



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

October 7, 2003

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
05000369/2003004 AND 05000370/2003004**

Dear Mr. Peterson:

On September 13, 2003, 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 September 12, 2003, 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.

Based on the results of this inspection, there was one finding of very low safety significance (Green) identified in the report which was determined to be a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this finding as a non-cited violation (NCV) consistent with Section VI.A of the NRC Enforcement Policy. Additionally, a licensee identified violation which was determined to be of very low safety significance is listed in Section 40A7 of this report. If you contest any of the NCVs 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 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of

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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/

Robert C. Haag, Chief,
Reactor Projects Branch1
Division of Reactor Projects

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

Enclosure: NRC Integrated Inspection Report 05000369/2003004 and 05000370/2003004
w/Attachments: (1) Supplemental Information and (2) OI Report 2 - 2003-025
Synopsis

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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: 05000369/2003004, 05000370/2003004

Licensee: Duke Energy Corporation

Facility: McGuire Nuclear Station, Units 1 and 2

Location: 12700 Hagers Ferry Road
Huntersville, NC 28078

Dates: June 22 - September 13, 2003

Inspectors: J. Brady, Senior Resident Inspector
E. DiPaolo, Resident Inspector
G. Laska, Operations Engineer (Section 1R11.2)
M. Scott, Senior Reactor Engineer (Section 1R12)
R. Cortes, Reactor Engineer (Section 1R12)

Approved by: Robert C. Haag
Reactor Projects Branch 1
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR05000369/2003004, IR05000370/2003004; 06/22/2003 - 09/13/2003; McGuire Nuclear Station, Units 1 and 2; Maintenance Effectiveness

The report covered a three month period of inspection by resident inspectors, an announced inspection by a regional senior reactor engineer and a reactor engineer, and an in-office review by a regional operations engineer. One Green non-cited violation (NCV) was 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 non-cited violation (NCV) of 10CFR50, Appendix B, Criterion XVI, Corrective Action, was identified by the inspectors for failure to take prompt action to remedy an identified problem documented in a Problem Investigation Process report (PIP) associated with the ability to restart control room cooling following a station blackout (SBO) event.

This finding was considered to be more than minor based on the fact that subsequent NRC review revealed that the licensee had been untimely in initiation of corrective action. The lack of corrective actions in an existing PIP could lead to untimely action to mitigate response to a SBO event. The licensee had committed to respond to a SBO event by re-energizing a train of control room chillers shared between the two Units within forty five minutes. However, on March 31, 1999, the licensee identified that the time for chiller re-energization may be as great as 2 hours. The licensee did not identify the corrective actions necessary to understand the expected consequences of the temperature rise in the control room as a result of the increased time to re-energization. Therefore, the mitigation systems and cornerstone objective of ensuring the continued reliability of equipment needed to respond to a postulated event (10 CFR 50.63) could be affected. This issue was considered to be of very low safety significance because there was no actual loss of function of a safety train or system and no design or qualification issue. (Section 1R12)

B. Licensee-Identified Violations

One Violation of very low safety significance, which was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. The violation is listed in Section 4OA7 of this report.

Report Details

Summary of Plant Status:

Unit 1 began the inspection period at approximately 100 percent rated thermal power (RTP) and remained there through the end of the period.

Unit 2 began the inspection period at approximately 100 percent RTP. Power was reduced to approximately 95 percent on July 29, 2003, to facilitate removing the 2B2 moisture separator reheater from service following the discovery of a steam leak on the drain tank purge line. Power was reduced to 85 percent for turbine valve testing on August 30, 2003, and was returned to 100 percent later that day. The unit was taken off-line for a refueling outage on September 6, 2003, and remained off-line through the end of the period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

After the licensee completed preparations for seasonal high temperature, the inspectors discussed the licensee's Hot Weather Program and the licensee's hot weather computer spreadsheet for 2002 and 2003 with the licensee's program owner. The inspectors reviewed the completed test results for PT/0/B/4700/039, Warm Weather Equipment Checkout, dated April 18. Because there was no safety-related equipment affected by hot weather, the inspectors toured the plant to determine if other equipment not monitored by the program could be affected.

