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

July 22, 2005

Duke Energy Corporation
ATTN: Mr. G. R. Peterson
Vice President
McGuire Nuclear Station
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000369/2005003 AND 05000370/2005003

Dear Mr. Peterson:

On June 30, 2005, 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 June 30, 2005, with Tom Harrall 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.

Based on the results of this inspection, there were three findings (two NRC-identified and one self-revealing) of very low safety significance (Green) identified in the report which were determined to be violations of NRC requirements. 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. In addition, two licensee identified violations, which were determined to be of very low safety significance, are listed in section 4OA7 of this report. If you contest the non-cited violations in this report, 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.

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

Sincerely,

/RA/

Michael E. Ernstes, 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 05000369/2005003 and 05000370/2005003
w/Attachment - Supplemental Information

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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:	05000369/2005003 and 05000370/2005003
Licensee:	Duke Energy Corporation
Facility:	McGuire Nuclear Station, Units 1 and 2
Location:	12700 Hagers Ferry Road Huntersville, NC 28078
Dates:	April 1, 2005 - June 30, 2005
Inspectors:	J. Brady, Senior Resident Inspector S. Walker, Resident Inspector R. Moore, Senior Reactor Inspector (Sections 1R02 and 1R17.2) J. Lenahan, Senior Reactor Inspector (Sections 1R02 and 1R17.2) R. Cortes, Reactor Inspector (Section 1R12.2) M. Maymi, Reactor Inspector (Sections 1R02, 1R07, and 1R17.2) R. Rodriguez, Reactor Inspector (Sections 1R02 and 1R17.2)
Accompanying Personnel:	Yun-il Kim, Reactor Inspector, Korea Institute of Nuclear Safety (Section 1R12.2)
Approved by:	Michael Ernstes, Chief Reactor Projects Branch 1 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000369/2005-003, 05000370/2005-003; 04/01/2005 - 06/31/2005; McGuire Nuclear Station, Units 1 and 2; Fire Protection and Other Activities.

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

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. A self revealing, non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, was identified for failing to take timely and adequate corrective actions to resolve adverse conditions that resulted in a Unit 2 main steam isolation valve (MSIV) being inoperable.

  The finding is considered greater than minor because it had a direct impact on the MSIV to perform its safety function, which is to close during a high energy line break or steam generator tube rupture. The finding affects both the Mitigating Systems and Barrier Integrity cornerstones, in that the failure to close impacts the equipment performance (reliability, availability) attribute and containment isolation (minimization of radiological releases) attribute, respectively. Based on the results of the Phase 3 SDP analysis, the finding is considered of very low safety significance. This issue contained elements of problem identification and resolution, as it involved failures to properly evaluate data and deficiencies associated with the MSIVs; therefore, failing to take prompt corrective action to prevent recurrence of adverse conditions and preclude the valve from becoming inoperable. (Section 4OA5.3)

C Green. A non-cited violation of Technical Specification (TS) 5.4.1.a was identified by the inspectors for failure to establish, implement, and maintain an adequate abnormal procedure for combating plant fires in the reactor containment building. The procedure was not consistent with the plant design documents regarding which safe shutdown equipment is credited as the assured shutdown train.

  This finding is greater than minor because if left uncorrected, the failure to maintain abnormal and emergency procedures consistent with the design basis, could become a more significant safety concern. Additionally, it impacts the Reactor Safety Cornerstone of Mitigating Systems to ensure the availability, reliability, and capability of systems to respond to an event. This finding was determined to be of very low safety significance because the way the procedure is currently written, the operators could still achieve and maintain hot standby. This issue contained elements of problem identification and resolution, as it involved failures to properly identify and correct deficiencies associated with the fire mitigation strategies. (Section 1R05)

- Green. A non-cited violation of Technical Specification (TS) 5.4.1.d, was identified by the inspectors for failing to establish, implement, and maintain adequate procedures to implement fire protection sprinkler inspection requirements for the reactor building annulus contained in Updated Final Safety Analysis Report (UFSAR) Chapter 16, Selected Licensee Commitments, in that six sprinklers' spray patterns were discovered obstructed.

  The finding is greater than minor because the finding is associated with both a degradation in the fire protection defense in depth feature and an increase in the likelihood of an initiating event, in that, in the event of a U2 annulus fire, the cables affected by the obstructed sprinklers include those which could cause all four reactor coolant pumps to trip, consequently causing a reactor trip. The finding was determined to be of very low safety significance due to the low number of ignition sources and the availability of one complete safe shutdown train. This issue contained elements of both problem identification and resolution, as well as human performance. The operators failed to properly identify and correct deficiencies associated with the sprinklers, such as obstructions, as specified by the Selected Licensee Commitments (SLC) requirements. In addition, following the discovery of this finding, several procedural issues were found. (Section 4OA5.2)

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status:

Unit 1 began the inspection period at approximately 100 percent rated thermal power (RTP) and operated at full power for the entire report period.

Unit 2 began the inspection period shutdown in a refueling outage. Unit 2 was taken critical on April 13, went on-line April 14, and was manually tripped on April 15, due to problems with the 'A' steam generator feed regulating valve. On April 17 Unit 2 was again taken critical, went on-line, and was manually tripped again due to continued problems with the 'A' steam generator feed regulating valve. Unit 2 was taken critical on April 20, went on-line April 20, and reached 100% power on April 22. The unit remained at approximately 100 percent RTP for the rest of the period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R02 Evaluation of Changes, Tests, or Equipment

a. Inspection Scope

The inspectors reviewed selected samples of evaluations to confirm that the licensee had appropriately considered the conditions under which changes to the facility, Updated Final Safety Analysis Report (UFSAR), or procedures may be made, and tests conducted, without prior NRC approval. The inspectors reviewed evaluations for six changes and additional information, such as calculations, supporting analyses, the UFSAR, and drawings to confirm that the licensee had appropriately concluded that the changes could be accomplished without obtaining a license amendment. The six evaluations reviewed are listed in the Attachment to this report. Review of the evaluation for the revisions to Chemistry Manual 3.1 for changes to the reactor makeup water storage tank (RMWST) oxygen limits was performed in the Region II office.

The inspectors also reviewed samples of changes such as design changes, a commercial grade dedication package, a procedure change, and an instrument setpoint change for which the licensee had determined that evaluations were not required, to confirm that the licensee's conclusions to "screen out" these changes were correct and consistent with 10 CFR 50.59. The 17 "screened out" changes reviewed are listed in the Attachment to this report.

The inspectors also reviewed three self-assessments of the 10 CFR 50.59 process and selected Problem Investigation Process (PIP) reports to confirm that problems were identified at an appropriate threshold, were entered into the corrective action process, and appropriate corrective actions had been initiated.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

a. Inspection Scope

Partial System Walkdowns

During this inspection period, the inspectors performed the following partial system walkdowns, while the indicated Structures, Systems and Components (SSCs) were out of service for maintenance and testing:

- Unit 1 train A Containment Spray with train B out of service on April 26
- Unit 1 train B Emergency Diesel Generator with train A out of service on May 10
- Unit 2 train B Charging and High Head Safety Injection with train A out of service on May 17
- Unit 1 train A Emergency Diesel Generator with train B out of service on May 24
- Unit 1 120V vital invertors EVIB, EVIC, and EVID; Unit 1 diesel generators 1A and 1B; and Unit 1 non-safety 6.9 KV supplies to safety-buses 1ETA and 1ETB; with 120V vital invertor EVIA out of service for maintenance on June 6.

To evaluate the operability of the selected trains or systems under these conditions, the inspectors verified correct valve and power alignments by comparing observed positions of valves, switches, and electrical power breakers to the procedures and drawings listed in the Attachment to this report. In addition, the inspectors used the operator aid computer to determine whether system parameters were as expected for the system and plant conditions, and whether equipment status shown for inaccessible equipment supported operability of the system.

Complete System Walkdown

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

- Valves are correctly positioned and do not exhibit leakage that would impact the function(s) of any given valve.
- Electrical power is available as required.
- Major system components are correctly labeled, lubricated, cooled, ventilated, etc.

- Hangers and supports are correctly installed and functional.
- Essential support systems are operational.
- Ancillary equipment or debris does not interfere with system performance.
- Tagging clearances are appropriate.
- Valves are locked as required by the licensee's locked valve program.

The inspectors reviewed the documents listed in the Attachment to this report, to verify that the ability of the system to perform its function(s) could not be affected by outstanding design issues, temporary modifications, operator workarounds, adverse conditions, and other system-related issues tracked by the engineering department.

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 verify that those items were consistent with UFSAR Section 9.5.1, Fire Protection System, and the fire protection program as described in the Design Basis Specification for Fire Protection, MCS-1465.00-00-0008. The inspectors walked down accessible portions of each area as well as reviewed results from related surveillance tests, and reviewed the associated pre-fire plan strategy, to verify that conditions in these areas were consistent with descriptions of the areas in the Design Basis Specification. Documents reviewed during this inspection are listed in the Attachment to this report.

The inspected Areas included:

- Unit 2 motor-driven auxiliary feedwater pump room (fire area 3)
- Unit 2 turbine-driven auxiliary feedwater pump room (fire area 3A)
- Unit 1 motor-driven auxiliary feedwater pump room (fire area 2)
- Unit 1 turbine-driven auxiliary feedwater pump room (fire area 2A)
- Vital Battery Room (fire area 13)
- Auxiliary Building elevation 695 (fire area 1)

b. Findings

Introduction: A Green non-cited violation of Technical Specification (TS) 5.4.1.a was identified by the inspectors for failure to establish, implement, and maintain an adequate abnormal procedure for combating plant fires in the reactor containment building. The procedure was not consistent with the plant design documents regarding which safe shutdown equipment is credited as the assured shutdown train.

