



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

July 24, 2007

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

SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000369/2007003 AND 05000370/2007003

Dear Mr. Peterson:

On June 30, 2007, the US Nuclear Regulatory Commission (NRC) completed an inspection at your McGuire Nuclear Station. The enclosed report documents the inspection results which were discussed on July 11, 2007, with you and members of your staff.

The inspection examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. No findings of significance were identified.

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/

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

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

Enclosure: NRC Integrated Inspection Report 05000369/2007003 and 05000370/2007003
w/Attachment - Supplemental Information

cc w/encl: (See page 2)

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3

Letter to G. R. Peterson from James H. Moorman, III dated July 24, 2007

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05000369/2007003 AND 05000370/2007003

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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: 05000369/2007003, 05000370/2007003

Licensee: Duke Energy Corporation

Facility: McGuire Nuclear Station, Units 1 and 2

Location: 12700 Hagers Ferry Road
Huntersville, NC 28078

Dates: April 1, 2007 through June 30, 2007

Inspectors: J. Brady, Senior Resident Inspector
S. Walker, Resident Inspector
R. Eul, Resident Inspector
R. Moore, Senior Reactor Inspector (Section 4OA5.2)
E. Michel, Reactor Inspector (Section 1R07.2)
L. Lake, Senior Reactor Inspector (Sections 1R07.2, 1R12.2)
G. Khouri, Reactor Inspector (Section 1R12.2)

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

Enclosure

SUMMARY OF FINDINGS

IR 05000369/2007003, 05000370/2007003; 04/01/2007 - 06/30/2007; McGuire Nuclear Station, Units 1 and 2; Routine Integrated Report.

The report covered a three month period of inspection by resident inspectors and announced inspections by regional senior reactor inspectors and reactor inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

No findings were identified during this inspection period.

B. Licensee-Identified Violations

None.

Report Details

Summary of Plant Status:

Unit 1 began the inspection period shutdown in the end-of-cycle (EOC) 18 refueling outage. It was taken critical on May 27, 2007, went on-line May 28, 2007, and reached 100% rated thermal power on June 6, 2007. Unit 1 remained at approximately 100 percent rated thermal power for the remainder of the period.

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

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

When a tornado watch was declared for the site on April 15, 2007, the inspectors reviewed actions taken by the licensee in accordance with procedure RP/O/A/5700/006, Natural Disasters, Enclosure 4.2, Tornado Watch, to determine whether the licensee had implemented the procedure, and that the adverse weather conditions would neither initiate a plant event nor prevent any system, structure, or component from performing its design function. Unit 1, which was in Mode 6 at the time of the tornado watch, stopped loading fuel until the watch was terminated.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial Walkdown

a. Inspection Scope

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

- Unit 1 Train B residual heat removal after changing from No Mode to Mode 6
- Unit 1 Train A component cooling water after Mode changing from Mode 5 to Mode 4
- Unit 1 Train A nuclear service water after changing from Mode 5 to Mode 4
- 1B Emergency Diesel Generator (EDG) after 1A EDG was declared inoperable due to failed diesel generator engine cooling water (KD) pump

b. Findings

No findings of significance were identified.

.2 Complete Walkdown

a. Inspection Scope

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

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

The inspectors reviewed the documents listed in the Attachment to this report, to determine whether the ability of the system to perform its function(s) could be affected by outstanding design issues, temporary modifications, operator workarounds, adverse conditions, and other system-related issues tracked by the engineering department. In addition, the inspectors also reviewed the below listed Problem Investigative Process report (PIP) associated with this area to determine whether the licensee identified and implemented appropriate corrective actions.

- M-05-5869, Long venting times for emergency core coolant system (ECCS) vent valves

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

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

The inspected Areas included:

- Standby Shutdown Facility (Fire Area SSF)
- Unit 2 Turbine Building (Fire Area TB)
- Unit 1 Auxiliary Building Electric Penetration Room (Fire Area 15)
- Unit 2 Auxiliary Building Electric Penetration Room (Fire Area 16)
- Unit 1 Switchgear and Heating, Ventilating and Air Conditioning (HVAC) Equipment Room (Fire Area 17)
- Unit 2 Switchgear and HVAC Equipment Room (Fire Area 18)
- Control Room (Fire Area 24)

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

.1 Annual Inspection

a. Inspection Scope

The inspectors reviewed the inspection results, including digital pictures, of the 1A and 1B component cooling heat exchangers to determine whether inspection results were appropriately categorized against the pre-established acceptance criteria described in procedure MP/0/A/7700/013, Component Cooling System Heat Exchanger Corrective Maintenance. The inspectors also evaluated whether the frequency of inspection was sufficient to detect degradation prior to loss of heat removal capability below design basis values, by comparing the recent 1EOC18 refueling outage inspection results to the previous two performances that occurred during refueling outages 1EOC17 and 1EOC16. In addition, the inspectors reviewed the online monitoring program contained in OP/1&2/A/6400/006, Nuclear Service Water System, which included guidance for operator monitoring during train swaps and online flushing methodology used when a differential pressure alarm is received or when high differential pressures are observed. The inspectors also reviewed the computer alarm response guidance for high

component cooling heat exchanger nuclear service water differential pressure to determine if prescribed actions were adequate to preempt inoperability of the heat exchanger. In addition, the inspectors reviewed PIP M-06-4255, Adverse trend associated with plant raw water systems, and associated PIPs, to determine whether plant actions taken to mitigate the effects of heat exchanger fouling were adequate to prevent a loss of heat sink function. The corrective actions were not complete at the time of this inspection. The inspectors also discussed with the system engineers the results of laboratory testing of deposit samples taken from each heat exchanger during the unit 1 refueling outage to determine whether the results were consistent with the conclusions drawn from the root cause.

b. Findings

No findings of significance were identified.

.2 Biennial Heat Sink Performance

a. Inspection Scope

The inspectors reviewed inspection records, test results, 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 EDG HXs, the Component Cooling Water (CCW) HXs, and the Control Room Chiller HXs.

The inspectors reviewed site and corporate HX program procedures, testing and cleaning frequencies, PIPs, system health reports, and conducted interviews with system engineers for all selected HXs. The inspectors reviewed visual inspection records, differential pressure trends, inspection and cleaning procedures, system walkdown inspection results, and eddy current testing reports for the CCW HXs. For the EDG cooling water HXs, the inspectors reviewed inspection and cleaning procedures, tube plugging acceptance criteria, eddy current testing, differential pressure (DP) test data, flushing procedures, and visual inspection records. The inspectors also reviewed Control Room Chiller HX differential pressure trends, engineering evaluations, visual inspection records, and inspection and cleaning procedures. These documents were reviewed to determine whether inspection methods were consistent with industry standards, to determine whether HX design margins were being maintained, and to determine whether performance of the HXs under the current maintenance frequency was adequate. In addition, the inspectors conducted a walk down of selected HXs to assess general material condition and to identify any degraded conditions of selected components. Specific documents reviewed are listed in the Attachment to this report.

