification.

.3 (Closed) Licensee Event Report (LER) 05000370/2012-001-00, Manual Containment Isolation Valve Inoperable Longer Than Allowed by Technical Specifications

On November 4, 2012, with Unit 2 in Mode 4, the licensee identified that manual containment isolation valve 2NV-1053 had been opened two days earlier in order to place ND auxiliary pressurizer spray in service. This action violated the Limiting Condition of Operation (LCO) of TS 3.6.3, Containment Isolation Valves, in that, 2NV-1053 was a manual containment isolation valve and was considered inoperable when not in its closed position in Modes 1-4. Upon recognizing the discrepancy, normal pressurizer spray was re-established and 2NV-1053 was closed. The licensee determined the cause of the event was incorrect design basis operability and procedure guidance which allowed operations personnel to incorrectly interpret that a manual containment isolation valve could be open and still be considered operable. The inspectors verified the accuracy of the LER, the appropriateness of completed and planned corrective actions, and reviewed the licensee's cause evaluation. The enforcement aspects of this violation are discussed in Section 40A7. The licensee entered this LER into their CAP as PIP M-12-09347.

.4 (Closed) LER 05000369/2012-002-00, Discovery of Inadequacy in Surveillance Testing of Solid State Protection System

On September 26, 2012, the licensee determined that existing solid state protection system (SSPS) testing for Safety Injection 2/4 Low-Low Pressurizer Pressure was inadequate and the LCO of 3.3.2, Engineered Safety Features Actuation System Instrumentation, was not met for both Unit 1 SSPS trains. The licensee determined the cause of the event was a design deficiency by the vendor in the specific test circuitry used to verify the particular logic function. The inspectors verified the accuracy of the LER, the appropriateness of completed and planned corrective actions, and reviewed the licensee's cause evaluation. This noncompliance with TS LCO 3.3.2 was determined to be a licensee-identified minor violation because subsequent proper testing of the logic circuitry did not identify any discrepancies which could have impacted the

ability of the actuation circuitry to perform its intended safety function. The licensee entered this LER into their CAP as PIP M-12-07530.

#### 4OA5 Other Activities

#### .1 <u>Quarterly Resident Inspector Observations of Security Personnel and Activities</u>

#### a. Inspection Scope

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.

.2 (Closed) Unresolved Item (URI) 05000369,370/2012005-02, Evaluation of the Occupational Radiation Dose Assigned to a Worker from a Piece of Contaminated Wire

This URI was opened to determine if the methodologies used by the licensee were adequate to determine what dose to assign to the individual whose hand was punctured by a piece of contaminated wire and if a violation of regulatory requirements existed. The inspectors reviewed the facts of the URI, as well as evaluations and corrective actions taken by the licensee.

The licensee contracted with an independent vendor to determine what dose methodologies should be used to assign an occupational radiation dose to a worker whose hand was punctured from a piece of contaminated wire. Using various radiation survey detection instruments to obtain radiation survey results of the wound site in various configurations as well as the use of the Varskin 4 code for calculating skin dose, the licensee calculated a dose of 14.11 rem skin dose equivalent to the skin of the extremity to be assigned for the Calendar Year 2012. The licensee entered this issue into their corrective action program as PIPs M-12-07334 and M-12-07796. The inspectors reviewed the licensee's methodologies to determine what dose to assign the individual and discussed this with representatives of the technical staff in the Office of Nuclear Reactor Regulation. Based on those reviews and discussions, the inspectors concluded that the methodology used to determine what dose to assign was an adequate approach and that no regulatory limit had been exceeded from this event. Therefore, no violation of NRC requirements occurred. This URI is closed.

## .3 (Closed) Temporary Instruction (TI) 2515/187, Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns

#### a. Inspection Scope

The inspectors verified the following flood protection area walkdown packages contained the elements as specified in NEI 12-07, Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features, Rev. 0-A.