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 three partial system walkdowns, while the indicated Systems, Structures, and Components (SSCs) were out of service for maintenance and testing:

- Unit 1 turbine-driven and 1A motor-driven auxiliary feedwater (CA) pumps when the 1B CA pump was out-of-service due to maintenance on July 22, 2003
- Unit 2A emergency diesel generator with the 2B emergency diesel generator out of service on August 12, 2003

- Unit 1A residual heat removal train with 1B residual heat removal train out of service on August 19, 2003

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 Attachment 1 of this report. In addition, the inspectors determined whether the system parameters on the operator aid computer matched expected conditions for the system and plant conditions.

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 verify that those items were consistent with Final Safety Analysis Report (FSAR) Section 9.5.1, Fire Protection System, and Design Basis Specification for Fire Protection, MCS-1465.00-00-0008. The inspectors walked down accessible portions of each area and reviewed results from related surveillance tests, 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 Attachment 1 of this report.

The inspected areas included:

- Auxiliary building 695' elevation (fire area 1)
- Unit 1 emergency diesel generator rooms (fire areas 5 and 6)
- Unit 2 emergency diesel generator rooms (fire areas 7 and 8)
- Unit 1 motor-driven CA pump room (fire area 2)
- Unit 1 turbine-driven CA pump room (fire area 2A)

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the inspection records for the 1A charging (NV) pump motor, speed reducer, and pump bearing oil coolers, to verify that inspection results were appropriately categorized against the pre-established acceptance criteria described in procedure MP/0/A/7150/058, NV Pump American Standard Oil Coolers Corrective

Maintenance. The inspectors also verified that the frequency of inspection was sufficient to detect degradation prior to loss of heat removal capability below design basis values by comparing the current inspection results to the previous two performances that occurred October 2, 2001, and June 15, 1999. Documents reviewed during this inspection are listed in Attachment 1 of this report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

.1 Simulator Training

a. Inspection Scope

On July 16 , the inspectors observed licensed-operator performance during requalification simulator training for shift D, to verify that operator performance was consistent with expectations described in Exercise Guide OP-MC-SRT-21. This training tested the operators' ability to use emergency and abnormal operating procedures associated with the failure of the unit to trip when required. The inspectors focused on clarity and formality of communication, use of procedures, alarm response, control board manipulations, group dynamics and supervisory oversight.

The inspectors observed the post-exercise critique to verify that the licensee-identified deficiencies and discrepancies that occurred during the simulator training were appropriately addressed. Additionally, the inspectors also reviewed Problem Investigation Process report (PIP) M-03-01991 associated with this area, to verify that the licensee identified and implemented appropriate corrective actions.

b. Findings

No findings of significance were identified. (See section 4OA7 regarding a licensee-identified violation associated with PIP M-03-01991.)

.2 Annual Operating Test Results

a. Inspection Scope

On June 13, 2003, the licensee completed the annual operating tests, required to be given to all licensed operators by 10 CFR 55.59(a)(2). The inspectors reviewed the overall pass/fail results of the individual operating tests, and the crew simulator operating tests. These results were compared to the thresholds established in Manual Chapter 609 Appendix I, Operator Requalification Human Performance Significance Determination Process.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

Periodic Evaluation (Biennial)

a. Inspection Scope

The inspectors reviewed the licensee's Maintenance Rule periodic assessment, "Maintenance Rule Periodic Assessment [Report] for Maintenance Rule Implementation - McGuire Nuclear Station, January 1, 2001 - June 30, 2002," dated December 30, 2002, while on-site the week of September 8, 2003. The report was issued to satisfy paragraph (a)(3) of 10 CFR 50.65, and covered the period as indicated for both Units. The purpose of the inspection was to assess the effectiveness of the licensee's assessment and determined if it was issued in accordance with the time requirement of the Maintenance Rule (MR). It included evaluation of: 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 maintenance rule systems and equipment: Radiation Monitoring (steam line), Lambda power supplies, Control Room Ventilation, Auxiliary Building Ventilation, Containment Spray, and Heat Tracing. Specific procedures and documents reviewed are listed in Attachment 1 to this report.