The inspectors also reviewed general health of the Service Water System (SW) via review of design basis documents, system health reports, intake structure diver

inspections, corrosion monitoring procedures, procedures for dead leg flushes, pipe wall thickness measurements, and discussions with the SW system engineer. These documents were reviewed to verify design basis were being maintained and to verify

adequate SW system performance under current preventive maintenance, inspections, and frequencies.

The inspectors reviewed Federal Energy Regulatory Commission (FERC) and State of North Carolina inspection reports for the McGuire Nuclear Station Pond Dam and Standby Nuclear Service Water Pond (SNSWP) earthen embankment. The inspectors also performed a walkdown of those structures and reviewed reports for testing the presence of macroscopic bio-fouling, such as Asiatic Clams and Zebra Mussels.

PIPs were reviewed for potential common cause problems and problems which could affect system performance to confirm that the licensee was entering issues into the corrective action program and initiating appropriate corrective actions.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

On May 30, 2007, the inspectors observed licensed-operator performance during requalification simulator training for shift B, to determine whether operator performance was consistent with expected operator performance, as described in Exercise Guide OP-MC-SRT-69 and 45. This training tested the operators' ability to perform abnormal and emergency procedures dealing with Pressurizer pressure instrument failure, loss of coolant outside containment, loss of charging, steam generator tube rupture, reactor trip, 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 observed the post-exercise critique, to determine whether the licensee identified deficiencies and discrepancies that occurred during the simulator training.

The inspectors reviewed the following PIPs associated with this area, to determine whether the licensee identified and implemented appropriate corrective actions:

- M-03-1992, Resolution of risk significant time critical action review
- M-02-0247, Potential for safety injection valves failing to close on loss of coolant accident (LOCA)
- M-06-3558, AP/11 entered due to pressurizer pressure master controller failure
- M-04-0975, Fouling of safety injection oil cooler at Kewaunee Nuclear Station

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

.1 Quarterly Review

a. Inspection Scope

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

- Unit 2 Hydrogen Analyzer failures
- Vital Battery unavailability due to test equipment failures

The inspectors also reviewed the following PIPs associated with this area to determine whether the licensee identified and implemented appropriate corrective actions:

- M-07-0560, Hydrogen analyzer equipment trouble
- M-07-0579, Hydrogen analyzer solenoid valve installed backwards
- M-07-0504, Vital battery and battery charger test equipment failures

b. Findings

No findings of significance were identified.

.2 Periodic Evaluation (Triennial)

a. Inspection Scope

From June 18 - 21, 2007, the inspectors reviewed the licensee's MR periodic assessment, "Maintenance Rule Periodic Assessment for Maintenance Rule Implementation January 1, 2004 to June 30, 2005 - McGuire Nuclear Station," to assess the effectiveness of the assessment and determine if it was issued in accordance with the requirements of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." The inspectors' review included the evaluation of: periodic assessment timeliness, balancing of reliability and unavailability, (a)(1) activities, (a)(2) activities, and use of industry operating experience for the 18-month period covered by the assessment. The inspectors reviewed selected MR activities covered by the assessment period for the following MR a(1)/a(2) status component and attendant systems: small bore piping in Moisture Separator Reheater Drain and Bleed systems, Containment At Power supersystem, Main Steam Isolation Valves, Feedwater

(CF) system and Auxiliary Feedwater (CA) system. Additionally, the inspectors conducted a plant walkdown to assess the condition of risk-significant plant structures within the scope of the MR to determine if condition monitoring was adequately performed.

The inspectors reviewed selected plant work order data, system health reports, reliability and unavailability monitoring status documents, significant adverse condition investigation reports, MR system scoping documents, and MR expert panel meeting minutes to verify the application of MR requirements. The inspectors also discussed and reviewed relevant PIPs, and discussed MR issues with system engineers and licensee management. The inspectors reviewed the most recent MR structures inspection report. Specific documents reviewed are listed in the Attachment to this report.

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 eight 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 determine whether the licensee identified and implemented appropriate corrective actions.

- Week of May 6th, the Unit 1 Pressurizer Hatch was removed in Mode 3 at normal operating temperature and normal operating pressure (NOT/NOP) which caused an Orange risk condition (ORAM) and required a risk management plan.
- Week of May 6th, including emergent work weld repairs on 1CF-5560 pinhole leak which is the high pressure instrument line tap for "C" Steam Generator.
- Week of May 13th, emergent work on "H8" control rod to remove debris from the associated guide tube by cycling the rod.
- Week of May 13th, including lifting and removing the Unit 1 Reactor Head to inspect and remove debris in the "H8" control rod guide tube.
- Week of May 20th, including lifting and replacing the Unit 1 Reactor Head which included use of a complex plan for risk management.
- Week of June 3rd, emergent work on 1A EDG KD pump to replace the failed motor.
- Week of June 18th, emergent work to reduce 1A1 Main Condenser high off gas in-leakage which required canceling scheduled work on Unit 1 Auxiliary Feedwater and Emergency Diesel Generator components.
- Week of June 18th, emergent leakage on charging manual isolation valve 1NV-240, including operational contingency actions to manage risk.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

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

- M-07-1270, Valve vendor notified licensee that main steam isolation valve (MSIV) weak link analysis results documented in PIP M-06-808 were incorrect.
- M-07-1514, Containment sump calculations did not model a 0.25" perforated plate that is installed in the refueling canal floor drain.
- M-07-1787, Post Accident Monitoring indicators may not be isolated from non-qualified equipment
- M-07-0905, Catawba Nuclear Station (CNS) PIP C-07-0656 evaluation of EDG loading TS limits for frequency and voltage
- M-07-3235, Unit 2 Turbine Driven Auxiliary Feed Pump Halon System reserve bank inoperable

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed the modification described in McGuire modification package MD100346, Installation of Containment Spray Full Flow Test Line in Unit 1, to determine whether:

- this modification degraded the design bases, licensing bases, and performance capabilities of risk significant SSCs
- implementing this modification placed the plant in an unsafe condition
- the design, implementation, and testing of this modification satisfied the requirements of 10 CFR 50, Appendix B. (Testing was accomplished by procedure

PT/1/A/4208/021A, 1ANS Pump Head Curve and Comprehensive Pump Performance Test and PT/1/A/4208/021B, 1B NS Pump Head Curve and Comprehensive Pump Performance Test.)

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

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

- PT/1/A/4350/002A, Diesel Generator 1A Operability Test (outage maintenance)
- PT/0/A/4600/105, RCCA drop timing using digital rod position indicator (DRPI) system (rod testing after core reassembly)
- MP/0/A/7200/011, Main Steam Isolation Valve and Actuator Corrective Maintenance (valve actuator adjustments)
- PT/0/A/4600/105, RCCA Drop Timing Using DRPI System (rod testing after core reassembly following foreign material exclusion (FME) removal from rod "H8" guide tube)
- MP/0/A/7200/011, Main Steam Isolation Valve and Actuator Corrective Maintenance (valve actuator adjustments due to PIP M-07-3213)
- OP/1/A/6100/SU-19 Enclosure 4.3, NOP/NOT walkdown after replacing approximately 160 S/G instrument tap welds.