Description: On April 4, 2005, while performing a risk analysis for a performance deficiency involving degraded fire protection sprinklers in the Unit 2 reactor building annulus, the inspectors reviewed procedure AP-45, Plant Fire, Rev. 003. During this review, the inspectors noted the procedure was not consistent with the safe shutdown analysis and the licensing basis for mitigation strategies regarding a fire in containment. The Design Basis Document (DBD) for Appendix R, MCS-1465.00-00-0008, Revision 6, which contains the licensing basis, stated that the assured safe shutdown train to achieve and maintain hot standby for a fire in containment consists of the normal Train B equipment and safe shutdown system (SSS) instrumentation. This is also communicated in various Fire Analysis calculations that demonstrate that only B train equipment and SSS instrumentation were analyzed. However, procedure AP-45, Enclosure 2, Unit 2 Containment Fire Actions, stated that a fire in that area could affect systems operated from the Safe Shutdown Facility (SSF), and that A & B trains were the assured Safe Shutdown trains for this area. The inspectors concluded that procedure AP-45 was inconsistent with the containment fire design basis. This issue contained elements of Problem Identification and Resolution (PI&R), in that licensee operations and engineering personnel failed to properly identify and correct deficiencies associated with the fire mitigation strategies.

Analysis: This performance deficiency is greater than minor because if left uncorrected, the failure to maintain abnormal and emergency procedures consistent with the design basis, could become a more significant safety concern. Additionally, it impacts the Reactor Safety Cornerstone of Mitigating Systems to ensure the availability, reliability, and capability of systems to respond to an event. Specifically, the Procedure Quality Attribute, in that procedure AP-45 for operators to mitigate a fire in containment was not consistent with the licensing and design basis of the plant. The significance of this issue was evaluated using the Significance Determination Process (SDP), Phase 2, per NRC Inspection Manual Chapter 0609 Appendix F, Fire Protection SDP. This finding was determined to be of very low safety significance because the way the procedure is currently written, the operators could still achieve and maintain hot standby.

Enforcement: Technical Specification 5.4.1.a requires that written procedures be established, implemented and maintained covering activities contained in Regulatory Guide 1.33, Appendix A, item 6(v), for Abnormal Procedures addressing plant fires. Procedure AP-45, Plant Fire, directs control room operators how to mitigate fires in various plant areas. Contrary to the above, the licensee failed to adequately maintain procedure AP-45, in that the procedure was not consistent with the design and licensing basis of the plant as found in the Appendix R DBD, MCS-1465.00-00-0008, Revision 6. Because this issue was of very low safety significance and was placed in the corrective action program as PIP M-05-1764, this violation is being treated as a non-cited violation in accordance with Section VI.A.1 of the Enforcement Policy: NCV 05000370/2005003-01, Failure to Have Adequate Procedures to Implement Fire Mitigation Actions for Containment.

1R06 Flood Protection Measures

a. Inspection Scope

External Flooding

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

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

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

- M-04-3746: Rainwater drainage into Unit 2 turbine building basement, was turned into a trend document for 13 previous PIPs
- M-04-4398, Unit 1 FWST enclosure sump pump has blocked discharge line that prevents sump from being emptied.

Internal Flooding

The UFSAR sections and the design basis documents listed in the Attachment indicate that the following areas are susceptible to flooding that contain safety-related equipment:

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

The inspectors walked down the Units 1 and 2 internal and external doghouses which contain risk- significant equipment and are below flood levels or otherwise susceptible to flooding from postulated pipe breaks, to verify that the area configuration, features, and equipment functions were consistent with the descriptions and assumptions used in UFSAR sections and in the supporting basis documents listed in the Attachment to this

report. The inspectors reviewed preventative maintenance documentation for the level transmitters in the doghouses to determine whether the equipment was being adequately maintained to perform its design function of mitigating flooding.

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

- M-05-2471: Floor drains in Unit 2 exterior doghouse will not pass flow

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (Biennial)

a. Inspection Scope

The inspectors reviewed inspection records, test results, maintenance work orders, and other documentation to ensure that heat exchanger (HX) deficiencies that could mask or degrade performance were identified and corrected. The test procedures and records were also reviewed to verify that these were consistent with Generic Letter (GL) 89-13 licensee commitments, and industry guidelines. Risk significant heat exchangers reviewed included the Control Room Chiller (YC) condensers, Unit 1 Safety Injection (NI) and Auxiliary Feedwater (CA) Pump Motor Coolers, and the Diesel Generator Cooling Water HXs (KD).

The inspectors reviewed HX inspection and cleaning completed procedures, inspection frequency, tube plugging maps and limits, and as-found pictures for all the safety related HXs selected. In addition, the inspectors reviewed eddy current test reports, delta-P trends, and delta-P operability calculations for the YC and KD HXs. These documents were reviewed to verify inspection methods were consistent with industry standards, to verify HX design margins were being maintained, and to verify performance of the HXs under the current maintenance frequency was adequate.

The inspectors also reviewed general health of the Nuclear Service Water (RN) system via review of design basis documents, the raw water program manual, system health reports, and discussions with the RN system engineer. These documents were reviewed to verify the design basis was being maintained and to verify adequate RN system performance under current preventive maintenance, inspections and frequencies.

The inspectors also verified RN system corrosion and degradation were being monitored and addressed via review of the service water pipe corrosion manual, piping corrosion health reports and ultrasonic testing (UT) database, Standby Nuclear Service Water Pond inspection procedure, and low level intake inspection report. RN system flow balance completed procedures and data trending, and CA assured makeup pipe flush

completed procedures were also reviewed to verify design flow conditions to components were maintained and verified.

Problem Investigation Process (PIPs) reports were reviewed for potential common cause problems and problems which could affect system performance to confirm that the licensee was entering problems into the corrective action program and initiating appropriate corrective actions. These PIPs included actions regarding RN component flow degradation issues including fouling in the reactor coolant (NC) pump motor cooler, and the Containment Spray (NS) air handling unit RN supply piping. In addition, the inspectors conducted a walk down of all selected HXs and major components for the RN system to assess general material condition and to identify any degraded conditions of selected components.

B. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

On June 7, 2005, the inspectors observed licensed-operator performance during requalification simulator exams for shift "C", to verify that operator performance was consistent with expected operator performance, as described in Active Simulator Exam OP-MC-ASE-35 and 41. This exam was structured to evaluate the operators' ability to identify and respond to certain design basis scenarios. The exam tested the operators' ability to perform abnormal and emergency procedures dealing with small and medium Loss of Coolant Accident (LOCA), steam generator tube rupture, loss of main condenser vacuum, loss of reactor pump cooling flow, reactor trip, safety injection, grid disturbances, loss of electrical power, and safety injection termination. The inspectors focused on clarity and formality of communication, use of procedures, alarm response, control board manipulations, group dynamics and supervisory oversight. The inspectors reviewed the post-exam critiques, to verify that the licensee identified deficiencies and discrepancies that occurred during the testing.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

.1 Quarterly Maintenance Effectiveness Inspection

a. Inspection Scope

The inspectors reviewed the two degraded SSC/function performance problems or conditions listed below, to verify the licensee's appropriate handling of these

performance problems or condition in accordance with 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, and 10 CFR 50.65, Maintenance Rule.

- Valcor type-21 solenoid valves
- Main Feedwater recirculation valves

The inspectors focused on the following:

- Appropriate work practices
- Identifying and addressing common cause failures
- Scoping in accordance with 10 CFR 50.65(b)
- Characterizing reliability issues (performance)
- Charging unavailability (performance)
- Trending key parameters (condition monitoring)
- 10 CFR 50.65(a)(1) or (a)(2) classification and reclassification, and
- Appropriateness of performance criteria for SSCs/functions classified (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified (a)(1)

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

- M-05-1999, 2B CF Pump Recirc started oscillating as power increased 0-15%
- M-04-1966, Slow stroke of 1CF-106AB recorded during ESF test
- M-04-2308, CF Pump 1B recirc valve performing erratically

b. Findings

No findings of significance were identified.

.2 Biennial Maintenance Effectiveness Inspection

a. Inspection Scope

The inspectors reviewed the licensee's most recent Maintenance Rule (MR) periodic assessment, "Maintenance Rule Periodic Assessment for McGuire Nuclear Station, June 17, 2004", covering the period of July 1, 2002 through December 31, 2003. The report was issued to satisfy paragraph (a)(3) of 10 CFR 50.65, and covered the period indicated for the two units. The inspection was to determine the effectiveness of the assessment, the periodicity of issuance and to verify the evaluation for balancing reliability and unavailability, (a)(1) activities, (a)(2) activities, and use of industry operating experience. To verify compliance with 10 CFR 50.65, the inspectors reviewed selected MR activities covered by the assessment period for the following MR systems and equipment: nuclear service water system (RN), standby shutdown facility (SSF), the turbine driven pump auxiliary feedwater system (CA), and the FWST level transmitters and heat tracing. Specific procedures and documents reviewed are listed in the Attachment to this report.

The inspectors reviewed the site MR implementing procedures, relevant PIPs, MR assessor unavailability hours log, (a)(4) assessments history for specific time frame, self-assessment procedure, and system health reports. The inspectors discussed issues with cognizant system engineers. Operational event information was evaluated by the inspectors in its use in MR functions. The inspectors selected system health reports and other corrective action documents of risk significant systems recently removed from 10 CFR 50.65 (a)(1) status and those in (a)(2) status for some period to assess the justification for their status. The documents were compared to the site's MR program criteria, and MR (a)(1) evaluations and scoping documents. The inspectors also reviewed corrective actions and acceptance criteria for systems in (a)(1) such as the Engineered Safeguard System (ESS) air handling units, the controlled area chilled water system, and the small bore steam piping leaks for both units to verify proper thresholds for entering systems into (a)(1) and timeliness commensurate with risk significance in resolving problems with the systems.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the licensee's risk assessments and the risk management actions used to manage risk for the plant configurations associated with the five activities listed below. The inspectors assessed whether the licensee performed adequate risk assessments, and implemented appropriate risk management actions when required by 10 CFR 50.65(a)(4). For emergent work, the inspectors also verified that any increase in risk was promptly assessed, and that appropriate risk management actions were promptly implemented. The inspectors also reviewed associated PIPs to verify that the licensee identified and implemented appropriate corrective actions.