During the inspection, the inspectors: reviewed selected plant work order data and the site guidance implementing procedure; discussed and reviewed relevant corrective action issues (PIPs); reviewed generic operations event data and probabilistic risk reports; and discussed issues with system engineers. Operational event information was evaluated by the inspectors with respect to its use in MR functions. The inspectors selected work orders, MR assessments, and other corrective action documents of systems recently removed from 10 CFR 50.65 a(1) status, as well as 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, the MR a(1) evaluations, and related data bases.

b. Findings

Introduction: A Green non-cited violation (NCV) was identified for failure to take prompt corrective action to analyze a Station Blackout (SBO) event condition and/or be able to re-power a control room chiller in about 45 minutes.

Description. During a September 8, 2003, review of MR PIPs on the shared control room ventilator/chiller (VC/YC) systems, the inspectors discovered a licensee commitment on SBO recovery of the control room chillers. PIP M-99-01677, dated March 31, 1999, indicated that the licensee had committed to a chiller being realigned to an operable emergency diesel generator (EDG) in approximately 45 minutes after an SBO event. The commitment is documented in NRC Safety Evaluation Report letter for

Station Blackout Rule, dated June 16, 1992. The subject PIP further indicated that with the worst possible operational conditions in an SBO occurrence, the alignment could take two hours on the common Unit 1 and 2 Control Room (CR) space. The licensee had not reported this change in commitment status to the NRC.

The two shared chillers can be powered from either Units' EDGs. Existing operational procedures could switch the power source between the 1A or 2A EDGs (for the "A" chiller) or between the 1B or 2B EDGs (for the "B" chiller) by manual control switch selection. Depending on which of two EDGs the chillers were aligned to for power sources, this switch could take about 37 to 45 minutes (service water re-alignment also required). However, an additional scenario involved the running EDG with the same train chiller being inoperable. In this case a hard-wire change would be required by the maintenance staff (under emergency procedure controls) to power the opposite train chiller. Up to approximately two hours (best licensee estimation) could be required for this chiller alignment.

A historical Licensee Event Report (50-369/84-18) cited in the subject PIP indicated that some critical CR instruments began reading anomalously with the loss of both chillers after about 40 minutes of ambient CR temperature rise. The subject PIP also recognized that there was no documented calculation for an SBO condition describing the control room habitability effect (i.e., thermal temperature rise on personnel and equipment). During a SBO event, should temperature rise to the point that control equipment or personnel would be affected, then the CR could be evacuated. Alternate operational control could be performed from the Standby Shutdown Facility (SSF), the CR (with personnel environmental protection), Auxiliary Control Station, and/or emergency feedwater turbine driven pump manual control stations.

During the time between the PIP initiation date and the NRC inspection, the licensee had gone through several iterations of discussions, studies, calculation cost evaluations, and modification development. At one point in December 2001 the estimated completion date for the CR heatup analysis was thought to be scheduled for mid 2002. The calculation development was canceled. After developing a minor modification for some power switching between chillers (corrective actions (CA) 14 and 15 of the PIP) in August of 2002, the modification (MGMM 13584) was canceled in August of 2003 by CA 16. These CAs had been approved and then canceled, which is different from guidance specified in the licensee's corrective action procedure (NSD 208.5.3, see below). A licensee meeting had been scheduled in the PIP for October 2003 to further discuss the issue. At the time of the inspection the licensee had not identify the corrective actions necessary to understand the expected consequences of the temperature rise in the control room as a result of the increased time to re-energization.

Analysis: The finding is more than minor because the mitigation systems and cornerstone objective of ensuring the continued reliability of equipment needed to respond to a postulated event could be affected. The SDP identified that there was no design or qualification deficiency, no loss of actual safety function, no TS allowed outage time would be exceeded, no potential loss of equipment specifically designed for external events, and no specific analyses to identify core damage scenarios of concern. The evaluation resulted in a finding of very low safety significance (Green).