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

- PIP M-07-3213, "Stroke timing not performed following MSIV guide rod adjustment"

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (Unit 1)a. Inspection Scope

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

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

The inspectors observed portions of the cooldown process from Mode 3 to Mode 6 (after problems with control rod H8 were encountered during rod testing) to determine whether TS cooldown restrictions were followed. The inspectors observed the items or activities described below, to determine whether the licensee maintained defense-in-depth commensurate with the outage risk control plan for the key safety functions identified above and applicable TS when taking equipment out of service.

- Clearance Activities
- Reactor Coolant System Instrumentation
- Electrical Power
- Decay Heat Removal
- Spent Fuel Pool Cooling
- Inventory Control
- Reactivity Control
- Containment Closure

The inspectors reviewed the licensee's responses to emergent work and unexpected conditions, to determine whether resulting configuration changes were controlled in accordance with the outage risk control plan. The inspectors also observed fuel loading operations and other ongoing activities including Control Rod Latching, to determine whether those operations and activities were being performed in accordance with TSs and procedure PT/0/A/4150/033, Total Core Reloading. Additionally, the inspectors observed refueling activities to determine whether the location of the fuel assemblies was tracked, including new fuel, from core offload through core reload. This included observation of procedure PT/0/A/4550/003C, Core Verification. In response to operational experience concerns regarding reactor vessel head lifts (Operating Experience Smart Sample FY2007-03), the inspectors also reviewed programs and procedures to determine whether current practices were within the licensing basis.

Prior to mode changes, the inspectors reviewed system lineups and/or control board indications to determine whether TSs, license conditions, and other requirements, commitments, and administrative procedure prerequisites for Mode changes were met prior to changing Modes or plant configurations. Also, the inspectors periodically

reviewed reactor coolant system (RCS) boundary leakage data and observed the setting of containment integrity, to determine whether the RCS and containment boundaries were in place and had integrity when necessary. Prior to reactor startup, the inspectors walked down containment to determine whether debris had been left which could affect performance of the containment sumps. The inspectors reviewed reactor startup and unit synchronization to the grid to verify procedure compliance and that systems performed as designed. The inspectors reviewed reactor physics testing results to determine whether core operating limit parameters were consistent with the design. Specific documents reviewed are listed in the Attachment to this report.

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

b. Findings

(1) Debris in the Unit 1 ECCS Sump

While reviewing PIP M-07-1609, the inspectors discovered that on March 17, 2007, the licensee found fire wrap/blanket in the Unit 1 Train B ECCS sump. The blanket was folded over multiple times and partially stuffed into the annular area between the ECCS suction pipe penetration bellows and the bellows guard pipe. The licensee performed an extent of condition inspection for train A, and found a similar fire wrap/blanket in the same respective location. In addition, the PIP indicated that there was other additional material found inside the screened sump structure, behind the suction piping supports, which included "non-transportable" debris (i.e., two 16P nails, 1/2" drill bit, 3" cutting wheel, 1/2" nut, and a 4" partial welding rod stick) and "transportable" debris (i.e., 3"x6" paper tag dated 3/13/04, a cigarette butt, an empty cigarette package, and several small pieces (<2"x3") of aged, friable duct-tape).

The licensee performed several evaluations with regard to this issue during the inspection period which were documented in a Materials Lab Report, dated April 30, 2007, and a Reportability Support Evaluation for PIP M-07-1609, dated May 21, 2007. The Materials Lab Report was included as Attachment 1 to the Reportability Support Evaluation, a thermal expansion analysis was included as Attachment 2, and Attachment 3 was a February 21, 2007, test on ECCS Throttle Valve Duct Tape Flow Testing, which was conducted as part of an evaluation for the Unit 2 duct tape issue documented in Unresolved Item (URI) 05000370/2006005-01. The licensee plans to conduct a more refined throttle valve test for the Unit 2 duct tape issue in the near future. The Unit 1 ECCS debris in the sump issue is greater than minor because if left uncorrected the transportable debris could have had a detrimental affect on the

availability and reliability of both trains of the Unit 1 ECCS when called upon during an accident. Specifically, the debris had the potential to have detrimental effects on the

high pressure and low pressure ECCS recirculation function. This issue is unresolved pending completion of the NRC review of the licensee's reportability evaluation and the results of the more refined duct tape testing. It is identified as URI 05000369/2007003-01, Debris in the Unit 1 ECCS Sump.

(2) Reactor Vessel Head Lift

Based on a review of the documents listed in the Attachment of this report related to heavy load lifts of the reactor vessel head and discussions with licensee personnel, the inspectors identified the following issues:

- The licensee could not demonstrate that a risk assessment had been performed for the increase in risk associated with the lifting and setting of the reactor vessel head.
- The licensee could not demonstrate that their reactor vessel head lifts, which lift the head to approximately 38 feet over the irradiated fuel in the reactor vessel, were bounded by any design calculations which evaluated the drop of the head through air onto the reactor vessel, upper internals, and irradiated fuel.
- The licensee could not demonstrate that their procedures for the reactor vessel head removal and installation, ever limited their head lifts to the bounds contained in an August 17, 1984 letter sent to the NRC concerning a load drop analysis for reactor vessel head lifts.
- The licensee could not demonstrate that their UFSAR had been adequately updated to reflect information and analyses provided to the NRC as the result of all generic communications relative to their resolution of heavy loads issues.

The licensee issued PIPs M-07-3099, M-07-3410, and G-07-0449 to address the above issues. A complex maintenance plan was issued for the most recent head installation that occurred on May 18, 2007, to manage risk. A multi-site team has been formed to address the issues above and to work with vendors to determine whether an alternative design and licensing basis exists that bounds past practices. The issues identified above are greater than minor because they are associated with the design control attribute of the Initiating Events Cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown. The issues are also greater than minor because the failure to update the UFSAR could have an impact on safety and may require a license amendment for resolution. These issues are unresolved pending the completion of the licensee's investigation into whether an alternative design and licensing basis exists and whether reactor vessel head lifts were ever performed within the bounds of that basis. They are identified as URI 05000369,370/2007003-02, Reactor Vessel Head Lift Practices Related to Design and Licensing Basis.

