UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

January 30, 2007

Duke Power Company LLC
d/b/a Duke Energy Carolinas, LLC
ATTN: Mr. G. R. Peterson
Vice President
McGuire Nuclear Station
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000369/2006005, 05000370/2006005, AND 072000038/2006002 AND EXERCISE OF ENFORCEMENT DISCRETION

Dear Mr. Peterson:

On December 31, 2006, the US Nuclear Regulatory Commission (NRC) completed an inspection at your McGuire Nuclear Station. The enclosed report documents the inspection findings which were discussed on January 10, 2007, with you and members of your staff.

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

This report documents four findings of very low safety significance (Green). All of which were determined to be violations of NRC requirements. Additionally, a licensee-identified violation, which was determined to be of very low safety significance, is listed in the report. However, because of the very low safety significance and because they were entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCV) consistent with Section VI.A of the NRC Enforcement Policy. If you deny these non-cited violations, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the McGuire facility.

The enclosed report also documents one noncompliance that was identified during the inspection period. The NRC is not taking enforcement action for this noncompliance because it meets the criteria of NRC Enforcement Policy, "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)."

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system(ADAMS). ADAMS is accessible from the NRC Web site at *www.nrc.gov/reading-rm/adams.html* (the Public Electronic Reading Room).

Sincerely,

/RA/

James H. Moorman, III, Chief,
Reactor Projects Branch 1
Division of Reactor Projects

Docket Nos.: 50-369, 50-370, 72-38
License Nos.: NPF-9, NPF-17

Enclosure: Inspection Report 05000369/2006005, 05000370/2006005
and 072000038/2006002 w/Attachment - Supplemental Information

cc w/encl: (See page 3)

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Letter to G. R. Peterson from James H. Moorman, III dated January 30, 2007

SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000369/2006005, 05000370/2006005, AND 072000038/2006002 AND EXERCISE OF ENFORCEMENT DISCRETION

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos:	50-369, 50-370, 72-38
License Nos:	NPF-9, NPF-17
Report Nos:	05000369/2006005, 05000370/2006005, 072000038/2006002
Licensee:	Duke Energy Corporation
Facility:	McGuire Nuclear Station, Units 1 and 2
Location:	Huntersville, NC 28078
Dates:	October 1, 2006 through December 31, 2006
Inspectors:	J. Brady, Senior Resident Inspector J. Fuller, Reactor Inspector (Section 1R08) J. Griffis, Health Physicist (Sections 2OS1, 2OS2, 2PS1, 2PS2, and 4OA2) G. Kuzo, Senior Health Physicist (Sections 2OS1, 2OS2, 2PS1, 2PS2, and 4OA2) J. Rivera - Ortiz, Reactor Inspector (Section 4OA5) S. Walker, Resident Inspector
Approved by:	James H. Moorman, III, Chief Reactor Projects Branch 1 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000369/2006005, 05000370/2006005, 072000038/2006002; 10/01/2006 - 12/31/2006; McGuire Nuclear Station, Units 1 and 2; Inservice Inspection Activities, Operability Evaluations, Surveillance Testing, and Radioactive Material Processing and Transportation.

The report covered a three month period of inspection by resident inspectors and announced inspections by regional health physics inspectors and regional reactor inspectors. Four Green non-cited violations (NCV) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. The inspectors identified a non-cited violation (NCV) of 10CFR50, Appendix B, Criterion V, Instructions, Procedures and Drawings. Licensee activities affecting quality were not accomplished in accordance with site procedures, in that, the licensee failed to adequately evaluate multiple boric acid leaks on safety related components. These site procedures required plant personnel to identify, document, and evaluate all evidence of boric acid leakage. The licensee immediately entered the improperly evaluated leaks into their corrective action system, and completed an initial operability review.

  This finding is greater than minor because if the failure to properly evaluate boric acid leaks continued, then unidentified / unevaluated degradation of the reactor coolant pressure boundary or other, susceptible, safety related components could continue and lead to a more significant safety concern. This finding was determined to be of very low safety significance based on the IMC 0609, Appendix A, Phase 1 SDP worksheet. The finding screened as Green because leakage of boric acid is characterized as a Loss of Coolant Accident (LOCA) initiator, but the identified leakage did not contribute to the increased likelihood of a primary or secondary LOCA, and the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The violation is associated with the Work Practices Component of the Human Performance cross-cutting area in that the licensee did not define and effectively communicate expectations regarding compliance with the boric acid corrosion control program procedures. (1R08.3)

  Cornerstone: Barrier Integrity

- Green. The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, Design Control, and Criterion XVI; Test Control, for the licensee's failure to have design documentation to support the ice condenser lower inlet door surveillance procedure test acceptance limits The licensee subsequently received

the supporting information from the vendor and incorporated it into the UFSAR, Technical Specifications and surveillance procedures.

The inspectors determined that the licensee's failure to have design documentation that supported the acceptance criteria contained in the T.S. surveillance procedures used to test the ice condenser's lower inlet doors at the 40-degree open position was a performance deficiency. The requirement to maintain design bases documentation for tests performed on safety-related SSC's is contained in 10CFR50, Appendix B, Criterion III. The requirement to implement a test program that incorporates the design basis for these components is contained in 10CFR50, Appendix B, Criterion XI. The issue was determined to be more than minor because an excessively high closing torque could adversely impact the ability of the lower inlet door to modulate properly in the event of a small-break LOCA; however, with no lower limit defined in the surveillance test's acceptance criteria, this condition might not have been identified and corrected prior to returning the unit to power operation. The finding is associated with the Barrier Integrity cornerstone and affected the integrity of the reactor containment structure; i.e., the ice condenser's ability to control internal pressure following a LOCA event, and protect the public from radio-nuclide releases. The cause of this issue is related to the cross-cutting area of Human Performance- Resources, because the licensee failed to maintain complete, accurate, and up-to-date design documentation and procedures. (Section 1R22)

Cornerstone: Public Radiation Safety

- Green. The inspectors identified a non-cited violation (NCV) of 10 CFR 20 Appendix G, Section III.A.3 for failure to conduct adequate Quality Assurance (QA) activities to ensure compliance with the waste characterization requirements of 10 CFR 61.55. The NCV included three examples: the failure to analyze for required plutonium isotopes in a primary filter waste stream sample analyzed on April 15, 2005; the failure to account for differences between licensee and vendor analyses of Cerium-144 in a spent fuel pool cooling (KF) filter waste stream sample collected February 25, 2004; and the failure to account for differences between licensee and vendor analysis results for Cesium-137 in a chemical and volume control (NV) filter waste stream sample dated February 25, 2004. The failure to identify missing or anomalous isotope values could have resulted in the potential shipment of improperly characterized radioactive waste to a licensed burial site or waste processor.

  These examples are more than minor because they adversely affect the program and process attributes of the Public Radiation Safety cornerstone, in that they involve an occurrence in the licensee's radioactive material transportation program that is contrary to NRC regulations. The finding was determined to be of very low safety significance because none of the reviewed waste stream data had been used to characterize waste that had been shipped to an offsite licensed burial or processing facility. (Section 2PS2)

- Green. An NCV of 10 CFR 71.5 and 49 CFR172.704(a) was identified for failure to provide required training to hazardous material (Hazmat) employees involved in the preparation and loading of packages containing radioactive material for public transport.

Specifically, inspectors identified that two individuals involved in the preparation and closure of a Department of Transportation (DOT) Type A Specification Package on September 6, 2005 had not received the required Hazmat training.

This violation is more than minor because it adversely affects the program and process attributes of the Public Radiation Safety cornerstone, in that it involves an occurrence in the licensee's radioactive material transportation program that is contrary to NRC regulations. The violation was determined to be of very low safety significance because the shipment in question did not result in a breach of package or loss of licensed material during transport. (Section 2PS2)

B. Licensee-Identified Violations

A violation of very low safety significance, which was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and the corrective action tracking numbers (PIPs) are listed in Section 4OA7 of this report.

Report Details

Summary of Plant Status

Unit 1 began the inspection period at approximately 100% rated thermal power (RTP). Unit 1 was reduced to 91% RTP on December 21 for corrective maintenance on the 1A main feedwater pump, returned to 100% power later that day, and remained at approximately 100% rated thermal power for the entire inspection period.

Unit 2 began the inspection period shutdown in a refueling outage. Unit 2 was taken critical on November 9, went on-line November 11, and reached 100% power on November 15. The unit remained at approximately 100% RTP for the rest of the period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

.1 Imminent Weather Condition

a. Inspection Scope

When a tornado warning was predicted for the site on November 15, 2006, the inspectors reviewed actions taken by the licensee in accordance with procedure RP/0/A/5700/006, Natural Disasters, prior to the onset of that weather, to ensure that the adverse weather conditions would neither initiate a plant event nor prevent any system, structure, or component from performing its design function.

b. Findings

No findings of significance were identified.

.2 Weather Preparations

a. Inspection Scope

After the licensee completed preparations for seasonal low temperature, the inspectors walked down main fire pumps and intake structure. This equipment was selected because their safety related functions could be affected by adverse weather (freezing conditions). The inspectors reviewed documents listed in the Attachment, observed plant conditions, and evaluated those conditions using criteria documented in procedure IP/0/B/3250/059, Preventive Maintenance and Operational Check of Freeze Protection.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial Walkdowns

a. Inspection Scope

The inspectors performed a partial walkdown of the following three systems to verify the operability of redundant or diverse trains and components when safety equipment was inoperable. The inspectors attempted to identify any discrepancies that could impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, walked down control systems, components, and verified that selected breakers, valves, and support equipment were in the correct position to support system operation. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program. Documents reviewed are listed in the attachment.

- Unit 2 train B Spent Fuel Cooling with train A out of service on October 2
- Train B Control Area Ventilation with train A out of service on December 11
- Essential Battery B,C,D, with train A out of service on December 11

b. Findings

No findings of significance were identified.

.2 Complete Walkdown

a. Inspection Scope

The inspectors conducted a detailed review of the alignment and condition of the Containment Spray (NS) system. To determine the proper system alignment, the inspectors reviewed the procedures, drawings, and Updated Final Safety Analysis Report (UFSAR) sections listed in the Attachment to this report. In addition, significant events data in the industry was reviewed to ascertain any similarities to McGuire Structures, Systems, and Components (SSC). The inspectors walked down the system, to verify that the existing alignment of the system was consistent with the correct alignment. Items reviewed during the walkdown included the following:

- Valves are correctly positioned and do not exhibit leakage that would impact the function(s) of any given valve.
- Electrical power is available as required.
- Major system components are correctly labeled, lubricated, cooled, ventilated, etc.
- Hangers and supports are correctly installed and functional.
- Essential support systems are operational.
- Ancillary equipment or debris does not interfere with system performance.
- Tagging clearances are appropriate.
- Valves are locked as required by the licensee’s locked valve program.

The inspectors reviewed the documents listed in the Attachment to this report, to verify that the ability of the system to perform its function(s) could not be affected by outstanding design issues, temporary modifications, operator workarounds, adverse conditions, and other system-related issues tracked by the engineering department. In addition, the inspectors also reviewed the PIPs associated with this area to verify that the licensee identified and implemented appropriate corrective actions.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Fire Protection – Tours

a. Inspection Scope

For the six areas identified below, the inspectors reviewed the licensee's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures, to verify that those items were consistent with UFSAR Section 9.5.1, Fire Protection System, and the fire protection program as described in the Design Basis Specification for Fire Protection, MCS-1465.00-00-0008. The inspectors walked down accessible portions of each area as well as reviewed results from related surveillance tests, and reviewed the associated pre-fire plan strategy, to verify that conditions in these areas were consistent with descriptions of the areas in the Design Basis Specification. Documents reviewed during this inspection are listed in the Attachment to this report.

- Fire Area RB, Unit 2 Annulus
- Fire Area RB 2-1, Unit 2 Pipe Chase/Lower Containment
- Fire Area RB 2-2, Unit 2 Upper Containment
- Fire Area 1, Auxiliary Building ND/NS Pumps (695 elevation)
- Fire Area 13, Battery Room (elevation 733)
- Fire Area TB1, Turbine Building - main feed pumps(760 elevation)

b. Findings

No findings of significance were identified.

.2 Fire Protection – Drill Observation

a. Inspection Scope

The inspectors observed two fire drills. The drills were observed to evaluate the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies, openly discussed them in a self- critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper

use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient fire fighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of pre-planned strategies; (9) adherence to the pre-planned drill scenario; and (10) drill objectives.

b. Findings

Introduction. A Noncompliance (Green) was identified for inadequate site fire brigade drills. Specifically, the fire brigade drills conducted in safety-related areas of the plant did not require the members to fully dress out, simulate use of fire fighting equipment, nor assess effectiveness of fire fighting and communication equipment, as required by the licensing basis.

Description. While observing fire brigade drills during the third and fourth quarters, the inspector discovered that for drills conducted in safety related areas of the plant, the fire brigade members were not required to perform the exercise fully dressed out nor simulate use of fire fighting equipment. Instead, the licensee conducted walkthrough scenarios, which require the fire brigade members to initially don personal protection equipment in the dress out area and then take a drill time out. After removing the fire brigade gear, a discussion of the specific fire strategy by the fire brigade leader is done. The inspector noted that the licensee's failure to simulate use of fire fighting equipment and communication equipment impacts the capability to ensure thorough, accurate, and effective training for the brigade members. Full dress-out drills also allow for thorough assessment of each fire brigade members' knowledge of his/her role in the fire fighting strategy. These licensing basis' objectives are not currently being met by the licensee.

Analysis. Inadequate fire brigade drill training impacts the ability to effectively mitigate fire external events. Not performing fire brigade drills in accordance with the licensing basis is a performance deficiency. The performance deficiency is more than minor because it is associated with the degradation of a fire protection feature, i.e., manual suppression. This finding was determined to be of very low safety significance (Green) using Appendix F of the Significance Determination Process (SDP), because it only minimally diminished suppression effectiveness. The inspector determined that based on experience, other training, and additional fire suppression capabilities, i.e., sprinkler systems, halon, etc..., a fire in a safety-related area will still be mitigated.

Enforcement. McGuire operating license condition 2.C.4, for Unit 1 and 2, states that the licensee shall maintain in effect and fully implement all provisions of the approved fire protection program as described in the Final Safety Analysis Report, as updated, for the facility and as approved in the NRC Staff's McGuire Safety Evaluation Report (NUREG-0422) and its supplements. McGuire UFSAR section 9.5.1 states that the fire protection program is contained in document MCS-1465.00-0008, Design Basis Specification for Fire Protection. The Fire Protection Program states, in Appendix B, section 2, Fire Brigade Training, that drills include assessment of each brigade member's knowledge of his/her role in the fire fighting strategy; selection, placement, and use of equipment; and the simulated use of fire fighting equipment required to cope

with the situation and type of fire selected for the drill. Contrary to the above, during the third and fourth quarter drills, the inspector determined that the walkthrough drills conducted in safety related areas of the plant did not meet the licensing basis. The licensee initiated PIP M-06-5841 to assess the deficiency.

Pursuant to the Commission's Enforcement Policy and NRC Manual Chapter 0305, under certain conditions fire protection findings at nuclear power plants that transition their licensing bases to 10 CFR 50.48(c) are eligible for enforcement and ROP discretion. The Enforcement Policy and ROP also state that the finding must not be evaluated as Red. In February 2005, the licensee submitted a letter to the NRC stating its intent to transition to 10 CFR 50.48(c). On September 26, 2006, the licensee was granted extended transition discretion from April 18, 2006 to April 18, 2009.