- Earthen dike
- Unit 1 and Unit 2 fuel building roof parapet, walls, and drains
- Unit 1 and Unit 2 auxiliary building roof parapet, walls, and drains
- Unit 1 and Unit 2 fueling water storage tank trenches
- Unit 1 and Unit 2 EDG room wall penetrations

The inspectors accompanied the licensee on their walkdown of the above areas and verified that the licensee confirmed the following flood protection features.

- Visual inspection of the flood protection feature was performed if the flood protection feature was relevant. External visual inspection for indications of degradation that would prevent its credited function from being performed was performed
- Reasonable simulation, if applicable to the site
- Critical SSC dimensions were measured
- Available physical margin, where applicable, was determined
- Flood protection feature functionality was determined using either visual observation or by review of other documents

The inspectors independently performed their walkdown and verified that the flood protection features were in place.

- Unit 1 and Unit 2 exterior doors
- Unit 1 and Unit 2 plant yard drains

The inspectors verified that noncompliances with current licensing requirements, and issues identified in accordance with the 10 CFR 50.54(f) letter, Item 2.g of Enclosure 4, were entered into the licensee's CAP. In addition, issues identified in response to Item 2.g that could challenge risk significant equipment and the licensee's ability to mitigate the consequences will be subject to additional NRC evaluation. Documents reviewed are listed in the Attachment.

b. <u>Findings</u>

No findings were identified.

#### 4OA6 Meetings, Including Exits

On April 8, 2013, the resident inspectors presented the inspection results to Mr. Steven Capps and other members of his staff. The inspectors confirmed that any proprietary information provided or examined during the inspection period had been returned.

#### 4OA7 Licensee-Identified Violations

The following Severity Level IV violation 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 3.6.3 required that each containment isolation valve be operable in Modes 1, 2, 3, and 4. TS 3.6.3, Condition A, specified if one containment isolation valve is inoperable, the flow path must be isolated within 4 hours and verified isolated once per 31 days. Contrary to the above, from November 2, 2012, to November 4, 2012, with Unit 2 in Mode 4, manual containment isolation valve 2NV-1053 was inoperable and the licensee failed to isolate the flow path within 4 hours. This violation was determined to be of very low safety significance (Green) due to the small size of the piping and that a control room air-operated valve (i.e., 2NV-840) located downstream of 2NV-1053 could have been used to isolate the penetration. This violation was documented in the licensee's CAP as PIP M-12-09347.

## ATTACHMENT: SUPPLEMENTAL INFORMATION

# SUPPLEMENTAL INFORMATION

# **KEY POINTS OF CONTACT**

### Licensee personnel

- D. Brewer, Organizational Effectiveness Manager
- S. Capps, Vice President, McGuire Nuclear
- K. Crane, Senior Licensing Specialist
- J. Gabbert, Chemistry Manager
- J. Hicks, Maintenance Superintendent
- N. Kunkel, Work Control Superintendent
- 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

#### <u>NRC</u>

- D.Cool, Senior Advisor for Health Physics and International, Division of Intergovernmental Liaison and Rulemaking (FSME)
- S. Sherbini, Senior Technical Advisor for Health Physics, Division of Risk Analysis (RES)
- R. Pedersen, Senior Health Physicist, Division of Risk Assessment (DRA), Health Physics and Human Performance Branch (HPHPB) (NRR)
- U. Shoop, Branch Chief, DRA, HPHPB

# LIST OF REPORT ITEMS

Opened and Closed		
05000370/2013002-01	FIN	Failure to Revise Turbine Inlet Pressure Calibration Procedures During Implementation of High Pressure Turbine Replacement Design Modification (Section 4OA3.2)
Closed		
05000370/2012-002-00	LER	Automatic Actuation of the Auxiliary Feedwater and Nuclear Service Water Systems (Section 40A3.2)
05000370/2012-001-00	LER	Manual Containment Isolation Valve Inoperable Longer Than Allowed by Technical Specifications (Section 4OA3.3)
05000369/2012-002-00	LER	Discovery of Inadequacy in Surveillance Testing of Solid State Protection System (Section 40A3.4)