1R22 Surveillance Testing

a. Inspection Scope

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

- *PT/2/A/4208/028A, Slave Start NS Pump 2A
- PT/2/A/4208/002A, NS Valve Stroke Timing - Quarterly (2NS 29A and 32A - 2A discharge containment outside isolation valves)
- PT/1/A/4200/009A, Engineered Safety Features Actuation Periodic Test Train A
- PT/1/A/4200/009B, Engineered Safety Features Actuation Periodic Test Train B
- *PT/1/A/4208/021B, 1B NS Pump Head Curve and Comprehensive Pump Performance Test
- *PT/1/A/4208/021A, 1A NS Pump Head Curve and Comprehensive Pump Performance Test
- **PT/1/A/4255/003C SM Valve Timing Test at Full Temperature and Pressure
- *PT/2/A/4252/001 #2 TD CA Pump Performance Test
- PT/0/A/4200/032, Periodic Inspection of Ice Condenser Lower Inlet Doors
- **PT/1/A/4255/003C SM Valve Timing Test at Full Temperature and Pressure (additional performance due to problems identified in PIP-07-3213)

*This procedure included inservice testing requirements.

**This procedure included testing of a large containment isolation valve.

The inspectors reviewed the associated PIP listed below to determine whether the licensee identified and implemented appropriate corrective actions:

- M-07-1393, 1SM-7 C steam generator (S/G) power operated relief valve (PORV) could not be manually cycled in accordance with acceptance criteria due to connection installed on vent path.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the two temporary modifications listed below and the associated 10 CFR 50.59 screening to determine whether the modifications satisfied the requirements of 10 CFR 50, Appendix B, Criterion III, Design Control, and compared each against the UFSAR and TS to determine whether the modification did not affect operability or availability of the affected system. The inspectors walked down each modification to ensure that it was installed in accordance with the modification

documents and reviewed post-installation testing, where applicable, to determine whether the actual impact on permanent systems was adequately verified by the tests.

- MD201273, Temporary Modification to defeat 2AD1/D-7 Alarm (Condenser Low Vacuum Pre-trip) for 2LTPS5360
- MD501197, Locate control area chilled water (YC) Chiller Condenser Injection Skid

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

Resident inspectors evaluated the conduct of a routine licensee emergency drill on June 6, 2007. The inspectors observed licensee activities to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation (PAR) development activities in accordance with 10 CFR 50, Appendix E. The inspectors observed emergency response operations in the simulator control room and technical support center to assess the overall response of the personnel involved in the drill from an operations and emergency planning perspective. The inspectors evaluated whether event classification and notifications were done in accordance with RP/000, Classification of Emergency. The inspectors also attended the licensee's critique of the drill to compare any inspector-observed weakness with those identified by the licensee in order to determine whether the licensee was properly identifying problems.

b. Findings

No findings of significance were identified.

1EP7 Force-on-Force Exercise

a. Inspection Scope

Resident inspectors evaluated the operations and emergency planning performance during a Security Force-on-Force drill on June 20, 2007. The inspectors observed emergency response operations in a simulated control room constructed inside the technical support center to assess the overall response of the personnel involved in the security drill from an operations and emergency planning perspective. The inspectors observed the adequacy of actions taken to integrate security, plant operations, and emergency response, focusing on the operations-security interface. In addition, they observed licensee activities to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation (PAR) development activities. The

inspectors also attended the licensee critique of the drill to compare any inspector-observed weakness with those identified by the licensee in order to determine whether the licensee was properly identifying problems.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

a. Inspection Scope

For the performance indicators (PIs) listed below, the inspectors sampled licensee PI data for the period from 4th quarter 2005 through 1st quarter 2007 for Unit 1 and Unit 2. To verify the accuracy of the PI data reported during that period, the inspectors compared the licensee's basis in reporting each data element to the PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Rev. 4.

Initiating Events Cornerstone

- Unplanned Scrams
- Scrams with Loss of Heat Removal
- Unplanned Power Changes

The inspector reviewed a selection of licensee event reports, operator log entries, daily reports (including the daily PIP descriptions), and NRC Inspection Reports to determine whether the licensee had adequately identified the number of scrams and unplanned power changes greater than 20 percent that occurred during the previous four quarters. The inspectors compared this number to the number reported for the PI during the current quarter. The inspectors also reviewed the accuracy of the number of critical hours reported and the licensee's basis for crediting normal heat removal capability for each of the reported reactor scrams.

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution

.1 Daily Screening of Corrective Action Items

In accordance with 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 paper copies of condition reports, attending daily screening meetings, and accessing the licensee's computerized database.

.2 Annual Sample Review

a. Inspection Scope

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

b. Observations and Findings

No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a trend review to determine if trends were identified outside the corrective action program that could indicate the existence of a more significant safety issue. The inspector's review was focused on repetitive equipment issues, but also considered the results of daily inspector corrective action program item screening discussed above, licensee trending efforts, and licensee human performance results. The inspector's review nominally considered the six month period of January 2007 through June 2007, although some examples expanded beyond those dates when the scope of the trend warranted. The review included the following areas/documents:

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

b. Observations and Findings

Update of previously identified trends:

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

implementing the identified corrective actions. The effectiveness of the corrective actions will be revealed during the August to October fouling season.

The inspectors had previously identified a trend associated with numerous violations for failing to update the FSAR in accordance with regulations outlined in 10 CFR 50.71(e). The licensee initiated PIP M-06-2889 to address the UFSAR accuracy trend and performed a sample review of the UFSAR. During this period a number of deficiencies were identified by the licensee, including the failure of the UFSAR to include heavy load information.

New trends:

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

4OA3 Event Followup

.1 Hydrogen Fire

a. Inspection Scope

The inspectors observed the licensee's actions associated with a fire in the on-site hydrogen house that occurred on April 25, 2007. The licensee declared a Notice of Unusual Event. The inspectors observed plant parameters for mitigating systems and fission product barriers, evaluated performance of systems and operators, and assessed the licensee's classification and reporting of the event.

b. Findings

No findings of significance were identified.

.2 Unit 1 Rod Stuck

a. Inspection Scope

The inspectors observed the licensee's actions associated with a Unit 1 stuck rod "H8" during rod testing. The inspectors observed all rod troubleshooting efforts and inspections to ensure safe shutdown margin was maintained.

b. Findings

No findings of significance were identified.

.3 Unit 2 D Steam Generator Feed Flow Malfunction

a. Inspection Scope

On May 22, 2007, the inspectors observed the licensee's actions associated with a level transient on Unit 2 D steam generator. The inspectors observed plant parameters, evaluated performance of systems, and observed operator response to determine whether abnormal procedure AP/2/A/5500/006, S/G Feedwater Malfunction, was followed.

b. Findings

No findings of significance were identified.

.4 Unit 1 Approach to Criticality

a. Inspection Scope

On May 27, 2007, the inspectors observed the licensee's actions associated with achieving criticality on Unit 1. The inspectors observed plant parameters, evaluated performance of systems, and observed operator actions to determine whether procedure PT/0/A/4150/028, Criticality Following a Change in Core Nuclear Characteristics, was followed.

b. Findings

No findings of significance were identified.