Because the licensee committed, prior to December 31, 2005, to adopt NFPA 805 and change their fire protection licensing bases to comply with 10 CFR 50.48(c), the NRC is exercising enforcement discretion for this issue in accordance with the NRC Enforcement Policy, "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)." Specifically, it is likely that the licensee would have identified the violation in light of the defined scope, thoroughness, and schedule of their transition to 10 CFR 50.48(c), was entered into the licensee's corrective action program and will be corrected, was not likely to have been previously identified by routine licensee efforts, was not willful, and was not associated with a finding of high safety significance.

1R06 Flood Protection Measures

.1 External Flooding

a. Inspection Scope

The inspectors walked down the outside portions of the plant in the vicinity of the auxiliary building which are susceptible to flooding from external sources, to verify that the area configuration, features, and equipment functions were consistent with the descriptions and assumptions used in UFSAR Section 2.4.10, Flood Protection Requirements, and in the supporting basis documents listed in the Attachment to this report. This review entailed: (1) potential flooding affects from probable maximum flooding on the Auxiliary Building (AB); (2) potential flooding affects of cable trenches, cable pits, and manholes; (3) potential failure of the Auxiliary Feedwater Storage Tanks (CAST) and flooding of the Turbine Building, Diesel Generator Area, and Yard.

In addition, the inspectors reviewed preventative maintenance for manholes that contain cables important to safety and were subject to flooding, to verify that cables and associated support equipment described in UFSAR were not damaged by submergence and would perform their intended function.

b. Findings

No findings of significance were identified.

.2 Internal Flooding

a. Inspection Scope

The UFSAR sections and the design basis documents listed in the attachment indicate that the following areas that contain safety-related equipment are susceptible to flooding. The inspectors walked down the four areas listed below containing risk-significant equipment, which were below flood levels or otherwise susceptible to flooding from postulated pipe breaks, to verify that the area configuration, features, and equipment functions were consistent with the descriptions and assumptions used in UFSAR sections and in the supporting basis documents listed in the Attachment to this report. The inspectors also did a general walk-through of the auxiliary building to verify the licensee's determination that pipe breaks in the auxiliary building would drain to the auxiliary building areas identified above. The inspectors reviewed preventative maintenance documentation for the sump pumps and level transmitters in the Groundwater Drainage system to determine whether the system equipment was being adequately maintained to perform its design function of mitigating flooding. The inspectors reviewed the operator actions credited in the flooding analysis, contained in procedure AP/0/A/5500/44, Plant Flooding, to verify that the desired results could be achieved.

- Auxiliary building unit 1 and 2 auxiliary feedwater pump rooms (712 foot elevation)
- Auxiliary building residual heat removal and containment spray pump area (695 foot elevation)
- Diesel generator rooms
- Internal and external doghouses

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

Annual Inspection

a. Inspection Scope

The inspectors reviewed the inspection results including digital pictures of the 2A and 2B component cooling heat exchangers, to verify that inspection results were appropriately categorized against the pre-established acceptance criteria described in procedure MP/0/A/7700/013, Component Cooling System Heat Exchanger Corrective Maintenance. The inspectors also verified that the frequency of inspection was sufficient to detect degradation prior to loss of heat removal capability below design basis values by comparing the current 2EOC17 refueling outage inspection results to the previous two performances that occurred during refueling outages 2EOC16 and 2EOC15. In addition, the inspectors reviewed the online monitoring program contained in OP/1&2/A/6400/006, Nuclear Service Water System, which included guidance for

operator monitoring during train swaps and online flushing methodology used when a differential pressure alarm is received or when high differential pressures are observed. The inspectors also reviewed the computer alarm response guidance for high component cooling heat exchanger nuclear service water differential pressure to determine if prescribed actions were adequate to preempt inoperability of the heat exchanger. In addition, the inspectors reviewed PIP M-06-4255, Adverse trend associated with plant raw water systems, and associated PIPs, to determine whether plant actions taken to mitigate the effects of heat exchanger fouling were adequate to prevent a loss of heat sink function. The root cause was not complete at the time of this inspection.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activities

.1 Piping Systems ISI

a. Inspection Scope

From September 25 - October 4, 2006, the inspectors reviewed the implementation of the licensee's ISI program for monitoring degradation of the reactor coolant system (RCS) boundary and the risk significant piping system boundaries for McGuire Unit 2. The inspectors reviewed a sample of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI required examinations and Code components in order of risk priority as identified in Section 71111.08-03 of inspection procedure 71111.08, "Inservice Inspection Activities," based upon the ISI activities available for review during the onsite inspection period.

The inspectors conducted an on-site review of nondestructive examination (NDE) activities to evaluate compliance with Technical Specifications (TS), ASME Section XI, and ASME Section V requirements, 1998 Edition through 2000 Addenda, and to verify that indications and defects (if present) were appropriately evaluated and dispositioned in accordance with the requirements of ASME Section XI, IWB-3000 or IWC-3000 acceptance standards.

Specifically, the inspectors observed the following examinations:

Ultrasonic Testing:
- Sample of Reactor Pressure Vessel Head Nozzle Penetrations (4OA5)

Visual Testing:
- Reactor Pressure Vessel Head Nozzle Penetrations, Bare Metal Visual Inspection (83 locations) (4OA5)

Specifically, the inspectors reviewed the following examination records:

Ultrasonic Testing:
- 2NI2FW27-15, Tee to Reducer Weld on Safety Injection System, ASME Class 2
- 2SGA-W65, Tubesheet to Shell weld on 'A' Steam Generator, ASME Class 1
- 2NC2FW24-6, Pipe to Elbow Weld on Reactor Coolant System, ASME Class 1

Liquid Penetrant Testing:
- Weld Number NW1 / 2PZR-W4ASE, Weld Overlay Prep for Pressurizer Safety Nozzle, ASME Class 1
- Weld Number NW2 / 2PZR-W4BSE, Weld Overlay Prep for Pressurizer Safety Nozzle, ASME Class 1
- Weld Number NW3 / 2PZR-W4CSE, Weld Overlay Prep for Pressurizer Safety Nozzle, ASME Class 1
- Weld Number NW4 / 2PZR-W3SE, Weld Overlay Prep for Pressurizer Relief Nozzle, ASME Class 1
- Weld Number NW5 / 2PZR-W2SE, Weld Overlay Prep for Pressurizer Spray Nozzle, ASME Class 1
- Weld Number NW6 / 2PZR-W1SE, Weld Overlay Prep for Pressurizer Surge Nozzle, ASME Class 1

Radiographic Testing:
- 2NS2F486, Containment Spray, ASME Class 2
- 2NS2F574, Containment Spray, ASME Class 2
- 2NS2F5413, Containment Spray, ASME Class 2

The Inspectors reviewed examination records for the following recordable indications to evaluate if the licensee's acceptance was in accordance with acceptance standards contained in Article IWB-3000 of ASME Section XI.

Ultrasonic Testing:
- 2PZR-12, Pressurizer Pressure and Level Control System, Nozzle to Head Weld, ASME Class 1

Liquid Penetrant Testing:
- Weld Number NW6 / 2PZR-W1SE, Weld Removal Area, 2 Linear Indications, Pressurizer Surge Nozzle, ASME Class 1

Visual Examination of Component Supports and Snubbers (VT-3)
- 2MCR-CA-H26, Auxiliary Feed Water Pipe Hanger, ASME Class 2

The inspectors reviewed the "McGuire Nuclear Station, Unit 2, Inservice Inspection Report, End of Cycle 16 Refueling Outage," dated July 14, 2005, which stated that there were no reportable indications from last outage. The report did identify several exams that had limited coverage, but were greater than 90%; the inspectors reviewed a sample of these examination coverage calculations.

Qualification and certification records for examiners, inspection equipment, and consumables along with the applicable NDE procedures for the above ISI examination

activities were reviewed and compared to requirements stated in ASME Section V and Section XI.

Pressure boundary welding activities associated with ASME Class 1 components were reviewed by the inspectors, to verify the welding process and NDE examinations were performed in accordance with the ASME Code Sections III, V, IX, and XI requirements. Specifically, the inspectors observed and reviewed the licensee's weld overlay activities associated with pressurizer dissimilar metal nozzle welds. The inspectors observed portions of the in-process welding, and reviewed the in-process weld data sheets, the welding procedure specification, supporting welding procedure qualification records, and welder qualification records for the following welds:

- Weld Number NW1 / 2PZR-W4ASE, Weld Overlay Pressurizer Safety Nozzle, ASME Class 1
- Weld Number NW3 / 2PZR-W4CSE, Weld Overlay Pressurizer Safety Nozzle, ASME Class 1
- Weld Number NW6 / 2PZR-W1SE, Weld Overlay Pressurizer Surge Nozzle, ASME Class 1

The inspectors performed a review of piping system ISI related problems that were identified by the licensee and entered into the corrective action program. The inspectors reviewed these corrective action documents to confirm that the licensee had appropriately described the scope of the problems. Additionally, the inspectors' review included confirmation that the licensee had an appropriate threshold for identifying issues and had implemented effective corrective actions. The inspectors evaluated the threshold for identifying issues through interviews with licensee staff and review of licensee actions to incorporate lessons learned from industry issues related to the ISI program. The inspectors performed these reviews to ensure compliance with 10CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements. The corrective action documents reviewed by the inspectors are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

.2 Reactor Vessel Upper Head Penetrations

The inspector completed TI2515/150, Reactor Pressure Vessel Head and Head Penetration Nozzles (NRC Order EA-03-009) (Unit 2), this outage. See Section 4OA5.

.3 Boric Acid Corrosion Control (BACC) Program

a. Inspection Scope

The inspectors reviewed the licensee's BACC program to ensure compliance with commitments made in response to NRC Generic Letter 88-05 "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary," and Bulletin 2002-01 "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity."

The inspectors conducted an on-site record review as well as independent walk downs of the reactor building that are not normally accessible during at-power operations, and portions of the auxiliary building. The inspectors applied the results of these walk downs to evaluate the licensee's compliance with BACC program requirements and 10CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements. In particular, the inspectors verified that the licensee's visual examinations focused on locations where boric acid leaks can cause degradation of safety significant components, and that degraded or non-conforming conditions were properly identified in the licensee's corrective action system.

The inspectors reviewed a sample of engineering evaluations completed for boric acid found on reactor coolant system piping and components to verify that the minimum design code required section thickness had been maintained for the affected component(s). The inspectors also reviewed licencee corrective actions implemented for evidence of boric acid leakage to confirm that they were consistent with requirements of Section XI of the ASME Code and 10 CFR 50, Appendix B, Criterion XVI. Specifically, the inspectors reviewed:

- M -06-02870, Active Leak at 2-NC-45, Unit 2 PZR Liquid Sample Isolator
- Work Order 01702272 01, 2NI-IV-5023 Repair Leak at Valve Fitting
- M -05-01899, Active Leak on 2NV-841 during ASME Class A System Leakage Test
- M - 05-04436, Boron Accumulation in the B Train ECCS Sump
- M -05-03265, Active, Repetitive boron leak on 2NR-VA-0092
- M -06-04293, Corrosion of bellows for ECCS Sump Line Penetrations

b. Findings

Introduction. A Green NRC-identified NCV was identified for the failure to comply with 10CFR50, Appendix B, Criterion V, Instructions, Procedures and Drawings. As a result of plant personnel routinely failing to follow BACC program procedures, the inspectors identified five examples where the licensee failed to complete the required boric acid evaluation procedure for boric acid leaks. Licensee procedure, Engineering Support Document (ESD) Boric Acid Corrosion Program, requires all boric acid leaks to be identified and documented in the fluid leak management database. Additionally, the ESD requires the completion of Maintenance Procedure MP/0/A/7700/080, Inspection Evaluation and cleanup of Boric Acid on Plant Materials, to properly evaluate and correct boric acid leaks.

Description. From September 25, 2006 through October 4, 2006 the inspectors reviewed the licensee boric acid corrosion control program, and identified that the licensee did not complete evaluations of boric acid leakage in accordance with their site procedures. Specifically, maintenance procedure MP/0/A/7700/080, was required to be completed for all boric acid leaks except for the most minor instances. Licensee procedures: ESD - Boric Acid Corrosion Control Program, and Nuclear Safety Directive (NSD) 413 - Fluid Leak Management Program, require that all boric acid leaks be identified and documented in the fluid leak management database, and evaluated in accordance with MP/0/A/7700/080.

The ESD specifically states that Maintenance Procedure MP/0/A/7700/080 is to be completed whenever a leak or spill is identified, so as to verify and evaluate the structural integrity of plant materials that have come in contact with boric acid leakage. Through review of plant records regarding boric acid leaks, the inspectors identified five examples of boric acid leaks that were not properly evaluated in accordance with the maintenance procedure. These boric acid leaks on safety related components involved active boric acid leaks and/or potential carbon steel targets in contact with the boric acid leakage. In some cases, the licensee had completed a partial evaluation within their corrective action program, but failed to complete the maintenance procedure; therefore, the licensee created an inconsistent and inadequate evaluation process. The leaks that were not properly evaluated in accordance with MP/0/A/7700/080 are as follows: 1) 2-NV-841 (Auxiliary Pressurizer Spray System, Inside Containment Isolation Valve) - active boric acid leak, 2) 2-ND–FT-5250 - active leak above multiple target components, 3) 2-NR-VA-0092 (Letdown Heat Exchanger Inlet Isolation Valve) - active, repetitive boric acid leak, 4) “B” ECCS Sump - discolored boric acid residue with target components. The maintenance procedure was completed for actively leaking valve 2-NI-IV-5023, which caused a significant amount of boric acid buildup in the “A” sump. The inspectors observed this discolored boric acid buildup during the independent containment walk down. Upon further review, it was determined that the licensee had previously identified the leakage, but completed an inadequate evaluation and inappropriately closed the cleaning work order, in that a copper electrical grounding cable and carbon steel component supports were entirely immersed in the boric acid leakage. Licensee procedures referenced above are safety related procedures for activities affecting Appendix B components, and are credited in their responses to NRC generic letters and bulletins regarding boric acid corrosion control programs.

The licensee issued PIP M-06-4513 for the performance deficiency identified by the inspectors. Although the licensee failed to follow their BACC program requirements, the licensee’s initial evaluations of these leaks determined that affected components would have performed their intended functions and would not have failed during the next operating cycle if left uncorrected.

Analysis. The performance deficiency associated with this inspector-identified NCV was that licensee activities affecting quality were not accomplished in accordance with site procedures: NSD 413 - Fluid Leak Management Program, ESD - Boric Acid Corrosion Program, and MP/0/A/7700/080 - Inspection, Evaluation and Cleanup of Boric Acid on Plant Materials. In that, the licensee failed to properly evaluate five boric acid leaks. This performance deficiency should have been prevented and was reasonably within the licensee’s ability to foresee, identify, and correct.

The finding is more than minor because if the failure to evaluate boric acid leaks continued, then unidentified / unevaluated degradation of the reactor coolant pressure boundary or other, susceptible, safety related components could continue and lead to a more significant safety concern.

This finding was determined to be of very low safety significance based on the IMC 0609, Appendix A, Phase 1 SDP worksheet. The finding is associated with the initiating event cornerstone and screened as Green. Leakage of boric acid is characterized as a

LOCA initiator, but the identified leakage did not contribute to the increased likelihood of a primary or secondary LOCA, and the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available.

The violation is associated with the Work Practices Component of the Human Performance cross-cutting area in that the licensee did not define and effectively communicate expectations regarding compliance with the boric acid corrosion control program procedures. The failure to adequately communicate the expectation to complete MP/0/A/7700/080 for boric leaks resulted in inconsistent and inadequate evaluations of boric acid leaks.

