



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

July 24, 2008

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

**SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000369/2008003 AND 05000370/2008003**

Dear Mr. Hamilton:

On June 30, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your McGuire Nuclear Station. The enclosed report documents the inspection findings which were discussed on July 8, 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 of very low safety significance (Green) which were determined to be violations of NRC requirements and one finding categorized as a Severity Level IV violation under traditional enforcement. However, because of the very low safety significance and categorization at Severity Level IV, and because they were entered into your corrective action program, the NRC is treating these NRC-identified findings as non-cited violations (NCVs) consistent with Section VI.A of the NRC Enforcement Policy. If you contest any of these non-cited violations, you should provide a written response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, 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.

DPC

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

Sincerely,

/RA/

Steven D. Rose, Acting 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 05000369/2008003 and 05000370/2008003
w/Attachment - Supplemental Information

cc w/encl: (See page 3)

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Letter to Bruce H. Hamilton from Steven D. Rose dated July 24, 2008

SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000369/2008003 AND 05000370/2008003

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-369, 50-370

License Nos: NPF-9, NPF-17

Report Nos: 05000369/2008003, 05000370/2008003

Licensee: Duke Power Company, LLC

Facility: McGuire Nuclear Station, Units 1 and 2

Location: 12700 Hagers Ferry Road
Huntersville, NC 28078

Dates: April 1, 2008 through June 30, 2008

Inspectors: J. Brady, Senior Resident Inspector
R. Eul, Resident Inspector
R. Aiello, Senior Operations Engineer (Sections 1R11.2,
4OA2.2a.(2))
G. Laska, Senior Operations Examiner (Section 1R11.2,
4OA2.2a.(2))
R. Moore, Senior Reactor Inspector (Section 4OA5.2)

Approved by: Steven D. Rose, Acting Chief
Reactor Projects Branch 1
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR05000369/2008003, IR05000370/2008003; 4/1/2008 - 6/30/2008; McGuire Nuclear Station, Licensed Operator Requalification, Maintenance Effectiveness, and Surveillance Testing.

The report covered a three month period of inspection by two resident inspectors and announced inspections by a regional reactor inspector, an operations examiner and one operations engineer. Two Green non-cited violations (NCVs) were identified, as well as one Severity Level IV NCV. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (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 (ROP), Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- SL IV. The inspectors identified a non-cited violation of 10 CFR 50.71(e) for the failure to update the Updated Final Safety Analysis Report (UFSAR) to include information related to those portions of the nuclear service water (RN) system that are shared between Units, as reflected in License Amendments issued for both Units on January 4, 1988.

This issue was greater than minor because the failure to include in the UFSAR the designation of which portions of the RN system were shared between units, as described in the License Amendments, was material to the NRC's review of the licensee's response to Generic Letter 91-13, Request for Information related to the Resolution of Generic Issue 130, "Essential Service Water System Failures at Multi-Unit Sites." The licensee's response revealed that they had procedures that allowed sharing of the RN discharge, which was specifically designated as not shared in Figure 7-1 of the Technical Specifications. As such, the UFSAR could not be relied upon to determine the shared portions and their safety implications. However, the inspectors found no subsequent changes made to the facility that were based on the erroneous information in the UFSAR section. Consequently, this issue was considered to meet the criteria of a severity level IV violation. This finding has a cross-cutting aspect of thorough evaluation in the area of problem identification and resolution [P.1.(c)]. (Section 1R11.1)

- Green. The inspectors identified a non-cited violation of 10 CFR 50.65(b)(2)(i) for failure to scope the credited main feedwater tempering lines (one per steam generator) and associated valves into the Maintenance Rule monitoring program.

This finding was more than minor because, similar to Example 7.d of NRC Inspection Manual Chapter (IMC) 0612 Appendix-E, "Examples of Minor Issues," effective control of component condition could not be demonstrated, since the appropriate preventative maintenance was not being performed due to not being

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scoped into the Maintenance Rule monitoring program. The licensee satisfactorily tested the functionality of the eight manual valves (two per tempering line) on each unit within the past few years, providing reasonable assurance that the manual valves would operate as required if needed. However, the functionality of the four check valves (one per tempering line) on each unit and the associated flow paths could not be demonstrated at this time; but, the licensee did perform an evaluation of all potential failure mechanisms and determined that the check valves would likely perform their function. The inspectors determined this finding to have very low safety significance, using NRC IMC 0609.04 "Phase 1 Initial Screening," in that this finding did not represent an actual loss of safety function for equipment designated as risk significant per 10 CFR 50.65, and was not risk significant for external initiating events. (Section 1R12)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a non-cited violation of Technical Specification (TS) 5.4.1.a for failure to establish an adequate procedure to test main steam isolation valves (MSIVs). Specifically, written test control procedures did not prevent and, therefore, resulted in pre-conditioning of the valves prior to their surveillance requirement stroke time testing.

This finding is more than minor because the use of test procedures that allow preconditioning, if left uncorrected, could become a more significant safety concern. Inspection Manual Chapter 9900 Section C.1.c defines pre-conditioning as the alteration, variation, manipulation, or adjustment, of the physical condition of structures, systems and components (SSCs) before TS surveillance or ASME code testing. Pre-conditioning can affect the acceptability of test results and can have a direct effect on the determination of operability of the affected system or component by masking the true as-found condition. As such, this issue also affects the barrier integrity cornerstone objective of maintaining containment functionality and the associated attributes of SSC barrier performance, and procedure quality, by affecting the determination of operability related to the containment isolation function of the MSIVs. This issue is of very low safety significance because there was insufficient information to show that the MSIVs were inoperable during the short period of time that they were required in Modes 3, 2 and 1; therefore, it did not represent an actual open pathway in the physical integrity of the containment. 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

None.

Report Details

Summary of Plant Status:

Unit 1 began the inspection period at approximately 100 percent rated thermal power. Unit 1 tripped from 100 percent power on June 25, 2008, due to the loss of the 1B reactor coolant pump. Unit 1 was taken critical on June 29, 2008, and went on-line June 30, 2008.

Unit 2 began the inspection period shutdown in Mode 5 (end-of-cycle 18 refueling outage). It achieved criticality on April 12, 2008, and went on-line April 13, 2008. The unit reached 20 percent rated thermal power and was shutdown on April 13 to perform emergent maintenance on a service water discharge gate. The unit was taken critical on April 16, 2008, and went on-line April 17, 2008. It reached 100 percent rated thermal power on April 21, 2008, and remained there for the rest of the period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

.1 Site Specific Actual Adverse Weather Condition

a. Inspection Scope

When a severe thunderstorm warning was declared for the site on May 20, 2008, the inspectors reviewed actions taken by the licensee in accordance with procedure RP/0/A/5700/006, Natural Disasters, Enclosure 4.2, Tornado Watch. This was done to determine whether the licensee had implemented the procedure, and that the adverse weather conditions would neither initiate a plant event nor prevent any SSC from performing its design function.

b. Findings

No findings of significance were identified.