- Week of April 3 during the Unit 2 refueling outage (2EOC16) 2ND-15B, residual heat removal cross connect valve failed due to actuator overload when attempting to open the valve from the control room; condition of 2ND-15B evaluated and resolved prior to changing modes (Mode 5 to Mode 4)

- Week of April 10 during Unit 2 refueling outage startup activities including delay due to emergent repair of Unit 2 turbine-driven auxiliary feedwater pump and resulting schedule changes; subsequent maintenance of 2CF-32, 'A' Steam Generator Control Valve, from FME found in valve seat

- Week of April 24, emergent work on 2NV-165, Vent from VCT to WG system, due to a body-to-bonnet hydrogen leak. Additionally, 2CM-86, Gland Steam Condenser Bypass Control Outlet Isolation, exhibited high vibrations due to the actuator being loose.

- Week of May 15 including emergent work on Unit 1 A1 moisture separator reheater low pressure turbine intercept valve actuator (1SC-44) and Unit 1 train B containment air return fan damper.

- Week of June 12, emergent work on 2B EDG due to the diesel being unable to function properly during overload conditions (4200 -4400 KW); the 2B diesel generator ventilation fan (VD) tripping during an operability run.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions

a. Inspection Scope

During the non-routine evolutions identified below, the inspectors observed plant parameters and operator performance to verify that the operators performed in accordance with the associated procedures and training.

- On April 8, shutdown bank “E” (SDBE) experienced a misaligned rod and a failed DRPI card resulting in entering AP-14, Rod Control Malfunction

- On April 12, U2 Startup following end-of-cycle refueling outage 2EOC16

- On April 14, U2 Turbine Generator synchronization to the grid for Cycle 17

- On April 16 and 17, U2 Startup following shutdown for 2CF-32 feed regulating valve problems (2EOC16A)

- On April 17, U2 Turbine Generator synchronization to the grid following 2EOC16A

- On April 20, U2 Startup following shutdown for continued 2CF-32 feed regulating valve problems (2EOC16B)

- On April 21, U2 Turbine Generator synchronization to the grid following 2EOC16B

- On May 13, U2 A steam generator feed flow channel 1 failure requiring entry into AP/2/A/5500/06, S/G Feedwater Flow Malfunction

The inspectors reviewed LER 05000370/2005-003-00, Containment Closure Requirements Not Met During Core Alterations, and associated PIP M05-1608 to determine whether the licensee identified and implemented appropriate corrective actions and whether aspects of human performance contributed to the licensee reported issue.

b. Findings

When reviewing the aforementioned Licensee Event Report (LER), the licensee's root cause investigation for PIP M05-1608 identified an inadequate procedure change and associated 10 CFR 50.59 safety evaluation as the root cause. A contributing cause was identified as the use of "automatic isolation valve" terminology, contained in TS 3.9.4 and the associated bases, which the operators considered confusing. The TS stated that each penetration having direct access from the containment atmosphere to the outside atmosphere, be closed by a manual or automatic isolation valve, blind flange, or equivalent, or exhausting through an operable containment purge exhaust system HEPA filter and carbon absorber. The LER identified that the operators interpreted the terminology "OPERABLE isolation valve" in the TS Bases to mean open as long as the associated valve was fully capable of automatic closure. The LER identifies all three as causes without differentiating between root and contributing. The corrective actions identified in the root cause adequately addressed the root causes and the contributing cause. However, a corrective action in the root cause to address the operator knowledge deficiency by conducting training was not included in the LER. The inspectors considered the operator knowledge deficiency as a cross-cutting human performance aspect. Enforcement for the LER is addressed in Section 4OA7.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the operability determinations the licensee had generated that warranted selection on the basis of risk insights. The selected samples are addressed in the PIPs listed below. The inspectors assessed the accuracy of the evaluations, the use and control of any necessary compensatory measures, and compliance with the TS. The inspectors verified that the operability determinations were made as specified by Nuclear System Directive (NSD) 203, Operability. The inspectors compared the arguments made in the determination to the requirements from the TS, the UFSAR, and associated design-basis documents, to verify that operability was properly justified and the subject component or system remained available, such that no unrecognized increase in risk occurred.

- M-05-2222, Gas was vented out of various Unit 2 ND and NV vents during performance of ECCS pump and piping vent
- M-05-2204, SBLOCA pressure differential across sump isolation valves NI-184, 185 may be greater than design
- M-05-1671, Appendix R submittal for Reactor Building fire area
- M-05-779, Reactor coolant pump #1 seal volume less than previously assumed
- M-04-2109, During Valve Stroke Timing (VST) test, 1SM-7 would not fully close

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds

a. Inspection Scope

The inspectors reviewed the cumulative effects of the operator work-arounds listed in the Attachment to this report, to verify that those effects would not increase an initiating event frequency, affect multiple mitigating systems, or affect the ability of operators to respond in a correct and timely manner to plant transients and accidents. There were no new operator work-arounds that warranted review on the basis of risk insights.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

.1 Annual Permanent Plant Modification Inspection

a. Inspection Scope

The inspectors reviewed the modification, New Reactor Core arrangement for Unit 2, Cycle 17, to verify that:

- this modification did not degrade the design bases, licensing bases, and performance capabilities of risk significant SSCs;
- implementing this modification did not place the plant in an unsafe condition; and
- the design, implementation, and testing of this modification satisfied the requirements of 10 CFR 50, Appendix B.

b. Findings

No findings of significance were identified.

.2 Biennial Permanent Plant Modification Inspection

a. Inspection Scope

The inspectors evaluated design change packages for modifications, in the Mitigating Systems cornerstone areas, to evaluate the modifications for adverse affects on system availability, reliability, and functional capability. The modifications and the associated attributes reviewed were as follows:

NSM 12533/P1, RN(Service Water) Piping Replacement to NC (Reactor Coolant) Pump 1D Motor Cooler (Mitigating Systems)

- Materials/Replacement Components (material compatibility, functional properties)
- Pressure Boundary
- Process Medium (fluid flow rates)
- Plant Document Updating (drawings)
- Post-Modification Testing
- Installation Records

NSM 52532/00, Main Intake Circulating Water (RC) Pump Cyclone Separators Replacement with Steel Backwash Strainers (Mitigating Systems)

- Materials/Replacement Components (material compatibility, functional properties, classification)
- Equipment Protection (freeze)
- Operations (lesson plan)
- Flowpaths
- Failure Modes
- Plant Document Updating (drawings, procedures)
- Post-Modification Testing

NSM 22546/P1, Feedwater Pump Turbine (FWPT) Speed Control Upgrade, Rev.1

- Materials/Replacement Components (functional properties)
- Control Signals (control)
- Plant Document Updating (drawings)
- Post-Modification Testing
- Training

MGMM 15252, Change Power Supplied to NCP 2A, 2B, 2C, 2D Trip Circuitry

- Materials/Replacement Components (functional properties)
- Energy Needs (electricity)
- Plant Document Updating (drawings)
- Post-Modification Testing

MGMM 14082, Add a Time Delay to the Source Range Annunciator and Containment Evacuation Alarm

- Timing (response time)
- Control Signals (initiation)
- Plant Document Updating (drawings, procedures)
- Post-Modification Testing
- Training

MGMM-14015, Replace Struthers-Dunn Relay with Cutler-Hammer Relay in Diesel Generator Droop Circuit (Mitigating Systems)

- Materials/Replacement Components material compatibility, Code requirements, and seismic requirements
- Conformance to Design Basis
- Functional Test Criteria and Results
- Updating of Equipment List and Valve Motor Data Sheets
- 10 CFR 50.59 Screening

MGMM-14179, Relocation of Pipe Support 2-MCA-VN-5060 (Diesel Generator Exhaust Support (Mitigating Systems)

- Materials/Replacement Components (material compatibility, Code requirements, and seismic requirements)
- Conformance to Design Basis
- 10CFR 50.59 Screening

For selected modification packages, the inspectors observed the as-built configuration. Documents reviewed included procedures, engineering calculations, modifications design and implementation packages, work orders, site drawings, corrective action documents, applicable sections of the UFSAR, supporting analyses, Technical Specifications, and design basis information.

The inspectors also reviewed selected PIPs associated with modifications to confirm that problems were identified at an appropriate threshold, were entered into the corrective action process, and appropriate corrective actions had been initiated.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

For the post-maintenance tests listed below, the inspectors witnessed the test and/or reviewed the test data, to verify that test results adequately demonstrated restoration of the affected safety function(s) described in the UFSAR and TS. The tests and description of maintenance performed included the following:

- PT/0/A/4600/105, RCCA Drop Timing Using DRPI System (verify control rod dashpot entry after refueling)
- PT/2/A/4252/001, #2 TD CA Pump Performance Test, and PT/2/A/4252/001R, Retest of 2SA-48ABC and 2SA -49AB (repair of TDCA Pump Steam Stop Valve 2SA-3 and linkage)
- OP/2/A/6250/001, Condensate and Feedwater System (Repair of valve 2CF-32, A steam generator feed regulating valve)
- PT/1/A/4403/002A, RN Train A Valve Stroke Timing - Quarterly, Enclosure

13.12, VST for 1RN-70A, A DG HX Inlet Isolation (annealing of switches on actuator)
- PT/0/B/4350/070, Safe Shutdown Facility Diesel Generator 24 VDC Starting Battery Performance Test (5 year battery discharge/ equalization; battery charger maintenance)
- PT/2/A/4350/002B, Diesel Generator 2B Operability Test (Adjust fuel rack linkage to achieve greater than 4200 kW)

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

The inspectors evaluated licensee outage activities to verify that 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
- Reactivity control
- Containment

The inspectors observed the items or activities described below, to verify that 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 verify that 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 verify that 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 RCS boundary leakage data, and observed the setting of containment integrity, to verify that the RCS and containment boundaries were in place and had integrity when necessary. Prior to reactor startup, the inspectors walked down containment to verify that debris had not been left which could affect performance of the containment sumps. The inspectors reviewed reactor physics testing results to verify that 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 verify that the licensee had identified problems related to outage activities at an appropriate threshold and had entered them into the corrective action program.

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 verify that the systems, structures, and components involved in these tests satisfied the requirements described in the Technical Specifications, the UFSAR, and applicable licensee procedures, and that the tests demonstrated that the SSCs were capable of performing their intended safety functions.