Enforcement. 10CFR50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, and drawings, of a type appropriate to the circumstances, and shall be accomplished in accordance with these instructions, procedures, or drawings. The licensee implements these requirements, in part, with Maintenance Procedure MP/0/A/7700/080 - Inspection, Evaluation and Cleanup of Boric Acid on Plant Materials, which is used to verify the structural integrity of plant materials that have come in contact with boric acid as a result of a leaking system, and is used whenever a leak or spill is identified. Contrary to the above, on October 4, 2006, it was determined that the licensee failed to follow boric acid corrosion control program requirements as stated in licensee procedures, in that the licensee failed to properly evaluate multiple boric acid leaks on safety related components.

This violation is associated with an inspection finding that is characterized by the Significance Determination Process as having very low risk significance (Green) and is in the licensee's corrective action program as PIP M-06-4513. This violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the NRC Enforcement Policy: NCV 50-370/2006-05-01, Failure to Identify and Evaluate Multiple Boric Acid Leaks.

.4 Steam Generator (SG) Tube ISI

a. Inspection Scope

The licensee did not perform any inspections of the Unit 2 Steam Generator tubes this outage. This inspectors did review the licensee's SG surveillance requirement stated in Technical Specifications to ensure that SG tube inspections were being appropriately scheduled.

b. Findings

No findings of significance were found.

1R11 Licensed Operator Requalification

a. Inspection Scope

On November 30, the inspectors observed licensed-operator performance during requalification simulator training for shift E, to verify that operator performance was consistent with expected operator performance, as described in Exercise Guide OP-MC-SRT-64. This training tested the operators' ability to perform abnormal and emergency procedures dealing with loss of condenser vacuum, rod control malfunctions, turbine runback, secondary steam leak, reactor trip. The inspectors focused on clarity and formality of communication, use of procedures, alarm response, control board manipulations, group dynamics and supervisory oversight. The inspectors observed the post-exercise critique, to verify that the licensee identified deficiencies and discrepancies that occurred during the simulator training.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the two samples listed below for items such as: (1) appropriate work practices; (2) identifying and addressing common cause failures; (3) scoping in accordance with 10 CFR 50.65(b) of the maintenance rule (MR); (4) characterizing reliability issues for performance; (5) trending key parameters for condition monitoring; (6) charging unavailability for performance; (7) classification and reclassification in accordance with 10 CFR 50.65(a)(1) or (a)(2); and (8) 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). Documents reviewed are listed in the Attachment. Items reviewed included the following:

- YC system - a(1) status
- Spent Fuel Cooling (KF) pump bearings

The inspectors reviewed the following PIP associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- M-06-3751, Possible ineffective corrective action to prevent recurrence (CAPR) with respect to KF Pump Bearing failures

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the licensee's risk assessments and the risk management actions used to manage risk for the plant configurations associated with the five activities listed below. The inspectors assessed whether the licensee performed adequate risk assessments, and implemented appropriate risk management actions when required by 10CFR50.65(a)(4). For emergent work, the inspectors also verified that any increase in risk was promptly assessed, and that appropriate risk management actions were promptly implemented. The inspectors also reviewed associated PIPs to verify that the licensee identified and implemented appropriate corrective actions.

- Week of October 16 including frequent schedule changes on Unit 1 due to resource availability changes for scheduled tasks because of the Unit 2 refueling outage;

- Week of October 29 including extension of Unit 2 refueling outage due to Emergency Core Cooling System (ECCS) sump modification challenges;

- Week of November 5 including rescheduling of work due to identified leakage on 2NC-1, Pressurizer Safety Relief Valve; scheduled Orange (Outage Risk Assessment Management (ORAM) risk profile for lifting the Pressurizer Hatch Plug for inspection;

- Week of November 12 including Unit 2 startup and increase to 100% RTP; 2A SG Narrow Range Channel 2 failing low and subsequent repair; inclement weather caused rescheduling of work;

- Week of December 18 including reducing Unit 1 to 91% RTP to swap low pressure steam to high pressure steam for the 1A Main Feedwater pump in support of a complex plan to replace a failed Low Pressure actuator interface card; this resulted in an additional Yellow ORAM activity.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the operability determinations the licensee had generated that warranted selection on the basis of risk insights. The selected samples are addressed in the PIPs listed below. The inspectors assessed the accuracy of the evaluations, the use and control of any necessary compensatory measures, and compliance with the Technical Specifications (TS). The inspectors verified that the operability determinations were made as specified by Nuclear System Directive (NSD) 203, Operability. The inspectors compared the arguments made in the determination to the

requirements from the TS, the UFSAR, and associated design-basis documents, to verify that operability was properly justified and the subject component or system remained available, such that no unrecognized increase in risk occurred.

- M-06-4255, Adverse trend associated with plant raw water systems
- M-06-4439, 2ND-1(RHR suction isolation) stalled in the closed direction
- M-06-4538, Calculation flawed and conclusions invalid
- M-06-5057, Duct tape found installed on U2 RCP divider barrier plug (U1 evalaution)
- M-06-5249, Duct tape installed on U2 Pressurizer hatch plugs (U1 evaluation)

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed the modification described in McGuire modification package MD 200347, Install Containment Spray Full Flow Test Line, to verify that:

- this modification did not degrade the design bases, licensing bases, and performance capabilities of risk significant SSCs,
- implementing this modification did not place the plant in an unsafe condition, and
- the design, implementation, and testing of this modification satisfied the requirements of 10CFR50, Appendix B.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

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

- PT/2/A/4255/003A, Main Steam (SM) Train A Valve Stroke Timing - Shutdown Main Steam Isolation Valve (MSIV) valve disassembly, repair, and modification)
- PT/2/A/4255/003B, SM Train B Valve Stroke Timing - Shutdown (MSIV valve disassembly, repair, and modification)
- PT/2/A/4208/021B, 2B Containment Spray (NS) Pump Head Curve and Comprehensive Pump Performance Test (maintenance and modification for full flow testing)
- PT/2/A/4208/021A, 2A NS Pump Head Curve and Comprehensive Pump Performance Test (maintenance and modification for full flow testing)
- PT/2/A/4151/005, Reactor Coolant (NC) Valve Stroke Timing Test Using Air (maintenance on actuator for pressurizer Power Operated Relief Valve (PORV) 2NC-36B)
- PT/1/A/4209/001C, Standby Makeup Pump Flow Periodic Test (Baker Testing on Pump Power Cable)
- PT/1/A/4204/005A, ND Train A Valve Stroke Timing - Shutdown (replace add-on- pack for 1ND19A, FWST isolation valve)

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope (Unit 2)

The inspectors performed the inspection activities described below for the refueling outage. The inspectors confirmed that, when the licensee removed equipment from service, the licensee maintained defense-in-depth commensurate with the outage risk control plan for key safety functions and applicable technical specifications, and that configuration changes due to emergent work and unexpected conditions were controlled in accordance with the outage risk control plan.

- Reviewed the status and configuration of electrical systems to verify that those systems met TS requirements and the licensee's outage risk control plan.
- Reviewed system alignments to verify that the flow paths, configurations, and alternative means for inventory addition were consistent with the outage risk plan.
- Reviewed the outage risk plan to verify that activities, systems, and/or components which could cause unexpected reactivity changes were identified in the outage risk plan and were controlled.
- Reviewed reactor coolant system (RCS) pressure, level, and temperature instruments to verify that the instruments provided accurate indication and that allowances were made for instrumentation errors.
- Observed decay heat removal parameters to verify that the system was properly functioning and providing cooling to the core.
- Reviewed selected control room operations to verify that the licensee was controlling reactivity in accordance with the technical specifications.
- Observed licensee control of containment penetrations to verify that the requirements of the technical specifications were met.

- Reviewed the licensee's plans for changing plant configurations to verify that technical specifications, license conditions, and other requirements, commitments, and administrative procedure prerequisites were met prior to changing plant configurations.
- Reviewed RCS boundary leakage and the setting of containment integrity.
- Examined the containment prior to reactor startup to verify that debris had not been left which could affect performance of the containment sumps.

Periodically, the inspectors reviewed the items that had been entered into the licensee's corrective action program, to verify that the licensee had identified problems related to outage activities at an appropriate threshold and had entered them into the corrective action program. For the significant problems documented in the corrective action program and listed in the Attachment to this report, the inspectors reviewed the results of the licensee's investigations, to verify that the licensee had determined the root cause and implemented appropriate corrective actions, as required by 10CFR50, Appendix B, Criterion XVI, Corrective Action.

- M-06-4364, Duct tape found around ECCS sump bellows guard pipe during boric acid corrosion program inspection.

b. Findings

While reviewing PIP M-06-4364, the inspectors discovered that on September 28, 2006, the licensee found 12 square feet of yellow duct tape wrapped around the emergency core cooling system (ECCS) suction and guard pipe in both trains of ECCS sump (5' in A train, 7' in B train). There appeared to have been more tape installed at one time, however, boric acid in the sump had dissolved what could have been up to 6 additional square feet of duct tape (2.5' in A train, 3.5' in B train). The licensee documented this discovery in PIP M-06-4364 and initiated a significant event investigation (SEIT). During the investigation the licensee discovered that in a Unit 1 outage sometime prior to 2003, a licensee manager had found several feet of duct tape in the Unit 1 ECCS sump on the ECCS suction pipe. There was no corrective action document (PIP) initiated and no extent of condition review performed for Unit 2 at that time.

This issue is greater than minor because if left uncorrected the tape could have had a detrimental affect on the availability and reliability of both trains of ECCS when called upon during an accident. Specifically, the tape had the potential to have detrimental effects on the high pressure and low pressure ECCS recirculation function. This issue was unresolved pending NRC review of the licensee's SEIT report and the associated analyses concerning the consequences of the duct tape on ECCS performance during accident conditions, a vendor analysis of the duct tape affect on operability performed by Westinghouse, a Duke materials laboratory report on testing of duct tape, and an ECCS downstream effects analysis performed by Westinghouse for the licensee, and

NRC analysis and evaluation of this information and other NRC information to determine to what extent ECCS system performance (high head, intermediate head, low head safety injection, and piggy back high pressure recirculation) would be affected. This item is identified as URI 05000370/2006005-02, Duct tape in Unit 2 ECCS sump.

1R22 Surveillance Testing

a. Inspection Scope

For the surveillance tests identified below, the inspectors witnessed testing and/or reviewed the test data, to verify that the systems, structures, and components involved in these tests satisfied the requirements described in the Technical Specifications, the FSAR, and applicable licensee procedures, and that the tests demonstrated that the SSCs were capable of performing their intended safety functions.

* • PT/2/A/4208/003A, NS Train A Valve Stroke Timing - Shutdown
* • PT/2/A/4208/003B, NS Train B Valve Stroke Timing - Shutdown
• PT/1/A/4200/028A, Train A Slave Relay Test, Enclosure13.23 Train 1A Safety Injection (K-604, K-639, and K-640)
• PT/2/A/4200/009A, Engineered Safety Features Actuation Periodic Test Train A
• PT/2/A/4200/009B, Engineered Safety Features Actuation Periodic Test Train B
• PT/2/A/4350/002A, Diesel Generator 2A Operability Test
• PT/2/A/4255/033C, SM Valve Timing Test at Full Temperature and Pressure

*This procedure included inservice testing requirements.

The inspectors reviewed PIP M-06-1850, associated with ice condenser lower inlet doors (LID), to verify that the licensee identified and implemented appropriate corrective actions.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, and Criterion XVI, Test Control, for the licensee's failure to have design documentation to support the ice condenser lower inlet door surveillance procedure test acceptance limits.

Description. During the inspectors' review, on May 8, of licensee actions from an issue at Catawba associated with ice condenser lower inlet door (LID) surveillance procedure test acceptance criteria (PIP M-06-1850), the inspectors questioned the calculated frictional torque value documented in the surveillance procedure PT/0/A/4200/032, Ice Condenser Lower Inlet Door Inspection and Testing that was used to satisfy T.S. requirement 3.6.13.6. On a large number of the doors tested for McGuire Unit 1 and on several of the doors for McGuire Unit 2, the measured closing torque value was greater than the measured opening torque value which resulted in a calculated negative frictional torque value; i.e., Frictional Torque = Opening Torque - Closing Torque. The acceptance criteria in the T.S. bases and the plant surveillance procedure for the calculated frictional torque was stated as "≤40 in-lbs." The inspectors requested the design bases documents that supported the acceptability of calculated frictional torque values being negative; however, the licensee was not able to provide any design documents that supported the ability to accept negative frictional torque values as satisfying the T.S. surveillance requirement.

As a result of the questions raised by the inspectors, the licensee contracted with the vendor, Westinghouse, to develop a formal design document that provided technical justification for the opening, closing and frictional torque values contained in the station's surveillance procedures. The licensee's LID surveillance testing for the Unit 2 refueling outage completed in November indicated all positive values.

Analysis. The function of the ice condenser is to protect containment integrity by dissipating the heat from a design basis accident. The design documents for the ice condenser should contain the basis used to establish the acceptance criteria contained in the surveillance tests performed to verify the operability of the ice condenser lower inlet doors under the full range of postulated accident scenarios. The test acceptance limits in the surveillance test procedure being used at McGuire to verify that torque values were acceptable at the 40-degree open position did not contain the proper lower bound and as a result, did not provide assurance that operability could be assured over the full range of calculated values if negative numbers were obtained.

The inspectors concluded that the finding was greater than minor because an excessively high closing torque could adversely impact the ability of the lower inlet door to modulate properly in the event of a small-break LOCA; however, without an accurate lower limit defined in the surveillance test's acceptance criteria, this condition might not have been identified and corrected prior to returning the unit to power operation. The finding is associated with the Barrier Integrity cornerstone and is associated with the integrity of the reactor containment structure; i.e., the ice condenser's ability to control internal pressure following a LOCA event, to protect the public from radio-nuclide releases.

The issue was determined to be of very low safety significance (green) because the acceptance criteria contained in the design bases document received from the vendor bounded the calculated frictional torque values that had been recorded during the performance of past LID surveillance tests on both McGuire units. The cause of this issue is related to the cross-cutting area of Human Performance-Resources, because the licensee failed to maintain complete, accurate, and up-to-date design documentation and procedures.

Enforcement. 10CFR 50 Appendix B Criterion III, Design Control, requires, in part, that measures be established to assure that the design basis as defined in 10 CFR 50.2 for safety-related structures, systems and components is correctly translated into specifications, procedures and instructions, and that design control measures be applied to items such as delineation of acceptance criteria for inspections and tests. 10CFR 50 Appendix B Criterion XI, Test Control, requires, in part, that a test program shall be established and performed in accordance with written procedures which incorporate the requirements and acceptance limits contained in applicable design documents. Contrary to the above, prior to November 2006, the licensee failed to establish a technical bases for the acceptance criteria used to satisfy the Technical Specification surveillance requirements pertaining to the 40-degree torque testing of the ice condenser lower inlet doors. The failure to have test acceptance criteria based on design documents for the ice condenser LIDs is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as NCV

05000369,370/2006005-03: Failure to implement adequate design and test control for ice condenser lower inlet doors. This issue is in the licensee's corrective action program as PIPs M-06-5239 and M-06-5484.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the temporary modification listed below and the associated 10 CFR 50.59 screening to verify that the modification satisfied the requirements of 10CFR50, Appendix B, Criterion III, Design Control, and compared it against the UFSAR and TS to verify that the modification did not affect operability or availability of the affected system. The inspectors walked down the modification to ensure that it was installed in accordance with the modification documents and reviewed post-installation and removal testing to verify that the actual impact on permanent systems was adequately verified by the tests.

