



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

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

October 30, 2006

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  
05000369/2006004 AND 05000370/2006004

Dear Mr. Peterson:

On September 30, 2006, 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 October 10, with you and members of your staff.

The inspection examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one finding of very low safety significance (Green) which was determined to be a violation of NRC requirements and three findings categorized as Severity Level IV violations under traditional enforcement. However, because of the very low safety significance and categorization at Severity Level IV, and because they were entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCV) consistent with Section VI.A of the NRC Enforcement Policy. If you deny these non-cited violations, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the McGuire facility.

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

Sincerely,

**/RA/**

Michael Ernstes, Chief,  
Reactor Projects Branch 1  
Division of Reactor Projects

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

Enclosure: NRC Integrated Inspection Report 05000369/2006004 and 05000370/2006004  
w/Attachment - Supplemental Information

cc w/encl: (See page 3)

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Letter to G. R. Peterson from Michael E. Ernstes dated October 30, 2006

SUBJECT: MCGUIRE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT  
05000369/2006004 AND 05000370/2006004

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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: 05000369/2006004, 05000370/2006004

Licensee: Duke Energy Corporation

Facility: McGuire Nuclear Station, Units 1 and 2

Location: Huntersville, NC 28078

Dates: July 1, 2006 through September 30, 2006

Inspectors: J. Brady, Senior Resident Inspector  
S. Walker, Resident Inspector  
G. Laska, Senior Operations Engineer (Section1R11.2)

Approved by: Michael Ernstes  
Reactor Projects Branch 1  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR05000369/2006-004, IR05000370/2006-004; 07/01/2006 - 09/30/2006; McGuire Nuclear Station, Units 1 and 2; Maintenance Effectiveness; Operability Evaluations; Other Activities.

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

### A. NRC-Identified and Self-Revealing Findings

#### Cornerstone: Initiating Events

- Green. An NRC-identified NCV was identified for the licensee's failure to establish goals and monitor the performance of the offsite power system per 10 CFR 50.65a(1). The licensee reclassified the offsite power system (OSP) from a(1) status to a(2) status without having monitored system performance against established goals, or documenting a technical justification to demonstrate that monitoring under a(1) was not required because the system performance was being effectively controlled such that it remained capable of performing its intended function. This finding is in the licensee's corrective action program as Plant Investigation Process (PIP) M-06-3218.

The finding is more than minor because, in accordance with MC 0612, Appendix E, Examples of Minor Issues and Enforcement Manual section 8.1.11, Maintenance Rule a(1) and a(2) violations are not minor because they involve structures, systems, and components (SSCs) that have demonstrated some degraded performance or condition. The finding is of very low safety significance because there was no design deficiency, the finding did not represent an actual loss of a safety function, nor does this involve a risk significant system for mitigating fire, flood, seismic, or severe weather events. (Section R12)

#### Cornerstone: Mitigating Systems

- SL4. A non-cited violation (NCV) was identified for failing to take adequate corrective action for the last Updated Final Safety Analysis Report (UFSAR) which did not include all the important information for the standby shutdown facility (SSF), the subject of two previous NCVs. The UFSAR did not include that the turbine-driven auxiliary feedwater (TDAFW) pump suction condenser circulating water makeup source was isolated by two dc power-operated valves which open automatically on low pump suction pressure, even though it was important information to demonstrate required system power source and suction supply diversity. This finding is in the licensee's corrective action program as Plant Investigation Process (PIP) M-06-3240.

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This finding is more than minor because it had the potential for impacting the NRC's ability to perform its regulatory function and had a material impact on licensed activities. The inadequate UFSAR information had been used in a 10 CFR 50.59 screening that resulted in not performing a safety evaluation when required, to determine whether prior NRC approval was needed. This issue was considered as traditional enforcement and was characterized as a Severity Level IV. The failure to adequately update the UFSAR for the SSF was the subject of two previous violations (NCVs 05000369,370/2004003-02, and NCV 05000369,370/2005004-01 for untimely corrective action). The cause of the finding is related to the cross-cutting area of Problem Identification and Resolution because the licensee failed to thoroughly evaluate similar problems such that the extent of condition was considered and the cause resolved to prevent recurrence. (Section 1R15)

- SL4. An NRC-identified NCV was identified for failure to adequately update the Updated Final Safety Analysis Report (UFSAR) for the station blackout rule (10 CFR 50.63) implementation. Some station blackout (SBO) mitigating equipment described in the submitted information and analysis have been changed, and because they were not contained in the UFSAR, were not evaluated under 10 CFR 50.59 for their effect on station blackout mitigation, to determine whether prior NRC approval was needed. This finding is in the licensee's corrective action program as Plant Investigation Process (PIP) M-06-3244.