.2 Summer Readiness of Offsite & Alternate AC Power Systems

a. Inspection Scope

The inspectors assessed whether plant features and procedures for operation and continued availability of offsite and alternate AC power systems were appropriate. Specifically, they reviewed the licensee's procedures affecting these areas and the communication protocols between the transmission system operator and the plant to determine whether the appropriate information is exchanged when issues arise that could impact the offsite power system. The documents reviewed during this inspection are listed in the Attachment to this report.

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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 systems to assess the operability of redundant or diverse trains and components when safety equipment was inoperable. The inspectors focused on discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, walked down control system components, and determined whether selected breakers, valves, and support equipment were in the correct position to support system operation. The documents reviewed during this inspection are listed in the Attachment to this report.

- Unit 1, "B" train, safety injection system with "A" train out of service for maintenance on April 29, 2008
- Unit 2, "B" train emergency diesel generator (EDG) with "A" train out of service for maintenance on April 29, 2008
- Unit 2, "B" train EDG with A train out of service for an emergent issue with the 2A EDG jacket water/intercooler pump on May 28, 2008.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors conducted a detailed review of the Unit 2 auxiliary feedwater system. To determine the correct system alignment, the inspectors reviewed the procedures, drawings, and the UFSAR sections listed in the Attachment to this report. Items reviewed during the inspection included: (1) valves are correctly positioned, do not exhibit leakage, and are locked as required; (2) electrical power is available, (3) system components are correctly labeled, cooled lubricated, ventilated, etc.; (4) hanger and supports are correctly installed and functional; (5) essential system support systems are functional; (6) system performance is not hindered by debris; and (7) tagging clearances are appropriate. The inspectors reviewed outstanding design issues, the operator workaround list, the temporary modification list, Problem Investigation Process reports (PIPs), and system health reports with the system engineer to determine their effect on the operability of the system. In addition, the inspectors reviewed outstanding maintenance work requests/work orders and deficiencies to determine whether they could affect the ability of the system to perform its function.

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b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Fire Protection-Walkdowns

a. Inspection Scope

The inspectors walked down accessible portions of the following plant areas to determine if they were consistent with the UFSAR and the fire protection program for defense in depth features. The features assessed included the licensee's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire fighting equipment, and passive fire features such as fire barriers. The inspectors also reviewed the licensee's compensatory measures for fire deficiencies to determine if they were commensurate with the significance of the deficiency. The inspectors reviewed the fire plans for the areas selected to determine if it was consistent with the fire protection program and presented an adequate fire fighting strategy. The documents reviewed during this inspection are listed in the Attachment to this report.

- Unit 1A emergency diesel generator room (fire area 5)
- Unit 1B emergency diesel generator room (fire area 6)
- Unit 2A emergency diesel generator room (fire area 7)
- Unit 2B emergency diesel generator room (fire area 8)
- Auxiliary building 695 elevation (fire area 1)

b. Findings

No findings of significance were identified.

.2 Fire Protection-Drill Observation

a. Inspection Scope

The inspectors observed one fire drill on May 14, 2008. The drill was observed to evaluate the readiness of the plant fire brigade to fight fires. The inspectors determined whether the licensee staff identified deficiencies, openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient fire fighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of pre-planned strategies; (9) adherence to the preplanned drill scenario; and (10) drill objectives. The inspectors reviewed PIP M-08-3552, Critique of

“B” Shift Fire Drill, associated with this area to determine whether the licensee identified and implemented appropriate corrective actions.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures - Internal

a. Inspection Scope

The inspectors reviewed the UFSAR and the licensee’s flooding analysis to determine which plant areas were subject to internal flooding and contained safety-related equipment. The inspectors selected the areas listed below and walked down these areas to determine whether the area configuration, features, and equipment functions were consistent with the descriptions and assumptions used in UFSAR sections and in the supporting basis documents. The inspectors reviewed the operator actions credited in the flooding analysis, and contained in the licensee’s flood mitigation procedure(s), to determine whether the desired results could be achieved by the times credited in the flooding analysis. The documents reviewed during this inspection are listed in the Attachment to this report.

- Unit 1 Interior and Exterior Doghouse
- Unit 2 Interior and Exterior Doghouse

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification

.1 Resident Quarterly Observation

a. Inspection Scope

On June 4, 2008, the inspectors observed operators in the plant’s simulator during licensed operator requalification training to determine the effectiveness of licensed operator requalification training required by 10 CFR 55.59 and the adequacy of operator performance. 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 occurred during the simulator training. The inspectors observed the shift crew’s response to the scenario, which included the following:

- Failure of Pressurizer Pressure Control Potentiometer
- Anticipated Transient Without Scram
- Safety Injection

The documents reviewed during this inspection are listed in the Attachment to this report.

The inspectors also reviewed the UFSAR to determine whether Amendment 78 for Unit 1, and Amendment 59 for Unit 2, had been adequately incorporated into the UFSAR to satisfy the UFSAR update requirement of 10 CFR 50.71(e). The amendments came to the inspectors' attention during the development of non-cited violation (NCV) 05000369,370/ 2008002-01; Failure to Establish and Maintain Abnormal Procedures for Loss of Nuclear Service Water (RN), contained in section 1R11 of the associated inspection report.

b. Findings

Introduction: A NCV of 10 CFR 50.71(e) was identified for the failure to update the UFSAR to include information related to those portions of the RN system that are shared between Units, as reflected in License Amendments issued for both Units on January 4, 1988.

Description: During final reviews associated with NCV 05000369,370/2008002-01, the inspectors discovered that the licensee's UFSAR did not include key information contained in license amendments, issued on January 4, 1988, related to sharing of portions of the RN system. Amendment 78 for Unit 1, and Amendment 59 for Unit 2, specifically identified which portions of the RN system were shared between the Units by designating those portions in a figure that was included as Figure 7-1 in Section 3.7.4 of the facility TS. When the TS were converted to Improved Technical Specifications, this figure was moved to the TS Bases. However, this information was never placed in the UFSAR.

The licensee's Final Safety Analysis Report (FSAR) was originally submitted in accordance with Regulatory Guide 1.70, which states that the FSAR shall include a failure analysis to demonstrate any safety implications related to sharing of the service water system (Section 9.2.1). UFSAR section 9.2.2, Nuclear Service Water (RN) System, is unclear with regard to what portions of the RN system are shared. Consequently, the UFSAR can not be relied upon to determine the shared portions and their safety implications.

Analysis: The inspectors found that the issue was greater than minor because the failure to include in the UFSAR the designation of which portions of the RN system were shared between units, as described in the License Amendments, was material to the NRC's review of the licensee's response to Generic Letter 91-13, Request for Information related to the Resolution of Generic Issue 130, "Essential Service Water System Failures at Multi-Unit Sites." The licensee's response revealed that they had procedures that allowed sharing of the RN discharge, which was specifically designated as not shared in Figure 7-1 of the TS. The inspectors found no subsequent changes

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made to the facility that were based on the erroneous information in the UFSAR section. Consequently, this issue was considered to meet the criteria of a severity level IV violation. Because the licensee had an UFSAR update review program in place which did not encompass the scope of this issue, this finding has a cross-cutting aspect of thorough evaluation related to extent of condition in the area of problem identification and resolution [P.1.(c)].

