



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

January 31, 2008

EA-08-035

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

SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000369/2007005 AND 05000370/2007005

Dear Mr. Hamilton:

On December 31, 2007, 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 7, 2008, 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 two findings (one NRC identified and one self-revealing) of very low safety significance (Green) 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 Section 4OA7 of the enclosed inspection 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 contest any of 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.

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Sincerely,

/RA/

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

Docket Nos.: 50-369, 50-370

License Nos.: NPF-9, NPF-17

Enclosure: NRC Integrated Inspection Report 05000369/2007005 and 05000370/2007005
w/Attachment - Supplemental Information

cc w/encl: (See page 3)

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Letter to Bruce H. Hamilton from James H. Moorman, III dated January 31, 2008

SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000369/2007005 AND 05000370/2007005

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Huntersville, NC 28078

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-369, 50-370

License Nos: NPF-9, NPF-17

Report Nos: 05000369/2007005, 05000370/2007005

Licensee: Duke Energy Corporation

Facility: McGuire Nuclear Station, Units 1 and 2

Location: 12700 Hagers Ferry Road
Huntersville, NC 28078

Dates: October 1, 2007 through December 31, 2007

Inspectors: J. Brady, Senior Resident Inspector
R. Eul, Resident Inspector
J. Diaz, Senior Health Physicist (Section 2PS3)
H. Gepford, Senior Health Physicist (Sections 2OS1,
4OA1.2, 4OA5.4, 4OA7)
R. Hamilton, Senior Health Physicist (Section 2PS1)
W. Loo, Senior Health Physicist (Section 2OS3)
S. Walker, Senior Reactor Inspector (Section 4OA5.3)
R. Taylor, Reactor Inspector (Section 4OA5.5)

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

Enclosure

SUMMARY OF FINDINGS

IR05000369/2007005, IR05000370/2007005; 10/01/2007 - 12/31/2007; McGuire Nuclear Station, Units 1 and 2; Surveillance Testing and Other Activities.

The report covered a three month period of inspection by resident inspectors and announced inspections by regional radiation health physicists and reactor inspectors. Two 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 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, for failure to take adequate corrective action for a nonconformance associated with potential clogging of the Unit 1 emergency core cooling system (ECCS) cold leg injection throttle valves during high pressure recirculation. The inadequate corrective actions involved inspections of the ECCS sump, which were found to be ineffective as evidenced by the discovery during an unrelated inspection of some foreign material.

This issue is greater than minor because, if left uncorrected, the transportable soft debris could have a detrimental affect on the availability and reliability of both trains of ECCS when called upon during an accident. In particular, the debris had the potential to have detrimental effects on the high pressure recirculation function due to potential clogging of the ECCS throttle valves. The issue was determined to be of very low safety significance based on the NRC evaluation documented in NRC Inspection Report 05000370/2007010, of similar quantities of soft debris in the Unit 2 ECCS sump and of similar throttle valve openings. This finding has a cross-cutting aspect of appropriate corrective actions in the area of problem identification and resolution (P.1(d)). (Section 40A5.2)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a self-revealing NCV of 10 CFR 50, Appendix B, Criterion XVI, for inadequate corrective action associated with the prevention of exceeding the thrust capacities of containment spray (NS) isolation valves (due to differential pressure), which could have prevented the NS system from performing its intended safety function.

This issue is more than minor because it affects the availability, reliability, and capability of the NS system and is related to the equipment performance and procedure quality

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attributes of the mitigating systems cornerstone. This finding was considered self-revealing because a temporary gauge installed to detect cross-train pressurization during NS pump runs revealed the unexpected existence of significant cross-system leakage from the residual heat removal (ND) system. The issue is of very low safety significance based on review IMC 0609, Appendix H, which indicates that containment spray does not impact large early release frequency for pressurized water reactor plants. This finding has a cross-cutting aspect of decision making in the area of human performance (H.1(b)). (Section 1R22)

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 number is listed in Section 4OA7 of this report.

Report Details

Summary of Plant Status:

Unit 1 began the inspection period at approximately 100 percent rated thermal power and remained there for the rest of the period.

Unit 2 began the inspection period at approximately 100 percent rated thermal power and remained there for the rest of the period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

After the licensee completed preparations for seasonal cold temperature, the inspectors discussed the licensee's cold weather program and the licensee's cold weather performance test with the licensee. The inspectors reviewed the completed test results for PT/0/B/4700/038, Verification of Freeze Protection Equipment and Systems, dated November 18, 2007.

After the licensee completed preparations for seasonal low temperature, the inspectors walked down the auxiliary feedwater (CA) system and the fueling water storage tank. 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 to this report, 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 Walkdown

a. Inspection Scope

The inspectors performed a partial walkdown of the following three systems to assess the operability of redundant or diverse trains and components when safety equipment was inoperable. The inspectors 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 system components, and determined that selected breakers, valves, and support equipment

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were in the correct position to support system operation. The inspectors also assessed whether the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers. Documents reviewed are listed in the Attachment to this report.

- Unit 2 Train A Emergency Diesel Generator with Train B out-of-service (OSS) for maintenance
- Unit 1 Train B Emergency Diesel Generator (EDG) with Train A OSS for maintenance
- Unit 2 Train A Residual Heat Removal (ND) System with Train B OSS for maintenance

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 Unit 1 nuclear service water (RN) 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 industry events data was reviewed to ascertain any similarities to McGuire Structures, Systems, and Components (SSCs). The inspectors walked down the RN system to determine whether the existing system alignment and conditions were appropriate. 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 determine whether the ability of the system to perform its function(s) could be affected by outstanding design issues, temporary modifications, operator workarounds, adverse conditions, and other system-related issues tracked by the licensee's engineering department. In addition, the inspectors also reviewed the Problem Investigation Process reports (PIPs) associated with this area to determine whether the licensee identified and implemented appropriate corrective actions.

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b. Findings

No findings of significance were identified.

1R05 Fire Protection

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 determine whether 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, reviewed results from related surveillance tests, and reviewed the associated pre-fire plan strategy, to determine whether 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.

The inspected areas included:

- Unit 1 and 2 Nuclear Service Water, charging, and safety injection pump rooms (Fire Area 4)
- Unit 1 Auxiliary Building Electrical Penetration Room (Fire Area 9)
- Unit 2 Auxiliary Building Electrical Penetration Room (Fire Area 10)
- Unit 1 Auxiliary Building 4kV (1ETB) Switchgear Room (Fire Area 11)
- Unit 2 Auxiliary Building 4kV (2ETB) Switchgear Room (Fire Area 12)
- Unit 1 and 2 Component Cooling Water Pumps and Heat Exchangers (Fire Area 21)

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

On November 14, 2007, the inspectors observed licensed-operator performance during requalification simulator training for shift "E" to determine whether operator performance was consistent with expected operator performance, as described in Exercise Guide OP-MC-SRT-75. This training tested the operators' ability to perform abnormal and emergency procedures dealing with high reactor coolant activity, loss of nuclear service water, and a 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 determine whether the licensee identified deficiencies and discrepancies that

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occurred during the simulator training. Documents reviewed are listed in the Attachment to this report.

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; (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 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 to this report. Items reviewed included the following:

- 1C steam generator level instrumentation piping steam leaks
- Unit 1 reactor coolant super-system classified as "A1" after exceeding its reliability performance criteria

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 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 determined whether any increase in risk was promptly assessed, and whether appropriate risk management actions were promptly implemented. The inspectors also reviewed associated PIPs to determine if the licensee identified and implemented appropriate corrective actions, where necessary.

- Work associated with Unit 2, Train B of containment spray (NS) system declared inoperable due to high discharge header pressure on October 24
- Work associated with Unit 2, Train B complex maintenance activities involving the ND, component cooling water (KC), and RN systems on October 30

- Work associated with Unit 1, Train B main feedwater pump operator control station troubleshooting due to erroneous “rpm” indication on November 9
- Work associated with Unit 2, Train A EDG fuel oil leak from a fuel injection pump inlet fitting on November 13
- Work associated with the standby shutdown facility being declared inoperable due to voltage regulator potentiometer limitations on November 22
- Work associated with the complex maintenance activities involving the Unit 2, Train B RN system diving operations on December 3 and 4
- Planned work associated with 2A RN and 2A ND being OOS on December 11 that resulted in an orange risk condition

b. Findings

No findings of significance were identified.

1R15 Operability Evaluation

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 found 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 determine whether operability was properly justified and the subject component or system remained available, such that no unrecognized increase in risk occurred.

- M-07-5135, Net positive suction Head calculation discrepancy for ND and containment spray (NS) pumps
- M-07-2651, Cable 2ERD-755 violates the cable restriction code in 2ATC7
- M-07-3915, Calculation error related to auxiliary feedwater (CA) structural pipe support 2MCA-CA-5131
- M-07-3610, Pin hole leak in chemical volume and control valve 1NV-240
- M-07-4950, Non-optimal flowpath through safety injection (NI) and RN pump motor coolers

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the five post-maintenance tests listed below to determine whether procedures and test activities ensured system operability and functional capability. The inspectors reviewed the licensee's test procedure to determine whether 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 determine whether test results adequately demonstrated restoration of the affected safety function(s).

- PT/1/A/4403/011 A, Retest for RN Train A Motor Cooler Control Valves (replacement of Valve 1RN-166A solenoid)
- PT/1/A/4350/002 A, Diesel Generator 1A Operability Test (after various maintenance activities on 1A EDG)
- PT/2/A/4401/001 B, KC Train 2B Performance Test (after replacement of 2KC-14, 2B1 KC Pump Discharge Check Valve)
- PT/2/A/4401/001 B, KC Train 2B Performance Test (after motor cooler and flow instrumentation maintenance on 2B2 KC Pump)
- PT/2/A/4350/002 A, Diesel Generator 2A Operability Test (after replacing leaking inlet fitting on a fuel injection pump)

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the surveillance tests identified below, the inspectors witnessed testing and/or reviewed the test data, to determine whether the SSCs involved in these tests satisfied the requirements described in the TSs, the UFSAR, and applicable licensee procedures, and whether the tests demonstrated that the SSCs were capable of performing their intended safety functions.

- PT/0/A/4350/040E, 125 VDC Vital I and C Battery Modified Performance Test Using BCT-2000
- *PT/1/A/4252/028A, Slave Start CA Pump 1A
- *PT/1/A/4252/002A, CA Valve Stroke Timing – Quarterly 1A Motor Driven Pump Flowpath
- PT/2/A/4250/002B, Diesel Generator 2B Operability Test
- *PT/1/A/4252/001B, 1B CA Pump Performance Test
- *PT/1/A/4252/002B, CA Valve Stroke Timing – Quarterly 1B Motor Driven Pump Flowpath

*Note: This procedure included inservice testing requirements.

The inspectors also reviewed PIP M-07-5624 to determine whether the licensee identified and implemented appropriate corrective actions.

b. Findings

Introduction: The inspectors identified a Green, self-revealing NCV of 10 CFR 50, Appendix B, Criterion XVI, for inadequate corrective action associated with the prevention of exceeding the thrust capacities of NS isolation valves (due to differential pressure), which could have prevented the NS system from performing its intended safety function.