- MD501016, Locate Ventilation Chiller (YC) Condenser Injection Skid

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation

a. Inspection Scope

Resident inspectors evaluated the conduct of a routine licensee emergency drill on November 29, 2006 to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation (PAR) development activities in accordance with 10CFR50, Appendix E. The inspectors observed emergency response operations in the simulated control room to verify that event classification and notifications were done in accordance with RP/0/A/5700/000, Classification of an Emergency. The inspectors also attended the licensee critique of the drill to compare any inspector-observed weakness with those identified by the licensee in order to verify whether the licensee was properly identifying failures.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety (OS)

2OS1 Access Control To Radiologically Significant Areas

a. Inspection Scope

Access Controls During the weeks of September 18, 2006, and October 2, 2006, licensee activities for controlling and monitoring worker access to radiologically significant areas and tasks associated with the Unit 2, End-of-Cycle17 Refueling Outage (2 EOC17) were evaluated. The inspectors evaluated changes to, and adequacy of procedural guidance; directly observed implementation of established administrative and physical radiological controls; appraised radiation worker and technician knowledge of and proficiency in implementing radiation protection activities; and assessed radiation worker (radworker) exposures to radiation and radioactive material.

The inspectors directly observed controls established for workers and Health Physics Technician (HPT) staff in airborne radioactivity area, radiation area, high radiation area (HRA), extra-high radiation area (EHRA), and very high radiation area (VHRA) locations. Controls and their implementation for EHRA keys and for storage of irradiated material within the Unit 1 (U1) and Unit 2 (U2) spent fuel pools were reviewed and discussed in detail. Evaluated 2 EOC17 tasks included under reactor vessel inspection; reactor head removal and inspection, pressurizer weld overlays, emergency core cooling system sump modifications, and selected valve maintenance. In addition, the inspectors reviewed controls for an 'at power' entry to evaluate U1 ECCS sump material condition. The inspectors attended pre-job briefings and reviewed radiation work permit (RWP) details to assess communication of radiological control requirements to workers. Occupational workers' adherence to selected RWPs and HPT proficiency in providing job coverage were evaluated through direct observations and interviews with licensee staff. Electronic dosimeter (ED) alarm set points and worker stay times were evaluated against area radiation survey results with a focus on activities and tasks involving areas where dose rates could change significantly as a result of plant shutdown and refueling operations. Worker exposure as measured by ED and by licensee evaluations of skin doses resulting from discrete radioactive particle or dispersed skin contamination events since January 2006 and during current 2 EOC17 activities were reviewed and assessed independently. For HRA tasks potentially involving significant dose gradients, e.g., under-vessel inspection and reactor head inspection, the inspectors evaluated the use and placement of dosimetry to monitor worker exposure.

Postings for access to radiologically controlled areas (RCAs) and physical controls for the U2 reactor building (RB) and for U1 and U2 auxiliary building (AB) locations designated as EHRAs and VHRAs were evaluated during facility tours. The inspectors independently measured radiation dose rates or directly observed conduct of licensee radiation surveys and results for the U1 pressurizer relief tank equipment and in-core monitor sump access area, and AB radioactive waste storage areas. Results were compared to current licensee surveys and assessed against established postings and radiation controls.

Licensee controls for airborne radioactivity areas with the potential for individual worker internal exposures of greater than 30 millirem (mrem) Committed Effective Dose Equivalent (CEDE) were evaluated. For selected RWPs identifying potential airborne

areas associated with refueling activities, e.g., reactor head inspection, the inspectors evaluated the implementation and effectiveness of administrative and physical controls including air sampling, barrier integrity, engineering controls, and postings. Licensee identification and assessment of potential radionuclide intakes by workers between January 1, 2005, and October 5, 2006, were reviewed and evaluated.

Radiation protection activities were evaluated against Updated Final Safety Analysis Report (UFSAR), Technical Specifications (TS), and 10 Code of Federal Regulations (CFR) Part 19 and 20 requirements. Specific assessment criteria included UFSAR Section 11, Radioactive Waste Management, and Section 12, Radiation Protection; 10 CFR 19.12; 10 CFR 20, Subpart B, Subpart C, Subpart F, Subpart G, Subpart H, and Subpart J; TS Sections 5.4, Procedures, and 5.7, High Radiation Area Controls; and approved procedures. Detailed procedural guidance and records reviewed for this inspection area are listed in Sections 2OS1, 2OS2, 2PS2, 4OA1, and 4OA5 of the report Attachment.

Problem Identification and Resolution Licensee Corrective Action Program (CAP) documents associated with access control to radiologically significant areas were reviewed and assessed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with Nuclear System Directive (NSD) 208, Problem Investigation Process, Revision (Rev.) 27. Licensee Problem Investigation Process (PIP) documents associated with access controls, personnel monitoring instrumentation, and personnel contamination events were reviewed. Licensee PIP documents reviewed and evaluated in detail during inspection of this program area are identified in sections OS1 and OA1 of the report Attachment.

The inspectors completed 21 of the line-item samples detailed in Inspection Procedure (IP) 71121.01.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls

a. Inspection Scope

As Low As Is Reasonably Achievable (ALARA) Inspectors reviewed ALARA program guidance and its implementation for ongoing 2 EOC17 job tasks. The inspectors evaluated the accuracy of ALARA work planning and dose budgeting, observed implementation of ALARA initiatives and radiation controls for selected jobs in-progress, assessed the effectiveness of source-term reduction efforts, and reviewed historical dose information.

Projected dose expenditure estimates detailed in ALARA planning documents were compared to actual dose expenditures and noted differences were discussed with cognizant ALARA staff. Changes to dose budgets relative to changes in job scope also

were discussed. The inspectors attended pre-job briefings and evaluated the communication of ALARA goals, RWP requirements, and industry lessons-learned to job crew personnel. Inspectors directly observed the use of a pressurizer mock-up model used to train shielding crews on installation of custom shielding packages for the pressurizer heater sleeves and the pressurizer surge line. The inspectors also attended a post crud burst clean-up ALARA committee meeting.

The implementation and effectiveness of ALARA planning and program initiatives during work in progress were evaluated. The inspectors made direct field or closed-circuit-video observations of work activities involving pressurizer Alloy 600 weld work, reactor head volumetric inspections; U2 ECCS sump modifications, valve maintenance; and shielding operations. For the selected tasks, the inspectors evaluated radworker and HPT job performance; extent of management oversight; individual and collective dose expenditure versus percentage of job completion; surveys of the work areas, appropriateness of RWP requirements, and adequacy of implemented engineering controls. The inspectors interviewed radworkers and job sponsors regarding understanding of dose reduction initiatives and their current and expected final accumulated occupational doses at completion of the job tasks.

Implementation and effectiveness of selected program initiatives with respect to source-term reduction were evaluated. Shutdown chemistry program actions and cleanup initiatives, and their effect on U2 RB and AB area dose rates, were compared to previous refueling outage trending data. The effectiveness of selected shielding packages installed for the current outage was assessed through reviews of survey records and comparison to expected planning data. Cobalt reduction initiatives for U2 valve maintenance and replacement activities were reviewed and discussed with both ALARA and Engineering staff.

The plant collective exposure history for calendar years (CY) 2003 through CY 2005, based on the data reported to the NRC pursuant to 10 CFR 20.2206 (c), was reviewed and discussed with licensee staff, as were established goals for reducing collective exposure. Dose rate trending data for selected in-plant monitoring points were reviewed and compared to previous years. The inspectors reviewed procedural guidance for and examined dose records of three declared pregnant workers to evaluate gestation dose.

ALARA program activities and their implementation were reviewed against 10 CFR Part 20 and approved licensee procedures. In addition, licensee performance was evaluated against Regulatory Guide (RG) 8.8, Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations will be As Low As Reasonably Achievable; RG 8.10, Operating Philosophy for Maintaining Occupational Radiation Exposures As Low As is Reasonably Achievable; and RG 8.13, Instruction Concerning Prenatal Radiation Exposure. Procedures and records reviewed within this inspection area are listed in Section 2OS2 of the report Attachment

Problem Identification and Resolution. Licensee CAP documents associated with ALARA activities were reviewed and assessed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with NSD-208, Problem Investigation Process, Rev. 27. The inspectors also discussed

post-job reviews with licensee supervisors and evaluated whether issues were appropriately entered in the CAP. Specific self-assessments and PIP documents reviewed in detail for this inspection area are identified in Section 2OS2 of the report Attachment.

The inspectors completed 15 of the required line-item samples, and 5 of the optional line-item samples detailed in IP 71121.02.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety (PS)

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

a. Inspection Scope

Current licensee programs for monitoring, tracking, and documenting the results of both routine and abnormal liquid releases to onsite and offsite surface and ground water environs were reviewed and discussed in detail. The inspectors reviewed and discussed the effect of routine effluent liquid releases made in accordance with Offsite Dose Calculating Manual (ODCM) requirements on surface water concentrations and their potential impact on tritium recently identified in samples collected from several onsite groundwater monitoring wells. Radionuclide analysis results for samples collected from the onsite groundwater sump, radwaste facility trench, the standby nuclear service water pond and the waste water collection basin also were reviewed and discussed. The inspectors toured established well locations, and discussed current monitoring activities and analysis results associated with landfarm, landfill and leachate pond areas located within the owner controlled area. Reports associated with abnormal liquid releases and corrective actions were reviewed and discussed with responsible licensee representatives to evaluate the potential onsite/offsite environmental impact of significant leakage/spills from onsite systems, structures, and components. Licensee current capabilities and routine surveillances to minimize and rapidly identify any abnormal leaks from liquid radioactive waste tanks, processing lines, and spent fuel pools were reviewed and discussed in detail.

The inspectors completed the two of the specified radiation protection line-item samples detailed in IP 71122.01.

b. Findings

No findings of significance were identified.

2PS2 Radioactive Material Processing and Transportation

a. Inspection Scope

Waste Processing and Characterization. The inspectors reviewed and discussed the currently installed radioactive waste (radwaste) processing system as described in the UFSAR Section 11. In addition, stored and disposed radwaste types and quantities as documented in Effluent Release Reports for Calendar Year (CY) 2004 and CY 2005 were discussed with responsible licensee representatives.

During the inspection, the operability and configuration of selected liquid and solid radwaste processing systems and equipment were evaluated. Inspection activities included reviews of procedures and records, interviews with plant personnel, and direct inspection of processing equipment and piping. The inspectors directly observed equipment material condition and configuration for liquid and solid radwaste processing systems. Licensee staff were interviewed regarding equipment function and operability. The licensee's policy regarding abandoned radwaste equipment was reviewed and discussed with cognizant licensee representatives. Chemistry staff were interviewed to assess knowledge of radwaste system processing operations. Procedural guidance involving transfer of resin and filling of waste packages was reviewed for consistency with the licensee's Process Control Program (PCP) and UFSAR details.

Licensee radionuclide characterizations of each major waste stream were evaluated. For dry active waste (DAW), primary resin, secondary resin, and filters, the inspectors evaluated PCP and licensee procedural guidance against 10 CFR 61.55 and the Branch Technical Position (BTP) on Radioactive Waste Classification details. Part 61 data and scaling factors were reviewed and discussed with licensee representatives for radwaste processed or transferred to licensed burial facilities from January 1, 2004, through October 6, 2006. The licensee's analyses and current scaling factors for quantifying hard-to-detect nuclides were assessed. The inspectors discussed potential for changes to plant operating conditions and reviewed selected DAW waste stream radionuclide data to determine if known plant changes were assessed and radionuclide composition remained consistent for the period reviewed. Effects of zinc addition on primary chemistry and waste streams were discussed with chemistry and radwaste staff.

Transportation. The inspectors evaluated the licensee's activities related to transportation of radioactive material. The evaluation included review of shipping records and procedures, assessment of worker training and proficiency, and direct observation of shipping activities.

The inspectors assessed shipping-related procedures for compliance with applicable regulatory requirements. Selected shipping records were reviewed for completeness and accuracy, and for consistency with licensee procedures. Training records for individuals qualified to ship radioactive material were verified. Inspectors directly observed the loading and bracing, and reviewed radiation and contamination surveys for a DOT Type A shipment of reactor head volumetric inspection equipment. The inspectors directly observed radiation surveys of the boxes and the transport vehicle being prepared for shipment. Responsible staff were interviewed to assess their knowledge of package radiation and contamination controls and applicable limits.

Transportation program guidance and implementation were reviewed against regulations detailed in 10 CFR 71.5, 49 CFR 170-189, and applicable licensee procedures listed in the Attachment to this report. In addition, training activities were assessed against 49 CFR 172 Subpart H, and the guidance documented in NRC Bulletin 79-19.

Problem Identification and Resolution. Licensee CAP documents associated with radwaste processing and transportation activities were reviewed and assessed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with NSD-208, Problem Investigation Process, Rev. 27. Specific assessments and PIP documents reviewed in detail for this inspection area are identified in Section 2PS2 of the report Attachment.

The inspectors completed six of the required line-item samples described in IP 71122.02.

b. Findings

.1 Failure to conduct adequate Quality Assurance activities to ensure compliance with 10 CFR 61.55

Introduction. An NRC identified non-cited violation (NCV) of 10 CFR 20 Appendix G, Section III.A.3. with three examples was identified for failure to conduct adequate Quality Assurance (QA) activities to ensure compliance with the waste characterization requirements of 10 CFR 61.55.

Description. During a review of the licensee's radwaste stream data used to quantify radioactive material in shipments to a waste processor, the inspectors identified three examples where the licensee failed to identify missing or anomalous isotope concentration results, as part of their quality assurance program for 10 CFR 61 samples. The specific examples included the following:

- The licensee sent a primary filter waste stream sample, sample number (no.) 050412047, to General Engineering Labs (GEL) on April 15, 2005, to identify hard-to-detect (HDT) nuclides that could not be identified using onsite count room equipment. The HDT nuclides are required to be quantified to characterize waste in accordance with 10 CFR 61.55, and include the Plutonium (Pu) -238, Pu-239, Pu-240, and Pu-241 isotopes. Upon receipt of the analysis performed by GEL, the licensee updated their waste characterization software with the hard to detect isotopes identified in the GEL report, but failed to identify that the required plutonium isotopes were missing from the analysis results. This resulted in the potential for shipments of legacy filters to be made that would not represent the actual isotopic mixture of the waste. Through discussions with the licensee, inspectors determined that no actual shipments had been made using this particular waste stream data. The licensee has captured this issue in their corrective action program (PIP M-06-04259), and corrective actions included sending additional waste stream samples to GEL to identify the missing isotopes for future shipments.

- In accordance with their 10 CFR 61 Manual, licensee QA activities include data validations of Part 61 waste stream samples through quantitative comparisons of gamma spectroscopy analyses between the licensee and a contract laboratory. This QA process was designed to ensure that waste stream analyses were performed accurately. During a review of data validations for a spent fuel pool cooling (KF) system filter waste stream sample (sample no. Z18588) conducted on February 25, 2004, the inspectors determined that the licensee had not identified Cerium-144 in the sample, but the contract lab had identified this isotope. The licensee failed to determine what caused the anomalous data between the vendor and onsite analyses during their QA review. The licensee has captured this issue in their corrective action program (PIP M-06-04268).

- NRC review of subsequent 10 CFR 61 data validations for a chemical and volume control (NV) system filter waste stream sample (sample no. Z16927) performed on February 25, 2004, determined that Cesium (Cs)-137 had not been identified by the licensee in the sample but had been identified in the vendor laboratory analysis. The licensee failed to determine what caused this isotope to be missed in their analysis during their QA reviews. The licensee has captured this issue in their corrective action program (PIP M-06-04268).

Licensee followup on these deficiencies with the 10 CFR 61 QA program determined that none of the waste streams in question had actually been used to characterize waste packages that had been sent offsite.