- *PT/2/A/4252/003A, CA Train A Valve Stroke Timing - Quarterly Turbine Driven Pump Flowpath
- *PT/2/A/4252/007, CA System Turbine Driven Train Performance Test
- *PT/2/A/4252/001, #2 TDCA Pump Performance Test
- *PT/2/A/4252/001C, #2 TDCA Pump Performance Test Opening 2SA-49 First
- PT/2/A/4200/009A, Engineered Safety Features Actuation Performance Test Train A
- PT/2/A/4200/009B, Engineered Safety Features Actuation Performance Test Train B

*This procedure included inservice testing requirements.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the temporary modification ME200305, Move Alarm Inputs From 2LAM3 to 2LAM4 (monitors parameters on safety bus 2ETB), to verify that the modification did not affect the safety functions of important safety systems, and to verify that the modification satisfied the requirements of 10 CFR 50, Appendix B, Criterion III, Design Control.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed an emergency preparedness drill conducted on June 29, 2005 to verify licensee self-assessment of classification, notification, and protective action recommendation development in accordance with 10 CFR 50, Appendix E.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution (PI&R)

.1 Daily Screening of Items Entered into the Corrective Action Program

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

.2 Annual Sample Review

a. Inspection Scope

The inspectors selected PIP M-04-3803 for detailed review. This PIP was associated with problems with the auxiliary feedwater system and was issued in part to document

three NRC violations (05000369,370/2004005-01,02,and 03). Two were 10 CFR 50.59 violations for failure to get NRC permission prior to implementing a modification, and the third involved a design control violation. The PIP was not closed at the time of the inspection. The inspectors reviewed this PIP to verify that the licensee identified the full extent of the issue, performed an appropriate evaluation, and specified and prioritized appropriate corrective actions. The inspectors evaluated the report against the requirements of the licensee's corrective action program as delineated in corporate procedure NSD 208, Problem Identification Process, and 10 CFR 50, Appendix B .

b. Observations and Findings

From the review of PIP M-04-3803, no findings of significance were identified. However, the inspectors identified that the licensee had not performed a root or apparent cause evaluation. Consequently, the corrective actions were focused on fixing the identified problem and not preventing recurrence. Several procedural issues contributed to not performing any evaluation. Procedure NSD 208 had inadequate criteria for determining the PIP priority level of a 10 CFR 50.59 violation for failing to get NRC permission prior to implementing a change to the plant. Since the determination for what type of problem evaluation to perform was directly related to PIP category level, the inadequate criteria contributed to the failure to complete the problem evaluation. The licensee issued multiple PIPs as a result of the inspectors review and questions. The licensee separated the three issues and will perform a problem evaluation for each; a root cause evaluation will be performed for each of the 10 CFR 50.59 violations (PIPs are category 2) and an apparent cause evaluation will be performed for the design control violation (PIP is category 3). In addition, process improvement PIPs were initiated as well (PIPs M-05-2161, M-05-2162, M-05-2164).

.3 Summary of PI&R Cross-Cutting Findings Documented Elsewhere

The Unit 2 containment annulus fire protection sprinkler issue (section 4OA5.2) and the AP-45 procedural issue (section 1R05) had elements of PI&R. Following the discovery of the sprinkler finding, several issues were found with the procedures that implemented the surveillance requirements in the SLC. The failure to identify these issues contributed to the continued degradation of the sprinklers. The AP-45 issue involved failures to properly identify and correct deficiencies associated with the fire mitigation strategies.

The MSIV 2SM-1 issue (section 4OA5.3) contained elements of PI&R. The licensee had evaluated 2SM-1 prior to the failure and determined that it was operable. The failure to take prompt corrective action had resulted in the valve becoming inoperable.

.4 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 a daily inspector screening of corrective action program items, licensee trending efforts, and licensee human performance results. The inspector's review nominally considered the six month period of January 2005 through June 2005, 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 4th quarter 2004 and 1st quarter 2005
- NRC performance indicators and departmental performance measures
- equipment problem lists
- maintenance rework trending
- departmental problem lists
- system health reports
- quality assurance audit /surveillance reports
- self assessment reports
- maintenance rule program reports including a(1) list
- corrective action backlog lists

b. Observations and Findings

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

Update of previously identified trends

A licensee-identified trend on nuclear service water fouling, identified in the last semi-annual trend review contained in IR 05000369,370/2004006, had the potential to be a more significant safety issue. Nuclear service water is one of the highest safety significant systems in the plant and necessitates continuous performance monitoring to ensure fouling levels do not affect the ability to safely shutdown the reactor and maintain it in a safe shutdown condition. The licensee's actions to reduce the effect of service water fouling on the availability of the Unit 2 Reactor Coolant Pump motors during the cooldown crud burst in the spring 2005 refueling outage was effective in not causing increased dose, as compared to the fall 2004 Unit 1 refueling outage. Instead of having to secure all but one pump during crud burst due to high motor temperature, the licensee was able to run as many pumps as desired on Unit 2.

Two fire protection issues were identified that continued a trend identified in 2004 related to a weakness in the identification of problems in the fire protection area. The first involved six obstructed sprinklers in the Unit 2 containment annulus (4OA05) that were required to be inspected for obstruction per SLC TR 16.9.2.6, and the second involved the fire event response procedure AP-45 (1R05) not implementing the safe shutdown strategy identified in the design documents for the containment. The inspectors also identified a trend in a weakness to update Fire Protection documents. This is demonstrated by a few examples including: PIP M-05-1764, AP-45 Plant Fire is inconsistent with the design basis documents; PIP M-05-1264 Appendix R Containment

documents; PIPs M-04-762, M-04-1114, M-04-2466, and M-04-2477, Fire Pre-Plans not updated to actual physical layout.

A main steam isolation valve, 2SM-1, failed to close during a surveillance test (PIP M-05-841) continuing a trend previously identified of inoperable MSIVs. This is the fourth degraded MSIV identified, out of eight, in the past 12 months.

New Trends:

Operability evaluations: The inspectors identified a negative performance trend in operability evaluations/assessments. Less than adequate operability evaluations/assessments included ones performed on RCS leakage detection instrumentation (M-04-4329, M-04-5611, M-04-5592); MSIVs 1SM-1 (M-04-2441), 1SM-3 (M-02-5187), and 2SM-1 (M-04-2109, M-04-5133) ; incore instrument room sump hatch leakage (M-04-5049); and the Incore instrument room SBLOCA diversion issue (M-04-5115). The licensee initiated PIP M-05-615 to address the identified trend.

PIP program not being used real time: The inspectors identified a negative performance trend in real time use of the corrective action program. The licensee has initiated PIP M-05-615 to address the identified trend. Examples are described below:

1. The operability evaluation for PIP M-04-5049, revision 0, for Unit 2 incore instrument room hatch leakage, on February 10, discussed actions taken to provide additional water for the RWST by raising the minimum level in the refueling water storage tank (RWST), raising spent fuel pool level, and revising procedures. The inspectors determined from discussions and direct observation that these actions were complete. However, the corrective action program did not mention these actions as immediate or long term corrective actions, compensatory actions, or track these actions by any other means.

2. On February 15, during review of the operability evaluation for PIP M-04-5611, revision 0, pertaining to RCS leakage detection, the inspectors found that the licensee had, subsequent to the issuance of revision 0, taken a position different from that in the PIP (declared the floor and equipment sump instrumentation inoperable per TS 3.4.15, on February 12, due to surveillance requirements not being met). However, the corrective action program did not reflect this new position on operability or that immediate corrective action was taken as required by TS.

3. During the review of LER 05000369/2004-02, “Main Steam Isolation Valve Inoperable” (1SM-3), the inspectors noted the licensee committed to updating the LER, if necessary, when the root cause evaluation for the failure of an additional MSIV (1SM-1) was completed (PIP M-04-5043). However, this commitment was not entered into the licensee’s corrective action program. In January 2005, the licensee completed the root cause evaluation for MSIV 1SM-1 which established in the root cause that evidence of why MSIV 1SM-1 did not stroke was evident in April 2004. This should have triggered the licensee to

perform a reportability review and report this additional failure. However, the licensee did not use the corrective action program to reevaluate reportability, and subsequently, the licensee exceeded the 60 day reporting requirement which was the subject of a 10 CFR 50.73 violation in IR 05000369,370/2005002.

Operator knowledge deficiency/lack of understanding of TS: The inspectors identified a negative performance trend in operator knowledge of technical specifications. The operator performance issues associated with knowledge of TS were identified in the RCS leakage detection instrumentation issue in IR 05000369,370/2005002; the operator license examination in IR 05000369/370/2005301 (multiple examples); and in LER 05000370/2005-003-00, associated with containment closure during core alterations, addressed in section 4OA3 of this report. The licensee initiated PIP M-05-1459 after the license examination to address the identified trend. The investigation results and corrective actions are contained in PIP M-05-3098.

4OA3 Event Follow-up

.1 (Closed) LER 05000369/2005001-00, Reactor Coolant System Leakage Detection Instrumentation Inoperable.

This issue was addressed as NCV 05000369,370/2005002-02 and was identified as very low safety significance in Inspection Report 05000369,370/2005002, Section 1R15. The inspectors reviewed the LER for accuracy and appropriateness of corrective actions. This LER is closed.

.2 (Closed) LER 05000370/2005001-00, Automatic Actuation of Motor-Driven Auxiliary Feedwater Pumps During Outage.

The actuation was due to a low suction pressure trip of the last running feedwater pump which caused both motor-driven auxiliary feedwater (AFW) pumps to start. The licensee attributed the feedwater pump trip to an inadequate procedure (PT/2/B/4250/024, Feed Water Heater Tube Integrity Test) which did not prohibit the restoration portion of the procedure from being performed prior to blocking the auxiliary feedwater auto-start signal. Because the control rods were on the bottom and the main turbine generator was shutdown before the feedwater heater tube integrity test was performed, the loss of main feed pump signal that caused the automatic AFW start is not a contributor to shutdown initiating events. This finding constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. The licensee documented the problem in PIP M-05-847. The inspectors reviewed the LER for accuracy and appropriateness of corrective actions. This LER is closed.