Description: While reviewing PIP M-07-5624, the inspectors learned that on October 24, 2007, a high pressure condition (96 per square inch gauge (psig)) was found on the Unit 2 "B" train NS discharge header by the operators while connecting the temporary pressure instrument prior to running the "A" train NS pump for its quarterly performance test. The temporary pressure instrument was being installed to detect cross-train leakage during NS pump runs (PIP M-07-1069), not to detect leakage from another source prior to NS pump runs. The licensee's apparent cause of this pressurization was that cross-system leakage from the ND pump run had occurred 30 days prior. The potential for ND-to-NS cross-system leakage causing problems had been identified in April 2005 (PIP M-05-2204), but no similar action had been taken to monitor NS discharge pressure during ND pump runs like it was monitored during opposite train NS pump runs. PIP M-05-2204 identified that the maximum differential pressure (D/P) the NS system isolation valve could open against (63 psig) could be exceeded following ND pump runs if cross-system leakage occurred between the ND suction line and the NS system. Pressure from this cross-system leakage path could reach 175 psig. Since there is no permanent NS discharge pressure instrumentation installed, there is no data available for review that would indicate what the pressure was for the 30 days prior to the 96 psig reading.

The licensee's corrective action in 2005 for this condition was to do nothing in the short-term, since leakage past the normally shut valve that separated the two systems was considered improbable. Long-term corrective actions were identified to install a pressure relief valve on the ND system to prevent pressure accumulation and/or to replace the NS isolation valve actuators with ones that could open against D/Ps up to 220 psig. Neither corrective action had been completed on Unit 2. When NS cross-train leakage was identified in February 2007 (130 psig D/P in PIP M-07-1069), one of the licensee's immediate corrective actions was to change the NS pump performance test procedure to direct the operator to connect a temporary pressure instrument on the opposite train's discharge header and monitor pressure accumulation during NS pump runs. This was to ensure cross-train leakage could be evaluated during the test and appropriate actions taken to address pressure accumulation.

Analysis: This finding involves the failure to adequately address the discovery that the design capacity of the motor operated containment spray isolation valve actuators was inadequate for the valves to perform their safety function under all differential pressure conditions. The result was that in February and October 2007, differential pressure may

have exceeded motor operated valve thrust capacity and would have prevented valve actuation if called upon to automatically open and initiate spray when containment pressure exceeded 3 psig for the purpose of mitigating pressure increases inside containment following loss of coolant accidents and main steam line breaks. This issue is more than minor because it affects the availability, reliability, and capability of the containment spray system and is related to the equipment performance and procedure quality attributes of the barrier integrity cornerstone. This finding was considered self-revealing because the purpose of installing the gage was to detect cross-train pressurization during NS pump runs, not cross-system leakage from ND. The issue is of very low safety significance (Green) based on a review of IMC 0609, Appendix H; which indicates that containment spray does not impact large early release frequency for pressurized water reactor plants. This finding has a cross-cutting aspect of decision making in the area of human performance (H.1.(b)).

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, states that measures shall be established to assure that conditions adverse to quality, such as deficiencies, deviations, and non-conformances are promptly identified and corrected. This requirement is implemented through the Duke Quality Assurance Program Topical Report and procedure NSD 208, Problem Identification Process. Contrary to the above, between April 2005 and October 2007, the licensee failed to adequately correct a condition adverse to quality related to inadequate containment spray isolation valve actuator thrust capacities. Specifically, in 2005, the licensee identified that the design capacity of the valve actuators was inadequate for the valves to perform their safety function under all differential pressure conditions and failed to take adequate corrective action to prevent the excessive differential pressure condition from occurring or replace the valve actuators with ones that would perform their function under all conditions. The failure to adequately correct a condition adverse to quality is considered a violation of 10 CFR 50, Appendix B, Criterion XVI. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as PIP M-07-5624, this violation is being treated as an NCV consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000370/2004005-01: Failure to Take Adequate Corrective Action for Ensuring Containment Spray Isolation Valve Thrust Capacity.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the two temporary modifications listed below and the associated 10 CFR 50.59 screening to determine whether the modifications satisfied the requirements of 10CFR50, Appendix B, Criterion III, Design Control, and compared each against the UFSAR and TS to determine whether the modification affected the operability or availability of the affected system. The inspectors walked down each modification to ensure that it was installed in accordance with the modification documents and reviewed post-installation and removal testing to determine whether the actual impact on permanent systems was adequately verified by the tests.

- MD 101460, 1B EDG Crankcase Vacuum Pressure Switch Modification
- MD 201457, 2B EDG Crankcase Vacuum Pressure Switch Modification

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety (OS)

2OS1 Access Controls To Radiologically Significant Areas

a. Inspection Scope

Access Controls - Licensee program activities for monitoring workers and controlling access to radiologically significant areas and tasks were reviewed. The inspectors evaluated procedural guidance, directly observed implementation of administrative and established physical controls, assessed worker exposures to radiation and radioactive material, and appraised radiation worker and technician knowledge of, and proficiency in, implementing radiation protection program activities.

During the inspection, radiological controls for selected activities were observed and discussed. Reviewed on-going tasks included direct observation of the installation of insulation on valve 1NDVA0081 located in the Unit 1 pipechase and 'at power' containment and annulus surveillance activities. In addition, the inspectors reviewed documentation of select unusual dosimetry occurrences (UDOs). The evaluation of tasks and UDOs included, as applicable, Radiation Work Permit (RWP) details, observation of pre-job briefings, use and placement of dosimetry and air sampling equipment, contamination controls, electronic dosimeter set-points, and monitoring and assessment of worker dose from direct radiation and airborne radioactivity source terms. Effectiveness of established controls were assessed against area radiation and contamination survey results, and occupational doses received. Physical and administrative controls and their implementation for locked-high radiation area (LHRA) locations and for storage of highly activated material within the spent fuel pool (SFP) areas were evaluated through discussions with licensee representatives, direct field observations, and record reviews.

Occupational worker adherence to selected RWPs and radiation protection technician (RPT) proficiency in providing job coverage were evaluated through direct observations of staff performance during job coverage and routine surveillance activities, review of selected exposure records and investigations, and interviews with licensee staff. Radiological postings and physical controls for access to designated high radiation (HRA) and LHRA locations within auxiliary building and SFP areas were evaluated during facility tours. In addition, the inspectors independently measured radiation dose rates and evaluated established posting and access controls for selected auxiliary building locations. The inspectors also directly observed the posting and control of

LHRAs in Unit 2 upper containment and a very high radiation area (VHRA) in the Unit 2 annulus. Select occupational exposures associated with direct radiation, potential radioactive material intakes, and from discrete radioactive particle or dispersed skin contamination events for calendar years 2006 and 2007 were reviewed and discussed.

Radiation protection program activities were evaluated against 10 CFR 19.12; 10 CFR 20, Subparts B, C, F, G, H, and J; Updated Final Safety Analysis Report (UFSAR) details in Section 12, Radiation Protection; Technical Specification (TS) Sections 5.4, Procedures and 5.7, High Radiation Area; and approved licensee procedures. Licensee guidance documents, records, and data reviewed within this inspection area are listed in Sections 2OS1, 4OA1.2, and 4OA5.4 of the Attachment to this report.

Problem Identification and Resolution - Licensee Corrective Action Program (CAP) documents associated with access controls 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, Rev. 28. Licensee audits, self-assessments, and PIPs related to access controls that were reviewed and evaluated in detail during inspection of this program area are identified in Sections 2OS1, 4OA1.2, and 4OA5.4 of the Attachment to this report.

b. Findings

No findings of significance were identified. However, on September 30, 2006, during a refueling outage on Unit 2, a radiation protection technician left the reactor head inspection stand locked-high radiation area (LHRA) barrier unlocked and unguarded from approximately 5:05 to 5:21 a.m., contrary to the requirements of Technical Specification 5.7.2. Dose rates as high as 10 rad/hr at 30 cm and 4 rad/hr general area were present inside the reactor head stand LHRA. This event was appropriately reported to the NRC as an occupational radiation safety cornerstone performance indicator occurrence. The licensee's root cause failure analysis report determined the root cause to be that the radiation protection technician did not perform the procedure steps as written (to ensure the barrier was secure) due to poor work practices and failure to validate assumptions; however, the inspectors determined that additional review and discussion of the details of the event, the licensee's root cause analysis, and the implemented corrective actions were required to characterize the significance of the event. Therefore, this issue is identified as URI 05000370/2007005-02, Failure to Control a Locked-High Radiation Area Barrier. This issue is in the CAP as PIP M-06-4479.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment

a. Inspection Scope

Radiation Monitoring Instrumentation and Post-Accident Sampling Systems - During tours of the auxiliary building, Radiologically Controlled Area (RCA) exit points, and

administrative building areas, the inspectors observed installed radiation detection equipment including Area Radiation Monitors (ARMs), Personnel Contamination Monitors (PCMs), Portal Monitors (PMs), and Whole Body Counter (WBC) equipment. During those tours, the adequacy of the equipment's physical location and material condition were evaluated.

From review of selected records and discussions with cognizant licensee representatives, the inspectors evaluated completion and adequacy of equipment calibrations, and assessed system operability and reliability. The calibration records for select area radiation monitors were evaluated against required calibration frequencies and technical requirements. In addition, the inspectors reviewed and discussed procedural guidance used to meet post-accident dose-equivalent iodine monitoring requirements against commitments specified in license amendments detailing changes to Post-Accident Sampling System capabilities.

During equipment walk-downs, the inspectors observed functional checks of various fixed and portable radiation monitoring/detection instruments. The observations included source checks of selected PCMs, PMs, WBC and small articles monitor (SAM) equipment. The inspectors reviewed calibration records and discussed the functional testing and testing intervals for selected PCM and PM equipment located at the RCA and protected area exits. The operability and analysis capabilities of the WBC equipment were evaluated. WBC equipment operations and training of staff were reviewed and discussed with responsible personnel.

For selected portable survey instrumentation used in field tasks, the inspectors observed RPT selection of survey instruments, completion of required performance and/or functional checks, and use of instruments during selected task coverage. Availability of portable instruments for licensee use was evaluated through observation of instruments staged for issue and discussion with select licensee personnel. For frisker and portable survey instruments in the field, the inspectors noted calibration sticker data. Calibration data for select portable instruments staged or recently used for coverage of HRA/VHRA field tasks were reviewed. In addition, the inspectors discussed with cognizant licensee representatives at the EnRad Laboratories facility how calibrations were performed. During tours of the facility, the inspectors observed calibrations of select portable radiation survey instruments used by the licensee.

Operability and reliability of selected radiation detection instruments were reviewed against 10 CFR Part 20; NUREG-0737, Clarification of TMI Action Plan Requirements; TS Sections 3 and 5.4; Selected Licensee Commitments Manual Section 16.7; Updated Final Safety Analysis Report Chapter 12; and applicable licensee procedures. Documents reviewed during the inspection are listed in Sections 2OS1 and 2OS3 of the Attachment to this report.

Self-Contained Breathing Apparatus (SCBA) and Protective Equipment - Selected SCBA units staged for emergency use in the control room and other locations were inspected for material condition and adequate air pressure. The inspectors also

reviewed the maintenance records for components of select SCBA units. In addition, certification records associated with supplied-air quality were reviewed and discussed.

Qualifications for staff responsible for testing and repairing SCBA equipment were evaluated through review of training records. Selected control room operators were interviewed to determine their knowledge of available SCBA equipment locations, including corrective lens inserts if needed, and their training on bottle change-out during periods of extended SCBA use. Respirator qualification records were reviewed for selected licensee personnel designated as emergency responders.