Analysis. The inspectors determined that the violation was greater than minor, in that the failure to accurately identify radionuclides and verify their concentrations in waste streams for each of the examples could have resulted in improper characterization of waste shipments. These examples are associated with the program and process attribute of the Public Radiation Safety cornerstone, and affected the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. The violation was evaluated using the Occupational Radiation Safety Significance Determination Process (SDP). Each example was determined to be of very low safety significance because no shipments had been made using the waste streams in question.

Enforcement. 10 CFR 20, Appendix G, Section III.A.3. requires that any licensee who transports radioactive waste to a land disposal facility or a licensed waste collector conduct a QA program to assure compliance with 10 CFR 61.55. Contrary to the above, licensee QA activities were inadequate to assure compliance with 10 CFR 61.55 because the licensee failed to identify missing or resolve anomalus results for radioisotopes in multiple waste streams analyzed between February 25, 2004, and April 15, 2005. Because these QA deficiencies are of very low safety significance and have been entered into the corrective action program as PIP document numbers M-06-04259 and M-06-04268, this violation is being treated as an Non-cited Violation (NCV), consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000369,370/2006005-04, Failure to conduct adequate QA activities to ensure waste shipments are characterized in accordance with 10 CFR 61.55.

.2 Failure to train employees involved in preparing shipments of radioactive material.

Introduction. The inspectors identified a Green non-cited violation (NCV) of 10 CFR 71.5 and 49 CFR172.704(a) for failure to provide required training to hazardous material (Hazmat) employees involved in the shipment of radioactive material

Description. While reviewing the training records for individuals involved in the preparation of radioactive material shipments, inspectors noted that two maintenance workers involved in reassembly of a Department of Transportation (DOT) Type A specification shipping container had not received the function specific training required by 49 CFR 172.704(a). The workers were utilized to install and torque the bolts which fasten the lid to the body of the shipping package. Torque specifications and closure sequences for the Type A package were identified in the vendor supplied procedures, which are a condition of the Certificate of Compliance for the package. Preparation of the shipment included proper reassembly of the package lid, which directly affects the safe transportation of hazardous materials.

Analysis. The inspectors concluded that the maintenance workers were considered hazardous material employees because of the tasks they perform, training was required even for workers supervised by other trained employees, and function-specific training was not provided to the employees to ensure proper performance of the reassembly of in the DOT Type A package. The failure to provide required training is a performance deficiency. The finding is greater than minor because it is associated with the Public Radiation Safety Cornerstone attribute of program and process and affects the cornerstone objective in that it involved the potential to impact the licensee's ability to safely package and transport radioactive material on public roadways. The violation involved an occurrence in the licensee's radioactive material transportation program that is contrary to NRC or DOT regulations. When processed through the Public Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it did not cause DOT shipping radiation limits to be exceeded and did not result in a breach of package during transit.

Enforcement. 10 CFR 71.5 states that each licensee who transports licensed material shall comply with the applicable DOT regulations in 49 CFR Parts 107 and 171-180. 49 CFR 171.8 defines a hazardous material employee as a person who is employed by a hazardous material employer and who, in the course of employment directly affects hazardous materials transportation safety. 49 CFR 172.704(a) states that a hazardous material employee must have general awareness training and function-specific training. General Awareness training shall be provided to familiarize the worker with the requirements of Subchapter C of 49 CFR and to enable the employee to recognize and identify hazardous materials. Function-specific training shall be provided concerning requirements of Subchapter C that are specifically applicable to the functions the employee performs. For example, 49 CFR 173.24 contains general requirements for use and maintenance of packages, 49 CFR 173.475 contains requirements for filling and closing the packaging for shipment, and 49 CFR 173.413 refers to the requirements specified in 10 CFR Part 71 that states that the licensee shall comply with the terms and conditions of the package certificate.

Contrary to the above, the licensee did not provide function-specific training of applicable sections of the shipping regulations to maintenance workers involved in the reassembly of specification packages. The violation was entered into the licensee's Corrective Action Program as PIP M-06-04682. Because the failure to train Hazmat workers was determined to be of very low safety significance and was entered into the licensee's corrective action program, this violation is being treated as a non-cited violation, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000369,370/2006005-05, Failure to train Hazmat employees.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

a. Inspection Scope

The inspectors sampled licensee data for the performance indicators (PIs) listed below. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Indicator Guideline," Rev. 4, were used to screen each data element.

Occupational Radiation Safety Cornerstone
- Occupational Exposure Control Effectiveness

The inspectors reviewed the PI results for the Occupational Radiation Safety Cornerstone from January 1, 2005 through September 2006. For the assessment period, the inspectors reviewed electronic dosimeter alarm logs and PIPs related to exposure significant area controls. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Report section 2OS1 contains additional details regarding the inspection of controls for exposure significant areas. Documents reviewed are listed in sections 2OS1 and 4OA1 of the report Attachment.

Public Radiation Safety Cornerstone
- Radiological Control Effluent Release Occurrences

The inspectors reviewed the PI results for the period of January 1, 2005 through September 30, 2006. For the assessment period, the inspectors reviewed monthly and quarterly dose calculations to the public, out-of-service effluent radiation monitors, selected compensatory sampling data, and selected PIPs related to Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual issues. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in Section 4OA1 of the report Attachment.

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution

.1 Daily Reviews

As required by Inspection Procedure 71152, "Identification and Resolution of Problems", and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. This review was accomplished by reviewing hard copies of condition reports, attending daily screening meetings, and accessing the licensee's computerized database.

.2 Annual Sample Review

a. Inspection Scope

The inspectors selected PIP M-06-2968 for detailed review. This PIP was associated with a silent trip of the 2A Emergency Diesel Generator. The inspectors reviewed this report to verify that the licensee identified the full extent of the issue, performed an appropriate evaluation, and specified and prioritized appropriate corrective actions. The inspectors evaluated the report against the requirements of the licensee's corrective action program as delineated in corporate procedure NSD 208, Problem Identification Process, and 10 CFR 50, Appendix B.

b. Observations and Findings

No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a trend review to determine if trends were identified outside the corrective action program that could indicate the existence of a more significant safety issue. The inspector's review was focused on repetitive equipment issues, but also considered the results of daily inspector corrective action program item screening discussed above, licensee trending efforts, and licensee human performance results. The inspector's review nominally considered the six month period of June 2006 through December 2006, although some examples expanded beyond those dates when the scope of the trend warranted. The review included the following areas/documents:

- PIP and department trend reports for 3rd and 4th quarters 2006
- NRC performance indicators and departmental performance measures
- equipment problem lists
- maintenance rework trending
- departmental problem lists
- system health reports
- quality assurance audit /surveillance reports
- self assessment reports
- maintenance rule program reports including a (1) list
- corrective action backlog lists

b. Observations and Findings

In general, the inspectors found that the licensee's trending of issues has been effective in identifying and preventing problems from becoming more significant.

Update of previously identified trends:

A licensee-identified trend on nuclear service water fouling has been discussed in the previous three 6 month trends. The licensee issued PIP M-06-4255 during this period to identify an emerging trend associated with increased fouling of plant service water systems. The licensee is performing a root cause analysis as part of this PIP.

An additional example of a previous inspector identified trend in the area of fire protection issues was identified in that the licensee was not meeting their licensing basis for the performance of fire drills.

A trend resulting from degraded performance of main steam isolation valves (MSIVs) was identified in the last 6 month report. During the previous 6 month trend, the licensee implemented numerous modifications on Unit 1 MSIVs to increase closing margin and improve reliability. During this 6 month period the same modifications were completed for the Unit 2 MSIVs. No MSIV failures have occurred during 2006.

The inspectors identified a trend associated with numerous violations for failing to update the FSAR in accordance with regulations outlined in 10 CFR Part 50.71(e). These non-cited violations included NCV 05000369,370/2004003-02, examples 1 and 2 (regarding the SSF/Safe Shutdown and Feedwater Isolation Valve stroke times respectively); NCV 05000369,370/2005004-01 (associated with a license amendment for CAPRM); NCV 05000369,370/2005004-02 (regarding the SSF description); and the following additional issues in the last 6 months: NCV 05000369,370/2006004-02 (inadequate corrective action for SSF UFSAR description); and NCV 05000369,370/2006004-03 (Failure to Adequately Update the UFSAR for Station Blackout). The licensee has initiated PIP M-06-2889 to address the UFSAR accuracy trend.

4OA5 Other Activities

.1 Independent Spent Fuel Storage Installation (ISFSI)

a. Inspection Scope

Access controls and surveillance results for the licensee's ISFSI activities were evaluated. The evaluation included review of ISFSI radiation control surveillance procedures and assessment of ISFSI radiological surveillance data. During tours of the ISFSI storage facilities, the inspectors observed access controls; thermoluminescent dosimeter (TLD) locations and material condition; and radiological postings on the perimeter security fence. The inspectors conducted independent radiation surveys of the general areas and selected casks currently maintained within the established ISFSI

Storage Pad area. Survey results were compared to licensee survey data and established postings.

Program guidance, access controls, postings, equipment material condition, and surveillance data results were reviewed against details documented in applicable sections of the UFSAR; 10 CFR Parts 20 and 72; applicable Certificates of Compliance and TS details; and licensee procedures. Licensee guidance documents, records, and data reviewed within this inspection area are listed in Sections 2OS1 and 4OA5 of the report Attachment.

b. Findings

No findings of significance were identified.

.2 (Closed) NRC Temporary Instruction 2515/150, Reactor Pressure Vessel Head and Head Penetration Nozzles (NRC Order EA-03-009) (Unit 2)

a. Inspection Scope

From September 25 to October 4, 2006 the inspectors reviewed the licensee's activities relative to the non-destructive examination (NDE) of the reactor pressure vessel head (RPVH) nozzles, the bare metal visual (BMV) examination of the RPVH nozzles and head surface area, and the visual examination to identify potential boric acid leaks from pressure-retaining components above the RPVH. These activities were reviewed during the Unit 2-Fall 2006 refueling outage, in order to verify licensee compliance with the regulatory requirements of NRC Order EA-03-009 Modifying Licenses dated February 20, 2004 (hereinafter NRC Order) and gather information to help the NRC staff identify possible further regulatory positions and generic communications.

The inspectors' review of the NDE of RPVH nozzles included: a) review of NDE procedures; b) assessment of NDE personnel training and qualification; c) review of NDE equipment certification and performance demonstration; and d) observation and assessment of ultrasonic (UT) and surface penetrant test (PT) examinations. The inspectors also held discussions with contractor representatives (Areva) and licensee personnel involved in the RPVH examination. Specifically, the inspectors reviewed a sample of NDEs as follows:

- Observed portion of in-process UT scanning of RPVH nozzle Nos. 9, 21, 36, 71, and 73
- Reviewed the UT data sheets and electronic data for RPVH nozzle Nos. 30, 37, 41, 50, 60, 61, 74, and 77
- Reviewed the UT and PT data sheets for the RPVH vent line penetration
- Reviewed the results of the UT examination performed to assess for leakage into the annulus between the RPVH penetration nozzle and the RPVH low-alloy steel (interference fit zone) for penetration Nos. 30, 37, 41, 50, 60, 61, 74, and 77
- Reviewed training and qualification records, including qualification and certification procedures, for NDE personnel who performed the above volumetric and surface examinations

- Reviewed certification, performance demonstration, and calibration records for NDE equipment used to perform the above volumetric examinations
- Reviewed Areva's examination procedures used to perform the above volumetric and surface examinations.

The inspectors' review of the BMV examination of the RPVH nozzles and head surface area included: a) review of procedures used to perform the examination; b) assessment of personnel training and qualification; c) direct observation of portion of the examination; and d) review of final report and disposition of indications.

The inspectors' review of the visual examination to identify potential boric acid leaks from pressure-retaining components above the RPVH consisted of the review of licensee procedures used to meet this requirement and the results from the visual examinations performed in the Unit 2-Fall 2006 refueling outage.

The inspectors also reviewed the licensee's effective degradation years calculation, which was performed to determine the RPVH's susceptibility category and its examination requirements.

b. Observations and Findings

1) Verification that the examinations were performed by qualified and knowledgeable personnel.

The inspectors reviewed personnel training and qualifications to verify that volumetric and surface NDEs were performed by trained and qualified personnel. All examiners were qualified in accordance with the ASME Code and had additional training on RPVH examination, as required in Areva's "Written Practice for the Qualification and Certification of NDE Personnel" document.

2) Verification that the examinations were performed in accordance with approved and demonstrated procedures.

McGuire's RPVH (Unit 2) has 78 control rod drive mechanism (CRDM) penetrations and 1 vent line penetration. Fifty seven (57) of the 78 penetrations contain thermal sleeves and the remaining 21 penetrations have open bores. All penetration nozzles, including the vent line nozzle, were examined by remote automated UT from the inside diameter (ID) surface in accordance with Areva approved procedures 54-ISI-604-001 for open bore penetrations, 54-ISI-603-002 for sleeved penetrations, and 54-ISI-605-01 for small bore penetrations.

In addition to the CRDM and vent line penetrations, McGuire's RPVH has 4 auxiliary head adapter penetrations. These penetrations consist of an Alloy 600 nozzle welded to the top of the RPVH with a dissimilar metal full penetration weld. These welds were not examined as part of the NDEs required to meet the NRC Order. However, these welds were included within the scope of the Inservice Inspection Program as required by Section XI of the ASME Code.

RPVH penetrations with thermal sleeves and some open bore penetrations were examined with the Time of Flight Diffraction (TOFD) technique using a blade probe containing one set of 50 degree/5 MHz/L-Wave transducers circumferentially oriented for axial flaws (COAF). The transducer set was contained in a single inspection housing. Assessment of leakage into the interference fit zone was employed by analyzing the pattern and amplitude of the backwall reflection from the TOFD transducers set up.

RPVH thermocouple penetrations (open bore) were examined with a 0 degree/5 MHz/L-Wave transducer, one TOFD set of 30 degree/5 MHz/L-Wave transducers axially oriented for circumferential flaws (AOCF), one set of 60 degree/2.25 MHz/S-Wave transducers AOCF, one TOFD set of 45 degree/5 MHz/L-Wave transducers COAF, and one set of 60 degree/2.25 MHz/S-Wave transducers COAF. All transducer sets were contained in a single inspection housing. Assessment of leakage into the interference fit zone was employed by analyzing the pattern and amplitude of the backwall reflection from the TOFD and 0 degree transducers set up.

The vent line penetration nozzle was examined with a set of 0 degree/5 MHz/L-Wave transducers, one set of 45 degree/5 MHz/S-Wave transducers (CW and CCW beam direction), and one set of 70 degree/5 MHz/S-Wave transducers (up and down beam direction). All transducer sets were contained in a single inspection housing. Assessment of leakage through the J-groove weld was employed by performing a PT examination on the surface of the J-groove weld in accordance with Areva procedure 54-PT-200-06.

The inspectors found that Areva examination procedures for CRDM nozzles were demonstrated to be able to detect and size flaws in the RPVH nozzles in accordance with Electric Power Research Institute (EPRI) NDE Center's protocol contained in "Materials Reliability Program: Demonstration of Vendor Procedures for the Inspection of Control Drive Mechanism Head Penetrations (MRP-89)." Areva's equipment demonstration took place from August 14 to August 24, 2006. Areva had performed a similar demonstration in 2002, as documented in MRP-89. However, because Areva modified its equipment including changing the essential variables of the demonstration in 2002, the demonstration was repeated. The 2006 demonstration was performed with three RPVH nozzle mockups with multiple tube flaws representing the expected field degradations. These mockups were different from the ones used during the demonstration performed in 2002 (i.e. demonstration documented in MRP-89).