The finding is more than minor because it had a material impact on licensed activities. The missing UFSAR information identified the systems and methodology used to combat a station blackout as described in the station blackout rule. This issue was considered as traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. This issue was considered to meet the criteria for a severity level IV violation. The cause of the finding is related to the cross-cutting area of Problem Identification and Resolution because the licensee failed to thoroughly evaluate similar problems such that the extent of condition was considered and the cause resolved to prevent recurrence. (Section R15)

#### Other

- SL4. An NRC-identified non-cited violation of 10 CFR 72.212 was identified for failing to evaluate changes to the written evaluations required by 72.212(b)(2) using the requirements of 72.48(c). Even though licensee procedure NSD 211, 10 CFR 72.48 Process, required that one be performed, the licensee had not performed any 72.48(c) evaluations for any changes to the 72.212(b)(2) written evaluations for the NAC-UMS casks or the TN-32 casks since the requirement was included in the rule (5 revisions). This finding is in the licensee's corrective action program as Plant Investigation Process (PIP) M-06-3729.

This issue is greater than minor because the failure to perform 72.48(c) evaluations on any changes to 72.212 written evaluations had a reasonable likelihood that the changes could require NRC review and approval. This issue was considered as traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function and was characterized as a Severity Level IV violation.(Section 4OA5.3)



B. Licensee-Identified Violations

None.

## Report Details

### Summary of Plant Status:

Unit 1 began the inspection period at approximately 100 percent power and remained at 100% for the remainder of the period.

Unit 2 began the inspection period at approximately 100 percent power. Unit 2 was shutdown for a refueling outage on September 17, and remained shutdown for the remainder 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 2005 and 2006 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 14. Because there was no safety-related equipment affected by hot weather, the inspectors focused on equipment and systems that could cause initiating events. The inspectors reviewed data and trend graphs for reactor coolant pump stator temperatures which typically have been the major hot weather concern for both units. The inspectors also reviewed information in relation to the condensate booster pump and motors, and the Unit 2 feed pump bearing temperatures. In addition, the inspectors toured the plant to determine if other equipment not monitored by the program could be affected.

The inspectors reviewed Problem Investigation Process Reports (PIPs) associated with this area, to verify that the licensee identified and implemented appropriate corrective actions. Documents reviewed are listed in the Attachment.

#### b. Findings

No findings of significance were identified.

### 1R04 Equipment Alignment

#### a. Inspection Scope

During this inspection period, the inspectors performed the following four partial system walkdowns, while the indicated structures, systems, and components (SSC) were out of service for maintenance and testing:

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- 1B intermediate head safety injection with the 1A intermediate head safety injection out of service for maintenance on July 3
- 1A emergency diesel generator with the 1B emergency diesel generator out of service for maintenance on July 18
- 1A motor-driven auxiliary feedwater with the 1B motor-driven auxiliary feedwater out of service for maintenance on July 19
- 1B emergency diesel generator with the 1A emergency diesel generator out of service for maintenance on August 29

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

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Fire Protection – Tours

a. Inspection Scope

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

The inspected areas included:

- U2 fuel handling building (fire area 27)
- U1 fuel handling building (fire area 26)
- 1A Diesel Generator Room (fire area 5)
- 1B Diesel Generator Room (fire area 6)
- 2A Diesel Generator Room (fire area 7)
- 2B Diesel Generator Room (fire area 8)

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b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification

.1 Resident Quarterly Observation

a. Inspection Scope

On July 12, the inspectors observed licensed-operator performance during regualification simulator training for shift "E", to verify that operator performance was consistent with expected operator performance, as described in Exercise Guide OP-MC-SRT-13 and 59. This training tested the operators' ability to perform abnormal and emergency procedures dealing with loss of a safety buss, loss of off-site power, steam line break inside containment, loss of "A" motor-driven auxiliary feedwater pump, loss of instrument air, loss of nuclear service water, and reactor trip response. The inspectors focused on clarity and formality of communication, the 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.

b. Findings

No findings of significance were identified.

.2 Annual Review of Licensee Regualification Examination Results

a. Inspection Scope

On June 30, 2006, the licensee completed the comprehensive regualification biennial written examinations and annual operating tests, required to be given to all licensed operators by 10 CFR 55.59(a)(2). The inspectors performed an in-office review of the overall pass/fail results of the written examinations, individual operating tests, and the crew simulator operating tests. These results were compared to the thresholds established in Manual Chapter 609 Appendix I, Operator Regualification Human Performance Significance Determination Process.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the two samples listed below for items such as: (1) appropriate

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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 structures, systems, and components (SSCs)/functions classified as (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified as (a)(1). Documents reviewed are listed in the Attachment. Items reviewed included the following:

- Offsite Power System
- Level Transmitters a(1) plan

b. Findings

Introduction: A green non-cited violation was identified for the licensee's failure to establish goals and monitor the performance of the offsite power system per 10 CFR 50.65a(1).