Enforcement: 10 CFR 50.71(e) requires that licensees shall periodically update the FSAR originally submitted as part of the application for the operating license, to assure that the information included in the report contains the latest information developed. This submittal shall include the effects of all the changes necessary to reflect information and analysis submitted to the Commission by the licensee or prepared by the licensee pursuant to Commission requirements since the submittal of the original FSAR, or as appropriate the last update to the FSAR under this section. Contrary to this requirement, prior to March 31, 2008, the licensee had not updated the UFSAR to include the latest information developed in relation to the RN system portions shared between units. Specifically, the licensee did not update the UFSAR after the issuance of license amendment 78 for Unit 1, and license amendment 59 for Unit 2, to reflect the shared portions of the nuclear service water system. The license amendments were, in part, submitted and approved to perform the function of providing the specific sharing description. The failure to update the UFSAR for the designation of sharing related to the RN system as required by 10 CFR 50.71(e) is characterized as a Severity Level IV violation and is being treated as a NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000369,370/2008003-01, Failure to Update the FSAR to Reflect Those Portions of RN Shared Between Units. This issue is in the licensee's corrective action program as PIP report M-08-3007.

.2 Biennial Review of Licensee's Operator Requalification Program

a. Inspection Scope

During the week of June 9, 2008, the inspectors reviewed documentation, interviewed licensee personnel, and observed the administration of simulator operating tests associated with the licensee's operator requalification program. Each of the activities performed by the inspectors was done to assess the effectiveness of the licensee in implementing requalification requirements identified in 10 CFR 55, "Operators' Licenses." The evaluations were performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," and Inspection Procedure 71111.11, "Licensed Operator Requalification Program." The inspectors reviewed and evaluated the licensee's simulation facility for adequacy for use in operator licensing examinations. The inspectors observed two crews during the performance of simulator operating tests. Documentation reviewed included written examinations, Job Performance Measures (JPMs), simulator scenarios, licensee procedures, on-shift records, licensed operator qualification records, selected watchstanding and medical records, feedback forms, and remediation plans. The inspectors also reviewed a sample of simulator performance test records (transient tests, malfunction tests, steady state test, and procedure tests), simulator modification request records, and the process for

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ensuring continued assurance of simulator fidelity to ensure compliance with 10 CFR 55.46, Simulation Facilities. Licensee documents reviewed during the inspection 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 samples listed below for items such as: (1) appropriate work practices; (2) identifying and addressing common cause failures; (3) adequacy of corrective actions; (4) scoping in accordance with 10 CFR 50.65(b) of the maintenance rule; (4) characterizing reliability issues against performance criteria; (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 (9) appropriateness and adequacy of goals and corrective actions for SSCs/functions classified as (a)(1). For each item selected, the inspectors performed a detailed review of the problem history and surrounding circumstances, evaluated the extent of condition reviews as required, and reviewed the generic implications of the equipment and/or work practice problem. The documents reviewed during this inspection are listed in the Attachment to this report.

- Nuclear Service Water valve 1RN-69A installed in the opposite flow direction than stated in the instructions
- Steam Generator feedwater tempering valves not coded properly per their maintenance rule functional requirements

b. Findings

Introduction: The inspectors identified a green NCV of 10 CFR 50.65(b)(2)(i) for failure to scope the main feedwater tempering line valves into the maintenance rule monitoring program.

Description: On May 15, 2008, while reviewing Emergency Operating Procedure feedwater mitigation paths for another issue, the inspectors identified several Unit 1 and Unit 2 main feedwater tempering line valves that are credited in the "response not obtained" column of Emergency Operating Procedure EP/1&2/A/5000/FR-H.1 "Response to Loss of Secondary Heat Sink," for which no preventive maintenance was performed since 1997. Each unit has four separate tempering feedwater flow paths (one to each steam generator) which are used after all other normal and auxiliary feedwater means fail to provide feedwater to the steam generators. None of these flow paths have had flow through them since 1997. Each tempering line establishes a feedwater flow path to the steam generators through two manual valves and one check valve for a total of 12 valves per unit (8 manual valves and 4 check valves). Even though no preventive

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maintenance had been performed since 1997, the licensee was able to provide documentation that four of the manual valves on each unit were cycled satisfactorily in 2005 (Unit 1) and 2006 (Unit 2) as part of steam generator containment isolation valve testing. As a result of inspectors' questions, the licensee scoped the feedwater tempering line function into the Maintenance Rule and placed the function in (a)(1) status for both units on June 3, 2008.

Analysis: This finding involves the failure to adequately scope components into the maintenance rule monitoring program. This finding was more than minor because, similar to Example 7.d of NRC IMC 0612 Appendix-E, "Examples of Minor Issues," effective control of component condition could not be demonstrated, since the appropriate preventative maintenance was not being performed due to not being scoped into the Maintenance Rule monitoring program. The licensee drafted a test procedure, TT/1&2/A/9100/611, "Stroking of Main Feedwater Tempering Flow Valves," and satisfactorily tested the functionality of the four remaining manual valves on each unit on May 31, 2008. Although the functionality of the four check valves on each unit could not be demonstrated at this time, the licensee performed an evaluation of all potential failure mechanisms and determined that the check valves would likely perform their function. The inspectors determined this finding to have very low safety significance (Green), using NRC IMC 0609.04 "Phase 1 Initial Screening," in that this finding did not represent an actual loss of safety function for equipment designated as risk significant per 10 CFR 50.65, and was not risk significant for external initiating events.

Enforcement: 10 CFR 50.65(b)(2)(i) states that non-safety related SSCs used in plant emergency operating procedures shall be scoped in the monitoring program as specified in 10 CFR 50.65(a)(1). Contrary to the above, from May 1997 through May 2008, the licensee failed to adequately scope into the Maintenance Rule several main feedwater tempering line valves used to help mitigate the consequences of an accident in emergency operating procedures, EP/1&2/A/5000/FR-H.1, "Response to Loss of Secondary Heat Sink". In addition, the licensee failed to monitor the performance or condition of these valves against licensee-established goals in a manner sufficient to provide reasonable assurance that the valves were capable of fulfilling their intended functions. Because this violation was determined to be of very low safety significance and was placed in the corrective action program as PIP M-08-3307, this violation is being treated as a non-cited violation in accordance with Section VI.A.1 of the Enforcement Policy: NCV 5000369,370/ 2008003-02, Failure to Scope Main Feedwater Tempering Line Valves Into the Maintenance Rule Monitoring Program.

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 10 CFR 50.65(a)(4). For emergent work, the inspectors also verified that any increase in

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risk was promptly assessed, and that appropriate risk management actions were promptly implemented.