The demonstration adopted security portions from the EPRI Performance Demonstration Initiative protocol by restricting the access to the mockups and making them available to Areva only when the EPRI NDE personnel were present. EPRI letter to Duke Energy Corporation, dated September 29, 2006, documents the comparison of the recent Areva's equipment demonstration with the previous demonstration performed in 2002. The letter states that the scatter observed is within the variability of the examination and the reliability of the examinations conducted with the new instrumentation will be comparable to the previous demonstration.

The procedure used for the RPVH vent line was not demonstrated under a specific program such as the EPRI MRP. This procedure was developed with NDE techniques similar to the CRDM procedures with regard to basic fundamental ultrasonic requirements. The procedure used for the PT examination of the vent line weld surface was developed in accordance with the ASME Code.

3) Verification that the licensee was able to identify, disposition, and resolve deficiencies.

All indications of cracks or interference fit zone leakage were required to be reported for further examination and disposition as specified in Areva's NDE procedures. Based on observation of the examination process and discussions with vendor's personnel, the inspectors considered that deficiencies would be appropriately identified, dispositioned, and resolved. UT indications associated with the fabrication of the J-groove weld and nozzle tube material were identified at several RPVH penetrations. These indications did not exhibit service related crack characteristics and were documented for future reference.

4) Verification that the licensee was capable of identifying the primary water stress corrosion cracking (PWSCC) and/or RPVH corrosion phenomenon described in the NRC Order.

The NDE techniques employed for the examination of RPVH CRDM nozzles had been previously demonstrated under the EPRI MRP/Inspection Demonstration Program as capable of detecting PWSCC type manufactured cracks. Based on the review of performance demonstration documents, observation of in-process examinations, and review of NDE data, the inspectors considered that the licensee was capable of identifying PWSCC and/or corrosion as required by the NRC Order.

5) Evaluation of the RPVH condition (e.g. debris, insulation, dirt, boron from other sources, physical layout, viewing obstructions).

A BMV examination was performed per licensee's procedure MP/0/A/7150/153 by a reactor vessel component engineer and a VT-2 qualified inspector. All RPVH penetrations were inspected either by direct visual examination or visual examination using a mirror on a pole and flashlights. The licensee was able to have access to essentially 100% of the required examination surface. No evidence of corrosion or leakage from the annular gaps around the penetrations was observed. The licensee did identify a light boron-like deposit on the high side of penetration No. 73 that did not appear to have originated from the penetration.

In addition, a small deposit was observed near penetration No. 2 that did not have a boron like look and it did not appear to originate from the penetration. Samples of both deposits were taken for isotope activity analysis. The results of the sample taken from penetration No. 73 indicated no recent primary system leakage. The results of the sample taken from penetration No. 2 found no activity. In addition, a white substance appeared to be splattered on the sides of several penetrations in the area around

penetration No. 33. The licensee classified these deposits as PT developer that dripped onto the RPVH during previous NDE examinations.

The inspectors witnessed part of the BMV and found no indications of leakage from the RPVH nozzles or corrosion of the RPVH top surface area around the penetration nozzles.

6) Evaluation of the licensee's ability to identify and characterize small boron deposits, as described in NRC Bulletin 2001-01.

As noted above, the licensee was able to have access to essentially 100% of the required examination surface. The examination procedure established requirements for the illumination and resolution of the examination equipment. Per procedure, the light intensity must allow the examiner to see a 1/32" wide black line on a 18% neutral gray card. In addition, the examiner must be capable of resolving a 0.158 inch characters height at a 6 ft distance and 0.044 inch characters height at a 1 ft distance. Based on the inspector's assessment of the BMV examination implementation, the review of personnel qualifications, the review of the BMV examination procedure, and the review of the licensee's observations captured in the examination report; the inspectors found that the licensee had the ability to identify and characterize small boron deposits in the examination area.

7) Evaluation of the extent of material deficiencies (i.e., cracks, corrosion, etc.) that required repair.

No examples of RPVH leakage, material deficiencies, or flaws requiring repair were identified during the NDEs and the BMV examination. As indicated above, UT indications were identified at several RPVH penetrations and they were dispositioned as fabrication indications (not service related).

8) Evaluation of any significant impediments to effectively perform each examination method (e.g., centering rings, insulation, thermal sleeves, nozzle distortion, etc.)

The volumetric examination coverage extended from a minimum of 2-in above the highest point of the J-groove weld to the maximum coverage possible below the lowest point of the J-groove weld, which resulted to be more than 1-inch for all nozzles. The inspectors reviewed Dominion Engineering Calculation C-3217-00-01, which contains the axial and hoop stress analysis for McGuire's RPVH nozzles. The analysis determined the distance below the J-groove weld where the stresses reach 20 ksi tension in penetrations with a set up angle of 0, 15.8, 29.3, 43.8, and 47.0 degrees.

The inspectors reviewed the coverage obtained for a sample of RPVH penetrations at different set up angles to verify that the distance below the lowest point of J-groove weld to reach 20 ksi was bounded by the examination coverage. No issues concerning the UT coverage below the J-groove weld were found during the NRC inspection.

The BMV examination required the removal of the CRDM shroud and the RPVH mirror insulation. Some pieces of insulation could not be removed, but they were lifted as

necessary to perform the examination. In addition, at several locations the insulation support clamps had to be pried from the head surface to provide visibility of the annular gap around the penetrations.

The inspectors considered that the examination coverage requirement of the NRC Order was met for the NDE activities reviewed during the NRC inspection. The licensee did not experience any significant impediment that would preclude the effective performance of the volumetric and BMV examinations.

9) Evaluation of the basis for the temperatures used in the susceptibility ranking calculation.

The inspectors reviewed the susceptibility ranking calculation and the basis for the RPVH temperatures used in the calculation. The calculation determined the RPVH Effective Degradation Years (EDY) and susceptibility ranking since the first operating cycle until the end of the operating license using estimated values of effective full power days (EFPD) for future cycles. The temperature used for the calculation was the reactor coolant system cold leg temperature. The use of this temperature was based on the RPV upper internals temperature documented on WCAP-15440, “Best Estimate Analysis of the Large Break Loss of Coolant Accident for the McGuire and Catawba Nuclear Stations,” and WCAP-9404, “Study of Reactor Vessel Upper Head Region Fluid Temperature.”

The inspectors identified a performance deficiency of minor significance for failure to perform the susceptibility ranking calculation at the frequency established by the NRC Order. NRC Order EA-03-009, Section IV, Paragraph A states that the susceptibility ranking calculation shall be performed with the best estimated values at the end of each operating cycle. However, the licensee did not perform the susceptibility ranking calculation with actual EFPD values at the end of operating cycle 16. Because the latest revision of the calculation included the projected susceptibility ranking values until the end of the operating license, and the current and projected RPVH susceptibility ranking would not change with the actual EFPD from cycle 16; the examination requirements would not be affected and therefore it is a performance deficiency of minor significance. The licensee entered this issue into the Corrective Action Program as PIP 06-04351.

10) Verification that the methods used for disposition of NDE identified flaws were consistent with NRC flaw evaluation guidance.

No indications considered to be flaws were found during the RPVH examinations. As indicated above, UT indications were identified at several RPVH penetrations and they were dispositioned as fabrication indications (not service related).

11) Evaluation of the existing procedures to identify potential boric acid leaks from pressure-retaining components above the RPVH and the licensee’s followup actions for indications of boric acid leaks.

The inspectors reviewed Procedure MP/2/A/7150/057A, which was implemented to conduct inspection activities required by the NRC Order to identify potential boric acid

leaks from pressure retaining components above the RPVH. This procedure has steps to inspect the following components for leakage before disassembly of the RPVH every refueling outage: CRDM vent valves, mirror insulation at RPVH flange, Conoseal flanges and thermocouple fittings, RPVH vent line flanges, Reactor Vessel Level Instrumentation System (RVLIS) instrument tubing and isolation valve, and CRDM intermediate canopy seal welds. The licensee generated corrective action document PIP M-06-04367 to implement enhancements for Procedure MP/2/A/7150/057A, in order to clearly specify that the visual examination requirements established in this procedure are also intended to meet the NRC Order. The inspectors reviewed the visual examination results for the current Unit 2 outage and held discussions with licensee personnel to confirm followup actions taken for any evidence of boric acid leaks above the RPVH. The inspectors considered that the implementation of the procedure mentioned above met the requirements of the NRC Order.

.3 (Closed) NRC Temporary Instruction (TI) 2515/169, Mitigating Systems Performance Index (MSPI) Verification

a. Inspection Scope

During this inspection period, the inspectors completed a review of the licensee's implementation of the Mitigating Systems Performance Index (MSPI) guidance for reporting unavailability and unreliability of monitored safety systems in accordance with Temporary Instruction 2515/169.

The inspectors examined surveillances that the licensee determined would not render the train unavailable for greater than 15 minutes or during which the system could be promptly restored through operator action and therefore, are not included in unavailability calculations. As part of this review, the recovery actions were verified to be uncomplicated and contained in written procedures.

On a sample basis, the inspectors reviewed operating logs, work history information, maintenance rule information, corrective action program documents, and surveillance procedures to determine the actual time periods the MSPI systems were not available due to planned and unplanned activities. The results were then compared to the baseline planned unavailability and actual planned and unplanned unavailability determined by the Licensee to ensure the data's accuracy and completeness. Likewise, these documents were reviewed to ensure MSPI component unreliability data determined by the licensee identified and properly characterized all failures of monitored components. The unavailability and unreliability data were then compared with performance indicator data submitted to the NRC to ensure it accurately reflected the performance history of these systems.

b. Findings and Observations

No findings of significance were identified. With only minor exceptions, the licensee accurately documented the baseline planned unavailability hours, the actual unavailability hours and the actual unreliability information for the MSPI systems. The errors that were discovered were not significant in that they would result in a change to

the indicated index color. No significant discrepancies were identified in the MSPI basis document which resulted in: (1) a change to the system boundary, (2) an addition of a monitored component, or (3) a change in the reported index color.

4OA6 Meetings, Including Exit

On January 10, 2007, the resident inspectors presented the inspection results to Mr. G. Peterson and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a non-cited violation (NCV).

- 10 CFR Part 50.55a(g)(4), "Codes and Standards," requires, in part, that components (including supports) which are classified as ASME Code Class 1, Class 2, and Class 3 must meet the requirements set forth in Section XI of the ASME Boiler and Pressure Vessel Code and Addenda, which the plant has committed to in their ASME Section XI program.

  Contrary to the above, the licensee failed to meet section IWA-2420, "Inspection Plans and Schedules," in that they had failed to identify 27 components which were required to be examined by their Inservice Inspection (ISI) Program. The licensee identified this violation during an operating experience review for a previous violation (05000269,270,287/2006003-02) at another facility. The current violation was identified in the licensee's corrective action program as PIP number M-06-2995. As part of their corrective actions the licensee re-evaluated scheduling of welds and supports included in their ISI Program, and has completed or scheduled examinations for the missed weld and support examinations. The finding is not suitable for SDP evaluation, but has been reviewed by NRC management and is determined to be a finding of very low safety significance because no SSCs were found to be inoperable as a result of the completed exams.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

T. Alley, Duke General Office
R. Beckham, Radioactive Material Control General Supervisor
D. Black, Security Manager
S. Bradshaw, Superintendent, Plant Operations
R. Branch, ISI Group
S. Brown, Manager, Engineering
K. Crane, Regulatory Compliance
G. Cutri, Boric Acid Program Manager
K. Evans, Superintendent, Maintenance
T. Harrell, Station Manager, McGuire Nuclear Station
M. Hatley, Weld Overlay Manager
P. Hull, Chemistry Manager
J. Kammer, Manager, Safety Assurance
S. Mooneyhan, Radiation Protection Manager
T. Moore, Reactor Vessel Engineer
J. Nolin, Manager, Mechanical and Civil Engineering (MCE)
R. Parker, Superintendent, Work Control
G. Peterson, Site Vice President, McGuire Nuclear Station
J. Smith, Radiation Protection General Supervisor
S. Snider, Manager, RES Engineering
J. Thomas, Manager, Regulatory Compliance
G. Underwood, ISI
D. Whitaker, Duke General Office RPVH Inspection

Contractor Personnel

M. Hacker, Level III Examiner, Areva
M. Webster, Manager of RPVH examination team, Areva

NRC personnel

G. Hopper, Chief, Engineering Branch 3
J. Moorman, III, Chief, Reactor Projects Branch 1
J. Stang, Project Manager, NRR

Attachment

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000370/2006005-02	URI	Duct Tape in Unit 2 ECCS Sump (Section 1R20)

Opened and Closed

05000370/2006005-01	NCV	Failure to Identify and Evaluate Multiple Boric Acid Leaks (Section 1R08.2)
05000369,370/2006005-03	NCV	Failure to Implement Adequate Design and Test Control for Ice Condenser Lower Inlet Doors (Section 1R22)
05000369,370/2006005-04	NCV	Failure to Conduct Adequate QA Activities to Ensure Waste Shipments are Characterized in Accordance with 10 CFR 61.55. (Section 2PS2 (b) 1)
05000369,370/2006005-05	NCV	Failure to Train Hazmat Employees. (Section 2PS2 (b) 2)

Closed

McGuire Unit 2, TI 2515/150	TI	Reactor Pressure Vessel Head and Head Penetration Nozzles (NRC Order EA-03-009) (Section 4OA5.2)
McGuire TI 2515/169	TI	Mitigating Systems Performance Index (MSPI) Verification (Section 4OA5.3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

IP/0/B/3250/059C, Preventative Maintenance and Operational Check of Freeze Protection for Intake, Rev. 2
PT/0/B/4700/038, Verification of Freeze Protection Equipment and Systems, Rev. 20 (2005)
PT/0/B/4700/038, Verification of Freeze Protection Equipment and Systems, Rev. 20 (2006)
IP/1/B/3250/059B, Monthly Check of Freeze Protection, Rev. 2
PT/0/B/4700/070, On Demand Freeze Protection Verification Checklist, Rev. 17
Various Work Orders

PIPs
M-06-6024, NRC identified broken heat trace in C Main Fire Pump Room

Section 1R04: Equipment Alignment

Partial System Walkdown

2B KF System:
OP/2/A/6200/005, Spent Fuel Cooling System, Rev. 63
AP/2/A/5500/041, Loss of Spent Fuel Cooling or Level, Rev. 05
MCFD-2570-01.00, Flow Diagram of KF System
MCFD-2570-01.01, Flow Diagram of KF System

B VC/YC System:
MC-1578-1, Flow Diagram of Control Area Ventilation System

Detailed Walkdown
UFSAR , DBD, Maintenance Rule database, System Health Reports
OP/1/A/6200/007, Containment Spray System, Rev. 27
MCFD-1563-01.00, Flow Diagram of NS System

Section 1R05: Fire Protection

Fire strategy plans for areas: RB, RB2-1, RB 2-2, 1, 13, TB1
Fire Drill Summary Sheets dated 9/8/06 (B Shift) and 11/21/06 (A Shift)
NFPA 27, Private Fire Brigades, 1975
PIP M-06-3708, Scaffold in CA Pump Room does not allow for clearance of fire brigade equipment

Section 1R06: Flood Protection Measures

External Flooding
UFSAR Sections
2.4.10, Flooding Protection Requirements
2.4.13.5, Design Bases for Subsurface Hydrostatic Loading
3.4, Water Level (Flood) Design

Design Basis Documents
MCS-1465.00-00-0012, Design Basis Specification for Flooding From External Sources, Rev 1
MCS-1154.00-00-004, Design Basis Specification for the Auxiliary Building Structures, section 2.3.13 and 3.2.1.3.3.4, external flooding
MCS-1581.WZ-00-0001, Design Basis Specification for the WZ System

Calculations:
MCC-1223.42-00-0037, Evaluation of the Use of Non-Safety Water Sources for the Auxiliary Feedwater System, Sec. 10.8, Rev. 6