Attachment

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05000369,370/2012005-02URIEvaluation of the Occupational Radiation Dose<br/>Assigned to a Worker from a Piece of<br/>Contaminated Wire (Section 4OA5.2)2515/187TIInspection of Near-Term Task Force<br/>Recommendation 2.3 Flooding Walkdowns<br/>(Section 4OA5.3)

# DOCUMENTS REVIEWED

# Section 1R04: Equipment Alignment

OP/2/A/6350/002, Diesel Generator, Rev. 99 OP/1/B/6200/004, Residual Heat Removal System, Rev. 127 Drawing MFSD-1561-01.00, Flow Diagram of Residual Heat Removal System, Rev. 20 OP/2/A/6200/006, Safety Injection System, Rev. 53 Drawing MFSD-1562-01.00, Flow Diagram of Safety Injection System, Rev. 4

# Section 1R05: Fire Protection

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
FS/1/B/9000/011, 1ETB Room (Fire Strategy #11), Rev. 1
Drawing MFSD-009.011, 1ETB/733 Electrical Penetration, Rev. 0
Drawing MFSD-002, Unit 1 CA Pump Room, Rev. 0
Drawing MFSD-007.08, Unit 2 D/G Rooms, Rev. 0
Drawing MFSD-030, Unit 1 Exterior Doghouse, Rev. 0
Drawing MFSD-031, Unit 2 Exterior Doghouse, Rev. 0
Drawing MFSD-004, Aux 716, Rev. 0
Drawing MC-1384-07.13-00, Fire Plan Auxiliary Building Elevation 716, Rev. 12
Drawing MC-1206-2-A, Fuel Building General Arrangement EL 778+10, Rev. 22

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

## LOR Activity Review

NSD 509, Site Standards in Support of Operational Focus, Rev. 7 SOMP 01-07, Control Room Oversight, Rev. 1 Licensed Operator Continuing Training Simulator Exercise OP-MC-SRT-HIT AP/1/A/5500/12, Loss of Letdown, Charging or Seal Injection, Rev. 24 EP/1/A/5000/E-0, Reactor Trip or Safety Injection, Rev. 32 EP/1/A/5000/E-2, Faulted Steam Generator Isolation, Rev. 10 RP/0/A/5700/000, Classification of Emergency, Rev. 19

Licensed Operator Performance Review

EP/1/A/5000/E-0, Reactor Trip or Safety Injection, Rev. 32 EP/1/A/5000/ES-0.1, Rector Trip Response, Rev. 34 OP/1/A/6100/003, Controlling Procedure for Unit Operation, Rev. 178 PT/0/A/4150/047, 1/M Monitoring During Startup, Rev. 3

## 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 OP/0/A/6350/008, Operation of Station Breakers, Rev. 67

## Section1R13: 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. 12 and 13 Complex Activity Plan for 2B EDG

Complex Activity Plan for 1B KC/ND

## Section1R15: Operability Determinations and Functionality Assessments

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

## 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 WO 2014187, Implementation of EC 109641 PIPs M-12-09580 and M-12-10304

## Section 1R19: Post-Maintenance Testing

NSD 408, Testing, Rev. 16 WO 01077768, Investigate/repair ground in 1ETB breaker cubicle 11 WOs 01931550 and 02040673, 0RN-9B valve actuator inspection and testing WO 02071202, Investigate/repair failed hydrogen igniters in Circuit 2 and 3 IP/0/B/3250/064, Hydrogen Mitigation System Glow Plug Burn-In, Rev. 10 WOs 02059941, 02054498, and 020600596, Complex plan on 1B ND pump WOs 02049520 and 02059568, 2B NI pump/motor maintenance OP/2/A/6200/006, Safety Injection System, Rev. 53 WOs 02042338, 02016684, 02015809, Complex plan activities on 2A RN pump