- Emergent work associated with misaligned travel stops on component cooling water (KC) valve 2KC-82, "KC to Residual Heat Removal (RHR) Heat Exchanger Discharge Throttle Valve," on April 22, 2008.
- Tornado Warning on May 11, 2008, which resulted in an outage risk assessment management (ORAM) color change to Yellow.
- Severe thunder storm warning on May 20, 2008, which resulted in an additional ORAM Yellow.
- Emergent work on May 28, 2008, associated with the 2A emergency diesel generator jacket water/intercooler pump motor that caused an additional ORAM Yellow.
- Emergent work on June 13, 2008, associated with the 2A Slave Relay K-16 not latching during testing.
- Emergent work from June 20 - 25, 2008, associated with a nitrogen leak on the line from the 1A cold leg accumulator to pressurizer power operated relief valve 1NC-34. This resulted in an additional ORAM Yellow and caused scheduling changes to prevent having an ORAM Orange in the following week prior to the completion of the repair.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

For the operability evaluations listed below, the inspectors evaluated the technical adequacy of the evaluations to determine whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors reviewed any compensatory measures taken for degraded SSCs to determine whether the measures were in-place and adequately compensated for the degradation, such that operability was justified. For the degraded SSCs, or those credited as part of compensatory measures, the inspectors reviewed the UFSAR to determine whether the measures resulted in changes to the licensing basis functions, as described in the UFSAR, and whether a license amendment was required per 10 CFR 50.59. The documents reviewed during this inspection are listed in the Attachment to this report.

- M-08-0134, Air supply to auxiliary feedwater (CA) valve 2CA-44B found closed.
- M-08-0925, 2B Diesel Generator has a hard 80 volts negative ground on 2 EDG B.
- M-08-2324, Evaluation of 4 locations for Unit 1 containment recirculation sump enclosure that had greater than 1/2 inch gaps.
- M-08-2452, Evaluation of upper containment air handling unit intake filter for fiber transmittal to the containment recirculation sump.

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- M-08-0467, 2B RN Strainer motor overload due to foreign material in the strainer
- M-08-0565, RN solenoid valve splice boxes found not sealed.
- M-08-3376, 2A Diesel Generator Engine Cooling Water (KD) Jacket Water/Intercooler Water Pump motor Overload led to EDG trip.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed the two permanent modifications listed below and the associated 10 CFR 50.59 review to determine whether the modifications satisfied the requirements of 10 CFR 50, Appendix B, and compared each against the UFSAR and TS to determine whether the operability or availability of SSCs were affected by completion of the modification. The inspectors reviewed each modification to ensure that it was installed in accordance with the modification documents and reviewed post-installation testing to determine that the actual impact on permanent systems was adequately tested. In addition, the inspectors determined whether the appropriate procedures, design documents, and licensing documents were updated to reflect the installation of the modifications. The documents reviewed during this inspection are listed in the Attachment to this report.

- MD100461, 1A CA Assured Supply Relocation
- MD 200464, Installation of new RN supply to CA

The inspectors also reviewed PIP M-08-0913, Post-modification Testing Does Not Include All Newly Installed Piping, to determine whether the licensee identified and implemented appropriate corrective actions.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

For the maintenance in parenthesis listed below, the inspectors determined the safety function(s) described in the UFSAR and TS that were affected by the maintenance activity. The inspectors witnessed the post-maintenance tests listed below and/or reviewed the test data, to determine whether the test results adequately demonstrated restoration of the affected safety function(s).

- PT/2/A/4252/003A, CA Train A Valve Stroke Timing - Quarterly Turbine Driven Flowpath; and PT/2/A/4252B, CA Train B Valve Stroke Timing - Quarterly Turbine Driven Flowpath (resetting of limit switches for valve 2CA-48AB after flow balance adjustment)
- PT/2/A/4401/001B, KC Train 2B Performance Test (after readjusting the travel stops on 2KC-82)
- PT/2/A/4350/002A, 2A EDG Operability Test (after various maintenance activities were completed)
- PT/1/A/4209/001A, 1A Chemical and Volume Control Pump Performance Test (after various maintenance activities were completed)
- PT/2/A/4200/028B, Train B Slave Relay Testing (after replacing relay K-16)

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

The inspectors evaluated licensee outage activities to determine whether the licensee: considered risk in developing outage schedules; adhered to administrative risk reduction methodologies they developed to control plant configuration; adhered to operating license and TS requirements that maintained defense-in-depth; and developed mitigation strategies for losses of the key safety functions identified below:

- Decay heat removal
- Inventory control
- Power availability
- Containment

The inspectors observed portions of the cooldown process on April 13, 2008, to determine whether TS cooldown restrictions were followed. The inspectors observed the items or activities described below, to determine whether the licensee maintained defense-in-depth commensurate with the outage risk control plan for the key safety functions identified above and applicable TS when taking equipment out of service.

- Clearance activities
- Reactor coolant system instrumentation
- Electrical power
- Decay heat removal
- Spent fuel pool cooling
- Inventory control
- Reactivity control
- Containment closure

The inspectors reviewed the licensee's responses to emergent work and unexpected conditions, to determine whether resulting configuration changes were controlled in accordance with the outage risk control plan.

Prior to mode changes and on a sampling basis, the inspectors reviewed system lineups and/or control board indications to determine whether TSs, license conditions, and other requirements, commitments, and administrative procedure prerequisites for mode changes were met prior to changing modes or plant configurations. Also, the inspectors periodically reviewed reactor coolant system boundary leakage data, and observed the setting of containment integrity, to determine whether the reactor coolant system and containment boundaries were in place and had integrity when necessary. Prior to reactor startup, the inspectors walked down containment to determine whether debris had been left which could affect performance of the containment sumps. The inspectors reviewed reactor startup and unit synchronization to the grid to verify procedure compliance and that the systems performed as designed. The inspectors reviewed reactor physics testing results to determine whether core operating limit parameters were consistent with the design.

Periodically, the inspectors reviewed the items that had been entered into the licensee's corrective action program to determine whether the licensee had identified problems related to outage activities at an appropriate threshold and had entered them into the corrective action program. For any significant problems documented in the corrective action program, the inspectors reviewed the results of the licensee's investigations, to determine whether the licensee had determined the root cause and implemented appropriate corrective actions, as required by 10 CFR 50, Appendix B, Criterion XVI, Corrective Action.

The documents reviewed during this inspection are listed in the Attachment to this report.

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 if the SSCs involved in these tests satisfied the requirements described in the TS, the FSAR, and applicable licensee procedures, and that the tests demonstrated that the SSCs were capable of performing their intended safety functions.

Surveillance Tests

- PT/0/A/4600/105 Rod Control Cluster Assembly (RCCA) Drop Timing Using Digital Rod Position Indication (DRPI) System

In-Service Tests

- PT/2/A/4252/007, CA System Turbine Driven (TD) Train Performance Test
- PT/2/A/4252/001, #2 TD CA Pump Performance Test
- PT/2/A/4252/004, Steam Generator Injection Check Valve Verification for #2 TD CA Pump

Containment Isolation Valve Testing

- PT/2/A/4255/003C, Main Steam Isolation Valve (MSIV) Functional Test and Closure Verification at Full Temperature and Pressure

b. Findings

Introduction: The inspectors identified a Green NCV of TS 5.4.1.a for failure to establish an adequate procedure to test Unit 2 MSIVs. Specifically, written test control procedures did not prevent and, therefore, resulted in pre-conditioning of the valves prior to their surveillance requirement stroke time testing.