Work Orders
98663476, 98664573

PIPs
M-04-3765, M-03-1377, M-05-3040, M-06-3715

Other Documents:
Selected Licensee Commitment 16.9.8, Ground Water Level Monitoring System
IN 2003-08, Potential Flooding through unsealed concrete floor cracks
IN 83-44, Potential damage to redundant safety equipment as a result of backflow through the equipment and floor drain system
IN 94-27, Facility Operating Concerns Resulting From Local Area Flooding
IN 92-69, Water leakage from yard area through conduits into buildings
IN-87-49, Deficiencies in Outside Containment Flooding Protection
Drawing MCFD-1581-01.00, Flow Diagram of Groundwater Drainage System
Cowans Ford Development 8th Five-Year Safety Inspection Report, December 2002

Internal Flooding
UFSAR Sections
9.3.3, Equipment and Floor Drainage System
2.4.13.5, Design Bases for Subsurface Hydrostatic Loading

Design Basis Documents
MCS-1154.00-00-004, Design Basis Specification for the Auxiliary Building Structures, section 30.2.1.3.4.1, Internal Flooding

Calculations:
MCC-1139.01-00-0268, Turbine Building and Auxiliary Building, Sec. 10.8, Rev. 6
MCC-1206.47-69-1001, Auxiliary Building Flooding Analysis, Sec.9.2-9.2.1, Rev. 11

Procedures:
AP/0/A/5500/44, Plant Flooding, Rev. 3
IP/0/A/3215/004, Magnetrol Liquid Level Control Switch Calibration, Rev. 15
IP/0/A/3215/002, Robertshaw SL-400 series Level AC - Liquid Level Controller Calibration
IP/0/A/3050/017D, ND and NS Pump Room Level Calibration
PT/0/A/4973/007 A,B,C; WZ Sump Pump Performance Tests
OP/1/A/6100/010 Annunciator Response
Computer alarm response for points M1P5062 and M2P5063

Work Orders
98753832, U1 diesel generator penetration seals
PMIDs 11720 through 11726, clean sump and test pump

PIPs
C-06-7420, M-06-2070

Other Documents:
IN 2005-11, Internal Flooding/ Spray Down of Safety Related Equipment Due to Unsealed Equipment Hatch Floor Plugs and/or Blocked Drains
IN 2003-08, Potential Flooding Through Unsealed Concrete Floor Cracks
IN 83-44, Potential Damage To Redundant Safety Equipment As a Result of Backflow Through the Equipment and Floor Drain System

Section 1R08: Inservice Inspection Activities

Procedures
ESD Boric Acid Corrosion Program, Revision 3
MP/0/A/7700/080, Inspection, Evaluation and Cleanup of Boric Acid on Plant Materials, Revision 009
PT/0/A/4150/046, Containment Walk down, Revision 2
MP/0/A/7650/076, Controlling Procedure For System Pressure Testing of ASME Piping Systems, Revision 16
MP/-/A/7150/153, Reactor Vessel Head Bare Metal Inspection, Revision 5
NSD 413, Fluid Leak Management Program, Revision 4
Welding Procedure Specification (WPS) 03-08-T-802-102840, Revisions 0 and 1
WPS-43-43-T-001, Revisions 0 - 3
WPS-03-08-T-801-102840 Revisions 0 and 2
NDE-820, Ultrasonic Examination of Welds in Ferritic Pressure Vessels Greater than 2 Inches in Thickness, Revision 2
PDI-UT-7, PDI Generic Procedure for the Manual Ultrasonic Inspection Through Wall and Length Sizing of Ultrasonic Indications, Revision F

Other Documents
Work Order 01704227 02, 2NC-45 Repair Leak
Work Order 01702272 01, 2NI-IV-5023 Repair Leak at Valve Fitting

Corrective Action Documents (Problem Investigation Process [PIP])
M-06-04413, Grounding Cable Covered with Dried Boron
M-06-02870, Active Leak at 2-NC-45, Unit 2 PZR Liquid Sample Isolator
M-05-04436, Boron Accumulation in the B Train ECCS Sump
M-05-03265, Active, Repetitive boron leak on 2NR-VA-0092
M-06-02629, Active Leak at 2-ND-FT-5250
M-06-04293, Corrosion of bellows for ECCS Sump Line Penetrations
M-05-03685, Gap analysis for WCAP-15988-NP Revision 1
M-06-04216, Arc Strike on PZR Surge Line
M-06-04286, VT-3 indications on CA Pipe Hanger
M-06-03986, ISI Ultrasonic Inspection Indications
M-06-02463, Pressurizer Heater Sleeve Cracking Operating Experience Review

Self-Assessments and Audits
M-05-04362, Fluid Leak Management

Section 1R17: Permanent Plant Modifications

MD 200347, U2 NS Pump Full Flow test Loop:

Design Basis Document MCS-1563.NS-00-0001, Design Basis Specification for the NS System
Updated Final Safety Analysis Report Section 6.5 and 7.6.3
Post- modification test procedures: PT/2/A/4208/021B, 2B NS Pump Head Curve and Comprehensive Pump Performance Test and PT/2/A/4208/021A, 2A NS Pump Head Curve

and Comprehensive Pump Performance Test
Drawings: MCFD-2571-01.00, Flow Diagram of Refueling Water System
MCFD-2563-01.00, Flow Diagram of Containment Spray System

Section1R20: Refueling and Outage Activities

MCEI-0400-41, "McGuire 2 Cycle 17 Final Core Map", Rev. 12
PT/0/A/4150/033, "Core Verification", Rev. 15
PT/0/A/4150/033, "Total Core Reloading", Rev. 43
MP/2/A/7150/073, "Rod Cluster Control Assembly Heavy Drive Rod Unlatching and Latching", Rev. 14
OP/2/A/6100/003, Controlling Procedure For Unit Operation
PT/0/A/4150/021, Post Refueling Controlling procedure for Criticality, Zero Power Physics, & Power Escalation Testing
PT/0/A/4150/028, Criticality Following a Change in Core Nuclear Characteristics
PT/0/A/4150/013, Boron Endpoint, Dynamic Rod Worth and Isothermal Temperature Coefficient Measurement
MCEI-0400-47, Unit 2 Cycle 16 Core Operating Limits Report
OP/2/A/6100/SU-3, Mode 5 Checklist

Section 2OS1: Access Controls to Radiologically Significant Areas

Procedures, Manuals, and Guidance Documents

Operations and Repair Manual, Model REM 500B, Neutron Survey Meter, Rev. B1
DRC Outage Support Task Training, MC3569, 05/08/2000
RP-MC-DRC-004, DRC Outage Support Task Training, RP Badge Number & Dosimetry Issue, Revision (Rev.) 3
RP-8000 ETQS Training and Qualification Guide, RP Badge Number & Dosimetry Issue, Rev. 22
Nuclear System Directive (NSD) 501, Temporary Storage of Radioactive Material in the Spent Fuel Pool, 03/06/06
PT/0/A/4550/003, Physical Inventory of Reportable Special Nuclear Material, Rev. 0
Shared Health Physics Procedure (SH)/0/B/2000/012, Access controls for high, extra high, and very high radiation areas, Rev. 006
SH/0/B/2000/007 Placement of personnel dosimetry for non-uniform radiation fields, Rev. 01
RPMP 7-1, Radiological key control, Rev. 006
RPMP 7-6, Administrative controls of yellow flashing light process, Rev. 003
Radiation Work Permit (RWP) Number (No.) 11, Routine spent fuel pool activities, Rev. 16
RWP No. 2229, U2 Reactor building (RX BLDG); Under vessel inspection for boron degradation in incore sump room (inspection only), Rev. 2
RWP No. 2060, U2 RX BLDG: UT and volumetric testing under the reactor head, Rev. 2
RWP No. 2230, U2 RX BLDG: Insulation remove/replace for under-vessel inspection for boron degradation in incore sump room, Rev. 2
RWP No. 2231 U2 RX BLDG: Scaffold install/remove for under vessel inspection for boron degradation in incore sump room, Rev. 2
RWP No. 2271, U2 Pressurizer (PZR) weld overlay work in top of the pressurizer, Rev. 0

RWP No. 2272, U2 RX BLDG weld overlay work in lower containment, Rev. 0
RWP No. 2273, U2 PRZ: Vender (WSI) supplied NDE for weld overlay work in top of the pressurizer, Rev. 0
RWP No. 2274, U2 PRZ: Vender (WSI) supplied NDE for weld overlay work in lower containment, Rev. 0
RWP No. 2279, U2 RX BLDG: Demolition of existing ECCS sump (MOD# MD20 0375), Rev. 0
RWP No. 2281, U2 RX BLDG: Installation of extended ECCS sump in pipe chase (MOD# MD200375), Rev. 0
RWP No. 2281, U2 RX BLDG: Installation of extended ECCS sump in crane wall (MOD# MD200375), Rev. 0
RWP No.2724, U2 RX BLDG: RX Head - R&R Conoseals & Vent Line Spool Piece, Rev. 7
RWP No.2725, U2 RX BLDG: Reactor Head-detention R&R, and retention RX Head, Rev. 15
RWP No. 2728, U2 RX BLDG RX HEAD and RV O-rings, Rev. 5
RWP No. 2894, U2 RX BLDG: RX head bare metal inspection - RX head team activities, Rev. 4
RWP No. 2896, U2 RX BLDG: RX head bare metal inspection - Inspection QC activities, Rev. 0
RWP No. 26, Reactor building pipe chase and seal table entry during power operations, MNS/CNS Only, Rev. 18

Licensee Records and Data

PT/0/A/4550/003, Enclosure 13.7, Inventory of Non-Fuel Items Stored in the Spent Fuel Pools, April 2006
Maximum Individual Doses (Top Ten) CY 2005 and Year-to-Date (YTD) 2006
Personnel Contamination Event Records: CY 2005 and January 1, through November 4, 2006
Assigned Intakes exceeding 0.2 percent ALI data: CY 2005, and January 1, through November 4, 2006
HP/1/B/1006/009, Power entry into lower containment, Enclosure 5.2, 10/04/06
NSD 213, Appendix L, Complex Activity Plan, Lower containment entry / Unit 1 ECCS sump cleanliness inspsection/Debris removal, 10/04/06
SH/0/B/2000/003, RWP 26 ED setpoint change documentation, 10/04/06
Radiation Survey Data - Pressurizer: Survey Nos M-092006-11, 09/20/06 @ 03:00 hrs; M-092006-35, 09/20/06 @ 13:30 hrs
Radiation Survey Data - U2 RX HEAD Inspection staging area: Survey Nos M-093006-28, 09/30/06 @ 10:10 hrs; M-100106-5, 10/01/06 @ 03:18 hrs; M-100106-30, 10/01/06 @ 17:15 hrs; M-100206-10, 10/02/06 @ 06:29 hrs; M-100306-4, 10/03/06 @ 01:52 hrs
Radiation Survey Data - 614 Mixing Settling Tank Pumps: Survey No. M-091206-17, 09/12/06 @ 20:15 hrs
Radiation Survey Data - U2 Room 647W Pipechase: Survey Nos. M-091806-34, 09/18/06 @ 11:30 hrs, M-092006-13, 092006-13, 09/13/06 @ 05:26 hrs
Air Sampling Results: U2 Reactor Headstand Area Samples: No. 061001040, 10/01/06 @ 15:44 hrs; No.061002013, 10/02/06 @ 06:30 hrs; No. 061002024, 10/02/06 @ 10:10 hrs; No. 061002045, 10/02/06, 15:47 hrs; No. 061002047, 10/02/06 @ 16:45 hrs; No. 061002043, 10/02/06 @ 17:00 hrs; No. 061002051, 10/02/06 @ 18:14 hrs; No. 061002052, 10/02/06 @ 18:17 hrs; No. 061003007, 10/03/06 @ 0015 hrs; No. 061003009, 10/03/06 @00:23 hrs
Job Dosecard Report Data, RWP 2292, 09/22-23/06: U2 RX BLDG, shielding installation and removal of lead shielding for weld overlay work in lower containment

Job Dosecard Report Data, RWP 26, 10/04/06: Reactor building pipe chase and seal table entry during power operations
Job Dosecard Report Data, RWP 2060, 09/18-10/03/06: U2 RX BLDG: UT and volumetric testing under the reactor head
Job Dosecard Report Data, RWP 2292, 09/22-23/06: U2 RX BLDG; Shielding installation and removal of lead shielding for weld overlay work

Corrective Action Program (CAP) Documents

Problem Investigation Process (PIP) Document Number (No.) McGuire (M)-05-00934, Key to upper VE door found in door lock, 03/05/05
PIP No. M-05-01621, Required radiation protection postings and access controls for fuel movement incorrectly removed prior to completion of core reload, 03/29/05
PIP No. M-05-01725, RCZ boundary found with postings greater than allowable limits, 04/03/05
PIP No. M-06-02032. U1 upper annulus VE door No. 1200A lock found broken, 05/22/06
PIP No. M-06-02036, RP lock broken on upper annulus, 05/21/06
PIP No. M-06-02041, Emerging trend with failure of RP locks on VE doors, 05/22/06
PIP No. M-05-02168, Signs preventing annulus and lower containment entry were removed without RP contacting reactor engineering, 04/26/05
PIP No. M-05-02414, Pipe trench in Auxiliary Building pipechase allows passage between Unit 1 and Unit 2, 05/11/05
PIP No. M-06-02563, RP lock on U2 upper annulus door (1250A) is broken, 06/28/06
PIP No. M-06-03406, Dose rates on the NV system have increased on Unit-2 throughout the auxiliary building, 08/21/06
PIP No. M-06-30676, Inadequate controls in place for portable HEPA filters, 09/06/06
PIP No. M-06-04056, MNS is not meeting requirements of 10 CFR 20.1905 exemptions to labeling requirements for non-fuel items stored in spent fuel pools, 09/21/06
PIP No. M-06-04280, HEPA used for safety concerns at the ECCS sump is installed backwards, 09/27/06
PIP No. M-06-04485, Policy for assignment of gamma dose from DRPs currently does not exist, 10/02/06

Section 2OS2: As Low As Is Reasonably Achievable

Procedures, Instructions, and Guidance Documents

Duke Power Company System ALARA Manual, Rev. 17
Duke Power Company Long Range ALARA Plan 2005-2010, McGuire, 06/29/06
Maintenance Directive 3.11, Cobalt Control Procedure for Valves and Valve Related Maintenance, Rev. 2
McGuire Nuclear Station (MNS) Valve/Actuator Replacement Evaluation Form
HP/0/B/1006/018, Installation and Removal of Temporary Shielding, Rev. 5
System Chemistry Manual (SCM)-9, Optimized Crud Burst Program, Rev. 4
SCM-12 Appendix B, McGuire Chemistry Optimization Plan, Rev. 6
SH/0/B/2002/003, Declared Pregnant Worker, Rev. 2
Nuclear System Directive 208, Problem Investigation Process (PIP), Rev. 27

Records and Data Reviewed

Dose Reduction Plan for 2EOC17 PZR Alloy 600 Weld Overlays, 08/17/06
Dose Reduction Plan for 2EOC17 Valve Maintenance, 08/17/06
Dose Reduction Plan for 2EOC17 ECCS Sump Screen Upgrade, 08/17/06
Dose Reduction Plan for 2EOC17 Reactor Head/Refueling Activities, 08/17/06
Dose Reduction Plan for 2EOC17 Mechanical Modifications, 08/17/06
Temporary Shielding Request (TSR) 06-251, Pressurizer HTR and Surge Nozzle Shielding
MNS RFO Dose, Crud Burst, and Shutdown Dose Rate Data since 1EOC12, printed 09/14/06
2EOC17 Reactor Coolant System CRUDburst Cleanup (CBCU) Curve, 09/21/06
2EOC17 Post CBCU/Shielding Radiological Status, 09/21/06
2EOC17 Actual vs. Goal Exposure Variance Summary, 09/21/06
McGuire Refueling Outage Dose History Graph for U1 RFO 1-17 and U2 RFO 1-16
Minor Modification No. ME200798 (2NV-225 valve replacement), 9/29/06
2EOC17 Radiation Daily Dose Updates, 09/18/06 - 10/04/06
2EOC17 PZR RWP Dose Performance Update Sheet, 10/03/06
2EOC17 Revised Major Job Exposure Status Graphs, 10/04/06
Occupational Exposure Reports for selected DPWs