Licensee activities associated with maintenance and use of respiratory protection equipment were reviewed against 10 CFR Part 20; Regulatory Guide 8.15, Acceptable Programs for Respiratory Protection; American National Standards Institute - Z88.2-1992, American National Standard for Respiratory Protection; and applicable licensee procedures. Documents reviewed during the inspection are listed in Section 2OS3 of the Attachment to this report.

Problem Identification and Resolution - Select corrective action program and audit documents associated with instrumentation and protective equipment were reviewed and assessed. Inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure NSD 208, Problem Investigation Process, Rev. 28. Documents reviewed are listed in Section 2OS3 of the Attachment to this report.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

a. Inspection Scope

Effluent Monitoring and Radwaste Equipment - During inspector walk-downs, accessible sections of the Unit 1 and Unit 2 liquid radioactive waste (radwaste) system including Waste Monitor Tank (WMT) A and WMT B, system piping and valves, and Waste Liquid (1-EMF-49) and Containment Ventilation Unit Condensate (1-EMF-44) monitors were assessed for material condition and conformance with current system design diagrams. Inspected components of the gaseous effluent process and release system included Waste Gas Decay Tanks, Unit 1/Unit 2 vent air particulate/noble gas/iodine monitor (1/2-EMF-35,36,37) system and steam generator blowdown monitors (1-EMF-34), and associated effluent sample lines. The inspectors interviewed radiation protection supervision regarding radwaste equipment configuration, effluent monitor operation, and system modifications.

The operability, availability, and reliability of selected effluent process sampling and detection equipment used for routine and accident monitoring activities were reviewed and evaluated. The inspectors reviewed results of calibrations and/or performance surveillances for selected process monitors, flowmeters, and air filtration systems. For effluent monitors 1/2-EMF-33 and 1/2-EMF-35, the inspectors reviewed technical bases for Offsite Dose Calculation Manual (ODCM) and/or design-related changes. The most recent surveillances on the Auxiliary Building Ventilation and Spent Fuel Pool High Efficiency Particulate Air (HEPA)/charcoal air treatment systems for both units were also reviewed. The inspectors evaluated OOS effluent monitors and compensatory action data for the period January to December 2007.

Installed configuration, material condition, operability, and reliability of selected effluent sampling and monitoring equipment were reviewed against details documented in the following: 10 CFR Part 20; RG 1.21, Measuring, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials In Liquid and Gaseous Effluents from Light-Water Cooled Nuclear Power Plants, June 1974; ANSI-N13.1-1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities; TS Section 5; the ODCM, Rev. 48; and UFSAR, Chapter 11. Procedures and records reviewed during the inspection are listed in Section 2PS1 of the Attachment to this report.

Effluent Release Processing and Quality Control (QC) Activities - The inspectors directly observed the weekly collection of particulate, iodine, noble gas, and tritium grab samples from the unit vent. The inspectors reviewed gaseous and liquid release permits for the months of September and November 2007.

QC activities regarding gamma spectroscopy and beta-emitter detection were discussed with count room technicians and radiation protection supervision. The inspectors reviewed the daily QC control chart data for the period of December 2006 to November 2007 for the high purity germanium (HPGe) detectors. In addition, results of the radiochemistry cross-check program were reviewed from the third quarter of 2006 and the first through third quarters of 2007.

Four procedures for effluent sampling, processing, and release were evaluated for consistency with licensee actions. Two liquid and five gaseous release permits were reviewed against ODCM specifications for pre-release sampling and effluent monitor setpoints. The ODCM was reviewed and discussed with responsible licensee representatives to identify and evaluate any changes made since January 1, 2007. The inspectors also reviewed 2005 and 2006 annual effluent reports for effluent release data trends and anomalous releases.

Observed task evolutions, count room activities, and offsite dose results were evaluated against details and guidance documented in the following: 10 CFR Part 20 and Appendix I to 10 CFR Part 50; ODCM; RG 1.21; RG 1.109, Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50 Appendix I, October 1977; and TS Section 5. Procedures and records reviewed during the inspection are listed in Section 2PS1 of the Attachment to this report.

Groundwater Monitoring - The inspectors discussed current and future programs for onsite groundwater monitoring with radiation protection supervisors, including number and placement of monitoring wells and identification of plant systems with the most potential for contaminated leakage. The inspectors also reviewed procedural guidance for identifying and assessing onsite spills and leaks of contaminated fluids. In addition, the inspectors reviewed records of historical contaminated spills retained for decommissioning purposes as required by 10 CFR Part 50.75(g).

The licensee currently has 47 groundwater monitoring wells distributed across the site and is planning on installing three more on private property adjacent to the site. The distribution of the sampling wells was based on the existence of several piezometer wells and several sampling wells in addition to the results from a hydrological study. The wells have been quantified at or near normal environmental background levels for tritium with the exception of the wells in the vicinity of the waste holding ponds. The wells adjacent to the waste holding ponds showed higher than normal background levels of tritium but were a fraction of the EPA drinking water limit of 20,000 pCi/L. (This limit corresponds to 4 millirem per year to a member of the public that used the water as their sole source of drinking water.) None of the documented well samples exceeded 60% of the limit.

Problem Identification and Resolution - Eight licensee PIPs associated with effluent release activities or process monitors were reviewed and assessed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve selected issues in accordance with NSD 208, Problem Investigation Process, Rev 28. Reviewed documents are listed in Section 2PS1 of the Attachment to this report.

b. Findings

No findings of significance were identified.

2PS3 Radiological Environmental Monitoring Program (REMP) and Radioactive Material Control Program

a. Inspection Scope

REMP Implementation - The inspectors observed collection of environmental samples and surveillance of sampling instruments during the licensee's weekly environmental run. The inspectors noted the material condition and operability of airborne particulate and iodine sampling stations at monitoring location numbers (Nos.) 120, 121, 125, 133, 134, 192, and 195. The inspectors observed air sample collection of airborne particles and iodine on monitoring stations referenced above. Environmental thermoluminescent dosimeter (TLD) Nos. 121, 133, 134, 135, 144, 192 and 187, were checked for material condition. The inspectors observed milk sample collections at monitoring locations Nos. 141 and 139, and surface water sample collection at monitoring location No. 135.

The inspectors determined the current location of selected air samplers, surface water, TLDs, and vegetation sampling stations using global positioning system instrumentation

and compared the results with ODCM data. Land use census results and sample collection/processing activities were discussed with environmental technicians and corporate environmental affairs personnel.

The inspectors reviewed the previous calibration records for the environmental air samplers. The inspectors also reviewed the 2005 and 2006 REMP reports, results of the 2005 and 2006 interlaboratory cross-check program, and procedures for environmental sample collection and processing. The inspectors discussed missed samples/inoperable samplers reported in the REMP reports, detection capabilities, and cross-check results with cognizant personnel.

Program implementation, sampling locations, and environmental monitoring results were reviewed against: 10 CFR Part 20; Appendix I to 10 CFR Part 50; TS 5.5.1; ODCM; RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operation) - Effluent Streams and the Environment; and Branch Technical Position, An Acceptable Radiological Environmental Monitoring Program - 1979. Documents reviewed are listed in Section 2PS3 of the Attachment to this report.

Meteorological Monitoring Program - During a walkdown of the meteorological tower and associated equipment, the inspectors observed the physical condition of the tower and discussed equipment operability and maintenance history with cognizant licensee personnel. During licensee's performance of the weekly surveillance testing, the inspectors compared locally generated meteorological data with information available to control room operators. For the primary meteorological measurements of wind speed, wind direction, and temperature, the inspectors reviewed calibration records for applicable tower instrumentation and evaluated measurement data recovery from January 2005 to August 2007.

Licensee procedures and activities related to meteorological monitoring were evaluated against: ODCM; UFSAR Section 2.3; ANSI/ANS-2.5-1984, Standard for Determining Meteorological Information at Nuclear Power Sites; and Safety Guide 23, Onsite Meteorological Programs. Documents reviewed are listed in Section 2PS3 of the Attachment to this report.

Unrestricted Release of Materials from the RCA - The inspectors observed surveys of material and personnel being released from the RCA using SAM, PCM, and PM instruments. The inspectors also observed source checks of these instruments and discussed equipment sensitivity and release program guidance with licensee staff.

To evaluate the appropriateness and accuracy of release survey instrumentation, radionuclides identified within recent waste stream analyses were compared against the radionuclides used in current calibration sources and performance check sources. The inspectors also reviewed the last two calibration records for SAM instruments at the RCA egress.

Licensee programs for monitoring materials and personnel released from the RCA were evaluated against: 10 CFR Part 20 and IE Circular 81-07, Control of Radioactively

Contaminated Material. Documents reviewed are listed in Section 2PS3 of the Attachment to this report.

Problem Identification and Resolution - The inspectors reviewed audits and PIPs involving environmental monitoring, meteorological monitoring, and release of radioactive materials. 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. 28. Documents reviewed are listed in Section 2PS3 of the Attachment to this report.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Mitigating Systems Cornerstone

a. Inspection Scope

For the PIs listed below, the inspectors sampled licensee PI data for the period from January 2006 through December 2007 for both Unit 1 and Unit 2. To assess the accuracy of the PI data reported during that period, the inspectors compared the licensee's basis in reporting each data element to the PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Rev. 5.

Mitigating Systems Cornerstone:

- Safety System Unavailability, Emergency AC Power
- Safety System Unavailability, High Pressure Safety Injection
- Safety System Unavailability, Residual Heat Removal
- Safety System Unavailability, Auxiliary Feedwater
- Safety System Unavailability, Support Cooling Water System

The inspectors reviewed Licensee Event Reports, records of inoperable equipment, and Maintenance Rule records, to determine whether the licensee had adequately accounted for unavailability hours that the subject systems had experienced during the previous four quarters. The inspectors also reviewed the number of hours those systems were required to be available and the licensee's basis for identifying unavailability hours.

b. Findings

No findings of significance were identified.

.2 Occupational and Public Radiation Cornerstones

a. Inspection Scope

The inspectors sampled licensee data to verify the accuracy of reported PI data for the periods listed below. To verify the accuracy of the reported PI elements, the reviewed data were assessed against PI definitions and guidance contained in NEI 99-02, Regulatory Assessment Indicator Guideline, Rev. 5.

Occupational Radiation Safety Cornerstone - For the period September 2006 through November 2007, the inspectors assessed CAP documents associated with the Occupational Exposure Control Effectiveness PI to determine whether HRA, VHRA, or unplanned exposures, resulting in TS or 10 CFR 20 non-conformances, had occurred. The inspectors evaluated data reported to the NRC, and subsequently sampled and assessed applicable CAP documents and select health physics program records. The reviewed records included select personnel contamination event data, internal dose assessments, and UDO records. The inspectors also reviewed the corrective actions implemented subsequent to the two PI occurrences reported in fall 2006. Reviewed documents relative to this PI are listed in Sections 2OS1, 2OS3, and 4OA5.4 of the Attachment to this report.

Public Radiation Safety Cornerstone - The inspectors reviewed the Radiological Effluent Technical Specifications (RETS)/ODCM Effluent Occurrence PI results for the period September 2006 through November 2007. The inspectors reviewed selected OOS effluent radiation monitor and compensatory sampling data, abnormal release results as reported in the 2006 Annual Effluent Report, selected PIP documents related to RETS/ODCM issues. In addition, the inspectors reviewed cumulative and projected doses to the public for the same time period. Reviewed documents relative to this PI are listed in Sections 2PS1 and 4OA1.2 of the Attachment to this report.