Description: Following entry into Mode 3 on April 10, 2008, the inspectors observed stroke time testing on all four Unit 2 MSIVs, performed in accordance with procedure PT/2/A/4255/003C, Main Steam (SM) Valve Timing Test at Full Temperature and Pressure. The testing was being performed simultaneously with maintenance procedure MP/0/A/7200/011, MSIV and Actuator Corrective Maintenance, which measured the clearances and made adjustments to the MSIV yoke-rod guide pins under hot plant conditions. The stroke time testing procedure had steps that directed operators to complete the various steps in the maintenance procedure, including closing then reopening the MSIVs for measurements. Immediately following the MSIV cycling for the maintenance procedure, the valves were stroked closed for the surveillance test. The inspectors considered this practice as pre-conditioning based on Inspection Manual Chapter 9900 Technical Guidance, and questioned the licensee about the validity of their timed results. The licensee believed that previously conducted MSIV cold stroke testing in Mode 5 was sufficient to meet all testing requirements and Unit 2 subsequently entered Mode 2 and Mode 1 on April 13, 2008, without any additional MSIV testing. Unit 2 was then returned to Mode 4 the following day to perform emergent maintenance on a service water discharge gate.

Procedure PT/2/A/4255/003C implements the licensee's in-service testing program and TS Surveillance Requirement 3.7.2.1, which requires all MSIVs close in less than eight seconds after an actuation signal. The TS Bases document states that this testing should be completed in Mode 3 at normal operating temperatures and pressures in order to best establish the required suitable environmental conditions under which the valve acceptance criteria was generated and under which the valve will be required to close. This closing stroke time requirement is used in a variety of important accident analyses, including a high energy line break inside containment and a main steam line break outside containment upstream of the MSIVs, to ensure plant safety prior to entry into Mode 2.

Upon further questioning from the inspectors, the licensee determined that the Mode 3 testing was a testing requirement, and successfully retested all four MSIVs when Unit 2 returned to Mode 3 on April 15, 2008. The inspectors concluded that the licensee's previous decision to proceed to Mode 2 prior to resolving the issue was caused by failing to verify the validity of the underlying decision-making assumptions.

Analysis: This finding involves the failure to establish adequate surveillance test procedures for MSIV testing. This finding is more than minor because the use of test procedures that allow preconditioning, if left uncorrected, could become a more significant safety concern. Inspection Manual Chapter 9900 Section C.1.c defines preconditioning as the alteration, variation, manipulation, or adjustment, of the physical condition of SSCs before TS surveillance or ASME code testing. Pre-conditioning can affect the acceptability of test results and can have a direct effect on the determination of operability of the affected system or component by masking the true as-found condition. As such, this issue also affects the barrier integrity cornerstone objective of maintaining containment functionality and the attributes of SSC barrier performance and procedure quality, by affecting the determination of operability related to the containment isolation function of the MSIVs. This issue is of very low safety significance because there was insufficient information to show that the MSIVs were inoperable during the short period of time that they were required in Modes 3, 2 and 1; therefore, it did not represent an actual open pathway in the physical integrity of the containment. This finding has a cross-cutting aspect of decision making in the area of human performance [H.1.(b)].

Enforcement: TS 5.4.1.a requires that written procedures be established, implemented, and maintained covering activities described in Regulatory Guide 1.33, Revision 2, Appendix A, 1978, which includes surveillance procedures (Section 8b). 10 CFR 50 Appendix B Criterion XI, Test Control, states that a test program shall be established to assure that all testing required to demonstrate that systems and components will perform satisfactorily in service is identified and performed in accordance with written test procedures that assure that the test is performed under suitable environmental conditions. Contrary to the above, on April 10, 2008, the licensee failed to establish procedures that assured the timed closing stroke testing of the Unit 2 MSIVs was performed under suitable environmental conditions, in that the credited valve stroke times were taken after the valve had been pre-conditioned. Specifically, the valves were cycled as part of a maintenance procedure immediately prior to being cycled closed for surveillance requirement timed testing. Because this violation was determined to be of very low safety significance and was placed in the licensee's corrective action program as PIP M-08-2664, this violation is being treated as a NCV in accordance with Section VI.A.1 of the Enforcement Policy: NCV 05000370/2008003-03, Pre-conditioning of Unit 2 MSIVs Prior to Surveillance Testing.

40A1 Performance Indicator Verification

a. Inspection Scope

The inspectors sampled licensee data to confirm the accuracy of reported performance indicator (PI) data for the indicators during periods listed below. To determine the accuracy of the PI data reported during that period, the inspectors compared the

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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.

Initiating Events Cornerstone

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

The inspectors reviewed a selection of licensee event reports, operator log entries, daily reports, monthly operating reports, and PI data sheets to determine whether the licensee had adequately identified the number of scrams and unplanned power changes greater than 20 percent that occurred during the previous four quarters. The inspectors compared this number to the number reported for the PI during the current quarter. The inspectors also reviewed the accuracy of the number of critical hours reported and the licensee's basis for crediting normal heat removal capability for each of the reported reactor scrams. In addition, the inspectors interviewed licensee personnel associated with the PI data collection, evaluation, and distribution.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Routine 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 screening of items entered into the licensee's corrective action program. This was accomplished by reviewing copies of condition reports, attending some daily screening meetings, and accessing the licensee's computerized database.

.2 Annual Sample Review

a. Inspection Scope

The inspectors selected the following corrective action documents for detailed review:

- (1) The inspectors reviewed PIP M-06-2371 (Standby Shutdown Facility Diesel Generator Fuel Metering Valve Stuck Open) to determine whether the licensee identified the full extent of the issue, performed an appropriate evaluation, and specified and prioritized appropriate corrective actions.
- (2) The inspectors reviewed PIP M-08-03613, which was initiated because industry and peer feedback indicated that McGuire Nuclear Station did not meet industry standards for the use of Annunciator Response Procedures (ARPs) when operators

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identified annunciators during the conduct of requalification exams and initial exams. The facility's method of implementation of ARPs was identified during the last three NRC visits to the site. The inspectors checked that this issue had been completely and accurately identified in the licensee's Corrective Action Program (CAP) and that safety concerns were properly classified, prioritized for resolution, and apparent cause determinations were sufficiently thorough. In addition, the inspectors determined if appropriate corrective actions were implemented in a manner consistent with safety and compliance with plant Abnormal Procedure (AP) usage.

b. Findings

No findings of significance were identified.