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, requires that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformance's are promptly identified and corrected. The licensee's quality assurance (QA) program implements this requirement through Nuclear Station Directive 208, Problem Investigation Process, Revision 22. Section 208.5, Guidelines and Exceptions, states that a category 3 PIP should have an apparent cause done in 30 days and the evaluation within the next 30 days with due dates determined by the assigned group within two weeks of the proposed corrective action approval. Contrary to 10 CFR 50 Appendix B, Criterion XVI, following the March 31, 1999, problem identification, no action had been taken to understand the actual temperature rise in the CR with both chillers out-of-service nor had compensatory measures or modifications been made as of the date of NRC discovery (September 10, 2003) to meet the specified NRC commitment. This inadequate corrective action issue is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as NCV 05000369,370/2003004-01: Failure to Take Prompt Actions to Resolve Control Room Environmental Chiller Issues. This issue is in the licensee's corrective action program as PIP M-03-04195.

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

- Work activities for the week of June 30, 2003, that included emergent work on the A train nuclear service water discharge cross-connect valve (2RN-40A) from July 1-3, 2003, while planned work was conducted for: the 2A emergency diesel generator (July 1, 2003), power range nuclear instrumentation N-43 performance test (July 2, 2003), and containment pressure control system 2A performance test (July 3, 2003).
- Risk assessment following the emergent loss of the SSF battery charger SDSP2 due to an apparent lightning strike on July 13, 2003, resulting in the SSF being declared inoperable. This included operator actions to isolate the steam supplies to the Units 1 and 2 turbine-driven auxiliary feedwater pumps to reduce the risk of auto-starting due to the potential loss of inverter SKSS from a degraded 250 VDC bus voltage (PIP M-03-3042).
- Entry into ORAM-Sentinel "orange" condition (key safety function degraded) due to emergent switchyard work (PCB 20 failure to clear fault) while planned work

was conducted on the Unit 1 B emergency diesel generator on July 22, 2003, (PIP M-03-3172).

- Emergent critical plan during the week of July 28, 2003, to restore vital battery EVCA to operable status following the discovery of average specific gravity for connected cells below the Technical Specification (TS) limit (PIP M-03-3241).
- Emergent work on main control board annunciators (1AD-3) that caused entry into an unplanned ORAM-Sentinel “yellow” condition to perform the repair on September 3, 2003.
- Emergent work on the N-32 source range nuclear instrumentation channel that failed following the Unit 2 shutdown reactor trip on September 6, 2003.

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

- M-03-03893, ORAM coding for Unit 2 main steam safety valve testing was inconsistent for September 2, 2003 (green) and September 3, 2003 (yellow).

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions

a. Inspection Scope

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

- Failure of a control card for the 1A steam generator main feed regulating valve (1CF-32) causing operators to take manual control and switch to the alternate control circuit per procedure AP//1/A/5500/006, Steam Generator Malfunction
- Increased Unit 2 reactor coolant (NC) system leakage (greater than 1 gpm) causing operators to initiate leak isolation per AP/2/A/5500/010, NC System Leakage Within Capacity of Both NV Pumps
- Unit 2 shutdown for refueling outage

Following the non-routine evolution identified below, the inspectors reviewed operator logs, plant computer data, and other plant records, to determine what occurred and how the operators responded, and to verify that the response was in accordance with the associated procedures and training.

- A transient that occurred on August 30, 2003, while transferring turbine generator governor controls from single valve to sequential valve control following turbine generator valve testing

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed five operability determinations the licensee had generated that warranted selection on the basis of risk insights. The selected samples were 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 compared the arguments made in the determination to the requirements from the TS, the FSAR, 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-03-2742, Insulated control room area chilled water system piping located in battery room heavily corroded
- M-03-3227, Unit 2 B residual heat removal system discharge to reactor coolant system hot leg high point vent valve (2ND-85) would not operate during monthly emergency core cooling system venting
- M-03-3582, Unit 2A diesel generator battery charger inadvertently placed in equalize mode while still aligned to normal loads
- M-03-3227, Three 1.5-inch conduits carrying nuclear safety related electrical cables to the Unit 2 refueling water storage tank level switches are corroding and some supports are broken
- M-03-03823, Unit 1 and 2 pressurizer power operated relief valves not in the environmental qualification program

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

For the five 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 FSAR and TS. The tests included the following:

- PT/2/A/4350/002 B, Diesel Generator 2B Operability Test, for various maintenance performed on 2B diesel generator
- PT/1/A/4403/002 B, Nuclear Service Water (RN) Train B Valve Stroke Timing - Quarterly, for maintenance performed on the control board switch for valve 0RN-11B, Train 1B and 2B low level intake supply
- PT/2/A/4403/002 A, RN Train A Valve Stroke Timing - Quarterly, for replacement of the actuator for 2RN-69A, CA assured supply from train A RN
- PT/1/A/4200/001 Q, Penetration Leak Rate Test, for replacement of containment pressure transmitter 1NSPT5380
- PT/1/A/4350/002 A, Diesel Generator 1A Operability Test, for various maintenance performed on 1A diesel generator

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

- M-03-03679, Emergent replacement of containment spray transmitter 1NSPT5380 and concerns related to operations retest and TS applicability.

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; developed mitigation strategies for losses of the key safety functions (i.e., decay heat removal, inventory control, power availability, reactivity control, and containment); and adhered to operating license and TS requirements that maintained defense-in-depth.

Prior to the outage, the inspectors reviewed the licensee's outage risk control plan to verify that the licensee had performed adequate risk assessments and had implemented appropriate risk management strategies when required by 10CFR50.65(a)(4).

The inspectors observed portions of the cooldown process to verify that TS cooldown restrictions were followed. 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. 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.

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

The inspectors observed fuel handling operations (removal and sipping) and other ongoing activities, to verify that those operations and activities were being performed in accordance with TS and procedure PT/0/A/4150/037, Total Core Unloading. Also, the inspectors observed refueling activities to verify that the location of the fuel assemblies was tracked, including new fuel, from core offload through core reload.

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. Documents reviewed during this inspection are listed in Attachment 1 of this report.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

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

- PT/2/A/4350/036, Emergency Diesel Generator (D/G) 2A 24-Hour Run
- PT/2/A/445/006A, Containment Air Return Exhaust and Hydrogen Skimmer (VX) System Train 2A Performance Test
- PT/2/A/4350/055 B, 2B D/G Slave Start Test
- PT/0/A/4350/008E, SCI Vital Instrumentation and Control (I&C) Battery Charger Performance Test
- PT/2/A/4200/019, Emergency Core Cooling System (ECCS) Pump and Piping Vent
- *PT/2/A/4208/001 A, 2A Containment Spray (NS) Pump Performance Test

*This procedure included inservice testing requirements.

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

- M-03-2880, Cylinder 1 on Unit 2 A D/G exhibited low exhaust temperature for one minute during 24-hour run

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 July 30, 2003, to verify licensee self-assessment of classification, notification, and protective action recommendation development in accordance with 10CFR50, Appendix E. The drill involved a seismic event, an anticipated transient without scram (ATWS), and a loss of offsite power. The scenario required the licensee to use the severe accident management guidelines (SAMG).

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 submittals for the period from July 2002 through June 2003. 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, Revision 2.

Mitigating Systems Cornerstone

(1) Safety System Unavailability, Residual Heat Removal for Unit 1 and Unit 2

The inspectors reviewed Licensee Event Reports, records of inoperable equipment, and Maintenance Rule records, to verify that the licensee had adequately accounted for unavailability hours that the subject systems had experienced during the previous four quarters. The inspectors also reviewed the number of hours those systems were

required to be available and the licensee's basis for identifying unavailability hours. In addition, the inspectors interviewed licensee personnel associated with the PI data collection, evaluation, and distribution.

(2) Safety System Functional Failures for Unit 1 and Unit 2

The inspectors reviewed Licensee Event Reports, maintenance rule records, and maintenance work orders to verify that the licensee had adequately accounted for functional failures that the subject systems had experienced during the previous four quarters. The inspectors also reviewed the licensee's basis for identifying functional failures. In addition, the inspectors interviewed licensee personnel associated with the PI data collection, evaluation, and distribution.

b. Findings

No findings of significance were identified.

40A3 Event Followup

(Closed) Licensee Event Report (LER) 50-369/03-03: Both Trains of Hydrogen Mitigation System Inoperable Due to Human Error. NRC review of this event was previously documented in Inspection Report 05000369,370/2003003. A Green finding and non-cited violation were identified. No new issues were identified during the review of this LER.