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution

.1 Daily Review

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 PIPs associated with UFSAR inaccuracies for detailed review. The PIPs reviewed pertain to the Standby Shutdown Facility (M-06-3240), Station Blackout (M-06-3244), Reactor Coolant System leakage detection (M-05-3645), seismic qualification of ice in the ice condenser (M-07-5265), and a trend PIP on UFSAR discrepancies (M-06-2889). In addition, other PIPs listed in the Attachment to this report were reviewed which were referenced or pertained to these same issues. The inspectors reviewed these PIPs collectively to determine whether the licensee identified the full extent of the issue, performed an appropriate evaluation, and specified and prioritized appropriate corrective actions. The inspectors evaluated the PIPs 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

From the review of these PIPs, no findings of significance were identified. The licensee identified individual corrective actions, as well as programmatic corrective actions. The programmatic corrective actions identified included addressing procedural weaknesses that may have contributed to the UFSAR being inaccurate. Most of these corrective actions were fully implemented. However, two procedural changes identified in the PIPs to convert from knowledge based reviews to rule based steps were determined by the licensee to not need implementing. The first one pertained to addressing long-term operable but degraded non-conforming (OBDN) conditions as facility changes (PIP M-07-295:CA #10). The inspector found that the licensee had made changes to address when the UFSAR should be updated for long-term temporary modifications. As such, the inspector considered that the logic used for temporary modifications could consistently fit the OBDN situation as well, ensuring that long-term OBDN situations be reflected in the licensing basis. The current RN/CA gas entrainment issue is a good OBDN example where the licensee has not updated the UFSAR. Corrective actions implemented in 1995 (now considered interim as a result of 2004 NRC identified violations) have never been added to the UFSAR. The second procedural change pertained to addressing, in the 50.59 procedure, the relationship between 50.59 written evaluations for changes to the facility and updating the UFSAR for those changes (PIP M-06-2889:CA#5). The inspectors considered that if a written evaluation was required under 50.59(d)(2), the decision of whether the change affects the UFSAR has already been made. Consequently, a step could easily be included in the procedure for performing 50.59 evaluations that requires proceeding on to the UFSAR update procedure after completion of the written evaluation. The inspectors discussed these weaknesses in the corrective actions for the UFSAR issue with licensee management. As a result, licensee management was reevaluating the positions taken in the PIPs for the two recommended procedural changes.

.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 inspectors' 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 2007 to December 2007, 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 2nd and 3rd Quarter 2007
- 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

(1) Update of previously identified trends

A licensee-identified trend on nuclear service water fouling has been discussed in the previous four 6-month trends. The licensee issued PIP M-06-4255 to identify an emerging trend associated with increased fouling of plant service water systems. The licensee performed a root cause analysis and implemented the corrective actions prior to the August - November 2007 fouling season. The corrective actions were effective at reducing fouling. This trend appears to have stopped.

The inspectors previously identified a trend associated with numerous violations for failing to update the UFSAR in accordance with regulations outlined in 10 CFR Part 50.71(e). The licensee initiated PIP M-06-2889 to address the UFSAR accuracy trend and performed a sample review of the UFSAR. During the 6 month period, several additional examples of UFSAR inaccuracies were identified by the NRC. NRC Inspection Report (IR) 05000369,370/2007004, identified that the UFSAR had been inappropriately updated to delete the ice fusion licensing basis. For Unit 2, NRC IR 05000370/2007010 identified an additional example where the UFSAR was not updated to reflect that emergency core cooling system (ECCS) throttle valves were the smallest opening in the ECCS system instead of the containment sump screen. The same example is identified for Unit 1 in Section 4OA5.2 of this report.

(2) New trends

No new trends were identified this period that had not already been identified by the licensee.

4OA3 Event Follow-up

(Closed) Licensee Event Report (LER) 05000369/2007-004-00, Procedure Deficiency identified for Performing a Manual Backwash of Nuclear Service Water (RN) Strainers due to Reliance on Non-Safety Instrument Air. The principal safety-related function of the RN system is the removal of decay heat from the reactor via the component cooling water (KC) system during a design basis accident (DBA) or transient. This requires that the RN system can provide the necessary cooling water flow rates to essential heat exchangers during the DBA. In addition, RN provides the alternative safety related feedwater supply to the auxiliary feedwater pumps for feeding steam generators. Strainers are installed immediately upstream of the RN pumps. The related support function of the RN strainer is to ensure adequate suction pressure and flow rate are maintained during normal and accident conditions. To ensure strainers remain unfouled, backwashes are performed on them. The original design was for strainer backwash to be performed manually during accidents to prevent unnecessary loss of water from the system. The current design basis is that a manual backwash must always be able to be performed. In addition, the UFSAR states "During a Loss of Coolant Accident, on receipt of a high pressure differential pressure signal, manual backwashes will be performed."

On August 6, 2007, the licensee identified that the procedures for performing a manual backwash of the nuclear service water strainers directed operators to use a non-seismically qualified, non-safety related air system to manipulate the valves required for the manual backwash function. This unqualified air system cannot be relied upon to function during a DBA. These backwash procedures were written as part of a 2003 plant modification (MGMM-14403) to upgrade and reclassify the manual RN filtering and backwash functions to "safety-related," in response to NRC concerns (PIP M-02-2427). The concerns were that the changed environment of Lake Norman had caused seasonal macro-fouling of the strainers from increased concentrations of Alewife fish during late July and early August. The basis for reclassification was to ensure proper operation of the strainer in the event that significant fouling from these fish occurred. This modification also failed to identify reliance on other non-safety instrumentation and components for performing safety-related backwashes, including the UFSAR-credited differential pressure instrument. The reliance on non-safety-related systems to perform the safety-related manual backwash function was not recognized during the modification. The inspectors found that the licensee has continued to evaluate this issue after the LER was submitted. These continuing evaluations address such aspects as what happens inside the strainer, at what point does flow become less than what is needed as identified in design calculations, and what actions would operators take that might impact when the minimum flow point is reached.

This finding involves the inability to perform a safety-related manual backwash of nuclear service water strainers due to reliance on non-safety systems and motive force to provide the backwash function. Without manual backwash capability during macro-fouling season, these strainers could become permanently fouled, which could prevent the nuclear service water system from performing its intended safety function. This issue is more than minor because it affects the availability, reliability, and capability of the nuclear service water system and is related to the design control, protection from external factors (loss of heat sink), and procedure quality attributes of the mitigating systems cornerstone. This issue is unresolved pending NRC review of the licensee's evaluations of past strainer operability, including the licensee's classification of significant fouling periods and the engineering analyses of the fish clogging effects on the strainer. This item is identified as Unresolved Item (URI) 05000369,370/2007005-03 Failure to Take Adequate Corrective Action for Implementation of Safety-Related RN Strainer Backwash. This issue is in the licensee's corrective action program as PIP M-07-4313.

4OA5 Other Activities

- .1 (Closed) URI 05000369,370/2007003-02, Reactor Vessel Head Lift Practices Related to Design and Licensing Basis. This URI was identified in NRC IR 05000369,370/2007003 for a potential violation of requirements to update the safety analysis report pursuant to 10 CFR 50.71(e) to reflect aspects of handling the reactor vessel head and requirements to translate information from an existing reactor vessel head drop analysis to procedures for the movement of the head pursuant to the design control requirements of Criterion III of Appendix B to 10 CFR Part 50. In addition, the inspection report included a potential violation of the requirement to assess the increase in risk associated with the head movement outside analyzed bounds pursuant to 10 CFR 50.65(a)(4), which resulted from the absence of information in the safety analysis report and reactor vessel head lifting procedures.

The NRC has found industry uncertainty regarding the licensing bases for handling of reactor vessel heads, and as a result issued Enforcement Guidance Memorandum 07-006, "Enforcement Discretion for Heavy Load Handling Activities," on September 28, 2007. The Nuclear Energy Institute (NEI) has informed NRC of industry approval of a formal initiative that specifies actions each plant will take to ensure that heavy load lifts continue to be conducted safely and that plant licensing bases accurately reflect plant practices. The NRC staff believes implementation of the initiative will resolve uncertainty in the licensing bases for heavy load handling, and enforcement discretion related to the uncertain aspects of the licensing basis is appropriate during the implementation of the initiative. Therefore, consistent with the intent of Enforcement Guidance Memorandum 07-006, we are exercising enforcement (EA-08-035) discretion in accordance with Section VII.B.6 of the NRC Enforcement Policy and are closing URI 05000369,370/2007003-02 without any enforcement action.

.2 (Closed) URI 05000369/2007003-01, Debris in the Unit 1 ECCS Sump.

Introduction: The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI for a failure to take adequate corrective action for a nonconformance associated with potential clogging of the ECCS cold leg injection throttle valves during high pressure recirculation.

Description: While reviewing PIP M-07-1609, the inspectors discovered that on March 17, 2007, the licensee found fire wrap/blanket in the Unit 1 train B ECCS sump. The blanket was folded over multiple times and partially stuffed into the annular area between the ECCS suction pipe penetration bellows and the bellows guard pipe. The licensee performed an extent of condition inspection for train A and a similar fire wrap/blanket was found in the same respective location. In addition, the PIP identified other additional material found inside the screened sump structure which included hard debris (2 16P nails, 1/2" drill bit, 3" cutting wheel, 1/2" nut, and 4" partial welding rod stick) and soft debris (3"x6" paper tag dated 3/13/04, cigarette butt, empty cigarette package, several small pieces (<2"x3") of aged, friable duct-tape). In addition, during a Significant Event Investigation Team (SEIT) performed in November 2006, it was revealed that in September 2002 several feet of duct tape were discovered on the ECCS suction pipe inside of the Unit 1 ECCS sump.

The inspectors reviewed PIP M-96-0530, which was initiated to conduct an operating experience review of NRC Information Notice 96-27, Potential Clogging of High Pressure Safety Injection Throttle Valves During Recirculation. The PIP problem description identified that "during the recirculation phase of a postulated Loss of Coolant Accident, the ECCS throttle valves may have the potential to collect debris and clog, resulting in partial or complete loss of core cooling flow." The PIP identified a nonconformance/design deficiency in that the ECCS cold leg injection throttle valve positions/openings at McGuire were smaller than the ECCS sump screen openings. This nonconformance/design deficiency was contrary to the design and licensing basis for both units, which indicated that the ECCS sump screen had the smallest size opening in the system so that anything passing through the screen would not clog the ECCS system (UFSAR section 6.5). The PIP resolution credited a combination of design, system configuration, motive force, and administrative controls to ensure that the potential for ECCS throttle valves to become clogged was considered resolved. One administrative control credited was a periodic inspection performed during each refueling outage of the sump area inside the sump screen to ensure an acceptable condition of the Emergency Sump. Any debris found inside the sump was to be evaluated and removed. In addition, another credited administrative control was for inspections of the reactor building prior to unit startup to remove debris that could impede ECCS return flow, and for the online foreign material control process for reactor building entries. No additional corrective action was considered necessary in response to this nonconformance/design deficiency. The inspectors found that the resolution did not include an accept-as-is design change as required by the licensee's design control program, did not include an evaluation of this change under 10CFR 50.59, and did not include a change to the licensing basis as required by 10 CFR 50.71(e) to update the

UFSAR. The unrelated discovery of the material inside the sump screen indicated that the credited inspections were ineffective.