# Section1R20: Refueling and Other Outage Activities

1EOC22 Refueling Outage High Level Schedule, dated 3/9/2013 Self Assessment M-WCG-SA-1306, MNS 1EOC22 Independent Review Team OP/1/A/6100/002, Controlling Procedure for Unit Shutdown, Rev. 182 OP/1/A/6100/003, Controlling Procedure for Unit Operation, Rev. 180 OP/1/A/6100/SD-1, Prepare for Cooldown, Rev. 37 OP/1/A/6100/SD-2, Cooldown to 400 degrees F, Rev. 46 OP/1/A/6100/SD-4, Cooldown to 240 degrees F, Rev. 59 OP/1/A/6100/SD-6A, Placing Train A ND in Service, Rev. 44

Attachment

OP/1/A/6100/SD-6B, Placing Train B ND in Service, Rev. 43

OP/1/A/6100/SD-7, Cooldown to 200 Degrees F, Rev. 38

OP/1/A/6100/SD-11, Mode 5 Checklist, Rev. 16

OP/1/A/6100/SD-12, Cooldown to 100 Degrees F, Rev. 52

OP/1/A/6100/SD-16, Preparing for NC System Drain, Rev. 16

OP/1/A/6100/SD-20, Draining the NC System, Rev. 53

OP/1/A/6100/SD-21, Mode 6 Checklist, Rev. 19

OP/1/A/6100/SD-22, Removal of Reactor Vessel Head, Rev. 21

OP/1/A/6100/SD-25, Core Alterations Checklist, Rev. 15

OP/1/A/6100/SO-1, Maintaining NC System Level, Rev. 56

OP/1/A/6100/SO-2, Filling the Refueling Cavity, Rev. 43

OP/1/A/6100/SO-10, Controlling Procedure for LTOP Operation, Rev. 34

PT/0/A/4150/037, Total Core Unloading, Rev. 45

PT/0/A/4150/046, Containment Walkdown, Rev. 4

PT/1/A/4200/002C, Containment Closure, Rev. 80

MP/1/A/7150/042A, Rx Vessel Head Removal, Rev. 22

MSD-585, Reactor Building Personnel Access and Material Control, Rev. 15

MCEI-0400-262 Rev 0, Unit 1 and Unit 2 Loss of Spent Fuel Pool Cooling Heat Up Times Due to Decay Heat

MCEI-0400-206 Rev 2, Unit 1 Cycle 21 Spent Fuel Pool Decay Heat Engineering Instruction NRC letter dated September 5, 2008 transmitting SER on NEI 08-05, Industry Initiative on

Control of Heavy Loads

## Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures, Guidance Documents, and Manuals

HP/0/B/1003/063, Routine Surveillance, Rev. 38

HP/0/B/1004/034, Radioactive Sources, Rev. 10

HP/0/B/1006/020, Tool, Equipment and Area Decontamination, Rev. No. 003

HP/0/B/1006/023, Use and Control of Portable Ventilation Systems in Radiological Areas, Rev. No. 002

HP/1/B/1006/024, Outage Controls and Surveillance, Rev. No. 015

NSD-506, Radiation Protection, Rev. No. 16

NSWP 8.0 Personal Protective Equipment (PPE), Rev. No. 1

PT/0/A/4550/003, Physical Inventory of Reportable Special Nuclear Material, Rev. No. 011

PT/0/B/4450/032, Portable HEPA Filter Leak Test, Rev. No. 006

RPMP 3-2, Electronic Dosimeter Alarms, Rev. No. 002

RPMP 7-1, Radiological Key Control, Rev. No. 012

RPMP 7-11, Contamination Controls, Rev. No. 011

RPMP 7-15, Supplemental Guidelines for Establishing High, Locked High and Very High Radiation Areas, Rev. No. 007