3. Semi-Annual Review to Identify Trends

a. Inspection Scope

The inspectors performed a trend review to determine if trends were identified outside the corrective action program that could indicate the existence of a more significant safety issue. The inspector's review was focused on repetitive equipment issues, but also considered the results of daily inspector corrective action program item screening discussed above, licensee trending efforts, and licensee human performance results. The review also included issues documented outside the normal corrective action program in major equipment problem lists, plant health team vulnerability lists, focus area reports, system health reports, self-assessment reports, maintenance rule reports, and Safety Review Group Monthly Reports. The inspectors compared and contrasted their results with the results contained in the licensee's latest quarterly trend reports. Corrective actions associated with a sample of the issues identified in the licensee's trend report were reviewed for adequacy. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings and Observations

Update of previously identified trends

The inspectors previously identified a trend associated with numerous violations for failing to update the FSAR in accordance with regulations outlined in 10 CFR Part 50.71(e). 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, additional examples of UFSAR inaccuracies were identified by the NRC. NRC identified that the UFSAR had not been updated to reflect shared portions of the nuclear service water system in section 1R11.1 of this report.

New trends

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

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4OA3 Event Follow-up

.1 Reactor Trip

a. Inspection Scope

The inspectors reviewed the licensee's actions associated with the June 26, 2008, Unit 1 reactor trip due to the loss of a reactor coolant pump. The inspectors observed plant parameters for mitigating systems, evaluated performance of systems and operators, and confirmed proper classification and reporting of the event. Documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.2 Unit 1 Startup after Reactor Trip

a. Inspection Scope

The inspectors also reviewed the licensee's actions associated with the Unit 1 approach to criticality on June 29, 2008, and power escalation on June 30, 2008. The inspectors evaluated the performance of the operators and confirmed procedural compliance. Documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted the following observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours. The documents reviewed during this inspection are listed in the Attachment to this report.

- Multiple tours of operations within the Central and Secondary Security Alarm Stations
- Tours of selected security officer response posts

- Direct observation of personnel entry screening operations within the plant's Main Access Facility
- Security force shift turnover activities

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

.2 (Closed) Temporary Instruction (TI) 2515/166, Pressurized Water Reactor Containment Sump Blockage (NRC Generic Letter 2004-02) – Units 1 and 2

a. Inspection Scope

The inspectors verified implementation of the licensee's commitments documented in their September 1, 2005, and supplemental responses to Generic Letter (GL) 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactor for Unit 2. This included the licensee's requests for extension of GL 2004-02 completion dates. Additionally, the inspector reviewed the status of outstanding Unit 1 GL 2004-02 commitment items that were not complete during the previous Unit 1 TI 2515/166 inspection (NRC Inspection Report 50-369, 370/2007003).

The Unit 2 modifications were performed in two phases. The first phase was accomplished in the 2006 Unit 2 refueling outage. It installed approximately 1000 square feet (out of approximately 1700 square feet) of the planned modified containment sump screen/strainer design, installed the residual heat removal piping jet impingement/restraint, and removed the perforated cover from the refueling canal bottom drain. During the second phase, implemented during the most recent refueling outage, approximately 700 additional square feet of containment sump strainer assembly was installed. The inspector reviewed work documentation for the sump screen/strainer assembly installation to assess work controls, implementation of foreign material exclusion controls, and to verify that designated quality control inspections were accomplished. The inspector reviewed the identification and resolution of a quality control issue related to tack welds used on the containment sump structure housing flashing. The Unit 2 Phase 2 design documentation was reviewed to verify the implementation of appropriate design controls and 10 CFR 50.59 requirements. Also, a field walk down of the screen assembly was performed to verify gap criteria (where possible) and to verify that the installed configuration was consistent with the drawings and tested configuration. The inspectors reviewed the status of commitments related to engineering and design documentation which supported the modified sump screen/strainer design. Additionally, the inspectors reviewed the adequacy of emergency core cooling system pump net positive suction head margin, including the analyzed head loss from the modified sump screen/strainer design.

The licensee's commitments related to engineering and design documentation, associated with chemical effects testing and downstream effect analysis, to support the modified design were not complete during the on-site inspection. The licensee's activities for these commitment items were on schedule; consistent with the approved commitment date extension (April 30, 2008) specified in the NRC extension approval letter, dated December 28, 2007. An in-office review was performed on May 27, 2008, to address the status of commitment items that were due on April 30, 2008.

b. Findings and Observations

No findings of significance were identified.

The plant modifications and procedure changes committed to in the licensee's responses to GL 2004-02 were complete for Units 1 and 2 and were reviewed and documented in accordance with 10 CFR 50.59. The licensing basis will be updated to reflect the current GL 2004-02 commitments at the next UFSAR update, which is scheduled for October 2008. The licensee's design documentation and analysis related to chemical and downstream testing were complete.

This documentation of TI-2515/166 completion as well as any results of sampling audits of licensee actions, will be reviewed by the NRC staff (Office of Nuclear Reactor Regulation - NRR) with the Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," responses to support closure of GL 2004-02 and Generic Safety Issue (GSI)-191, "Assessment of Debris Accumulation on Pressurized-Water Reactor (PWR) Sump Performance". The NRC will notify each licensee by letter of the results of the overall assessment as to whether GSI-191 and GL 2004-02 have been satisfactorily addressed at that licensee's plant(s). Completion of TI-2515/166 does not necessarily indicate that a licensee has finished all testing and analyses needed to demonstrate the adequacy of their modifications and procedure changes. Licensees may also have obtained approval of plant-specific extensions that allow for later implementation of plant modifications. Licensees will confirm completion of all corrective actions to the NRC. The NRC will track all such yet-to-be-performed items identified in the TI-2515/166 inspection reports to completion and may choose to inspect implementation of some or all of them.

4OA6 Meetings, Including Exit

.1 Exit Meeting Summary

On July 8, 2008, the resident inspectors presented the inspection results to Mr. B. Hamilton and other members of his staff. Although proprietary information was reviewed during the inspection, no proprietary information is included in this report.

.2 Annual Assessment Meeting Summary

On April 22, 2008, the Acting Chief of Reactor Projects Branch 1, and the Resident Inspectors assigned to the McGuire Nuclear Station (MNS) met with Duke to discuss the

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NRC's Reactor Oversight Process (ROP) and the NRC's annual assessment of MNS safety performance for the period of January 1, 2007 - December 31, 2007. The major topics addressed were the NRC's assessment program and the results of the MNS assessment. The meeting was open to the public. A listing of meeting attendees (ML081980508) and information presented during the meeting (ML081980501) are available from the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at www.nrc.gov/reading-rm/adams.html.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

Ashe, K., Manager, Regulatory Compliance
Black, D., Security Manager
Bradshaw, S., Training Manager
Brewer, D., Manager, Safety Assurance
Capps, S., Manager, Engineering
Crane, K., Regulatory Compliance
Dalrymple, J., Project Manager, Modifications
Graham, G., Operations Training Supervisor
Hamilton, B. Site Vice President, McGuire Nuclear Station
Hicks, J., Superintendent, Maintenance
Hull, P., Chemistry Manager
Kammer, J., Manager, Safety Assurance
Mooneyhan, S., Radiation Protection Manager
Nolin, J., Manager, Mechanical and Civil Engineering (MCE)
Parker, R., Superintendent, Work Control
Pope, R., Operations Training Manager
Repko, R., Station Manager, McGuire Nuclear Station
Simril, T., Superintendent, Plant Operations
Snider, S., Manager, Reactor and Electrical Systems Engineering
Taylor, D., Simulator Engineer