40A5 Other Activities

(Closed) Unresolved Item (URI) 50-369,370/02-07-01: Auxiliary Building Filtered Ventilation Exhaust System Credit for Longer-Term Loss-of-Coolant Accident (LOCA) Mitigation. This URI was opened to determine whether the Auxiliary Building Filtered Ventilation Exhaust System (ABFVES) could be credited in mitigating offsite dose consequences for a longer-term LOCA. The issue was discovered during review of PIP M-01-1677 and the associated Self-Initiated Technical Assessment (SITA).

The inspectors reviewed the licensee's actions to address the issues raised by the SITA. Table 9.4.2-3 of the Final Safety Analysis Report (FSAR), Table 9-38 of the Updated FSAR, documents the licensee's comparison of the ABFVES with the standards of Regulatory Guide 1.52, Design, Testing, and Maintenance Criteria for Engineered Safety Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants. Although the ABFVES is an engineered safety features system, Table 9.4.2-3 noted exceptions to the regulatory guide design criteria such as system elements (filter unit, fans, ductwork) not being redundant, components external to the filter unit being of the heavy duty, industrial design and not seismic Category 1, etc.

The NRC staff's evaluation of the system is documented in Section 6.2.4 of NUREG-0422, Safety Evaluation Report (SER) related to operation of McGuire Nuclear Station Units 1 and 2, dated March 1978. The staff reviewed the system for conformance with Regulatory Guide 1.52, and determined that the system was capable of controlling the

release of radioactive materials in gaseous effluents in accordance with applicable regulations following a postulated design basis accident and is acceptable. Furthermore, Section 15.4.1 of the SER recognized that leakage from areas in the auxiliary building in which emergency core cooling system components are housed is treated by the filtered exhaust portion of the auxiliary building ventilation system. The SER concluded that adequate provisions to limit doses from this pathway have been provided. The licensee revised the TS bases, UFSAR, and design basis documents to include appropriate historical information of the system. The inspectors reviewed the licensing basis for the ABFVES, as described above, and concluded that there was sufficient basis for crediting the system for longer-term LOCA mitigation based on the NRC staff's SER evaluation. This URI is closed.

40A6 Meetings, Including Exit

On September 12, 2003, the resident inspectors presented the inspection results to Mr. G. Peterson and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

40A7 Licensee-Identified Violations

The following finding of very low significance was identified by the licensee and is a violation of NRC requirements which met the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as a NCV.

- 10CFR 55.53(f)(2) specifies, in part, that in order to reactivate an operator license, a complete tour of the plant shall be completed. TS 5.4.1, in part, requires that procedures be established, implemented, and maintained for procedures recommended in Regulatory Guide 1.33. Included in these recommended procedures are administrative procedures depicting authorities and responsibilities for safe operation and shutdown. McGuire Nuclear Station Operation Management Procedure (OMP) 12-2, Maintenance of an NRC License, is one such procedure. Reflective of 10 CFR 55.53(f)(2), OMP 12-2 requires the completion/verification of specific in-plant tours before activating an inactive operator license. On April 3, 2003, the licensee discovered that one individual who had reactivated an operating license on January 17, 2003, had not conducted in-plant tours as required. This violation is of very low significance, and is being treated as a NCV for the following reasons:
 - the associated NRC Office of Investigations Report Synopsis (Attachment 2) concluded that the individual had not falsified and/or deliberately misrepresented in-plant tour records;
 - the individual had not committed any human performance errors between January and April of 2003;
 - the individual had already appropriately completed all other aspects of reactivation;
 - the individual subsequently re-completed the license reactivation process, including a full plant tour;
 - all six of the other individuals audited were found to have met the plant

- tour requirement when reactivating their licenses; and the issue is in the licensee's corrective action program as PIP M-03-01991.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