Analysis: The performance deficiency involved a failure to take adequate corrective actions for an identified nonconformance/design deficiency. Specifically, the licensee chose to credit periodic inspections of the ECCS sump to ensure each Units' ECCS sump remained free of foreign material that could clog the respective ECCS cold leg injection throttle valves. The credited periodic ECCS sump inspections were, however, subsequently revealed to be ineffective, by the unrelated September 2007 and 2002 discovery of debris inside the Unit 1 ECCS sump for both ECCS trains.

Hard debris that would transport is of concern because it can disable the ECCS pumps by stopping or preventing the impellers from moving and could, if it passed through the pump, cause other problems in the system such as inhibiting flow through the throttle valves. The inspectors evaluated the hard debris that was found and its location to determine if it would transport to the sump suction pipe. The debris was located behind a box pipe support on the side opposite of where the ECCS suction is located. The inspectors concluded that there was insufficient flow velocity to lift the hard debris over the box support and elevate it up to the ECCS suction pipe opening. Therefore, it was not considered transportable.

The fire blankets were evaluated in PIP M-07-1609 including a Materials Lab Report, dated April 30, 2007, a Reportability Support Evaluation dated May 21, 2007, and supplemental information on the effect of thermal expansion on the expansion bellows. The bellows thermal expansion was important because the fire blanket was retained in various locations by being trapped between the guard pipe and the bellows. The evaluation indicated that the fire blanket will be retained and will not be transportable to the ECCS suction pipe.

This issue is greater than minor because, if left uncorrected, the remaining transportable soft debris could have had a detrimental affect on the availability and reliability of both trains of ECCS when called upon during an accident. In particular, the debris had the potential to have detrimental effects on the high pressure recirculation function due to potential clogging of the ECCS throttle valves. The issue was evaluated under IMC 0609, Significance Determination Process and was determined to be of very low safety significance (Green), based on the NRC evaluation documented in NRC Inspection Report 05000370/2007010, of similar quantities of debris in the Unit 2 ECCS sump and of similar throttle valve openings. This finding has a cross-cutting aspect of appropriate corrective actions in the area of problem identification and resolution (P.1(d)).

Enforcement: 10CFR50, Appendix B, Criterion XVI, Corrective Action, states that measures shall be established to assure that conditions adverse to quality, such as deficiencies, deviations, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. This requirement is implemented through the Duke Quality Assurance Program Topical Report and procedure NSD 208, Problem Identification Process. Contrary to the above,

Enclosure

from approximately June 3, 1996, until March 17, 2007, the licensee failed to adequately correct a condition adverse to quality related to the nonconformance/deficiency of ECCS injection throttle valve positions/openings being smaller than ECCS sump screen openings, as identified in PIP M-96-00530. Specifically, the licensee's corrective action failed to: (1) adequately implement credited inspections of the inside of the ECCS sump, as evidenced by the 2007 unrelated discovery of a significant amount of debris inside the Unit 1 ECCS sump of both ECCS trains; (2) process a design change per their design control program for the resolution discussed in PIP M-96-00530; (3) to evaluate the resolution/change under 10CFR50.59; and (4) process a licensing basis change under 10CFR50.71(e) to revise the UFSAR. This finding is identified as a violation of 10CFR50, Appendix B, Criterion XVI, for failure to take adequate corrective action. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as PIP M-07-1609, this violation is being treated as an NCV consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000369/2007005-04, Failure to Take Adequate Corrective Action for a Nonconformance Associated with ECCS Throttle Valves.

- .3 (Closed) URI 05000369,370/2000009-05, Adequacy of HEMYC Cable Wrap Fire Barrier Qualification Tests and Evaluations to Scope Installed Configurations. Inspection Report 05000369,270/2000009 documented the potential inadequacy of Hemyc fire barrier wrap material at McGuire Nuclear Power Plant. The issue was unresolved pending further NRC review to determine whether the qualification tests of the Hemyc fire wrap systems were acceptable. In subsequent NRC fire tests, results indicated that Hemyc/MT materials could not be routinely relied upon as one hour fire barriers. The NRC staff has completed a significant effort informing industry of the concerns associated with these materials by issuing information notice (IN) 2005-07, Results of Hemyc Electrical Raceway Fire Barrier System Full Scale Fire Testing, and Generic Letter (GL) 2006-03, Potentially Nonconforming Hemyc and MT Fire Barrier Configurations. As required by GL 2006-03, McGuire Nuclear Power Plant has responded to the NRC concerns by identifying all applications of Hemyc/MT materials, implementing compensatory measures as appropriate, and initiating corrective actions to resolve as necessary. Based upon the licensee's letter of intent received by the NRC to transition the current licensing basis to NFPA 805 Performance Based Standard for Fire Protection in accordance with 10 CFR 50.48 (c), these compensatory measures will remain in place until a license amendment is approved by the NRC. Therefore, the NRC staff has determined this URI is closed and any further evaluation of this issue will be conducted pursuant to review of the licensee's GL 2006-03 response and subsequent license amendment approval.
- .4 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 cask loading areas and storage facilities, the inspectors observed access

controls, TLD locations, 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. The inspectors also reviewed the quarterly trending results of radiation survey and TLD data results.

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 4OA5.4 of the Attachment to this report.

b. Findings

No findings of significance were identified.

- .5 (Closed) URI 05000369/2006007-01, Failure to Follow Procedure During Residual Heat Removal (ND) Pump 1B Performance Test (PT). As described in NRC Inspection Report 05000369,370/2006007, this concerned a failure to follow procedures during performance of a TS required PT for ND pump 1B. Specifically, steps in completed procedure PT/1/A/4204/001B were signed by an individual that was not qualified to sign the steps, the individual signed steps as completed that were not performed, and the individual designated a non-conditional step as being not applicable (N/A).

On January 30, 2007, the NRC Office of Investigations (OI) completed an investigation pertaining to URI 05000369/2006007-04. Based on a review of the OI investigation, the NRC determined that a violation of NRC requirements occurred. The Severity Level IV violation was cited in an OI letter dated July 17, 2007 (NOTICE OF VIOLATION, EA-07-130). For administrative purposes this violation (VIO) is designated as VIO 05000369/2007005-05, Failure to Follow Procedure During Residual Heat Removal Pump 1B Performance Test.

The inspectors have reviewed the licensee's August 16, 2007, response to the Notice of Violation and subsequent corrective actions. Because the results of PT/1/A/4204/001B were not affected by the procedural non-compliance and appropriate corrective actions have been taken, URI 05000369/2006007-01 and VIO 05000369/2007005-05 are closed.

4OA6 Meetings, Including Exit

On January 7, 2008, the resident inspectors presented the inspection results to Mr. B. Hamilton and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

4OA7 Licensee Identified Violations

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

- TS 5.7.2 requires that areas with radiation levels > 1000 mrem/hr at 30 cm (12 in.) from the radiation source or from any surface which the radiation penetrates shall be provided with locked or continuously guarded doors to prevent unauthorized entry and the keys shall be maintained under the administrative control of the Operations Shift Manager, Radiation Protection Manager or his or her designee. Contrary to the above, on September 20, 2006, the locked-high radiation area key for the Unit 1 lower containment pipe chase was issued to a security officer. Procedure SH/O/B/2000/012, which designates authorized individuals for possession of LHRA keys as specified in TS 5.7.2, states that LHRA keys can only be issued to ANSI qualified senior radiation protection technicians. Control of the key by radiation protection personnel was reestablished prior to any entry into the LHRA. This item is documented in the licensee's CAP as PIP M-06-4020. This event is of very low safety significance because it did not involve entry into a very high radiation area nor the substantial potential for worker overexposure.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

Ashe, K., Manager, Regulatory Compliance
Black, D., Security Manager
Bradshaw, S., Training Manager
Brown, S., Manager, Engineering
Correll, J., RP Supervising Scientist
Crane, K., Regulatory Compliance
Evans, K., Superintendent, Maintenance
Hamilton, B., Site Vice President, McGuire Nuclear Station
Hull, P., Chemistry Manager
Kammer, J., Manager, Safety Assurance
Mooneyhan, S., Radiation Protection Manager
Nolin, J., Manager, Mechanical and Civil Engineering
Parker, R., Superintendent, Work Control
Repko, R., Station Manager, McGuire Nuclear Station
Sigmon, T., Environmental Radiation Program Manager
Simril, R., Superintendent, Plant Operations
Sloan, H., RP General Supervisor
Snider, S., Manager, RES Engineering

NRC personnel

J. Moorman, Chief, Reactor Projects Branch 1
J. Stang, Project Manager, NRR

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000370/2007005-01	NCV	Failure to Take Adequate Corrective Action for Ensuring Containment Spray Isolation Valve Thrust Capacity (Section 1R22)
05000369/2007005-04	NCV	Failure to Take Adequate Corrective Action for a Nonconformance Associated with ECCS Throttle Valves (Section 4OA5.2)
05000369/2007005-05	VIO	Failure to Follow Procedure During Residual Heat Removal Pump 1B Performance Test (Section 4OA5.5)

Opened

05000370/2007005-02	URI	Failure to Control a Locked-High Radiation Area Barrier (Section 2OS1)
05000369,370/2007005-03	URI	Failure to Take Adequate Corrective Action for Implementation of Safety-Related RN Strainer Backwash (Section 4OA3)

Closed

05000369/2007-004-00	LER	Procedure Deficiency identified for Performing a Manual Backwash of Nuclear Service Water (RN) Strainers due to Reliance on Non-safety Instrument Air (Section 4OA3)
05000369,370/2007003-02	URI	Reactor Vessel Head Lift Practices Related to Design and Licensing Basis (Section 4OA5.1)
05000369/2007003-01	URI	Debris in the Unit 1 ECCS Sump (Section 4OA5.2)
05000369,370/2000009-05	URI	Adequacy of HEMYC Cable Wrap Fire Barrier Qualification Tests and Evaluations to Scope Installed Configurations (Section 4OA5.3)
05000369/2006007-01	URI	Failure to Follow Procedure During Residual Heat Removal Pump 1B Performance Test (Section 4OA5.5)

LIST OF DOCUMENTS REVIEWED**Section 1R01: Adverse Weather Protection**

IP/1/B/3250/059B, Monthly Check of Freeze Protection, Rev. 3

IP/2/B/3250/059B, Monthly Check of Freeze Protection, Rev. 3

IP/0/B/3250/059C, Preventative Maintenance and Operational Check of Freeze Protection for Intake, Rev. 4

PT/0/B/4700/038, Verification of Freeze Protection Equipment and Systems, Rev. 21

PT/0/B/4700/070, On Demand Freeze Protection Verification Checklist, Rev. 17

Section 1R04: Equipment Alignment

Partial System Walkdown

[2A Emergency Diesel Generator]

Drawing MCFD-2609-01.00, Flow Diagram of the Diesel Generator Engine Cooling Water System

Drawing MCFD-2609-02.00, Flow Diagram of the Diesel Generator Engine Lube Oil System

Drawing MCFD-2609-03.00, Flow Diagram of the Diesel Generator Engine 2B Fuel Oil System

Drawing MCFD-2609-04.00, Flow Diagram of the Diesel Generator Starting Air System

[1B Emergency Diesel Generator]

Drawing MCFD-1609-01.01, Flow Diagram of the Diesel Generator Engine Cooling Water System

Drawing MCFD-1609-02.01, Flow Diagram of the Diesel Generator Engine Lube Oil System

Drawing MCFD-1609-03.01, Flow Diagram of the Diesel Generator Engine 1B Fuel Oil System