.3 (Closed) LER 05000370/2005002-00, Ice Condenser Lower Inlet Door Failed Surveillance Testing.

On March 3, 2005, the licensee performed as-found torque testing on the 48 Ice Condenser Lower Inlet Doors (LID) to satisfy Technical Specification Requirement, SR

3.6.13.6. Seven of the 48 LIDs failed to meet the test acceptance criteria. These doors were retested approximately three weeks later on March 25, 2005, and five of the seven doors failed again. Subsequently, the licensee determined that at least one of the five doors had been previously inoperable in Modes 1-4 for a period longer than allowed by TS. This finding is more than minor because it affected the operability of the doors as required by TS. This in turn affects the equipment operability and function objectives of the Mitigating Systems Cornerstone. This licensee-identified finding involved a violation of TS SR 3.6.13.6, Inlet Door Torque Test. The enforcement aspects of the violation are discussed in Section 4OA7. The inspectors reviewed the LER for accuracy and appropriateness of corrective actions. This LER is closed.

.4 (Closed) LER 05000370/2005003-00, Containment Closure Requirements Not Met During Core Alterations.

The licensee reported that a violation of TS 3.9.4 occurred because a change to procedure PT/1&2/A/4200/002C, Containment Closure/Integrity, processed in 2001, allowed operation of the containment air release system while moving fuel in Mode 6. This licensee identified finding involved a violation of TS 5.4.1, Procedures. This item is greater than minor because the procedure change could only be implemented after a license amendment was received. The enforcement aspects of this violation are addressed in Section 4OA7. The human performance aspect is addressed in Section 1R14. The inspectors reviewed the LER for accuracy and appropriateness of corrective actions. This LER is closed.

.5 (Closed) LER 05000369/2005002-00, Main Steam Isolation Valve Inoperable Due to Internal Binding.

This issue was addressed as NCV 05000369,370/2005002-09 and was identified as very low safety significance. The inspectors reviewed the LER for accuracy and appropriateness of corrective actions. This LER is closed.

.6 (Closed) LER 05000370/2005005-00, Failure of Main Steam Isolation Valve to Close.

This issue is addressed as NCV 05000370/2005003-003 and is identified as very low safety significance in Section 4OA5.3 of this report. The inspectors reviewed the LER for accuracy and appropriateness of corrective actions. This LER is closed.

4OA4 Summary of Human Performance Cross-cutting Findings Documented Elsewhere

LER 05000370/2005003-00, Containment Closure Requirements Not Met During Core Alterations described in section 4OA3.4 and 1R14, contained elements of human performance. Operators interpreted TS 3.9.4, Refueling Operations, Containment Penetrations incorrectly because a procedure revision implied that automatic containment isolation valves for the air release system could be open in Modes 5 or 6 as long as they were capable of being shut by the radiation monitors, as compared to the TS which stated that all containment penetrations except the containment purge penetrations shall be closed.

The Unit 2 containment annulus sprinkler issue in section 4OA5.2 contained elements of human performance. The sprinklers were required to be checked every 18 months, yet these checks were ineffective in identifying that the sprinklers were obstructed.

4OA5 Other Activities

.1 (Closed) TI 2515/163, Operational Readiness Of Offsite Power

During this report period, inspectors collected data from licensee maintenance records, event reports, corrective action documents and procedures, and through interviews of station engineering, maintenance, and operations staff, as required by TI 2515/163. Appropriate documentation of the results was provided to headquarters staff for further analysis, as required by the TI. This completes the Region II inspection requirements in this TI for the McGuire Nuclear Station.

.2 (Closed) Unresolved Item (URI) 05000370/2005002-001, Failure to Have Adequate Procedures to Implement SLC Test Requirements for Fire Protection Sprinklers

Introduction: The inspectors identified a Green non-cited violation of Technical Specification (TS) 5.4.1.d for failure to establish, implement, and maintain adequate procedures to implement fire protection sprinkler inspection requirements for the reactor building annulus contained in UFSAR Chapter 16, Selected Licensee Commitments.

Description: On March 16, the inspectors found that several fire protection sprinklers in the reactor building annulus area had their spray patterns obstructed by cables in the cable trays immediately below them. The sprinkler heads were located such that the heads were located in the upper level of cables. The inspectors found that UFSAR Chapter 16, Selected Licensee Commitments, section 16.9.2 covers spray and/or sprinkler systems listed in Table 16.9.2-1, which includes the Reactor Building Annulus. Testing Requirement (TR) 16.9.2.6 requires that these sprinklers be inspected by a visual inspection every 18 months to ensure that each nozzle's spray pattern was not obstructed. The inspectors found that the licensee's implementation of that requirement had not identified these deficiencies. The licensee's investigation found a total of six sprinklers in the annulus area that were obstructed.

Analysis: The finding is greater than minor because the finding is associated with both a degradation in the fire protection defense in depth feature and an increase in the likelihood of an initiating event. In the event of a U2 annulus fire, the cables affected by the obstructed sprinklers include those which could cause all four reactor coolant pumps to trip, consequently causing a reactor trip. The significance of this issue was evaluated using the Significance Determination Process (SDP), Phase 2, per NRC Inspection Manual Chapter 0609 Appendix F, Fire Protection SDP. The finding was determined to be of very low safety significance due to the low number of ignition sources and the availability of one complete safe shutdown train. This issue contained elements of Problem Identification and Resolution (PI&R) in that licensee operations and engineering personnel failed to identify problems with several procedural issues which implemented the surveillance requirements in the SLC following the discovery of the

sprinkler finding. The failure to identify these issues contributed to the continued degradation of the sprinklers. Aspects of Human Performance were also present given that the sprinklers were required to be checked every 18 months, yet these checks were ineffective in identifying that the sprinklers were obstructed.

Enforcement: Technical Specification 5.4.1.d requires that written procedures be established, implemented and maintained covering activities for commitments contained in the UFSAR Chapter 16.0, Selected Licensee Commitments. Selected Licensee Commitment 16.9.2 covers spray and/or sprinkler systems listed in Table 16.9.2-1 which includes the Reactor Building Annulus. Testing Requirement (TR) 16.9.2.6 requires that every 18 months a visual inspection be performed of each nozzle's spray area to verify the spray pattern is not obstructed. Contrary to the above, prior to March 16, the licensee failed to adequately implement TR 16.9.2.6 in the annulus area in that six sprinklers had their spray patterns obstructed by cables in the cable trays because the sprinkler heads were located too close to the tray. Because this issue was of very low safety significance and was placed in the corrective action program as PIP M-05-1463, this violation is being treated as a non-cited violation in accordance with Section VI.A.1 of the Enforcement Policy: NCV 05000370/2005003-02, Failure to Have Adequate Procedures to Implement SLC Test Requirements for Fire Protection Sprinklers.

.3 (Closed) URI 05000370/2005002-004, 2SM-1 MSIV Fails to Close During Surveillance Testing

Introduction: A self-revealing, Green non-cited violation (NCV) was identified for failing to take timely and adequate corrective actions to resolve adverse conditions that resulted in MSIV 2SM-1 failing its surveillance test. Specifically, prompt corrective actions in regards to a reduction of closing margin for the valve were not taken to preclude degraded conditions. The conditions prevented the main poppet for 2SM-1 from stroking closed during a valve stroke time surveillance test.

Description: On March 2, 2005, while performing PT/1/A/4225/003, SM Valve Timing at Full Temperature and Pressure, during shutdown for Unit 2 end of cycle (EOC) refueling outage (2EOC16), valve 2SM-1, the "D" loop main steam isolation valve, failed to stroke close. The licensee issued LER 05000370/2005-05 to address the 10 CFR 50.73 reporting requirement for MSIV 2SM-1 being inoperable longer than allowed by Technical Specifications (from October 4, 2003 to March 2, 2005). The LER attributed the valve failure to binding caused by insufficient clearance between the stem and the cover bushing. The binding was attributed to thermal expansion of the stem material, extrusion of the packing material into the clearance gap between the stem and cover bushing, and excessive corrosion growth from fluoride released from the extruded Teflon packing material. The LER considered this failure of 2SM-1, a recurring event of the 1SM-7 failure in April 2004. In each of those cases, the stem was bound in the stuffing box under certain thermal conditions. Additionally, the air assist feature had been removed from all MSIVs which further reduced the closing margin.

Upon further review of the LER, the root cause investigation contained in PIP M-05-841, and associated documents, the inspectors determined there were several missed

opportunities which led to the degradation and eventual failure of MSIV 2SM-1. Since 1992, there have been several significant corrective modifications /design changes on the main steam isolation valves in response to various concerns, that had not been thoroughly evaluated (individually, as well as collectively) with respect to reducing the valve's closing margin. Consequently, these modifications diminished the effectiveness of the MSIVs to perform their function. These modifications included: 1) removal of the air assist feature which reduced the closing force for the valves; 2) changing the valve stem to a material with a higher thermal expansion factor, without increasing clearances, which made the valve more susceptible to thermal binding; 3) replacing the packing with a Teflon packing (high fluoride content) which could subject the stem to possible corrosion; 4) changing the packing and bushing configuration, allowing possible extrusion. Other opportunities to have recognized the significantly reduced closing margin involved two previous Operability Assessments which evaluated the operability and capability of 2SM-1. One assessment was documented in PIP M-04-2109 and addressed the operability of 2SM-1 as it related to the failure of MSIV 1SM-7 (thermally induced binding, stem guiding friction) in April 2004. The other, documented in PIP M-04-5133, addressed the transportability of MSIV 1SM-1 failure in October 2004 (excessive guide body clearance, guide rib wear, valve misalignment), to the Unit 2 valves. In both cases, 2SM-1 was deemed fully operable and capable of performing its safety function.

Since 2001, when degraded conditions were first recognized to exist on the MSIVs, the licensee began implementing changes to increase the reliability and effectiveness of the valves. However, the failure of 1SM-7 in April 2004, the failure of 1SM-1 in October 2004, and the failure of 2SM-1in March 2005 occurred prior to the licensee implementing the changes on these valves. The changes for 2SM-1 were scheduled for the 2EOC16 refueling outage in March 2005. When the failure mechanisms and conditions were revealed through the failures of 1SM-7 and 1SM-1, the licensee chose to rely on engineering evaluations to justify continued operation to the refueling outage; the next required surveillance valve stroke.