Black, D., Security Manager
Boyle, J., Training Manager
Bradshaw, S., Superintendent, Plant Operations
Bramblett J., Chemistry Manager
Brenton D., Shift Operations Manager
Dolan, B., Manager, Safety Assurance
Evans, K., Manager, Mechanical and Civil Engineering (MCE)
Harrall, T., Station Manager, McGuire Nuclear Station
Loucks L., Radiation Protection Manager
Murray, K., Emergency Planning Manager
Orton, A., Operations Training Director
Parker, R., Superintendent, Maintenance
Peele, J., Manager, Engineering
Peterson, G., Site Vice President, McGuire Nuclear Station
Reed, L., Modifications Manager
Thomas, J., Manager, Regulatory Compliance
Thomas, K., Manager, Reactor and Electrical Systems Engineering
Travis, B., Superintendent, Work Control

NRC personnel

R. Bernhard, Senior Reactor Analyst

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

05000-369,370/2003004-01 NCV

Failure to take Prompt Actions to
Resolve Control Room Environmental
Chiller Issue (Section 1R12)

Closed

50-369/03-03	LER	Both Trains of Hydrogen Mitigation System Inoperable Due to Human Error (Section 4OA3)
50-369,370/02-07-01	URI	Auxiliary Building Filtered Ventilation Exhaust System Credit for Longer-Term LOCA Mitigation (Section 4OA5)

LIST OF DOCUMENTS REVIEWED**(Section 1R04: Equipment Alignment)**Partial System Walkdown

Unit 1 auxiliary feedwater system:

- Flow Drawing MCFD-2592-01.01, Auxiliary Feedwater System

Unit 2A emergency diesel generator system:

- Diesel Generator Engine Flow Diagrams: MCFD-1609-03, Fuel Oil System; MCFD-1609-01, Cooling Water System; MCFD-1609-04, Starting Air System; MCFD-1609-02, Lubricating Oil System

Unit 1A residual heat removal system:

- Flow Diagram of Residual Heat Removal System, MCFD-1561-01

(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

Drawings: MC-1384-12-00, MC-1384-13-01, MC-1384-14-02, MC-1384-14-03,

(Section 1R07: Heat Sink Performance)

Submittal dated September 30, 1996, McGuire Nuclear Station Supplemental Response Number Five to Generic Letter 89-13, Service Water System Problems Affecting Safety Related Equipment (including references)

Procedures:

MP/0/A/7150/058, NV Pump American Standard Oil Coolers Corrective Maintenance.

PM Title: PM-1RNHX17,19,21 - Clean 1A NV PU/MTR Oil Coolers

Work Orders : 2003: 98591450-03, -08, -09; 2001: 98342718-03, -08, -09; 1999: 98124258-03, -08, -09

(Section 1R12: Maintenance Effectiveness)

Problem Investigation Process reports (PIPs):

M-00-5098, FWST level instrument fail due to freezing temperatures
M-03-352, One FWST instrument line fails due to freezing
M-00-5019, 1FWTE5040 pulled away from RTD condolets
M-01-1248, Received Annunciator Alarm 2AD-13 B1
M-01-3681, Emergency backup heat trace for Unit 2 FWST de-energized
M-02-389, Repetitive heat trace alarms on Unit 2 FWST
M-02-571, Apparent FWST instrument failure
M-00-921, 600/208 V system in maintenance rule A(1) for lack of function
M-02-5415, B train YC chiller low on refrigerant
M-01-3594, B train YC Chiller failed to start
M-00-4845, B YC chiller water thermostat setting found low
M-02-1661, B YC chiller tripped
M-03-1959, YC requires classification as A(1)
M-00-1340, Lambda Power supplies require classification as A(1)
M-99-4521, ESS AHU component classification as A(1)
M-99-4519, YC system classified A(1)
M-98-1721, Unit 1 failed plant Level Performance Criteria < 2 trips
M-02-1039, Rod D9 dropped
M-02-1877, Both trains of ND were inoperable with 2A ND discharge check stuck open
M-02-795, 2B CF not in roll-back hold with unit trip
M-99-1677, Evaluate the time specified to restore VC/YC for station blackout
M-99-2492, EMF System classification to Maintenance Rule A(1)
M-01-1198, Assessment SA-01-03 Documentation and Task assignment
M-02-2580, Assessment GO-02-28 Molded Case Circuit Breaker Testing
M-99-04521, The ESS AHU components requires classification as A1 status due to RMPFF
M-00-5052, RHR Pump Room temperature monitors are in hallway, rather than respective pump room
M-03-3954, Pressurizer surge line to water temperature delta T limit could not be maintained
M-97-4876, 1A NS declared inoperable due to failed AHU D/P test
M-98-1458, Unplanned equipment unavailability due to 1A NS pump AHU failing D/P test
M-99-3218, 1A NS AHU Failed D/P test
M-01-5299, 2B NS Pump 4160 Breaker tripped while pump was running