.5 Unit 1 Abnormal Secondary Chemistry

a. Inspection Scope

On May 29, 2007, the inspectors observed the licensee's actions associated with high dissolved oxygen levels in the secondary system. The inspectors observed plant parameters (including hydrazine levels), evaluated performance of systems, and observed operator response to determine whether abnormal procedure AP/1/A/5500/046, Abnormal Secondary Chemistry, was followed.

b. Findings

No findings of significance were identified.

.6 (Closed) Licensee Event Report (LER) 05000369/2007001-00, The Completion Time of Technical Specification 3.8.4 Condition A was exceeded on May 12, 2005. This LER concerned the 2007 discovery of an out-of-specification resistance value previously recorded in 2005 for vital battery EVCC. The licensee's evaluation of this issue could not substantiate the 2005 test value. Specifically, it concluded that the value was

recorded in error based on no corrective maintenance having been performed and that the previous test values and those for the following two tests were acceptable and lower.

Review of other testing for vital battery EVCC did not reveal any degradation in battery performance. The licensee has emphasized proper communication, independent verification, and sign-offs to personnel performing testing. In addition, a procedure review is being conducted to determine whether TS values receive the proper verification. 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. This LER is closed.

4OA5 Other Activities

.1 Institute of Nuclear Power Operations (INPO) Plant Assessment Report

a. Inspection Scope

The Inspectors reviewed the final report for the INPO plant assessment of McGuire Nuclear Station conducted in July 2006. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of licensee performance and to determine if any significant safety issues were identified that required further NRC follow-up.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors verified the Unit 1 implementation of the licensee's commitments documented in their June 28, 2006, supplemental response to Generic Letter (GL) 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors. The commitments included permanent modifications and program and procedure changes. Permanent modifications included installation of the modified sump screen assembly and enclosure, installation of rupture restraint/jet impingement barrier on ND piping, and removal of micro therm insulation from the reactor vessel head. Program and procedure changes were related to plant labeling and the modification process, and the technical specification surveillance for periodic screen inspection. This review included the sump screen assembly installation procedure, screen assembly modification 10 CFR 50.59 evaluation, missile evaluation, structural (debris) loading calculation, and the vortex analysis. The inspector also reviewed the foreign materials exclusion controls and the verification of quality control hold points in work documents for the screen assembly installation. The inspector conducted a visual walkdown to verify the installed screen assembly configuration was consistent with drawings and the tested configuration and verified the design gap criteria. Unit 1 permanent modifications were in progress at the

time of this inspection. The in-progress screen assembly modification work controls and installation were reviewed. The completion of the modifications was verified by the resident inspector at the conclusion of the outage.

b. Findings and Observations

No findings of significance were identified. The Unit 1 modifications were complete and consistent with the licensee's GL 2004-02 commitments. The TI will remain open pending completion of the GL 2004-02 commitments and inspection of the Unit 2 modifications. The following is the status of the GL commitments for Unit 1:

- Performance of Baseline Evaluation - COMPLETE
- Refined Baseline Evaluation - IN PROGRESS (estimated completion date Dec. 31, 2007)
- Downstream Effects Evaluation by ENERCON - COMPLETE
- Chemical Effects Evaluation - IN PROGRESS (estimated completion date Dec. 31, 2007)
- Confirmatory walkdown of Unit 1 using guidance of NEI 02-01 - COMPLETE
- Confirmation of conservatism of 200 pound latent debris assumption in baseline analysis - COMPLETE
- Plant labeling process enhancement - COMPLETE
- Testing to confirm replacement head loss acceptable under proposed (GL 2004-02) design basis debris load conditions - IN PROGRESS...Supplemental response changed completion date to Dec. 31, 2007. (NOTE: Present analysis confirms adequacy of screen under current license base conditions. Further analysis to include interpretation of test data, information from integrated testing that incorporates chemical effects analysis input, sump temperature variation, and debris loading considerations.)
- Modified containment sump strainer and support structure installed - COMPLETE
- Replacement of micro therm insulation on Rx vessel head - IN PROGRESS... Micro therm insulation removed, mirror installation to be installed at end of outage.
- Evaluate modification process for need of additional controls to maintain validity of GSI-191 analysis - COMPLETE

4OA6 Meetings, Including Exit

.1 Exit Meeting Summary

On July 11, 2007, the resident inspectors presented the inspection results to Mr. G. Peterson, Site Vice President, and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

.2 Annual Assessment Meeting Summary

On April 30, 2007, the Chief of Reactor Projects Branch 1, and the Resident Inspectors assigned to the McGuire Nuclear Station (MNS) met with Duke to discuss the NRC's Reactor Oversight Process (ROP) and the NRC's annual assessment of MNS safety performance for the period of January 1, 2006 - December 31, 2006. The major topics addressed were: the NRC's assessment program and the results of the MNS assessment. The meeting was open to the public. A listing of meeting attendees and information presented during the meeting are available from the NRC's document system (ADAMS) as accession number ML071990350. ADAMS is accessible from the NRC Web site at www.nrc.gov/reading-rm/adams.html.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

Ashe, K., Manager, Regulatory Compliance
Black, D., Security Manager
Bradshaw, S., Training Manager
Brown, S., Manager, Engineering
Coudriet, G., Enercon Project Manager
Crane, K., Regulatory Compliance
Evans, K., Superintendent, Maintenance
Hoss, S., MCE Engineering CNS, 3 Site MR Lead
Hull, P., Chemistry Manager
Kammer, J., Manager, Safety Assurance
Mooneyhan, S., Radiation Protection Manager
Nolin, J., Manager, Mechanical and Civil Engineering (MCE)
Parker, R., Superintendent, Work Control
Peterson, G., Site Vice President, McGuire Nuclear Station
Repko, R., Station Manager, McGuire Nuclear Station
Simril, T., Superintendent, Plant Operations
Smith, D., MCE Engineering, MR Coordinator
Snider, S., Manager, RES Engineering

NRC personnel

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

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

0500369/2007003-01	URI	Debris in Unit 1 ECCS Sump (Section 1R20b.(1))
05000369,370/2007003-02	URI	Reactor Vessel Head Lift Practices Related to Design and Licensing Basis (Section 1R20b.(2))

Closed

05000369/2007001-00	LER	The Completion Time of Technical Specification 3.8.4, Condition A Was Exceeded on May 12, 2005 (Section 4OA3.6)
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Discussed

2515/166 TI Pressurized Water Reactor Containment Sump
Blockage - Unit 1 (Section 4OA5.2)

LIST OF DOCUMENTS REVIEWED**Section 1R04: Equipment Alignment**Partial System Walkdown[1B Residual Heat Removal System]

Drawing MCFD-1561-01.00, Flow Diagram of Residual Heat Removal System (ND)
OP/1/A/6200/004, Residual Heat Removal System, Rev. 119, Enclosures 4.4 and 4.5

[1A Component Cooling Water System]