Drawing MCFD-1609-04.00, Flow Diagram of the Diesel Generator Starting Air System

[2A Residual Heat Removal System]

Drawing MCFD-2561-01.00, Flow Diagram of Residual Heat Removal System (ND)

OP/2/A/6200/004, Residual Heat Removal System, Rev. 78, Enclosures 4.4 and 4.5

Complete System Walkdown

UFSAR Chapter 9.2

Design Basis Document MCS 1154.00-00-0002 Rev. 2

Maintenance Rule database

Nuclear Service Water System Health Reports

OP/1/A/6400/006 A, Nuclear Service Water System Checklist, Rev. 30

MCFD-1574-01.00, Flow Diagram of ND System

Section 1R05: Fire Protection

McGuire Nuclear Station IPEEE Submittal Report dated June 1, 1994

McGuire Nuclear Station Supplemental IPEEE Fire Analysis Report dated August 1, 1996

MCS-1465.00-00-0008, R4, Design Basis Specification for Fire Protection

Section 1R11: Licensed Operator Requalification

MTP 2701.0, Simulator Configuration Management and Operating Limits, Revision 4

Nuclear Policy Manual, Nuclear System Directive 512, Maintenance of RO/SRO NRC Licenses, Revision 2

Exercise Guide OP-MC-SRT-75

Section 1R12: Maintenance Effectiveness

M-07-2973, Leaks discovered during NOP/NOT walkdown

M-07-3550, NC Super-system reclassified as "A1" due to repetitive MPFF (PIPs M-06-5191, M-06-5171, M-06-5089, M-06-3184)

Section1R15: Operability Evaluations

UFSAR 8.3.1.2.7.5, Cable application and installation
 NRC Bulletin 79-02 including revisions 1 (including supplement 1) and 2
 UFSAR Chapter 6.3.2.14
 MCC-1223.12-00-0010
 TSs 3.5.2 (ECCS Operating), 3.5.3 (ECCS Shutdown), 3.6.6 (Containment Spray)
 MCFD-1554-03.00 NV Flow Diagram
 MCS-1554.NV-00-0001, NV Design Basis Document
 MCC-1223.24-00-0073 Rev. 0
 MCC-1223.24-00-0073 Rev. 1
 PIP M-04-0118

Section1R23: Temporary Modifications

Applicable 10 CFR 50.59 screening forms

2OS1: Access Control To Radiologically Significant Areas

Procedures, Guidance Documents, and Manuals

SH/0/B/2001/003, Investigation of Skin and Clothing Contaminations, Rev. 9
 SH/0/B/2001/001, Internal Dose Assessment, Rev. 3
 SH/0/B/2000/013, Removal of Items from RCA/RCZs, Rev. 1
 SH/0/B/2000/08, Operational Alpha Program, Rev. 3
 SH/0/B/2000/011, Alpha Radiation Characterization Program, Rev. 1
 SH/0/B/2000/001, Operational Beta Program, Rev. 1
 SH/0/B/2000/010, Beta Radiation characterization Program, Rev. 1
 SH/0/B/2000/003, Preparation of a Radiation Work Permit, Rev. 7
 SH/0/B/2000/005, Posting of Radiation Control Zones, Rev. 5
 SH/0/B/2002/001, Multiple Dosimetry, Rev. 5
 SH/0/B/2000/012, Access Controls for High, Locked High, Very High Radiation Areas, Rev. 8
 HP/0/B/1001/043, Operation of the Body Burden Analysis System, Rev. 6
 HP/2/B/1006/009, Controls for Reactor Building Entry Under Power and for Non-Refueling Outages, Rev. 11
 RPMP 7-1, Radiological Key Control, Rev. 9
 RPMP 7-6, Administrative Controls of Yellow Flashing Light Process, Rev. 3
 RPMP 7-13, Supplemental Guidelines for Controls to Extra High Radiation Areas Greater than 10 rem per Hour, Rev. 1
 RPMP 7-15, Supplemental Guidelines for Establishing Extra High and Very High Radiation Areas, Rev. 2
 NSD 208, Problem Investigation Process (PIP), Rev. 28

Records, Data, and Reports

Radiation Work Permit (RWP) 5018, U1/U2 AB access to locked-high radiation areas, Rev. 12

RWP 25, Upper containment entry during power operations, Rev. 17
 RWP 28, Reactor building annulus entry (Modes 1-4), Rev. 14
 RWP 25, Upper containment entry during power operations, Rev. 21
 RWP 28, Reactor building annulus entry (Modes 1-4), Rev. 17
 RWP 1905, U1 reactor building/annulus: entry into the fuel transfer area, Rev. 3
 RWP 5013, U1/U2 AB miscellaneous material condition upgrade, Rev. 7
 Survey #M-031107-6, U1 Annulus South View
 Survey #M-031107-5, U1 Annulus North View
 Survey #M-092607-6, U1 Aux Pipe Chase
 UDO Investigation Form: 07-26 (3/30/07), 06-57 (10/14/06)
 External Dose Details (UDO 06-57)
 Root Cause Failure Analysis Report: Loss of Control of EHRA Barrier, 11/13/06
 HP/0/B/1003/063 Enclosure 5.10, LHRA/VHRA Boundary Surveillance, 12/11/07
 HP/2/B/1006/009 Enclosure 5.1, Power Entry into Upper Containment, 12/11/07
 HP/2/B/1006/009 Enclosure 5.3, Power Entry into Annulus, 12/11/07
 Temporary Storage Request for Radioactive Material in SFP: Boral Coupon Tree (1/14/04),
 Underwater Vacuum Filters (9/5/02), Underwater Vacuum Filters (6/3/03), Activated Filters
 (3/30/05), Underwater Vacuum Filter (6/29/05), Miscellaneous (9/20/06), Irradiation Capsule
 (4/15/07), 8 UCS Filters (1/17/06)

Corrective Action Program (CAP) Documents

Self-Assessment, RP SA07-03, Comparison of MNS RP procedures and processes to SOER
 2001-01 recommendations
 PIP M-07-2061, Lost TLD and ED inside RCA/RCZ, 3/30/07
 PIP M-06-4907, Lost SRD inside RCA and then found, 10/14/06
 PIP M-06-4537, ED not worn by worker in HRA, 10/3/06
 PIP M-06-4056, MNS not meeting the requirements of 10 CFR 20.1905 for non-fuel items
 stored in the spent fuel pools, 9/21/06
 PIP M-07-3719, Air sample for work on 2KF83 was counted for alpha activity with initial results
 >0.25 DAC; followup analysis was not performed, 6/27/07
 PIP M-07-5787, PIP to evaluate OE from Watts Bar concerning personnel being temporarily
 locked in containment, 11/5/07
 PIP M-06-6013, Personnel entered U1 annulus using RWP for U1 upper containment, 12/20/06
 PIP M-06-4326, Worker received ED dose alarm, 9/28/06
 PIP M-07-3603, Lead blankets and a portion of the tube-n-coupler frame supporting shield wall
 between WMT-A and Radwaste Chem office were removed, 6/20/07
 PIP M-06-4299, Attempt to enter multipack dose was unsuccessful, 9/27/06
 PIP M-06-5598, Unexpected dose rates at job location, 11/22/06
 PIP M-07-1950, ED lost inside RCA/RCZ and found, 3/27/07
 PIP M-07-1512, ED lost inside RCA/RCZ and found, 3/14/07
 PIP M-06-4206, ED lost inside RCA/RCZ and not found, 9/25/06
 PIP M-06-3877, U2 lower annulus door entrance posted as airborne radioactivity area when no
 airborne conditions existed, 9/17/06

2OS3: Radiation Monitoring Instrumentation and Protective Equipment

Procedures, Guidance Documents, and Manuals

EnRad Laboratories, Calibration of Bicron/Thermo MicroRem Meter, Procedure 805, Revision (Rev.) 1
 EnRad Laboratories, Calibration of Eberline RM-14 Count Rate Meter, Procedure 509, Rev. 1
 EnRad Laboratories, Calibration of Eberline RO-20 Ion Chamber, Procedure 807, Rev. 1
 EnRad Laboratories, Calibration of Ludlum Model 3 (CPM), Procedure 842, Rev. 0
 EnRad Laboratories, Calibration of the MGPI Telepole, Procedure 835, Rev. 1
 EnRad Laboratories, Calibration of Rotameter and Air Sampling Equipment, Procedure 509, Rev. 1
 EnRad Laboratories, SCBA Regulator Flow Testing, Procedure 509, Rev. 2
 HP/0/B/1001/041, Calibration and Quality Assurance of Whole Body Counter, Rev. 001
 HP/0/B/1001/043, Operation of the Body Burden Analysis System, Rev. 006
 HP/0/B/1005/066, Response Checks of Personnel Monitoring Equipment, Rev. 17
 HP/0/B/1005/079, Source Check of Inservice Radiation Protection Portable survey Instruments, Rev. 009
 HP/0/B/1008/006, Respiratory Protective Equipment Maintenance and Storage, Rev. 014
 HP/0/B/1008/011, Respiratory Equipment Use, Rev. 014
 License Amendments Numbers (Nos.) 199 to NPF-9 and No. 180 to NPF-17, Elimination of Post Accident Sampling Requirements, Issued September 17, 2001
 Nuclear System Directive 208, Problem Investigation Process (PIP), Rev. 28

Data and Records

ABACOS-Plus, Daily Performance and Background Checks, Whole Body Counter, 12/11/07
 Air Sampler Certificate of Calibration, GAST/RADECO Goose Neck Air Sampler, Serial Number (S/N) 0583 08/26/06 and 02/15/07
 Air Sampler Certificate of Calibration, SAIC Hi-Vol Air Sampler (Emergency), S/N 5795, 01/10/07 and 07/03/07
 BBA Library, 10/31/07
 Certificate of Calibration, Bicron Micro Rem, Serial Number (S/N) 1460, 04/25/07 and 10/18/07
 Certificate of Calibration, Eberline RM-14, S/N 2830, 11/29/07; and S/N 5529, 12/12/07
 Certificate of Calibration, Eberline RO-20, S/N 1494, 02/06/07 and 10/01/07
 Certificate of Calibration, Ludlum Model-3 (CPM), S/N 235329, 08/27/07
 Certificate of Calibration, Telepole, S/N 6604-120, 04/11/07 and 10/09/07
 Certificate of Calibration, Thermo Hand-E-Count Smear Counter, S/N 536, 04/07/07 and 10/24/07
 Delta 5B/Electra 1B with BP Series Beta Probe Calibration Worksheet, EnRad No. 01490, 01/15/07 and 07/30/07
 Grade D Breathing Air Sample Forms, VB System, 01/16/05, 05/12/05, 06/07/05, 08/04/05, 10/26/05, 04/10/06, 07/10/06, 10/04/06, 01/18/07, 06/06/07, and 08/30/07
 Grade D Breathing Air Sample Forms, SCBA Compressors, 06/28/05, 12/08/05, 04/05/06, 09/22/06, 11/07/06, 01/30/07, 05/09/07, 07/19/07, and 10/09/07
 MSA ProCheck3 Test Results, Complete SCBA Test, Custom 4500 II SCBA, S/N 01806,