SH/0/B/2000/003, Preparation of a Radiation Work Permit, Rev. No. 012

SH/0/B/2000/004, Taking, Counting and Recording Surveys, Rev. No. 011

SH/0/B/2000/005, Posting of Radiation Control Zones, Rev. No. 009

SH/0/B/2000/006, Control of Radioactive Material and Use of Radioactive Material Tags, Rev. No. 006

SH/0/B/2000/007, Placement of Personnel Dosimetry for Non-Uniform Radiation Fields, Rev. No. 002

- SH/0/B/2000/012, Access Controls for High, Locked High, and Very High Radiation Areas, Rev. No. 014
- SH/0/B/2000/013, Removal of Items from RCA/RCZs, Rev. No. 002
- SH/0/B/2000/014, Radiological Protection Requirements for Performing Remote Job Coverage, Rev. No. 001
- SH/0/B/2001/003, Investigation of Skin and Clothing Contaminations, Rev. 011
- SH/0/B/2008/004, Operation of Air Sampling Equipment, Rev. No. 001
- SRPMP 2-1, ED Alarms, Rev. No. 003
- SRPMP 3-4, Outside Radioactive Material Container Inventory and Controls, Rev. No. 000

Records and Data

- AREVA ALARA Package, 2EOC21 RX Head Volumetrics (AREVA), Dated 09/13/12
- EnRad Laboratories, Central Calibration Facility, Certificates of Calibration: Delta 5, S/N 404, Dated 03/06/13; Hand & Foot Monitor, S/N 182, Dated 02/11/13; RM-14, S/N 2814, Dated 01/16/13
- Gamma Spectrum Analysis', MN13031705566, Unit 1 UC OP Deck RWP 1965, Filter, Dated 03/17/13; MN13031705570, Unit 1 RX L/C PRT Platform Routine RWP 1964, Filter, Dated 03/17/13; MN13031805589, Unit 1 UC Cleanside Routine, Filter, Dated 03/18/13; MN13031805597, Unit 1 L/C PRT Platform Routine, Filter, Dated 03/18/13; and MN13032005676, Sandbox Seal Installation, Filter, Dated 03/20/13
- HP/0/B/1004/034, Radioactive Sources, Rev. 10, Dated 07/02/12 and 01/07/13
- PT/0/B/4450/032, Portable HEPA Filter Leak Test, Rev. No. 006, Units: MC 14398, Dated 09/24/12; and HU 500 #4, Dated 03/09/13
- Radiation Work Permit (RWP) Number (No.) 1378, Unit 1 RX Bldg: FIRP MMP Support, Rev. 02
- RWP No. 1722, Unit 1 Outage: RX Head R&R Shielding, Insulation & VR Ductwork, Rev. 09

RWP No. 1813, Unit 1 RX Bldg: All Work on 1NC-27 and 1NC-29, Rev. 18

- RWP No. 1854, Unit 1 RX Bldg: Miscellaneous Engineering Support, Rev. 07
- RWP No. 1868, Unit 1 RX Bldg: Rodout, Cleaning of NCP Motor Air Coolers, Rev. 02
- RWP No. 1903, Unit 1 RX Bldg: Entry into the Regenerative HX Room, Rev. 03
- RWP No. 2060, LHRA Entries in lower dose rate fields, Rev. 03
- Radiological Survey Maps of Unit 1 Lower Containment Below and Above S/G Lower Lateral Supports
- SH/0/B/2001/003, Investigation of Skin and Clothing Contaminations, Rev. 011, PCE: 12-017, Dated 01/03/13; 13-012, Dated 03/20/13; 13-013, Dated 03/20/13; and 13-014, Dated 03/20/13
- U.S. NRC, National Source Tracking System, Annual Inventory Reconciliation Report, IDs 663 and 5797, Dated 01/10/13
- VSDS Standard Map Survey Report, McGuire Nuclear Station, Survey Nos. M-20130319-9, U-1 Lower Containment Pipechase Floor, Dated 03/18/13; M-20130319-26, Unit 1 LC PRT, Dated 03/16/13; and M-20130321-16, Unit 1 BC Pipechase (vertical cut-off view), Dated 03/20/13 Wound Dose Assignment Information, Dated 10/29/12