NRC personnel

J. Stang, Project Manager, NRR
S. Rose, Acting Branch Chief, RII
R. Carroll, Acting Branch Chief/Senior Project Engineer, RII

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000369,370/2008003-01	NCV	Failure to Update the FSAR to Reflect Those Portions of RN Shared Between Units (Section 1R11.1)
05000369,370/2008003-02	NCV	Failure to Scope Main Feedwater Tempering Line Valves Into the Maintenance Rule Monitoring Program (Section 1R12)
05000370/2008003-03	NCV	Pre-conditioning of Unit 2 MSIVs Prior to Surveillance Testing (Section 1R22)

Section 1R06: Internal FloodingUFSAR Sections

9.3.3, Equipment and Floor Drainage System

Design Basis Documents

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

Calculations

MCC-1206.47-69-1001, Auxiliary Building Flooding Analysis, Sec.9.2-9.2.1, Rev. 11

Procedures

AP/0/A/5500/44, Plant Flooding, Rev. 3

IP/0/A/3215/004, Magnetrol Liquid Level Control Switch Calibration, Rev. 15

IP/0/A/3215/002, Robertshaw SL-400 series Level AC - Liquid Level Controller Calibration

PT/0/A/4973/007 A,B,C; WZ Sump Pump Performance Tests

OP/1/A/6100/010 Annunciator Response

Other Documents

IN 2005-11, Internal Flooding/ Spray Down of Safety Related Equipment Due to Unsealed Equipment Hatch Floor Plugs and/or Blocked Drains

Section 1R11: License Operator Requalification**Resident Quarterly Observation**

License Amendment No. 78 to Facility Operating License NPF-9 (Unit 1)

License Amendment No. 59 to Facility Operating License NPF-17 (Unit 2)

Duke Power Response to Generic Letter 91-13, "Essential Service Water System Failures at Multi-Unit Sites" dated February 27, 1992

Duke Power proposed Technical Specification Change for Nuclear Service Water dated July 31, 1987

Duke Power response to proposed NRC violations dated August 8, 1986

Duke Power response to proposed civil penalty dated April 3, 1987

McGuire UFSAR Chapter 9.2

PIP-M-07-6207

Annual Review of Licensee's Operator Requalification Program

McGuire Training Procedure (MTP) 4116.1, "Licensed Requalification Program," Revision 14

MTP-2701.0, "Simulator Configuration Management and Operating Limits," Revision 04

NSD 512 - Maintenance of RO/SRO NRC Licenses, Revision 03

2006 LOR Annual Exam Report

2007 LOR Annual Exam Report

2008 LOR Written Examination/JPM Selection Matrix / Sample Plan

McGuire Nuclear Station Licensed Operator Qualification Report

Return to Licensed Duties Certifications

Remediation Training Records

LOCT Feedback Forms

Written Examinations Reviewed:

LOR 08 3CS, 08 3CR
 LOR 08 3DS, 08 3DR
 LOR 08 3ES, 08 3ER

Job Performance Measures Reviewed:

OP-MC-PS-NV: 184T, Emergency Borate the Reactor Coolant System Locally Using 2NV-269
 OP-MC-JPM-PSS-RN 044, Realign the RN System Suction and Discharge Headers Following a Spurious Safety Injection
 OP-MC-JPM-IC-IPE: 197-IA, Respond to an ATWS
 OP-MC-JPM-PS-NV: 146A, Align Normal Charging With NV Recirc Path Isolated
 OP-MC-SS-VI: 083A, Bypass A, B, and C VI Dryers following a Loss of Instrument Air
 OP-MC-PSS-KC: 165T, Makeup to the Unit 2 KC Surge Tanks
 OP-MC-JPM-SS-VI: 110A, Aligning Nitrogen to Supply control Air to D, E, and F VI compressors
 OP-MC-JPM-IC-IRE: 174-IA, Respond to Additional Dropped Rods while Retrieving a Dropped Control Rod
 OP-MC-JPM-ECC-NI: 201, Align the ND, NI, and NV systems to Cold Leg Recirculation (Repeat from Scenario) ASE-12 or 46
 OP-MC-JPM-PS-NV-089A, Restore Reactor Coolant system Letdown
 OP-MC-EL-EPL: 166T, Swap Battery Charger EVCA Power Supply from Unit 1 to Unit 2
 OP-MC-JPM—SS-VI: 164A, Ensure Proper Response of Diesel VI Compressors on Loss of VI
 OP-MC-JPM-IC-ENB: 181-1A, Respond to a Failure of Power Range Channel N-42
 OP-MC-JPM-ECC-NI: 047, Terminate SI Flow
 OP-MC-JPM-PS-NC: 115A, Transfer to Hot Leg Recirculation

Simulator Scenarios:

Active Simulator Exams (ASE)
 ASE-46, Revision 04
 ASE-12, Revision 17
 ASE- 05, Revision 04
 ASE -38, Revision 04

Simulator Testing Reviewed:[Transient Tests]

Transient # 1, Steam Generator Tube Rupture SPT/A/T/01, Revision 08
 Transient # 5, Single NC Pump Trip SPT/A/T/05, Revision 09
 Transient # 13, Feedwater Line Break SPT/A/T/13, Revision 08
 Transient # 14, Loss of CF ATWS SPT/A/T/14, Revision 08

[Normal Operation Tests]

Steady State Power, Drift Test SPT/A/S/01, Revision 04
 Steady State Power, Heat Balance Check SPT/A/S/02, Revision 03
 Steady State Power, Critical and Noncritical Parameters Check SPT/A/S/03, Revision 03

[Malfunctions Tests]

Loss of 4160V Bus (EP008) SPT/1/M/03, Revision 02
 ND HX Outlet or Bypass Valve Failure (ND005) SPT/4/M/04, Revision 02

Instrument Air Leak (VI001) SPT/3/M/02, Revision 03
Loss of 6.9KV Switchgear (EP005) SPT/3/M/03, Revision 03

Simulator Maintenance Requests Reports Reviewed:
[Simulator Discrepancy Reports]

Reports Closed Out

20070023
20070033
20070046
20070054
20060003
20070032

Reports Still Open

20040010
20050016
20060014
20060055
20080021
20070057

PIPs Reviewed:

M-07-02951
M-08-03613

Section1R12: Maintenance Effectiveness

EDM-210, Engineering Responsibilities for the Maintenance Rule
PIP M-08-3496, Expert Panel Meeting Results for Tempering Line Valves
PIP M-08-3307, Main Feedwater Tempering Line Valves Not Scoped in Maintenance Rule
EP/1/A/5000/FR-H.1 Response to Loss of Secondary Heat Sink
EP/2/A/5000/FR-H.1 Response to Loss of Secondary Heat Sink