05/18/06, 01/09/07 and 10/25/07; S/N 01820, 07/06/06 and 07/19/07; S/N 01841, 08/10/06 and 08/06/07; and S/N RQ276014, 07/28/06 and 05/17/07
 HP/0/B/1001/041, Calibration and Quality Assurance of Whole Body Counter, Rev. 001, 06/26/06 and 06/18/07
 Hydrostatic Retest Data Sheets, 11/21/05 and 04/12/06
 ILIMS RP Daily High Range Check Report, 12/12/07
 McGuire Nuclear Site (MNS), DAW Sample Comparisons, Memorandum to File, 11/12/07
 MNS, New Standard Filter Waste Stream, Memorandum to File, 11/05/07
 MSA BMR Certified C.A.R.E. Technician Certificate for Four Individuals, 08/29/06, and Two Individuals, 03/28/07
 MSA MMR Certified C.A.R.E. Technician Certificate for Six Individuals, 08/29/07
 PM 1EMF-12, Control Room Area Radiation Monitor, RMS RP-86A Low Range Area Channel Calibration, 08/05/02
 PT 1EMF-51B, Source Check Containment Rad Monitor, RMS High Range Area Channel Maintenance, 09/20/05, 04/03/07
 PT 2EMF-4, SFP Bridge Fuel Pool Area Rad Monitor, RMS RP-86A Low Range Area Channel Calibration, 06/15/05 and 01/25/07
 Safe Air Systems, Inc., In-House Compressor, 12/29/06, and 07/05/07
 SCBA Bottle ID Number List, 12/12/07
 Simplex Grinnell, In-House Compressor, Mako Compair, S/N 5407H489, 07/29/05, 05/15/06, 08/28/06, 01/09/07, and 04/30/07

Corrective Action Program Documents

PIP G-07-00074, SCBA PASS device failed to operate properly at MNS, 01/29/07
 PIP M-06-04090, Unit 1 Control Room received a 'Trip 2' alarm on 1 EMF-9 – Reactor Building Incore Instrument Room, 09/22/06
 PIP M-06-05461, 0EMF-49 became inoperable following the release of WMT-A, 11/11/06
 PIP M-06-06077, Radiation Protection Group Assessment RP-SA06-05 Required Assessment of 2005 Assessment-Related Corrective Actions for RPS, 12/28/06
 PIP M-07-00563, cable 2EMF516 will not pass signal to remote meter at 2EMF4, 01/29/07
 PIP M-07-01006, 0EMF-43B loss of sample flow alarm came in on 1RAD-2 due to sample pump tripping, 02/20/07
 PIP M-07-01820, Four radiation monitoring PMs have been rescheduled exceeding their due date, 03/22/07
 PIP M-07-04117, Duke Energy Assessment Report, 1EOC10 RP S&C Supervisor Lessons Learned, 07/26/07
 PIP M-07-04274, 1EMF-3 failed and will not reset, 08/03/07
 PIP M-07-04466, All Argos monitors at RCA single access point (SPA) went into fault condition simultaneously, 08/15/07
 PIP M-07-04765, 2EMF-42 being declared inoperable, 09/05/07

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

Procedures and Reports

McGuire Nuclear Station 2005 Annual Radiological Effluents Release Report, 4/27/06
 McGuire Nuclear Station 2006 Annual Radiological Effluents Release Report, 4/25/07
 IP/0/B/3006/007A, RMS Liquid Monitor Transfer Calibration, Rev.9

IP/ 0/B/3006/017 A, RMS RP-86A/Iodine Monitor Transfer Calibration, Rev. 7
 IP/1/B/3006/003K, RMS P.I.G. Monitor Flow Calibration, Rev.23
 IP/1/B/3006/005 B, Radiation Monitoring System RP-86A/Particulate Monitor Transfer Calibration, Rev. 11
 HP/0/B/1001/038, Quality Assurance Of Count Room Equipment, Rev. 9
 HP/0/B/1003/001, Unit Vent Calculations, Rev. 8
 HP/0/B/1003/008, Determination Of Radiation Monitor Setpoints (EMFs), Rev. 36
 HP/0/B/1003/015, EMF-53 (Waste Handling Area), EMF-52 005 (Waste Management Facility), and 2EMF-59 (Equip. Staging Building) Vent Calculations, Rev. 5
 HP/0/B/1003/031 A, Liquid Waste Release to the WC System, Rev.12
 HP/0/B/1003/036, Unit Vent, Rev. 22
 HP/0/B/1003/039 P, VP/Incore Release Procedure, Rev.16
 HP/0/B/1003/039 Q, VQ Release Procedure, Rev. 19
 HP/0/B/1003/049, WMT Release, Rev.11
 OP/1/A/6450/015, Containment Purge System, Rev. 34
 OP/1/A/6450/017, Containment Air Release and Addition System, Rev. 35
 PT/0/B/4600/025, Cumulative Offsite Dose From Liquid & Gaseous Effluents, Rev. 7
 SRPMP 8-2, Investigation of Unusual Radiological Occurrences, Rev. 1
 McGuire Nuclear Station Offsite Dose Calculation Manual, Rev. 48
 McGuire Nuclear Station Updated Final Safety Analysis Report Chapter 11, 11/11/06
 McGuire Nuclear Station Selected Licensee Commitments Manual
 McGuire Nuclear Station Technical Specifications -Section 5, Administrative

Records and Data

PT/1/A/4450/001 B, VF HEPA/ Damper and Carbon Adsorber Filters In-Place Leak Test, Rev. 13, Completed 9/18/07
 PT/1/A/4450/001 D, VF HEPA/ Damper and Carbon Adsorber Filters In-Place Leak Test, Rev. 11, Completed 1/11/07
 PT/2/A/4450/001 B, VF HEPA/ Damper and Carbon Adsorber Filters In-Place Leak Test, Rev. 10, Completed 8/2/06
 PT/2/A/4450/001 D, VF HEPA/ Damper and Carbon Adsorber Filters In-Place Leak Test, Rev. 10, Completed 4/10/06
 Unit 1 VA Carbon Lab Efficiency -1VAFL0008, 9/15/07
 Work Order: PT1VALP5120/ Unit Vent Flow Instrument Loop, 8/3/07
 Work Order: PT1VALP5120/ Unit Vent Flow Instrument Loop, 4/24/07
 Work Order: PT 1 EMF-35L/ Unit vent particulate channel, 8/13/07
 Work Order: PT 1EMF-38L / Containment particulate radiation monitor low range, 1/10/06
 Calibration Data Sheet: 1EMF-31 (Turbine Building Sump), 8/20/06, 10/25/04
 Calibration Data Sheet 1 EMF-34 (Steam Generator Blowdown), 6/17/03, 6/15/05
 Calibration Data Sheet 1 EMF-33 (Condenser Offgas), 11/3/05, 8/16/07
 Calibration Data Sheet 1 EMF 35 (Plant Vent), 12/15/05, 8/13/07
 Calibration Data Sheet 1EMF 36 (RD 32 Gas Monitor), 8/17/04, 2/15/06
 Calibration Data Sheet 1 EMF 37, 2/6/06
 Calibration Data Sheet 1 EMF 38L(Containment Low range Particulate), 9/11/07
 Calibration Data Sheet 1 EMF 38 (Containment Particulate), 1/11/06
 Calibration Data Sheet 1 EMF-39 (Containment Gas) 2/18/06
 Calibration Data Sheet 1 EMF-40 (Containment Iodine), 2/15/06

Calibration Data Sheet 0-EMF-49, (Liquid effluent monitor), 1/29/04, 1/22/06
 Particulate, Iodine, Gas (P.I.G.) Flow Calibration sheet for Unit 1 vent 1EMF35,36,37, 6/9/04
 Gaseous Waste Release 2007075 (U-1) for September 2007, 10/2/07
 Gaseous Waste Release 2007076 (U-2) for September 2007, 10/2/07
 Unit 1 Gaseous Waste Release 10/1/07-11/1/07, 11/1/07
 Unit 2 Gaseous Waste Release 10/1/07-11/1/07, 11/1/07
 Gaseous Waste Release 2007080 (U-1) for November 2007, 12/1/07
 Liquid Waste Release 2007270 Waste Monitor Tank "B", 10/18/07
 Liquid Waste Release 2007286 Waste Monitor Tank "B", 11/19/07
 Select 10 CFR 50.75(g) documents from 1987 to 2007 were reviewed.
 Interlaboratory Cross Check Program results from third quarter 2006, and first, second and third quarters of 2007

CAP Documents

PIP M-07-00437, Drawing for radiation monitor modification had information missing when redrawn. The deleted information had been added to previous version and included as-built information.
 PIP M-07-00975, Inability to maintain isokinetic flow rates to 2 EMF-35 after maintenance due to internal failure of sample pump.
 PIP M-07-01502, Received multiple loss of sample flow alarms on 1 EMF 38,39, & 40 due to clogging of filter paper with dust from sump mod work.
 PIP M-07-01658, Discrepancies found on as built drawings during review of modifications package.
 PIP M-07-03778, Received Trip 2 alarm on 1EMF-31
 PIP M-07-03865, Radiation Monitoring for spent fuel pool handling area, reactor building fuel handling area, and new fuel vault area SLC 16.7.6 changes
 PIP M-07-04381, Incorrect background value entered during preparation of Liquid Waste Release documentation resulted in a less conservative trip setpoint
 PIP M-07-05594, Written to address issues associated with a license amendment request submittal for using Alternate Source Term (AST) methodology [for] the LOCA Dose Analysis.

2PS3: REMP and Radioactive Material Control Program

Procedures

SH/0/B/2007/002, Land Use Census, Revision (Rev.) 0
 McGuire Nuclear Station Units 1 and 2 Offsite Dose Calculation Manual 2007, Rev. 48
 McGuire Nuclear Station Units 1 and 2 Offsite Dose Calculation Manual 2006, Rev. 47
 IP/0/B/3260/001, Met One Series 21 Wind Direction Module Channel Calibration, Rev. 18
 IP/0/B/3260/003, Met One Series 21 Wind Speed Module Channel Calibration, Rev. 20
 IP/0/B/3260/006, Met One Series 21 Precipitation Processor Channel Calibration, Rev. 15
 IP/0/B/3260/012, Met One Series Power Supply Calibration, Rev. 10
 IP/0/B/3260/019, Met One Platinum RTD Model 21.32 and Delta Temperature Channel Calibration, Rev. 22
 IP/0/B/3260/023, Meteorological Monitoring (EEB) System Weekly Verification, Rev. 24
 IP/0/B/3260/033, Raising and Lowering Meteorological Tower Instrument Carriages, Rev. 6
 IP/0/B/3260/034, Best Uninterruptible Power System Model FER4.3KVA Functional Verification, Rev. 4

HP/0/B/1005/052, Calibration of the Thermo Electron Small Articles Monitors,(SAM), Rev. 005
 HP/0/B/1005/066, Response Checks of Personnel Monitoring Equipment, Rev. 17
 HP/0/B/1005/083, Calibration of GEM-5 Portal Monitor, Rev. 001
 SH/0/B/2000/013, Removal of Items from RCA/RCZs, Rev. 001
 SH/0/B/2008/001, Calibration and Quality Assurance of Canberra ARGOS-4AB Contamination Monitors, Rev. 001