Administrative Procedures:

Nuclear System Directive 310, Requirements for the Maintenance Rule, Rev. 7
Engineering Directives Manual (EDM) 210, Engineering Responsibilities for the Maintenance Rule, Rev. 15

Miscellaneous:

LER 50-369/03-01, Rev 0, FWST Line Freezing
 Design Basis Specification for Station Blackout Rule. Rev. 3
 SAAG File No. 731, PSA Assessment of McGuire Maintenance Rule Experience Period Ending
 June 2002, 12/19/02
 Maintenance Rule Periodic Assessment [Report] for Maintenance Rule Implementation -
 McGuire Station, July 1, 1999 - December 31, 2000, dated 6/20/01
 Safety Evaluation for Station Blackout (10 CFR 50.63) McGuire Nuclear Station, Unit 1 and 2
 (TACs M68564/M68565), dated February 19, 1992
 McGuire Maintenance Rule Periodic Assessment MPRA MRFF PIP Analysis for: 1/1/01 -
 6/30/02
 Maintenance Rule Expert Panel Meeting Minutes 3/18/03
 Maintenance Rule Expert Panel Meeting Minutes 5/20/03
 Maintenance Rule Expert Panel Meeting Minutes 8/19/03
 PT/1/A/4208/009A, 1A NS Pump Air Handling Unit Performance Test, Rev. 007
 MCC-1223.24-00-0065, ND, NS, and KF Pump Motor Cooler Operability Evaluation,
 02/25/2002
 WO 97058248, 1VAAH0022: Clean 1A NS AHU Cooling Coil (RN Side), 12/27/1997

(Section 1R20: Refueling and Outage Activities)

Nuclear System Directive 403, Shutdown Risk Management (modes 4,5,6, and No-mode) per
 10 CFR 50.65 (a)(4)

Loss of decay heat removal

AP/2/A/5500/019, Loss of ND or ND System Leakage
 AP/2/A/5500/020, Loss of RN
 AP/2/A/5500/021, Loss of KC or KC System Leakage

Loss of inventory control

AP/2/A/5500/019, Loss of ND or ND System Leakage
 AP/2/A/5500/012, Loss of Letdown, Charging or Seal injection
 AP/2/A/5500/034, Shutdown LOCA

Reactivity control

AP/2/A/5500/038, Emergency Boration
 PT/2/A/4200/006, Boron Injection Valve Lineup Verification

Containment control

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

Spent fuel cooling

OP/2/A/6200/005, Enclosure 4.4 (SFP level control)
 AP/2/A/5500/041, Loss of Spent Fuel Cooling or Level

Power availability

AP/2/A/5500/007, Loss of Electrical Power

SYNOPSIS

This investigation was initiated by the U.S. Nuclear Regulatory Commission (NRC) Office of Investigations (OI), Region II (RII), on April 12, 2003, to determine if a Nuclear Control Operator (NCO) at the Duke Energy Corporation, McGuire Nuclear Station deliberately falsified in-plant tour records associated with an NRC license reactivation.

Based on the evidence, documentation, and testimony developed during this investigation, OI:RII did not substantiate the allegation that the NCO falsified and/or deliberately misrepresented in-plant tour records associated with an NRC license reactivation. However, the investigation did reveal that the NCO did not adhere to a strict interpretation of Operation Management Procedure 12-2, thus reflecting inaccurate information.

Approved for release on 9/24/03 by E. L. Williamson

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FIELD OFFICE DIRECTOR, OFFICE OF INVESTIGATIONS, REGION II~~

Case No. 2-2003-025

Attachment 2