## Corrective Action Program (CAP) Documents

PIPs M-13-07334, M-12-07796, M-12-08074, M-12-08134, M-12-08168, M-12-08498,

- M-12-08808, M-13-00150, M-13-02788, M-13-02799, M-13-02801
- M-RPS-SA-12-02, NRC Readiness Review for Radiation Protection Occupational Baseline Inspection, Dated 08/08/12

M-RPS-SA-12-07, Alpha Program Compliance with EPRI Guidelines, Dated 08/05/12

## Section 2RS8: Radioactive Material Processing and Transportation

Procedures, Manuals, and Guides

OP/0/A/6200/032, "Solid Waste System Operation", Rev. 035

OP/0/B/6200/064, "Transfer and Dewatering Media", Rev. 027

OP/0/B/6200/029, "WM Operation", Rev. 062

OP/0/B/6200/083, "WM Process Skid Demineralizers Sluice, Load, and Maintenance", Rev. 018 HP/0/1003/049, "WMT Release", Rev. 013

HP/0/B/1004/026, "Waste Handling and Segregation", Rev. 011

HP/0/B/1004/032, "Packaging Radioactive Filters", Rev. 014

MP/0/A/7550/011, "EnergySolutions Cask14-195H Lid Handling", Rev. 009

SH/0/B/2000/004, "Taking, Counting and Recording Surveys", Rev. 011

SH/0/B/2000/006, "Control of Radioactive Material and Use of Radioactive Material Tags", Rev. 006

SH/0/B/2004/001, "Preparation and Shipment of Radioactive Material", Rev. 008

SH/0/B/2004/002, "Preparation and Shipment of Radioactive Waste", Rev. 010

SH/0/B/2004/004, "Preparation and Shipment of Radioactive Material Excepted Package", Rev. 001

SH/0/B/2004/003, "Determination and Documentation of 10CFR61 Radioactive Waste Classification and Waste Form Implementation Program Data", Rev. 000

SRPMP 3-4, "Outside Radioactive Material Container Inventory and Controls", Rev. 000

- "Duke Energy Radioactive Waste Process Control Program Manual, Corporate Process Control Program", Rev. 15
- "McGuire Nuclear Station Units 1 and 2, 2010 Annual Radioactive Effluent Release Report", 4/14/11
- "McGuire Nuclear Station Units 1 and 2, 2011 Annual Radioactive Effluent Release Report", 4/30/12
- "McGuire Nuclear Station Units 1 and 2, Offsite Dose Calculation Manual", Rev. 53, February 2012

## Shipping Records and Radwaste Data

2011 Radioactive Shipment Record MNS 11-021, Secondary Bead Resin, Excepted package

2011 Radioactive Shipment Record MNS 11-0028, Dewatered Filters, Low Specific Activity

- 2011 Radioactive Shipment Record MNS 11-0035, DAW, Low Specific Activity
- 2012 Radioactive Shipment Record MNS 12-0005, Ash, Low Specific Activity

2012 Radioactive Shipment Record MNS 12-0018, DAW, Low Specific Activity

2013 Radioactive Shipment Record MNS 13-0002, DAW, Low Specific Activity

2013 Radioactive Shipment Record MNS 13-0003, DAW, Low Specific Activity

Spreadsheet, Radwaste Inventory, 03/15/13

10 CFR Part 61 Analyses, U-1 and U-2 Fuel Cleaning Crud Composite Samples (collection dates 03/18/11, and 09/30/11 respectively), Dated 02/01/12

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

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- MC-1209-04.00, Auxiliary Building Architectural Roof Plan Unit 1, Rev. 40
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