Analysis: The inoperability of valve 2SM-1 is considered a performance deficiency because inadequate and untimely corrective actions by the licensee resulted in the failure of a main steam isolation valve during its respective full temperature and pressure valve stroke timing test. The finding is considered greater than minor because it had a direct impact on the MSIV to perform its safety function which is to close during a high energy line break or steam generator tube rupture. The finding affects both the Mitigating Systems and Barrier Integrity cornerstones, in that the failure to close impacts the equipment performance (reliability, availability) attribute and containment isolation (minimization of radiological releases) attribute, respectively.

As a result of the Phase 2 SDP Sheets, three sequences appear to be greater than green: Sequence 1(High Pressure Injection Termination: E-6) and Sequence 6 (Overcooling Transient: E-5) under "Main Steam Line Break"; and Sequence 7 (High Pressure Injection with Pressure Equalization - E-6) under "Steam Generator Tube Rupture". Because the NRC's understanding of the Pressurized Thermal Shock issue has changed since the plant SDP notebooks have been issued, the Regional Senior

Reactor Analyst performed an SDP Phase 3 assessment. The high value sequences that caused the finding to be greater than Green in the Phase 2 SDP have decreased in importance. The change in core damage probability due to the finding was evaluated to be within the Green band, with the Steam Generator Tube Rupture initiator contributing the most. Large Early Release frequency was considered to be Green, due to the timing of the release during the tube rupture, if secondary side cooling is available, and due to the low worth of the sequences containing failure of the secondary side cooling. The finding was determined to be of very low safety significance (Green). This issue contained elements of Problem Identification and Resolution (PI&R), in that licensee operations and engineering personnel had evaluated 2SM-1 prior to the failure and determined that it was operable. The failure to take prompt corrective action had resulted in the valve becoming inoperable.

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, requires that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material and equipment, 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. Contrary to the above, from the discovery of failure mechanisms and conditions on MSIV 1SM-7 in April 2004, to the failure of MSIV 2SM-1 in March 2005, the licensee failed to adequately resolve recurring significant conditions adverse to quality related to main steam isolation valves to preclude the valves from becoming inoperable. Specifically, the existence of reduced closing margin due to several modifications, the stuffing box configuration for 2SM-1 being the same as two previously degraded and inoperable MSIVs, and the failure to promptly implement corrective actions to preclude any adverse repetition, resulted in the degradation and eventual failure of 2SM-1.

Because this issue was of very low safety significance and was placed in the corrective action program as PIP M-05-0841, this violation is being treated as a non-cited violation in accordance with Section VI.A.1 of the Enforcement Policy, and is identified as NCV 05000370/20003-03, MSIV 2SM-1 Fails to Close.

4OA6 Meetings

.1 Exit Meeting Summary

On June 30, 2005, the resident inspectors presented the inspection results to Mr. T. Harrall and other members of the plant staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

.2 Annual Assessment Meeting Summary

On April 19, 2005, the NRC's Chief of Reactor Projects Branch 1 and the McGuire Resident Inspectors met with Duke Energy to discuss the NRC's Reactor Oversight Process and the McGuire Nuclear Station annual assessment of safety performance for

the period of January 1, 2004 - December 31, 2004. The major topics addressed were the NRC's assessment program and the results of the McGuire assessment. Attendees included McGuire site management, members of site staff, and local news media.

This meeting was open to the public. The presentation material used for the discussion is available from the NRC's document system (ADAMS) as accession number ML051990261. ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

4OA7 Licensee-Identified Violations

The following findings of very low significance were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as NCVs.

- TS 3.6.13 requires the Ice Condenser Doors be operable in Modes 1-4. If one or more doors are found to be inoperable, the door shall be restored in 14 days. If this cannot be met, the unit shall be in Mode 3 in six hours and Mode 5 in 36 hours. Contrary to this, following performing the surveillance test to satisfy TS SR 3.6.13.6 for the inlet door torque test on March 3 and March 25, 2005, it was discovered five doors were inoperable since the previous verification in September 2003. This was identified in the licensee's corrective action program as PIP M-05-0882. The finding was determined to be of very low safety significance due to industry and licensee calculations and analyses that demonstrate that given the sufficient redundancy of the doors, 1/3 of the LIDs can be blocked shut without impeding the overall mitigating function of the Ice Condenser and with no adverse affects on containment.

- TS 5.4.1.a requires that written procedures be established, implemented and maintained covering applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978 including Surveillance Procedures. Contrary to the above, from March 2001 until April 28, 2005, the licensee failed to have an adequate procedure to implement SR 3.9.4.1 in that procedure PT/1&2/A/4200/002C, Containment Closure/Integrity, allowed the containment air release system to provide direct access from the containment atmosphere to the outside environment during core alterations and movement of irradiated fuel. This item is documented in the licensee's corrective action program under PIP M-05-1608. This item is of very low safety significance because the volume released by the air release system is significantly less than the purge system which is assumed to be open during a fuel handling accident (but was shut in this case), and is likely bounded within the current accident analysis.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

Black, D., Security Manager
Boyle, J., Modifications Manager
Bradshaw, S., Superintendent, Plant Operations
Brown, S., Manager, Engineering
Bryant, J., Regulatory Compliance Engineer
Crane, K., Technical Specialist
Evans, K., Manager, Mechanical and Civil Engineering (MCE)
Harrall, T., Station Manager, McGuire Nuclear Station
Kammer, J., Manager, Safety Assurance
Kowalewsky, P., Maintenance Rule Coordinator MNS
Loucks L., Radiation Protection Manager
Nolan J., Chemistry Manager
Parker, R., Superintendent, Maintenance
Peterson, G.., Site Vice President, McGuire Nuclear Station
Schuerger, P., Rotating Equipment Supervisor
Thomas, J., Manager, Regulatory Compliance
Thomas, K., Manager, RES Engineering
Travis, B., Superintendent, Work Control

NRC personnel

M. Ernstes, Chief, Reactor Projects Branch 1
J. Shea, Project Manager, NRR
S. Peters, Project Manager, NRR

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000370/2005003-01	NCV	Failure to Have Adequate Procedures to Implement Fire Mitigation Actions For Containment (1R05)
05000370/2005003-02	NCV	Failure to Have Adequate Procedures to Implement SLC Test Requirements for Fire Protection Sprinklers (4OA5.2)
05000370/2005003-03	NCV	MSIV 2SM-1 Fails to Close (4OA5.3)

Closed

05000370/2005002-001	URI	Failure to Have Adequate Procedures to Implement SLC Test Requirements for Fire Protection Sprinklers (4OA5.2)
05000370/2005002-004	URI	2SM-1 MSIV Fails to Close During Surveillance Testing (4OA5.3)
05000369/2005001-00	LER	Reactor Coolant System Leakage Detection Instrumentation Inoperable (4OA3.1)
05000370/2005001-00	LER	Automatic Activation of Motor Driven Auxiliary Feedwater Pumps During Outage (4OA3.2)
05000370/2005002-00	LER	Ice Condenser Lower Inlet Door Failed Surveillance Testing (4OA3.3)
05000370/2005003-00	LER	Containment Closure Requirements Not Met During Core Alterations (4OA3.4)
05000369/2005002-00	LER	Main Steam Isolation Valve Inoperable Due to Internal Binding (4OA3.5)
05000370/2005005-00	LER	Failure of Main Steam Isolation Valve to Close (4OA3.6)
2515-163	TI	Operational Readiness Of Offsite Power-Unit 1 and Unit 2 (Section 4OA5.1)

LIST OF DOCUMENTS REVIEWED

Section 1R02: Evaluation of Changes, Tests, or Experiments

Full Evaluations
EP/1&2/A/5000/ES-1.2,1.3,E-1 Revisions, ECCS Sump Level Inventory Issues, 02/17/05
UFSAR Section 6.5.1 Revision, Clarification of Design Bases Function for the Containment Spray System, 02/17/05
EP/2/A/5000/ECA-00 Revision 18, Loss of Voltage of All A.C. Power
AP/1/A/5500/005 Revision 3, Generator Voltage and Electric Grid Disturbances
ISFSI Utilizing AC International, Inc MAC-UMS Universal Storage System
Revise Chemistry Manual 3.1, Primary Analytical Requirements and Corrective Actions for RMWST O2 Limits, Revision 37

Screened Out Items
MD-200350, Change IOC Setting for RCP Swgr 50/51 relays
MD-200335, Provide Atl Pwr Source for U2 Outage Pwr Fdr
MGMM-13540, Replacement of Lambda Power Supply for Feedwater Control Bypass Valve Indicator
MGMM-14080, Reconfigure Power to u2 NF AHUs
MGMM-14092, Remove Four of Six Latching Handles from Pressure Door
MGMM-14162, Repair Hole in Unit 1 Pipe Chase Floor
MGMM-14533, Modify Pipe Support 1-MCA-HD-164
MGMM-14738, Revise PORV Stress report
MGMM-14860, Weld Repair Pilot-Poppet Guide 1SM-SAB
MGMM-14873, Two Bolts Missing from RN Hanger 1 MCR RN 617
MGMM-15005, Add Snubbers to High And Low Impulse Lines for 2CMPT5360 Instrument Tubing
MGMM-15124, Train Separation Exception for the Rx Vessel Head
MGMM-15134, Install Pipe Sleeve through FHB Wall
NCDT (Reactor Coolant Drain Tank) Pump High Pressure Switch Defeat, 11/02/04
Control Room Chiller Flow & Delta P Instrumentation Addition, 10/04/04
Condensate Storage Tank (CST) Level OAC Alarm Setpoint Change, 04/22/05
ME-100030, Equivalency Evaluation for Replacement of Valves

Section 1R04: Equipment Alignment

Partial System Walkdown

1A Containment Spray:
Procedure OP/1/A/6200/007, Containment Spray System, Rev. 26
Drawing MCFD-1563-01.00, Simplified Flow Diagram NS Systems, Rev. 7