Drawing MCFD-1573-01.00, Flow Diagram of Component Cooling Water System (KC)
OP/1/A/6400/005A, Component Cooling Water System Valve And Power Supply Checklists

[1A Nuclear Service Water System]

Drawing MCFD-1574-01.00, Flow Diagram of Nuclear Service Water System (RN)
OP/1/A/6400/006A Nuclear Service Water System Valve Checklists

[Emergency Diesel Generator 1B]

Drawing MCFD-1609-04.00, Flow Diagram of the Diesel Generator Starting Air System
Drawing MCFD-1609-03.01, Flow Diagram of the Diesel Generator Engine 1B Fuel Oil System
Drawing MCFD-1609-02.00, Flow Diagram of the Diesel Generator Engine Lube Oil System
Drawing MCFD-1609-01.00, Flow Diagram of the Diesel Generator Engine Cooling Water
System

Complete System Walkdown

Drawing MCFD-2571-01.00 Flow Diagram Refueling Water System (FW)
OP/2/A/6200/014 Refueling Water System
Refueling Water Health Reports (2005T1 through 2006T3)

Section 1R05: Fire Protection

McGuire Nuclear Station IPEEE Submittal Report dated June 1, 1994
McGuire Nuclear Station Supplemental IPEEE Fire Analysis Report dated August 1, 1996
MCS-1465.00-00-0008, R4, Design Basis Specification for Fire Protection

Section 1R07: Heat Sink PerformanceAnnual Inspection

[Procedures]

MP/0/A/7700/013, Component Cooling System Heat Exchanger Corrective Maintenance, performed for 1A KC HX on 3/30-4/2/07

MP/0/A/7700/013, Component Cooling System Heat Exchanger Corrective Maintenance, performed for 1B KC HX on 3/20-3/25/07

Section 1R07 : Biennial Heat Sink Performance

[Procedures]

PT/1/A/4350/032, A Flow Determination Test, 2/5/2007

MP/0/A/7700/123, Flushing Procedure Rev 003, 10/04/2006

PT/0/A/4457/004, System VC/YC Condenser B Delta P Performance Test, 4/23/07

PT/0/A/4457/003, System VC/YC Condenser A Delta P Performance Test, 4/18/07

PT/1/A/4350/032 B, 1B KD Heat Exchanger RN DP Test, 1/22/07

PT/1/A/4350/032 A, 2A KD Heat Exchanger RN DP Test, 3/13/07

IP/0/B/3004/007 A Rev 001, Standby Nuclear Service Water Pond Level Loop Calibration

IP/0/B/3004/007 Rev 003, Standby Nuclear Service Water Pond Temperature Loop Calibration

MP/0/A/7700/013 Rev 007, Component Cooling System Heat Exchanger Corrective Maintenance

[PIPs]

M-05-04066, Lambda Power Supply Field Change

M-06-01454, Identification of 'M' contact on MCEE-0120-12.03 is missing

M-05-01364, Tube plugging required in 2B KD HX as a result of ECT inspection

M-06-03720, Chiller A in YC system Flow High, indicative of fouling and entry into Tech Spec

M-06-03625, Chiller B in YC system DP high, Alert Range

M-06-04255, Adverse trend associated with increased fouling of plant raw water system

M-06-01975, Documentation of inspection of 36 inch B trn RN supply piping from the SNSWP

M-06-00727, Documentation of inspection of 36 inch A trn RN supply piping from the SNSWP

M-06-00689, Documentation of inspection of 42 inch RN LLI piping from where RN comes off RC pipe at the LLI up to valve 1RN1

M-92-00074, Accumulated air in RN assured makeup through 1CA-162/1CA-161, 4/7/1992

M-06-04255, RN System Fouling, 9/26/2006

M-04-04156, 2A KC HX fouling requiring frequent superflushes, 9/23/2006

M-06-00648, DBD lacks guidance for the RN strainer differential pressure, 2/12/2006

M-06-03624, Unit 2 KC Train B was entered in TSAIL as inoperable, 9/4/2006

[Miscellaneous]

Nuclear Service Water System Engineering Support Document, August 2005

Emergency Diesel Generator Engineering Support Document, October 2005

Service Water Pipe Corrosion Control Manual, 6/6/2006

Service Water System Program Manual Rev. 8, 7/31/2006

MGDS-0143, Nuclear Service Water System Corrosion Study, 11/1/1990

Root Cause Failure Analysis Report, RN System Fowling, Rev. 1
 VC/YC System Engineering Support Document, Rev. 005, 5/8/2007
 Design Basis Specification for the VC/YC System, Rev. 20, original 10/6/1989
 Independent Review of McGuire Raw Water Systems, Prepared by Structural Integrity
 Associates, Inc., 6/21/06
 Duke Energy Assessment Report, McGuire Service Water Reliability Program Self
 Assessment, 12/20/2006
 MCGUIRE NUCLEAR STATION Evaluation of MCGUIRE Raw Water Systems and Chemical
 Treatment, Prepared by K. ANTHONY SELBY, 2/1/2006
 Five year safety Inspection Report for McGuire Nuclear Station Pond Dam and Collection
 Basin, 2/7/2007
 Updated Final Safety Analysis Report, 9.2.2 Nuclear Service Water System and Ultimate Heat
 Sink, 3/27/2002
 Updated Final Safety Analysis Report, 9.2.4 Component Cooling System, 3/27/2002
 Design Basis Specification for the RN System, Rev 21, original 6/26/1990
 Duke Energy Corporation Corporate Environmental, Health and Safety Services, Scientific
 Services, Biological; "*Corbicula* populations and their biofouling potential in the McGuire
 Nuclear Station intake structures during 2006 and January 2007"
 Letter from Eason Diving & Marine Contractors, Inc., to Mr. Terry Carriker, Duke Energy
 Corporation, RE: UNDERWATER VISUAL INSPECTION, 2/28/2005
 Letter from State of North Carolina Utilities Commission, to Ms. Janice D. Hager, Vice
 President Rates and Regulatory Affairs, Duke Power, RE: FIVE-YEAR SAFETY
 INSPECTION REPORT FOR DUKE POWER'S MCGUIRE NUCLEAR STATION POND DAM
 AND COLLECTION BASIN DIKES (DOCKET NO. E-100, SUB 23), 11/21/2005
 Root Cause Failure Analysis Report, RN System Fouling, Rev 1
 KC - Component Cooling Health Report, 2006T3

Section 1R11: Licensed Operator Requalification

MTP 2701.0, Simulator Configuration Management and Operating Limits, Revision 3
 Nuclear Policy Manual, Nuclear System Directive 512, Maintenance of RO/SRO NRC Licenses,
 Revision 1

Section 1R12: Maintenance Effectiveness

Quarterly Review

[PIPs]