Section1R15: Operability Evaluations

M-08-0925: TS 3.8, UFSAR Section 8 and 9.5.4, MCS-1609.FD-00-001, PIPs M-08-967 and 977
M-08-2324: PIP M-08-2306, VN MD200915
M-08-2452: Pictures of AHUs in upper containment, UFSAR 6.2

Section1R18: Plant Modifications

MD 100461, 1A CA Assured Supply Relocation:
Design Basis Document MCS-1574.RN-00-0001, Design Basis Specification for the RN System
Design Basis Document MCS-1592.CA-00-0001, Design Basis Specification for the CA System
Updated Final Safety Analysis Report Sections 2.4, 9.2, and Chapter 15

Post-modification test procedures: TT/1/A/9100/602, RN System Flow Functional Test,
 PT/1/A/4403/007, 1A RN Flow Balance Re-test
 Drawings: MCFD-1574-01.01, Flow Diagram of Nuclear Service Water System
 MCFD-1574-02.00, Flow Diagram of Nuclear Service Water System
 MCFD-1574-03.00, Flow Diagram of Nuclear Service Water System
 MCFD-1592-01.01, Flow Diagram of Auxiliary Feedwater System
 PT/1/A/4200/043 A, Flushing of Unit 1 RN Makeup Lines to CA pumps (A Train)
 MD100461 A-Z, Modification revisions including field work completion notice
 MD 200464, Installation of new RN supply to CA
 IP/0/A/3066/013 E, Testing of Motor Operated Gate Valves Using VIPER
 IP/0/A/3066/013 C, Rotork Actuator Testing Using Kalsi Engineering Test Bench With VIPER
 PT/2/A/4252/002A, CA Valve Stroke Timing – Quarterly 2A Motor Driven Pump Flowpath (only
 2CA-15A)
 PT/2/A/4252/003A, CA Train A Valve Stroke Timing – Quarterly Turbine Driven Pump Flowpath
 (only 2CA-86A)
 PT/2/A/4403/007, RN Train Flow Balance
 AP/2/A/5500/020, Loss of RN
 TT/2/A/9100/602, RN Train 2A Flow Balance for MD200464
 UFSAR Section 10.4.10
 NUREG-0422 and Supplements, Safety Evaluation Report related to operation of McGuire
 Nuclear Station Units 1 and 2
 MD200464 A-X, Modification revisions including field work completion notice
 PT/2/A/4200/043A, Flushing of Unit 2 RN Makeup Lines to CA pumps (A Train)
 MD2011471, Replace 2CA-86A and 2RN-69A MOD

Section 1R20: Refueling and Outage Activities

MP/2/A/7150/073, “Rod Cluster Control Assembly Heavy Drive Rod Unlatching and Latching”,
 Rev. 14
 PT/0/A/4150/021, Post Refueling Controlling procedure for Criticality, Zero Power Physics, &
 Power Escalation Testing
 PT/0/A/4150/028, Criticality Following a Change in Core Nuclear Characteristics
 PT/0/A/4150/013, Boron Endpoint, Dynamic Rod Worth and Isothermal Temperature Coefficient
 Measurement
 OP/2/A/6100/SU-3, Mode 5 Checklist
 OP/2/A/6100/SU-5, Filling the NC System
 OP/2/A/6100/SU-6, Venting the NC System
 OP/2/A/6100/SU-9, Mode 4 Checklist
 OP/2/A/6100/003, Controlling Procedure For Unit Operation
 PT/0/A/4150/021, Post Refueling Controlling procedure for Criticality, Zero Power Physics, &
 Power Escalation Testing

Section 4OA2: Problem Identification and Resolution

Nuclear System Directive (NSD) 208 Problem Investigation Process
 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

40A3 Event Follow-up

EP/1/A/5000/E-0, Reactor Trip or Safety Injection
 EP/1/A/5000/ES-0.1, Reactor Trip Response
 OP/1/A/6100/003, Controlling Procedure For Unit Operation

Section 40A5: Other Activities

PT/2/A/4700/055, Unit 2 Containment Building Civil Structures Inspection, Rev. 11
 MD200915, Unit 2 Replacement Containment Sump Screen, Phase 2 MOD, Rev.0
 Duke Letter to NRC dated Feb. 28, 2008, NRC GL 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation During Design Base Accident at PWRs
 Duke Letter to NRC dated Sept. 1, 2005, Response to NRC GL 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation During Design Base Accident at PWRs, McGuire Units 1 and 2
 Duke Letter to NRC dated Feb. 9, 2007, NRC GL 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation During Design Base Accident at PWRs, Revise Request for Relief from the GSI-191 Completion Date and Response to NRC RAI
 NRC Letter to Duke Energy, dated Dec. 19, 2007, McGuire Nuclear Station, Unit 2, NRC GL 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation During Design Base Accident at PWRs, Extension Request Approval
 NRC Letter to Duke Energy, dated April 30, 2008, McGuire Nuclear Station, Units 1 and 2, Response to NRC GL 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation During Design Base Accident at PWRs
 PIP M-07-05820, Track NRC Commitments to Completion regarding GL 2004-02
 PIP M-07-04254, Track Response to GL 2004-02 RAI Dated Feb. 9, 2007
 PIP M-06-00742, Track Response to GL 2004-02
 Foreign Material Exclusion/House Keeping Plan for Unit 2 ECCS Sump Replacement, Phase 2, dated 2/19/08
 WO 01754901-41, Install Tophats/New "BB" Wing Plenums
 MP/0/A/7650/034, Fabrication and Installation of Structural and Miscellaneous Steel, Rev. 22
 MP/0/A/7700/123, Open System or Component Foreign Material Exclusion, Rev. 65
 PIP M-08-02306, Flashing installed to limit gaps during Unit 2, phase 1, ECCS sump installation during 2EOC17 did not meet drawing design criteria

LIST OF ACRONYMS

AP - Abnormal Procedure
 ARP - Annunciator Response Procedures
 CA - Auxiliary Feedwater
 CAP - Corrective Action Program
 DRPI - Digital Rod Position Indicator
 EDG - Emergency Diesel Generator
 FSAR - Final Safety Analysis Report
 GL - Generic Letter
 IMC - Inspection Manual Chapter
 JPM - Job Performance Measures

KC	-	Component Cooling Water
KD	-	Diesel Generator Engine Cooling Water
MSIV	-	Main Steam Isolation Valve
NCV	-	Non-Cited Violation
ORAM	-	Outage Risk Assessment Management
PI	-	Performance Indicator
PIP	-	Problem Investigation Process Report
PWR	-	Pressurized Water Reactor
RCCA	-	Rod Control Cluster Assembly
RHR	-	Residual Heat Removal
RN	-	Nuclear Service Water
SM	-	Main Steam
SSC	-	Structures, Systems and Components
TD	-	Turbine Driven
TI	-	Temporary Instruction
TS	-	Technical Specifications
UFSAR	-	Updated Final Safety Analysis Report