1B EDG
MCFD-1609-04.00, Flow Diagram of the Diesel Generator Starting Air System
MCFD-1609-03.00, Flow Diagram of the Diesel Generator Engine 1A Fuel Oil System
MCFD-1609-02.00, Flow Diagram of the Diesel Generator Engine Lube Oil System
MCFD-1609-01.00, Flow Diagram of the Diesel Generator Engine Cooling Water System

2B Charging & High Head Safety Injection
MCFD-2554-01.03, Flow Diagram of the Chemical and Volume Control System (NV)
MCFD-2554-02.00, Flow Diagram of the Chemical and Volume Control System (NV)
MCFD-2554-03.00, Flow Diagram of the Chemical and Volume Control System (NV)
MCFD-2554-03.01, Flow Diagram of the Chemical and Volume Control System (NV)
MCFD-2562-01.00, Flow Diagram of the Safety Injection System (NI)

Complete System Walkdown

Corrective action documents (PIPs) :
Vendor Manuals (VMs), Operating Experience (OE) reports, Significant Operating Experience

Reports (SOERs), Significant Event Notices (SENs), Information Notices (INs), system health report
Title/Description MCFD-2554-01.03, Flow Diagram of the Chemical and Volume Control System (NV)

Section 1R05: Fire Protection

Procedures
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
Abnormal Procedure 45, Plant Fire, Rev. 1
Fire Pre-Plans for each area inspected

Section 1R06: Flood Protection Measures

External Flooding

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

Design Basis Documents
MCS-1465.00-00-0012, Design Basis Specification for Flooding From External Sources, Rev 1
MCS-1154.00-00-004, Design Basis Specification for the Auxiliary Building Structures, section 2.3.13 and 3.2.1.3.3.4, external flooding
MCS-1581.WZ-00-0001, Design Basis Specification for the WZ System
MCS-1223.SS-00-0001, Design basis Specification for the Standby Shutdown System

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

Work Orders
98663476, 98664573

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

Other Documents
Selected Licensee Commitment 16.9.8, Ground Water Level Monitoring System
IN 2003-08, Potential Flooding through unsealed concrete floor cracks
IN 83-44, Potential damage to redundant safety equipment as a result of backflow through the equipment and floor drain system
IN 94-27, Facility Operating Concerns Resulting From Local Area Flooding
IN 92-69, Water leakage from yard area through conduits into buildings

IN-87-49, Deficiencies in Outside Containment Flooding Protection
Drawing MCFD-1581-01.00, Flow Diagram of Groundwater Drainage System

Internal Flooding

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

Procedures
AP/0/A/5500/44, Plant Flooding, Rev. 3
IP/0/A/3215/004, Magnetrol Liquid Level Control Switch Calibration, Rev. 15

Work Orders
98580882, 98441271, 98294350

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

Section 1R07: Heat Sink Performance

Biennial

Calculations
MCC-1223.24-00-0070, VC/YC Chiller Condenser Operability Evaluation, Rev. 3
MCC-1223.24-00-0079, RN/KD Heat Exchanger Operability Evaluation, Rev. 0

Procedures
PT/0/A/4400/004, Standby Nuclear Service Water Pond Inspection, Rev. 7
PT/0/A/4457/003, VC/YC Condenser A Delta P Performance Test, Rev. 21
PT/1/A/4350/032 A, 1A KD Heat Exchanger RN DP Test, Rev. 15

Drawings
MC-1KDHX0013, Diesel Generator Heat Exchanger 1A Tube Plugging Map, Rev. D1
MC-1KDHX0014, Diesel Generator Heat Exchanger 1B Tube Plugging Map, Rev. D1
MC-2KDHX0013, Diesel Generator Heat Exchanger 2A Tube Plugging Map, Rev. D1

MC-2KDHX0014, Diesel Generator Heat Exchanger 2B Tube Plugging Map, Rev. D1
MC-1RNHX0011, 1A Motor Driven Auxiliary Feedwater Pump Motor Cooler Heat Exchanger Tube Layout and Plugging Record, Rev. 0
MC-1RNHX0012, 1B Motor Driven Auxiliary Feedwater Pump Motor Cooler Heat Exchanger Tube Layout and Plugging Record, Rev. 0
MC-1RNHX0023, 1A Safety Injection Pump Motor Cooler Heat Exchanger Tube Layout and Plugging Record, Rev. 0
MC-0YCCD0005, A Control Room Chiller Condenser Heat Exchanger Tube Layout, Rev. 2
MC-0YCCD0006, B Control Room Chiller Condenser Heat Exchanger Tube Layout, Rev. 2

Completed Procedures
MP/0/A/7450/040, Control Room Chiller Condenser Corrective Maintenance, Rev. 8, completed 05/24/04, 05/11/04 & 10/27/04
MP/0/A/7650/101, Diesel Generator Cooling Water (KD) HX Corrective Maintenance, Rev. 6, completed 03/13/04, 03/20/04
MP/0/A/7700/043, Westinghouse Large Motor Cooler HX Corrective Maintenance, Rev. 17, completed 05/29/02, 07/09/02, 08/06/02, 07/22/04
PT/1/A/4200/043 A, Flushing of Unit 1 RN Makeup Lines to CA Pumps (A Train), Rev. 3, completed 06/10/03
PT/1/A/4200/043 B, Flushing of Unit 1 RN Makeup Lines to CA Pumps (B Train), Rev. 4, completed 10/15/03
PT/1/A/4403/007, RN Train 1A Flow Balance, Rev. 45, completed 02/21/05
PT/1/A/4403/008, RN Train 1B Flow Balance, Rev. 39, completed 11/15/04

PIPs
M-93-00311, Internal Coatings of RN Piping, 03/93
M-93-00831, Divers Inspection of Low Level Intake Piping not Performed, 08/93
M-98-00890, GL 89-13 Commitment Cancelled without Notification, 03/98
M-04-03182, 1A NS AHU Problems with RN Piping Fouling, 06/04

Miscellaneous
Nuclear Service Water Health Report, 2004T3
Service Water Piping Corrosion Health Report, 2003T3 & 2004T3
Raw Water Program, Rev. 0
Supplemental Response #3 to GL 89-13, dated 07/14/93
Diesel Generator Jacket Water Cooler (KD) 1A/B & 2A/B Eddy Current Inspection Reports, 09/94, 03/04, 09/03, & 03/05
YC - A & B Chiller Condenser & Evaporator Bundles Eddy Current Inspection Reports, 01/03
'A' & 'B' VC/YC Condenser Delta P Trends, 02/90 - 02/05
1A/B & 2A/B KDHX Delta P Trends, 02/90 - 01/05
Low Level and Service Water Intake, and Service Water Discharge Structure Inspection, 02/05
1A/B RN Flow Balance Data Trends, 03/03 - 02/05
Service Water Pipe Corrosion Manual, Rev. 13

Section 1R12: Maintenance Effectiveness

Quarterly
PIP M-02-6207, 1B CA Pump Motor RN Supply Valve failed VST

Biennial
PIP M-05-00911, 2B ND pump declared inoperable due to failure of ES AHU RN D/P test, 03/04/2005
PIP M-05-01261, ESS AHU requires MR A(1) status due to RMPFF, 03/16/2005
PIP M-05-02710, Small bore steam piping component group requires classification as A(1), 06/03/2005
PIP M-05-00114, 4th Quarter MR evaluation for 2B Hydrogen Analyser, 01/11/2005
PIP M-99-04521, ESS AHU requires MR A(1) status due to RMPFF, 10/06/1999
PIP M-05-02114, Part 21 concerning Cutler-Hammer A200 Nema Size 1 Starters, 04/21/2005
PIP M-01-02481, IN 01-06 Centrifugal charging pump thrust bearing damage not detected, 05/22/2001
PIP M-04-02983, Unit 2 ELD system requires classification as A(1) status , 06/02/2004
PIP M-03-01580, FW system requires classification as A(1) status due to MPFF, 04/07/2003
PIP M-03-01959, The YC system requires classification as A(1) status due to RMPFF, 05/01/2003
MR Periodic Assessment for McGuire Nuclear Station (July 1, 2002 - December 31, 2003), 06/17/2004
MR Program Group Assessment (April 10, 2004 - February 1, 2005), 02/10-11/2005
EDM-210, Engineering Responsabilities for Maintenance Rule, Rev. 17
EDM-410, Inspection Program for Civil Engineering Structures and Components, Rev. 10
EDM-201, Engineering Support Program, Rev. 8
NSD-415, Operational Risk Management (Modes 1-3) per 10 CFR A(4), Rev. 2
NSD-310, Requirements for the Maintenance Rule, Rev. 8
NSD-403, Shutdown Risk Management (Modes 4, 5, 6 and No-mode) per 10 CFR A(4), Rev. 13
NSD-204, Operating Experience Program Description, Rev. 8
PT/1/A/4450/015 A, OAPFT-1 Visual Inspection, Rev. 005
PT/1/A/4450/015 B, Auxiliary Building Filter Package Visual Inspection, Rev. 007
PT/1/A/4450/015 C, VE Train A Filter Package Visual Inspection, Rev. 005
PT/1/A/4450/015 D, Fuel Handling Building Filter Package Visual Inspection, Rev. 004
PT/1/A/4450/015 E, Containment Purge Filter Package Visual Inspection, Rev. 004
RN Health Report - Nuclear Service Water Health Report for 2005 1st trimester
CA Health Report - Auxiliary Feedwater System Health Report for 2005 1st trimester
SSF Health Report - Standby Shutodwn Facility Health Report for 2005 1st trimester
FW Health Report - Refueling Water Health Report for 2005 1st trimester
NI Health Report - Medium Head Safety Injection Health Report for 2005 1st trimester
MR Health Report - Maintenance Rule Health Report for 2005 1st trimester
Joint CNS/MNS Maintenance Rule Expert Panel Meeting Minutes, 11/08/2004
MNS Maintenance Rule Expert Panel Meeting Minutes, 01/18/2005 and 02/15/2005
OEDB 05-039653, Part 21 concerning Cutler-Hammer A200 Nema Size 1 Starters, 04/20/2005
OEDB 99-019096, IN 99-01 on deterioration of high-efficiency particulate air filters on PWR containment fan coolers, 01/29/1999