M-07-00504
 M-07-00560
 M-07-00579
 M-06-02216
 M-04-04088
 M-04-02279
 M-03-02693
 M-03-02272

Triennial Review**[Assessments]**

Maintenance Rule Periodic Assessment for Maintenance Rule Implementation McGuire Station
 January 1, 2004 - June 30, 2005
 Duke Power Company Assessment Report Maintenance Rule Program Group Assessment,
 McGuire Nuclear Station, October 24-27, 2005

[System Health Reports]

Maintenance Rule Program Health Report, Report Time Period: 2005t1
 Maintenance Rule Program Health Report, Report Time Period: 2004t3
 Maintenance Rule Program Health Report, Report Time Period: 2004t2
 Maintenance Rule Program Health Report, Report Time Period: 2004t1
 Primary System Health Report Summary
 Rotating Equipment Health Report Summary
 Reactor System Health Report Summary
 Valves and Heat Exchangers Health Report Summary

[PIPs]

M-07-03550, dated 6/14/2007, Unit 1 NC Supersystem is A(1) due to exceeding its
 Reliability Performance Criteria of less than 5 MPFFs
 M-07 - 03616, Dated 6/20/2007, NRC, Civil Engineering, and MR Coordinator performed a
 walkdown of the Auxiliary building as part of the MR Inspections and identified four areas of
 follow-up actions
 M-04-05315, dated 11/05/2004, Valve 1MSM - 3 has a different stroke length than the other
 3 MSIVs
 M-07-00877, dated 2/13/2007, Valve 2NS-161 failed its leak test
 M-07-02721, dated 4/25/2007, Contap supersystem is Maint Rule a(1) for MRPFF
 M-06-00799, updated 2/22/2006, Through wall crack dicovered in the NS 1B train piping in
 the RB Annulus.
 M-05-02710, dated 8/02/2005, Mall Bore piping failures due to FAC and possibly corrosion
 M-05-0319, updated 12/08/2005, The CF system requires classification as maintenance
 rule a(1) status due to the RMRFFs

[Reports]

McGuire Station 2005 Inspection Report For Civil Engineering Structures and Components Per
 EDM-410 Maintenance Rule Program, dated May 26, 2005
 McGuire Station 1997 Inspection Report For Civil Engineering Structures and Components Per
 EDM-410 Maintenance Rule Program Report, dated February 15, 1998

[Meeting Notes]

CNS Expert Panel Meeting dated February 12, 2007
 CNS Expert Panel Meeting dated May 10, 2007
 CNS Expert Panel Meeting dated August 15, 2006

[Procedures]

EDM - 210, Engineering Responsibilities for the Maintenance Rule, Rev. 19
 NSD - 310, Requirements for Maintenance Rule, Rev. 9

EDM 410, Inspection Program for Civil Engineering Structures and Components, Rev. 12
 Management Directive 3.40, Rev. 2, Maintenance Manual Scaffold Control Guidelines
 Procedure No. PT/1/A/4350/002 A, Rev. 071 - Diesel Generator 1A Operability Test
 Procedure No. PT/2/A/4350/002 A, Rev. 067 - Diesel Generator 2A Operability Test
 Procedure MP/0/A/7150/022, Fuel Pool Corrective Maintenance, Rev. 29
 Procedure AP/1/A/5500/021, Loss of Component Cooling, Rev. 34
 Procedure EP/1/A/5000/FR-H.1, Response to Loss of Secondary Heat Sink, Rev. 28
 Procedure EP/1/A/5000/E-2, Faulted Steam Generator Isolation, Rev. 12

[Other Documents]

Super System Performance Criteria XL Spread Sheet as of the Inspection Period
 List of Maintenance Rule Functional Failures from October 6/18/2007
 Work Around List, April 2007
 TEPR [top equipment problem report] List, dated January 4, 2007
 Maintenance Rule performance Criteria
 List of Root Causes for the last two years
 List of a(1) SSCs, June 2007
 List of a(1) SSCs, June 2006
 Maintenance Rule a(1) SSC History list

Section 1R15: Operability Evaluations

[Additional MSIV PIPs]
 M-06-808 and M-06-5405

Section 1R20: Refueling and Outage Activities

MCEI-0400-41, "McGuire 2 Cycle 17 Final Core Map", Rev. 12
 PT/0/A/4150/033, "Core Verification", Rev. 15
 PT/0/A/4150/033, "Total Core Reloading", Rev. 43
 MP/2/A/7150/073, "Rod Cluster Control Assembly Heavy Drive Rod Unlatching and Latching",
 Rev. 14
 OP/2/A/6100/003, Controlling Procedure For Unit Operation
 PT/0/A/4150/021, Post Refueling Controlling procedure for Criticality, Zero Power Physics, &
 Power Escalation Testing
 PT/0/A/4150/028, Criticality Following a Change in Core Nuclear Characteristics
 PT/0/A/4150/013, Boron Endpoint, Dynamic Rod Worth and Isothermal Temperature
 Coefficient Measurement
 MCEI-0400-47, Unit 2 Cycle 16 Core Operating Limits Report
 OP/2/A/6100/SU-3, Mode 5 Checklist
 PT/0/A/4550/003C, Core Verification
 OP/1/A/6100/SU-1, Mode 6 and Core Alterations Checklist
 OP/1/A/6100/SU-3, Mode 5 Checklist
 OP/1/A/6100/SU-5, Filling the NC System
 OP/1/A/6100/SU-6, Venting the NC System
 OP/1/A/6100/SU-9, Mode 4 Checklist
 OP/1/A/6100/003, Controlling Procedure For Unit Operation

PT/0/A/4150/021, Post Refueling Controlling procedure for Criticality, Zero Power Physics, & Power Escalation Testing
 PT/0/A/4150/028, Criticality Following a Change in Core Nuclear Characteristics
 PT/0/A/4150/013, Boron Endpoint, Dynamic Rod Worth and Isothermal Temperature Coefficient Measurement

[PIPS]

M-07-2940, Material identified by resident inspector during walkdown of Unit 1 lower containment (initiated as a result of this inspection)

Unit 1 ECCS Sump Debris

[PIPs]

M-07-1609, Fire blankets found inside Unit 1 emergency core cooling system sump on both trains

M-07-2973, Unit 1 "C" Steam Generator instrumentation tap weld steam leak

M-06-4605, Results of a 10/04/06 visual inspection of the Unit 1 ECCS sump from outside the screen (with Unit 1 on-line)

Reactor Vessel Head Lift

Outage logs for reactor vessel head removals and reinstallations performed on 3/18/2007, 4/20/2007, 5/15/2007, and 5/20/2007.

Risk assessment defense-in-depth (DID) sheets for 3/18/2007, 4/20/2007, 5/15/2007, and 5/20/2007.

NRC Regulatory Issue Summary 2005-25 and Supplement 1, Clarification of NRC Guidelines for Control of Heavy Loads.