EnRad Procedures

Procedure 52, Preparation of Samples for Gamma Analysis, Rev. 3
 Procedure 53, Preparation of Samples for Gross Alpha and Gross Beta Analysis, Rev. 15
 Procedure 54, Preparation and Counting of Samples for Low Level I-131 Analysis, Rev. 11
 Procedure 62, Preparation of Tritium Samples, Rev.1
 Procedure 106, Calculation & Determination of Lower Limits of Detection for Radiological Laboratory Instrumentation, Rev. 3
 Procedure 207, Configuration and Calibration of the ISCO 3710 Water Sampler, Rev. 1
 Procedure 317, Low Volume Air Sampler Calibration Procedure, Rev. 2 (Superseded)
 Procedure 729, Milk Sampling at McGuire Nuclear Station, Rev. 0
 Procedure 730, Airborne Radioiodine and Airborne Particulate Sampling at McGuire Nuclear Station, Rev. 1
 Procedure 731, Water Sampling at McGuire Nuclear Station, Rev. 0
 Procedure 732, Broadleaf Vegetation Sampling at McGuire Nuclear Station, Rev. 2
 Procedure 734, Shoreline Sediment Sampling at McGuire Nuclear Station, Rev. 1
 Procedure 736, Direct Radiation Measurement (TLD'S) at McGuire Nuclear Station, Rev. 2
 Procedure 823, Calibration of Rotameters and Air Sampling Equipment, Rev. 2

Data

Low Volume Air Sampler Calibration Sheet: S/N 00329 (01/31/05), S/N 00344 (12/29/05), S/N 00333 (01/16/06), S/N 00322 (07/25/05), S/N 00327 (01/17/06), S/N 00347 (02/27/06), S/N 00324 (02/27/06), S/N 00355 (02/27/06), S/N 00303 (05/01/06), S/N 00338 (04/37/06)
 Air Sampler Calibration Worksheet: S/N 00329 (01/02/07), S/N 00344 (01/02/07), S/N 00333 (01/03/07), S/N 00322 (02/15/07), S/N: 00327 (02/16/07), S/N 00347 (04/03/07), S/N 00324 (04/03/07), S/N 00355 (04/03/07), S/N 00303 (05/07/07), S/N 00338 (06/18/07), S/N 00320 (07/03/06, 10/01/07), S/N 00315 (07/17/06, 02/13/07), S/N 00354 (06/28/06, 09/26/07), S/N 00304 (10/10/06, 10/23/07)
 Annual Calibration of ISCO Composite Sampler: S/N 01711 (08/02/06, 03/12/07), S/N 01708 (02/12/07), S/N 01709 (08/02/06, 07/30/07), S/N 01682 (01/15/07), S/N 01710 (11/22/06, 07/30/07), S/N 01712 (02/12/07), S/N 00276 (11/22/06, 10/22/07), S/N 00277 (02/12/07, 10/22/07)
 Field Calibration Data Sheet: S/N 01712 (06/07/06), S/N 01718 (02/15/06), S/N 01682 (01/18/07)
 1EEBLP9140, Air Temperature Loop Channel Calibration, Work Order Nos. 0170715001, 0173774001, 0059031201, 9874731501, 9871826801, 9868602601
 1EEBLP9130, Lower Wind Direction Channel Calibration, Work Order Nos. 0173798701, 0170701001, 0059030901, 9874731201, 9871826501, 9868602301
 1EEBLP9110, Lower Wind Speed Channel Calibration, Work Order Nos. 0173774201, 0170701201, 0059031101, 9874731401, 9871826701, 9868602501
 1EEBLP9120, Upper Wind Direction Channel Calibration, Work Order Nos. 0173774101,

0170701101, 0059030801, 9874731101, 9871826401, 9868602201
 1EEBLP9100, Upper Wind Speed Channel Calibration, Work Order Nos. 0173774301,
 0170701301, 0059031001, 9874731301, 9871826601, 9868602401
 1EEBPY9180, Meteorological Tower UPS Functional Verification, Work Order Nos.
 0170654801, 9874649801, 9868606901
 Work Order 0176685201, Meteorological System Weekly Surveillance
 Inter-laboratory Cross Check Program Reports 4th Qtr 2005 - 3rd Qtr 2007
 Memo to File 750.05, Subject: New Strontium-89/90 Method Development and Verification,
 June 7, 2006
 MNS-20604, Procedure Driven Task Observation (REMP Sampling), 06/07/07
 MNS-24383, Procedure Driven Task Observation (REMP Sampling), 09/24/06
 MNS-20894, Procedure Driven Task Observation (REMP Reviewing), 02/08/07
 MNS-22839, Procedure Driven Task Observation (REMP Reviewing), 06/14/07
 Work Request 00931931, IR Cause of Data Lock Up on Meteorological
 Meteorological Tower Inspection, 07/26/05
 Assessment No.: G0-07-51 (RP)(REMP)(MNS), 12/3/07
 ARGOS-4AB Contamination Monitor Weekly Source Check for Instrument No. 27700
 HP/0/B/1005/052, Calibration of the Thermo Electron Small Articles Monitors,(SAM), Rev. 004,
 MCHPS Number (No.) 27527, 01/24/06
 HP/0/B/1005/052, Calibration of the Thermo Electron Small Articles Monitors,(SAM), Rev. 005,
 MCHPS No. 27527, 01/10/07
 HP/0/B/1005/083, Calibration of GEM-5 Portal Monitor, Rev. 001, MCHPS No. 27703, 01/19/07;
 MCHPS No. 27701, 07/03/07; MCHPS No. 27704, 08/15/07; and MCHPS No. 27706,
 08/30/06 and 08/15/07
 SH/0/B/2008/001, Calibration and Quality Assurance of Canberra ARGOS-4AB Contamination
 Monitors, Rev. 001, MCHPS No. 27510, 01/21/06 and 01/20/07; and MCHPS No. 27700,
 08/27/07

CAP Documents

PIP M-06-03657, Items labeled for RCA use were found outside Unit 2 turbine building
 PIP G-06-00039, MNS REMP Assessment GO-06-51 (RP)(REMP)(MNS)
 PIP M-06-01151, NPAS Audit GO-06-01 (NPA)(RP)(ALL) RP FAE at MNS
 PIP M-06-04113, 8" crescent wrench labeled for RCA use was found under stairs in 786
 hallway.
 PIP M-06-05136, Tools discovered on U-2 Turbine Floor that were painted purple color
 PIP G-07-00399, MNS control air sampler <15 km distant from site as indicated in SLC
 16.11.13
 PIP M-07-00556, McGuire Level 1 Assessment of REMP [GO-07-52(RP)(REMP)(MNS),
 performed 5/7/07
 PIP M-07-00791, Low level at Lake Norman caused ISCO Pump at site #135 to lose prime
 PIP G-07-01011, MNS REMP Air Media Envelope Mistakenly Switched at MNS Air
 Collection/NRC Inspection
 PIP M-07-02765, Box containing low level Co-60 sludge removed from protected area (located
 at MOC Parking lot)
 PIP M-07-03584, Material identified with red paint was found in the non-radioactive material
 portion of the scaffold tent
 PIP M-07-04030, This PIP documents areas for improvement identified during the 2007

Maintenance and Work Control FAE. (Reviewed area for improvement no. 6)
PIP M-07-04520, Unanticipated entry into TS due to Meteorological tower data link failure

40A1.2: Performance Indicator Verification

Procedures

SRPMP 10-1, NRC Performance Indicator Data Collection, Validation, Review and Approval,
Rev. 2

Records and Data

Survey #M-093006-28, U2 Reactor Head Inspection Staging Area
Survey #M-100306-30, U2 Reactor Head Inspection Staging Area
MNS ED Doserate Restriction Log, July 2006 - November 2007

CAP Documents

PIP M-06-4020, Extra High Radiation Area key issued to non-qualified individual, 9/20/06
PIP M-06-4479, Loss of control of EHRA barrier, 10/2/06
PIP M-07-2512, Prior to restart of fuel reload, a deficiency was identified with the installed chain
and lock assembly on the Unit 1 lower annulus VE door, 4/16/07

Section 40A2: Problem Identification and Resolution

UFSAR related PIPs: M-07-548, M-07-5016, M-06-3244, M-06-3240, M-06-2889, M-07-4845,
M-07-5268, M-07-295, M-07-5265
UFSAR update packages: 06-028, 06-022, 06-019, 07-036

40A5.4: Independent Spent Fuel Storage Installation

Procedures and Guidance Documents

Certificate of Compliance (CoC) No. 1201, Amendment No. 1, for the Transnuclear, Inc.,
TN-32 Dry Storage Cask, Effective 2/20/2001
COC No. 1015, Amendment 3, For The NAC International UMS Universal Storage System,
Effective 3/31/04

Records, Data, and Reports

RP-SA-07-10, 2007 ISFSI Radiation Survey Assessment
ISFSI Routine Survey and Environmental TLD Trending Performed 1st Quarter 2007, 2/12/07
ISFSI Routine Survey and Environmental TLD Trending Performed 2nd Quarter 2007, 5/28/07
HP/0/B/1003/063 Enclosure 5.17, ISFSI boundary survey and posting verification, 11/12/07
Survey #M-102407-10, ISFSI
Survey #M-071707-3, ISFSI
Survey #M-110807-14, ISFSI

CAP Documents

PIP M-06-3551, Minor discrepancies found in ISFSI routine surveillance documentation, 8/29/06
PIP M-07-0944, ISFSI routine survey quarterly trending 1st quarter 2007, 2/15/07

PIP M-07-3396, ISFSI routine survey and environmental TLD trending performed 2nd quarter 2007, 6/5/07

PIP M-07-5093, 2007 ISFSI radiation survey assessment, 9/25/07

PIP M-07-5630, OE evaluation: radiation control zone boundary at CNS ISFSI was determined to be greater than 0.5 mrem/hr, 10/24/07

LIST OF ACRONYMS

ARM	-	Area Radiation Monitor
CA	-	Auxiliary Feedwater
CAP	-	Corrective Action Program
DBA	-	Design Basis Accident
D/P	-	Differential Pressure
ECCS	-	Emergency Core Cooling System
EDG	-	Emergency Diesel Generator
GL	-	Generic Letter
HRA	-	High Radiation Area
IN	-	Information Notice
IR	-	Inspection Report
ISFSI	-	Independent Spent Fuel Storage Installation
KC	-	Component Cooling Water System
LHRA	-	Locked-High Radiation Area
NCV	-	Non-Cited Violation
ND	-	Residual Heat Removal
NS	-	Containment Spray
NSD	-	Nuclear System Directive
OBDN	-	Operable But Degraded Non-conforming
ODCM	-	Offsite Dose Calculation Manual
OI	-	Office of Investigation
OOS	-	Out-Of-Service
OS	-	Occupational Radiation Safety
PCM	-	Personnel Contamination Monitor
PI	-	Performance Indicator
PIP	-	Problem Investigation Process report
PM	-	Portal Monitor
psig	-	per square inch gauge
PT	-	Performance Test
QC	-	Quality Control
Radwaste	-	Radioactive Waste
RCA	-	Radiologically Controlled Area
REMP	-	Radiological Environmental Monitoring Program
RN	-	Nuclear Service Water
RPT	-	Radiation Protection Technician
RWP	-	Radiation Work Permit
SAM	-	Small Article Monitor
SCBA	-	Self-Contained Breathing Apparatus
SEIT	-	Significant Event Investigation Team
SFP	-	Spent Fuel Pool
SSC	-	Structures, Systems, and Components
TLD	-	Thermoluminescent Dosimeter
TS	-	Technical Specifications
UDO	-	Unusual Dosimetry Occurrence
URI	-	Unresolved Item
UFSAR	-	Updated Final Safety Analysis Report
VHRA	-	Very High Radiation Area
VIO	-	Violation
WBC	-	Whole Body Counter
WMT	-	Waste Monitor Tank