OEDB 01-027594, IN 01-06 Centrifugal charging pump thrust bearing damage not detected, 05/16/2001
OEDB 05-039166, Perry-Woodward governor EGB-C actuator null voltage drifted causing EDG failure to start, 03/07/2005
OEDB 05-039982, Part 21 for a flex-wedge disc fabricated by Crane-Aloyco, 05/19/2005

Corrective Actions issued due to the inspection

PIP M-05-02785, Area for improvement identified on MR performance criteria limits on systems under MR, 06/08/2005
PIP M-05-02810, Review the determination of A(1) or A(2) status when in "gray areas", 06/10/2005
PIP M-05-02710, Small bore steam piping classification to A(1) - Corrective action additions, 06/09/2005
WR 98347719, 2B Safety Injection Pump with dry boron on I/B and O/B seals, 06/08/2005
WR 98347721, Dry boron at 2NI-137 on 2B Safety Injection Pump, 06/08/2005

Section 1R14: Personnel Performance During Nonroutine Plant Evolutions

AP/2/A/5500/014, Rod Control Malfunction, Rev. 9
PT/0/A/4150/028, Initial Criticality and Zero Power Physics Testing, Rev. 47
OP/2/A/6100/003, Controlling Procedure for Unit Operation, Rev. 106
OP/2/A/6300/001, Turbine Generator Startup/Shutdown Rev. 52
OP/2/A/6100/001, Controlling Procedure for Unit Startup

Section 1R15: Operability Evaluations

ECCS Sump Valves
Calculations: MCC 1205.19-00-0036; MCC 1205.19-00-0003
RCP #1 seal: Preliminary Evaluation of Reactor Coolant Pump Seal Performance at Catawba and McGuire Nuclear Stations for Loss-of-Seal Cooling Conditions- Revision 2, MPR Associates, transmitted to Duke April 14, 2005

Section 1R16: Operator Work-Arounds

Work-arounds reviewed for cumulative affect

OWA 99-12; Excess Leakage of 1RL-18 causes improper LT oil temperature
OWA 01-01; Steam generator level control at low power levels
OWA 02-03; Repeated occurrence of high dissolved O2 in U2 RMWST's.
OWA 03-10; Operators required to locally verify VA system operation
OWA 03-12; When starting ND pumps in various procedures operators are required to isolate NS pump suction instruments to prevent over ranging the process instruments
OWA 03-15; A and B KC HX's are required to be super flushed due to season fouling
OWA 03-16; A and B KC HX's are required to have high velocity flushes
OWA 03-17; A and B VC/YC Chiller - Requires high velocity flushes
OWA 03-20; U2 YC auto makeup is isolated and required manual valve operation to makeup

to the system. In addition, the YC reliefs periodically lift requiring operators to clean up the spill.

OWA 04-02; The water treatment room sump overflows when back-washing the YF filters.

OWA 04-03; Low room temperatures in D/G requires operator to locally check battery temp

OWA 04-05; U1 and U2 FWP's low and high pressure stop valves sometimes have to be locally opened when the raise push button from the CR fails to open them.

OWA 04-06; Comp actions are required to maintain T/D CA operable

OWA 04-08; Periodically OPS must go into U2 containment and flush NCP motor coolers due to high to high stator temperatures

OWA 04-09; Gradual downward trend in service water flow to the diesel generator cooling water heat exchangers during flow balance over the last few years

OWA 04-10; The MSIV pilot poppet valve may not close when system pressure is above 1080 psig.

OWA 04-11; Ground Water Intrusion causes operator to take preventive measures to avoid equipment damage.

OWA 05-01; CST pump capability limitations require operators to manually start pumps to prevent alarms

OWA 05-02; Minor leakage into 1A cold leg accumulator (CLA) results in slow dilution of the CLA. Operations required to feed and bleed in order to maintain boron concentration.

OWA 05-03; Reactor Operators required to perform NC (reactor coolant system) leakage calculation PT (surveillance test) every 24 hours due to operability questions associated with TS 3.4.15.

Section 1R17: Permanent Plant Modifications

Annual

Core Reload for Unit 2 Cycle 17 PT/0/A/4150/028, Initial Criticality and Zero Power Physics Testing, Rev. 47

Biennial

NSM 12533/P1, RN(Service Water) Piping Replacement to NC (Reactor Coolant) Pump 1D Motor Cooler, Rev. 0

NSM 52532/00, Main Intake Circulating Water Pump Cyclone Separators Replacement with Steel Backwash Strainers, Rev. 0

NSM 22546/P1, Feedwater Pump Turbine (FWPT) Speed Control Upgrade, Rev.1

MGMM 15252, Change Power Supplied to NCP 2A, 2B, 2C, 2D Trip Circuitry

MGMM 14082, Add a Time Delay to the Source Range Annunciator and Containment Evacuation Alarm

MGMM-14015, Replace Struthers-Dunn relay with Cutler-Hammer Relay in Diesel Generator Droop Circuit

MGMM-14179, Relocation of Pipe Support 2-MCA-VN-5060 (Diesel Generator Exhaust Support

Self Assessment Documents [1R02 & 1R17]

PIP M-05-02455, NSRB Review of 50.59 Evaluation for Changes to EP/1&2/A/5000/ES 1.3

PIP M-04-03312, Evaluation of McGuire Corrective Actions relative to Oconee 50.59 Civil Penalty Violation
PIP M–04-04760, NSRB Review of McGuire 50.59 Documentation
PIP M-04-05757, NSRB Review of McGuire 50.59
PIP M-04-00413, Quality of Engineering and Design Information

Procedures
EDM-101, Engineering Calculations/Analyses, Rev. 12
EDM-601, Engineering Change, Rev. 0
NSD-209, 10 CFR 50.59 Process, Rev. 9
NSD-228, Applicability Determination, Rev. 1
NSD-301, Engineering Change Program, Rev. 28
NSD-408, Testing, Rev. 12
SCD-230, Commercial Grade Items, Rev. 1

PIPs Initiated as a Result of the Inspection
M-05-02948, Modification Package did not Include Modification Testing Plan, 06/20/05
M-05-02992, RC Orival Strainer Package and Pressure Switch 0RCPS6560 Lack of Preventive Maintenance, 06/23/05
M-05-02993, Modification Package did not Contain Documentation of Actions Taken to Address Issues on Technical Information Checklist

Section 1R20: Refueling and Outage Activities

MCEI-0400-41, “McGuire 2 Cycle 16 Final Core Map”, Rev. 11
PT/0/A/4150/033, “Core Verification”, Rev. 15
PT/0/A/4150/033, “Total Core Reloading”, Rev. 43
MP/2/A/7150/073, “Rod Cluster Control Assembly Heavy Drive Rod Unlatching and Latching”, Rev. 14
OP/2/A/6100/003, Controlling Procedure For Unit Operation
PT/0/A/4150/021, Post Refueling Controlling procedure for Criticality, Zero Power Physics, & Power Escalation Testing
PT/0/A/4150/028, Initial Criticality and Zero Power Physics Testing, Rev. 47
PT/0/A/4150/013, Boron Endpoint, Dynamic Rod Worth and Isothermal Temperature Coefficient Measurement
PT/2/A/4600/003F, Containment Cleanliness and ECCS Operability Inspection, Rev. 8
MCEI-0400-47, Unit 2 Cycle 16 Core Operating Limits Report

Section 1R23: Temporary Plant Modifications

Work orders 98721913 and 98720836, Implement ME 200305

Section 4OA3: Event Follow-up

PT/2/A/4200/002C, Containment Closure/Integrity

LIST OF ACRONYMS

AB	-	Auxiliary Building
AFW	-	Auxiliary Feedwater Pumps
CA	-	Auxiliary Feedwater
CF	-	Feedwater
CFR	-	Code of Federal Regulations
DBD	-	Design Basis Document
DG	-	Diesel Generator
DRPI	-	Digital Rod Position Indicator
ECCS	-	Emergency Core Cooling System
EDG	-	Emergency Diesel Generator
ESS	-	Engineered Safeguard System
FME	-	Foreign Material Exclusion
FWPT	-	Feedwater Pump Turbine
FWST	-	Fueling Water Storage Tank
GDC	-	General Design Criteria
KD	-	Diesel Generator Cooling Water Heat Exchanger
LER	-	Licensee Event Report
LID	-	Lower Inlet Doors
LOCA	-	Loss of Coolant Accident
MR	-	Maintenance Rule
MSIV	-	Main Stem Isolation Valve
NC	-	Reactor Coolant System
NCV	-	Non-Cited Violation
NI	-	Safety Injection
NS	-	Containment Spray System
NSD	-	Nuclear System Directive
NV	-	Chemical and Volume Control
OSP	-	Off Site Power
PIP	-	Problem Investigation Process Report
PI&R	-	Problem Identification and Resolution
RCS	-	Reactor Coolant System
RMWST	-	Reactor Makeup Water Storage Tank
RN	-	Nuclear Service Water
RTP	-	Rated Thermal Power
RWST	-	Refueling Water Storage Tank
SBLOCA	-	Small Break Loss of Coolant Accident
SBO	-	Station Blackout
SDBE	-	Shutdown Bank E
SDP	-	Significance Determination Process
SLC	-	UFSAR Chapter 16.0, Selected Licensee Commitments
SSC	-	Structures, Systems, Components
SSF	-	Safety Shutdown Facility
SSS	-	Safety Shutdown System
TDCA	-	Turbine Driven Auxiliary Feedwater Pump
TI	-	Temporary Instruction

TR	-	Technical Review
TS	-	Technical Specifications
TSO	-	Transmission System Operator
UFSAR	-	Updated Final Safety Analysis Report
URI	-	Unresolved Item
UT	-	Ultrasonic Testing
VCT	-	Volume Control Tank
VD	-	Generator Ventilation Fan
VST	-	Valve Stroke Timing
WG	-	Gaseous Waste Disposal
YC	-	Control Room Chiller