NRC Bulletin 96-02, Movement of Heavy Loads Over Spent Fuel, Over Fuel in the Reactor Core, or Over Safety-Related Equipment

NRC Generic Letter 81-07, Control of Heavy Loads

NUREG 0612, Control of Heavy Loads

Generic Letter 85-11, Completion of Phase II of "Control of Heavy Loads at Nuclear Power Plants" NUREG-0612

NRC License Amendment Number 97 for Unit 1 and Amendment Number 79 for Unit 2

NRC Letter to Duke dated March 12, 1984, titled Control of Heavy Loads

Duke Letter to NRC dated August 17, 1984, titled NUREG-0612, Control of Heavy Loads at Nuclear Power Plants.

Duke Letter to NRC dated January 1985, titled NUREG-0612, Control of Heavy Loads at Nuclear Power Plants.

Duke Letter to NRC dated May 13, 1996, titled Response to NRC Bulletin 96-02: Movement of Heavy Loads Over Spent Fuel, Over Fuel in the Reactor Core, or Over Safety-Related Equipment

PIP M-05-5878, McGuire's evaluation of NRC RIS 2005-25, Clarification of NRC Guidelines for Control of Heavy Loads

PIP G-07-0449, NRC Regulatory Issue Summary 2005-25 Supplement 1, Clarification of NRC Guidelines for Control of Heavy Loads

NRC Letter to Duke dated March 3, 1983, Issuance of Facility Operating License NPF-17 - McGuire Nuclear Station, Unit 2

NRC Supplemental Safety Evaluation Rreport 6, section 9.1.5, Overhead Heavy-Load Handling System

McGuire Complex Activity Plan dated 5/18/2007, Lifting and Movement of Large Reactor Components

Procedure MP/1/A/7150/042A, Reactor Vessel Head Removal

Procedure MP/1/A/7650/060, Operation of Polar Crane In Unit 1 Upper Containment

Procedure MP/1/A/7150/042B, Reactor Vessel Head Installation

NRC Letter to Point Beach Nuclear Plant dated January 29, 2007, titled Notice of Vioation [NRC Special Inspection Report 0500266,267/2006011] Point Beach Nuclear Plant, Units 1 and 2]

NRC identified Unresolved Item 0500315/2006007-05 for D.C. Cook

NRC identified NCVs 05000282,306/2006003-01 and 05000306/2005004-06 for Prairie Island PIP M-06-2889, Potential Weakness Regarding UFSAR Update Process

PIP M-07-0295, Duke/MNS UFSAR Completeness Assessment by Industry Consultant (Enercon) December 2006 (Ref. PIP M06-2889 CA#10)

PIPs M-07-3099 and M-07-3410 (generated as a result of this inspection)

Section 1R23: Temporary Plant Modifications

MD201273: PIP M07-3350; UFSAR sections 7.8.2, 7.8.3, 10.2, 13.5.1.1.4, 13.5.1.2.2

MD501197: VN MD501197A, VN MD501197B, Procedure CP/0/A/8400/056 and associated 10 CFR 50.59 screen, Calculation MCC-1211.00-00-0144

Section 1EP6: Drill Evaluation

RP/0/A/5700/000; Classification of an Emergency

RP/0/A/5700/001; Notification of an Unusual Event

RP/0/A/5700/002; Notification of an Alert

RP/0/A/5700/003; Site Area Emergency

RP/0/A/5700/029; Notifications to Offsite Agencies from the Control Room

Section 1EP7: Force on Force Exercise

RP/0/A/5700/000; Classification of an Emergency

RP/0/A/5700/001; Notification of an Unusual Event

RP/0/A/5700/002; Notification of an Alert

RP/0/A/5700/003; Site Area Emergency

RP/0/A/5700/029; Notifications to Offsite Agencies from the Control Room

AP/0/A/5500/047; Security Events

Section 4OA5.2: TI 2515/166

MP/0/A/1800/105A, Final Sump Inspection and Cover Installation, Enclosure 13.7, RBES - LPI Suction Line Flange Installation and Removal Drain Line and Sump Inspection, Rev. 04

3-SA-096.009, Proof of Absence of Vortex and Air Intake, Oconee Units 1,2 &3, Rev. 0

Duke Power Response to NRC GL 2004-02, Potential Impact of Debris Blockage on

Emergency Recirculation During Design Basis Accidents at PWRs, dated September 1, 2005

S&W Calculation S-005, Missile Evaluation for the Emergency Sump Strainer, Rev. 1

ALION-REP-DUKE 2736-02, GSI-191 Baseline Analysis for Oconee Units 1,2 &3, dated 7/14/05

TN/1/A/OD100051/01C, Replace the Unit 1 Reactor Building Emergency Sump Strainer, Rev. 0

Variation Notices OD0100051 A through L, dated 10/20/06 - 11/3/06

PIP O-04-073154, Documentation and Tracking of Activities Related to GL 2004-02, dated 11/7/06

Container Sump Strainer Replacement: Large Test Loop Filter Performance Report , Bericht Report, Rev. 1

Downstream Effects Analysis for the Oconee Nuclear Station Units 1, 2 & 3, dated 9/13/06

Calculation OSC-8924, GSI-191, Baseline Analysis for Oconee Units 1, 2, &3, dated 8//10/06

10 CFR 50.59 Evaluation, ONS-2006-013, Reactor Building Emergency Sump Screen Replacement/Design change OD100051, dated 10/16/06

LIST OF ACRONYMS

AB	-	Auxiliary Building
CA	-	Auxiliary Feedwater
CAST	-	Auxiliary Feedwater Storage Tanks
CNS	-	Catawba Nuclear Station
DRPI	-	Digital Rod Position Indicator
ECCS	-	Emergency Core Cooling System
EDG	-	Emergency Diesel Generator
EOC	-	End-Of-Cycle
FERC	-	Federal Energy Regulatory Commission
FME	-	Foreign Material Exclusion
FW	-	Refueling Water System
HX	-	Heat Exchanger
HVAC	-	Heating, Ventilation and Air Conditioning
KD	-	Diesel Generator Engine Cooling Water
LOCA	-	Loss of Coolant Accident
MNS	-	McGuire Nuclear Station
MR	-	Maintenance Rule
MSIV	-	Main Steam Isolation Valve
NOT/NOP	-	Normal Operating Temperature and Normal Operating Pressure
NOUE	-	Notice of Unusual Event
NS	-	Containment Spray
NSD	-	Nuclear System Directive
ORAM	-	Outage Risk Assessment Management
PAR	-	Protective Action Recommendation
PI	-	Performance Indicator
PIP	-	Problem Investigative Process report
PORV	-	Power Operated Relief Valve
RCCA	-	Rod Cluster Control Assembly
RCS	-	Reactor Coolant System
S/G	-	Steam Generator

SM	-	Main Steam
SSC	-	Structures, Systems, and Components
SSF	-	Standby Shutdown Facility
SW	-	Service Water
TB	-	Turbine Building
TD	-	Turbine Driven
TS	-	Technical Specifications
USFAR	-	Updated Final Safety Analysis Report
YC	-	Control Area Chilled Water