CAP Documents

PIP M-04-03809, Engineering support for Mod development of zinc addition to the primary system for source term control, 07/29/04
PIP M-05-01982, R.P. did not notify Radwaste Chemistry or Primary Chemistry about potential dose/ALARA concerns, 04/14/05
PIP M-05-02792, 2EOC16 Post Outage ALARA Summary Report, 06/09/05
PIP M-06-00238, 1EOC17 Post Outage ALARA Summary Report including Proposed Corrective Actions, 01/17/06
PIP M-06-01151, This PIP identifies 6 AFIs identified during the annual RP FAE at MNS, 03/16/06
PIP M-06-02819, RP should include the stations cobalt control process for valves and valve related maintenance in the 5 Year ALARA Plan, 07/17/06
PIP M-06-04377, Charging Pump 2A discharge check valve body seat has sever erosion - valve may need to be replaced, 09/26/06
PIP M-06-04603, Reinstallation of the Reactor Head insulation exceeded the job dose estimate, 10/04/06
PIP M-06-04658, Revised valve/actuator replacement evaluation form to clarify cobalt reduction evaluation, 10/05/06
Duke Power Company (DPC) Assessment Report RP-SA-05-10, 2EOC16 Source Term Removal, 03/01/05 - 09/12/05
DPC Assessment Report RP-SA-06-07, 2006 Source Term Removal, 09/17/05 - 05/09/06

Section 2PS1: Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

Procedures, Instructions, and Guidance Documents

Standard Radiation Protection Management Procedures (SRPMP) 8-2, Investigation of unusual radiological occurrences, Rev. 01
HP/0/B/1003/021, Landfilling of very low level radioactive wastes, Rev. 03

Records and Data Reviewed

Decommissioning File NSD-0192.02, Replacement of missing McGuire RP decommissioning records in document control, 10/05/05
McGuire Nuclear Station Decommissioning files, 08/03/06
McGuire Nuclear Station Landfill Documentation,

CAP Documents

M-05-02964, Procedure process record was not being completed for technical procedure SH/0/B/2001/004 as required per NSD-704. Procedures has been superseded by SRPMP8-2, 06/21/05
M-06-02969, Document tritium sampling from the leachate pond input source, 07/25/2006
M-06-03024, U1 KC has elevated level in comparison to U2 KC, 07/27/2006
M-06-03033, Several samples obtained from 2WZLP-5100 from 02/15/06 through 07/26/06 have indicated tritium levels at 3E-5 uCi/ml. No gamma-emitters identified, 07/28/06

Section 2PS2: Radioactive Material Processing and Transportation

Procedures, Instructions, and Guidance Documents

MP/0/A/7550/018, Chem-Nuclear Cask CNS 8-120A Lid Handling, Rev. 5
PT/0/B/4600/069, Sample Analysis Requirements For Determination Of Waste Classification Scaling Factors, Rev. 5
SH/0/B/2004/002, Preparation and Shipment of Radioactive Waste, Rev. 6
SH/0/B/2004/001, Preparation and Shipment of Radioactive Material, Rev. 6
MNS 10 CFR 61 Manual, Rev. 8
Radiation Protection Policy Manual, 10 CFR Part 61 Waste Classification Implementation Program, Policy IV-08, Rev. 0
Radioactive Waste Process Control Program Manual, Rev. 14

Records and Data Reviewed

MNS Training Activity Report printouts for maintenance and Radwaste personnel
MNS Radwaste and Radioactive Material Shipping Logs, 01/01/04 - 08/03/06
Annual Radioactive Effluent Release Report, Attachment 2, Solid Waste Disposal Report for Calendar Year (CY) 2004
Annual Radioactive Effluent Release Report , Attachment 2, Solid Waste Disposal Report for CY 2005

MNS 10 CFR 61 Manual, Appendix A, Current Sample Data
MNS 10 CFR 61 Waste Classification and Waste Form Implementation Program Addendums, 03/1/06
Radioactive Shipment Record (RSR) No. 04-0020, Radioactive Filters, 05/27/04
RSR No. 05-0011, Fuel Cleaning Equipment, 04/01/05
RSR No. 05-0012, Wesdyne Equipment, 03/31/05
RSR No. 05-0023, Liner of DAW, 09/06/05
RSR No. 06-0001, 8-120 Liner of Primary Resin, 01/19/06

CAP Documents

PIP M-04-00610, Few MNT personnel meet the requirements of 49 CFR 172.704 relative to preparing packages of radioactive material for transportation, 02/08/04
PIP M-04-04965, This PIP is written to document assessment RP-SA04-22, RMC Shipping Campaigns to Studsvik, 10/12/04
PIP M-05-02540, Water leaking from bagged radwaste caused contamination of waste storage area floor, 05/19/05
PIP M-05-02639, Discrepancy between in-house and independent laboratory gamma spectroscopy analysis for Ce-144, 05/27/005
PIP M-05-03624, Evaluate increase in contamination levels during receipt of fuel cleaning equipment from CNS, 08/08/05
PIP M-06-01468, Large contaminated components (containers) stored outside in the northwest yard have no apparent plan for disposal, 04/06/06
PIP M-06-01980, Unexpected spill of very low level radioactive water, 05/17/06
PIP M-06-04259, Independent laboratory did not provide data for specific transuranics as requested for 10CFR61 analysis, 09/26/06
PIP M-06-04268, NRC inspector has identified several issues relevant to data required for 10CFR61 analysis of McGuire waste streams, 09/26/06
PIP M-06-04682, Potential NRC Non-cited Violation for failure to meet requirements of 49 CFR 172.704 dealing with hazardous material training relative to radioactive materials shipments, 10/06/06

Section 4OA1: Performance Indicator Verification

Records and Data Reviewed

Unusual Dosimetry Occurrence No. Issue Logs for Calendar Year (CY) 2005 and January 1, through November 4, 2006
EMF (Effluent Monitoring) Equipment Out-of-Service Logs: January 1, 2005 through September 30, 2006
Liquid Permit Status Summary Report, Liquid Releases 06/02-11/2006
Liquid Waste Release (LWR) No. 2006073, 06/03/06; LWR No. 2006074, 06/06/06; LWR No. 2006075, 06/08/06; LWR No. 2006076, 06/09/06; LWR No. 2006077, 06/09/06
Inoperable EMF- 49L compensatory sampling data; OP/0/B/6200/106, Liquid Waste Release - WMT A with WMT Pump A, Rev. 16, Enclosures 4.4/4.11 data sheets for 06/07/06 and 6/09/06; OP/0/B/6200/107, Liquid Waste Release - WMT B with WMT Pump B, Rev. 15, Enclosure 4.4 data sheets for 06/04/06, 06/05/06, and 06/08/06

Inoperable EMF 53 compensatory sampling data; HP/0/B/1003/053:
Enclosure 5.1 Weekly grab and composite particulate and iodine sample collection data sheet for 06/08/06
Enclosure 5.2 Inline to alternate continous P&C sample transfer data sheets, for 06/707/06
Enclosure 5.3, Alternate to inline continuous P&C sample transfer data sheet for 06/14/06
Enclosure 5.4 Gas grab sample and gamma spectroscopy data sheets for 06/07/06, 06/08/06, 06/09/06, 06/10/06, 06/11/06, 06/12/06, 06/13/06, 06/14/06
Enclosure 5.5, Inoperable minimum sample flow device 4 hour flow verification data sheet for 06/07-14/06
Enclosure 5.6, Vent flow estimate data sheets for 06/07-14/06
Enclosure 5.13 Inoperable 0EMF-53 and sampler minimum flow device data sheet for 06/07/06
Inoperable EMF 35,36 compensatory sampling data: gas and particulate grab sample data, 05/25-27/06
EMF-53 Inoperable gas grab sample results for 06/07/06

CAP Documents

PIP No. M-05-00934, Key to U2 upper VE door left in door lock, 03/05/05
PIP No. M-05-00981, Notification by Operations that key to posted EHRA had been issued to him, 03/08/05
PIP M-05-01130, Locked-cover installed installed on the VR head shroud duct opening fiybd loose and removable, 03/12/05
PIP M-05-01496, Worker logged into EDC access station with electronic dosimeter that was out of calibration, 03/24/05
PIP M-05-02414, Pipe trench in auxiliary building allows passage between Unit 1 and Unit 2, 05/11/05
PIP M-06-04326, Worker received ED dose alarm - Work group MNT/Work Group No 109/ED dose alarm exceeded by 0.6 mrem, 09/28/06
Duke Power Company Annual Radiological Environmental Operating Report for CY 2004
Duke Power Company Annual Radiological Environmental Operating Report for CY 2005

Section 4OA5: Independent Spent Fuel Storage Installation

Records and Data Reviewed

Unusual Dosimetry Occurrence No. Issue Logs for Calendar Year (CY) 2005 and January 1, through November 4, 2006
EMF (Effluent Monitoring) Equipment Out-of-Service Logs: January 1, 2005 through September 30, 2006
Liquid Permit Status Summary Report, Liquid Releases 06/02-11/2006
Liquid Waste Release (LWR) No. 2006073, 06/03/06; LWR No. 2006074, 06/06/06; LWR No. 2006075, 06/08/06; LWR No. 2006076, 06/09/06; LWR No. 2006077, 06/09/06
Inoperable EMF- 49L compensatory sampling data; OP/0/B/6200/106, Liquid Waste Release - WMT A with WMT Pump A, Rev. 16, Enclosures 4.4/4.11 data sheets for 06/07/06 and 6/09/06; OP/0/B/6200/107, Liquid Waste Release - WMT B with WMT Pump B, Rev. 15, Enclosure 4.4 data sheets for 06/04/06, 06/05/06, and 06/08/06
Inoperable EMF 53 compensatory sampling data; HP/0/B/1003/053:

Enclosure 5.1 Weekly grab and composite particulate and iodine sample collection data sheet for 06/08/06
Enclosure 5.2 Inline to alternate continous P&C sample transfer data sheets, for 06/707/06
Enclosure 5.3, Alternate to inline continuous P&C sample transfer data sheet for 06/14/06
Enclosure 5.4 Gas grab sample and gamma spectroscopy data sheets for 06/07/06, 06/08/06, 06/09/06, 06/10/06, 06/11/06, 06/12/06, 06/13/06, 06/14/06
Enclosure 5.5, Inoperable minimum sample flow device 4 hour flow verification data sheet for 06/07-14/06
Enclosure 5.6, Vent flow estimate data sheets for 06/07-14/06
Enclosure 5.13 Inoperable 0EMF-53 and sampler minimum flow device data sheet for 06/07/06
Inoperable EMF 35,36 compensatory sampling data: gas and particulate grab sample data, 05/25-27/06
EMF-53 Inoperable gas grab sample results for 06/07/06

CAP Documents

PIP No. M-05-00934, Key to U2 upper VE door left in door lock, 03/05/05
PIP No. M-05-00981, Notification by Operations that key to posted EHRA had been issued to him, 03/08/05
PIP M-05-01130, Locked-cover installed installed on the VR head shroud duct opening fiybd loose and removable, 03/12/05
PIP M-05-01496, Worker logged into EDC access station with electronic dosimeter that was out of calibration, 03/24/05
PIP M-05-02414, Pipe trench in auxiliary building allows passage between Unit 1 and Unit 2, 05/11/05
PIP M-06-04326, Worker received ED dose alarm - Work group MNT/Work Group No 109/ED dose alarm exceeded by 0.6 mrem, 09/28/06
Duke Power Company Annual Radiological Environmental Operating Report for CY 2004
Duke Power Company Annual Radiological Environmental Operating Report for CY 2005

(Closed) TI 2515/169 Mitigating Systems Performance Index (MSPI) Verification

Procedures, Manuals, and Guidance Documents

Reactor Oversight Program Mitigating System Performance Index (MSPI) Basis Document, Revision 1
NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 4
PT/1/A/4401/012A, RN to 1A KC HX Isolation Test
OP/1/A/6400/006, Nuclear Service Water, Enclosure 4.15

Records and Data

Selected Control Room Logs, January 2004 through September 2006
Maintenance Rule Assessor Entries for several systems (KC, RN, CA, EDG, ND)
Various System Health Reports
EDG, HPI, Heat Removal, Unplanned Reactor Scrams per 7000 Hours- NRC Performance Indicators, 2005

Corrective Action Program Documents

M-06-5650, MSPI basis document needs to be updated to correct overconservative baseline unavailability numbers
M-06-5797, MSPI Basis Document discrepancies in planned unavailability hours as result of NRC Inspection

(Closed) NRC Temporary Instruction 2515/150, Reactor Pressure Vessel Head and Head Penetration Nozzles (NRC Order EA-03-009) (Unit 2)

Procedures

54-ISI-30-04, "Written Practice for the Qualification and Certification of NDE Personnel," Rev. 3/8/06
54-PT-200-06, "Color Contrast Solvent Removable Liquid Penetrant Examination of Components," Rev. 03/16/06
54-ISI-604-001, "Automated Ultrasonic Examination of Open Tube RPV Closure Head Penetrations," Rev. 09/6/2006
54-ISI-603-002, "Automated Ultrasonic Examination of RPV Closure Head Penetrations Containing Thermal Sleeves," Rev. 09/13/2006
54-ISI-605-001, "Automated Ultrasonic Examination of RPV Closure Head Small Bore Penetrations," Rev. 09/13/2006
MP/2/A/7150/057A, "Reactor Vessel Head Removal," Rev. 12
MP/0/A/7150/153 , "Reactor Vessel Head Bare Metal Inspection," Rev. 5

Engineering Documents

DPC-1201.01-00-0007, "EDY Calculation for Reactor Pressure Vessel Head Penetrations," Rev. 2/13/04
Areva Document 51-9026779-001, "RPV Head Penetration Inspection Plan and Coverage Assessment for Catawba Unit 1 and McGuire Unit 2," Rev. 8/3/06
Dominion Engineering Calculation C-3217-00-01, "CRDM and Instrument Column Nozzle Stress Analysis for McGuire 2," Rev. 0
Engineering Support Document, "Alloy 600 aging Management Oconee, McGuire, and Catawba Nuclear Station," Rev. 2

Corrective Action Documents

PIP M-06-04367
PIP M-06-04351
PIP M-06-04362
PIP M-02-01324

Other Records

EPRI Letter from Mr. Jack Spanner (Program Mng.) to Mr. Tom Alley (Duke Power Corp.,Technical System Mng. II) dated September 29, 2006
PIP M-06-04611, "Results of 2EOC 17 Reactor Vessel Head Bare Metal Inspection," dated 10/4/06

Work Order 98484639, “Bare Metal Inspection of Reactor Vessel Head,” dated 3/21/03
Personnel Certification Records for all Areva NDE examiners
Areva UT Transducer Reports and/or Acceptance Test Report for UT Probes: 7502144 (open bore), S0990NL (blade probe), 9947-06001 (open bore, vent line)
Calibration records for blocks: 6011137-A, and 02-9023026
Calibration data sheets CDS-1 (open bore), CDS-3 (blade probe), and CDS-2 (open bore, vent line)