Description: The inspectors discovered on August 8, 2006, that on July 11, 2006, the licensee reclassified the offsite power system (OSP) from a(1) status to a(2) status without having monitored system performance against established goals, or provided a technical justification to demonstrate that monitoring under a(1) was not required because the system performance was being effectively controlled such that it remained capable of performing its intended function. The inspectors reviewed PIP M-05-5407, which was to document the licensee's Maintenance Rule (MR) review and evaluation, and noted the required information for the MR evaluation was not included. When discussed with the licensee, it was stated the Maintenance Rule Expert panel approved returning the OSP system back to a(2) status on July 11, 2006; however, the licensee did not establish performance goals, nor perform an adequate technical assessment justifying the reason for not monitoring system performance against established goals, per 10 CFR 50.65a(1) and a(2). As a result of the inspectors' questions, the Offsite Power system has since been returned to a(1) status pending additional evaluation and review by the Maintenance Rule Expert Panel.

Analysis: In accordance with MC 0612, Appendix E, Examples of Minor Issues and Enforcement Manual section 8.1.11, the inspectors determined that the licensee's failure to either properly establish goals and monitor system performance, or provide technical justification for not establishing goals for the Offsite Power system was more than minor. Maintenance Rule a(1) and a(2) violations are not minor because they involve SSCs that have demonstrated some degraded performance or condition. After assessing the finding in accordance with MC 0609, Significance Determination Process, Phase 1 worksheet, the inspectors concluded the finding to be of very low safety significance. This is because there was no design deficiency, the finding did not represent an actual loss of a safety function, nor does this involve a risk significant system for mitigating fire, flood, seismic, or severe weather events.

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Enforcement: 10 CFR 50.65, Maintenance Rule, paragraph (a)(1) states, in part, that the performance or condition of systems shall be monitored against established goals, to provide reasonable assurance that the systems are capable of performing their intended functions. Paragraph (a)(2) of 10 CFR 50.65 requires, in part, that monitoring as specified in paragraph (a)(1) is not required where it has been demonstrated that the performance or condition of a system is being effectively controlled through the performance of appropriate preventive maintenance such that the system remains capable of performing its intended function. Contrary to the above, as of July 11, 2006, the licensee failed to monitor performance of the OSP system to provide reasonable assurance that the system was capable of performing its intended function. Specifically, the licensee determined that the performance of the OSP system was such that it was necessary to monitor system performance against established goals under a(1), yet failed to establish goals and/or monitor the performance of the system against such goals. Subsequently, the licensee reclassified the system to a(2) without demonstrating that the performance or condition of the OSP system was being effectively controlled through the performance of appropriate preventive maintenance such that the system remains capable of performing its intended function. The failure to establish goals and monitor the OSP system under a(1), is being treated as a non-cited violation (NCV), consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as NCV 05000369,370/006004-01: Failure to monitor the Offsite Power System under 10 CFR 50.65a(1) . This issue is in the licensee's corrective action program as PIP M-06-3218.

#### 1R13 Maintenance Risk Assessments and Emergent Work Evaluation

##### a. Inspection Scope

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

- Week of July 9, including discovery of particulate matter in SSF DG fuel oil resulting in SSF inoperability; severe weather caused increase in operational risk assessment management (ORAM) risk profile from Yellow to Orange.
- Week of July 16, including emergent work on SSF fuel oil particulate; overall system indicator (OSI) grid status Orange due to a fossil unit trip resulting in rescheduling of work; emergent work on 1B emergency diesel generator (EDG) control room status indication.
- Week of July 23, including emergent work on 2A EDG following a silent trip due to a 40% speed relay not completely seating; the 2A EDG work also resulted in rescheduling work; OSI grid status Yellow due to a fossil unit trip.

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- Week of July 30, including rescheduling work due to varying OSI grid status of Red, Orange, and Yellow.
- Week of August 20, including emergent work on the “A” train control room air conditioning due to a blown fuse on the chiller (YC) and an overload condition on the air handling unit (AHU) (VC); emergent maintenance on the 2A EDG following failure to reach overload condition during a operability test; a scheduled orange ORAM condition for a pre-outage engineering inspection of the pressurizer.

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 verified that the operability determinations were made as specified by Nuclear System Directive (NSD) 203, Operability. The inspectors compared the arguments made in the determination to the requirements from the TS, the UFSAR, and associated design-basis documents, to verify that operability was properly justified and the subject component or system remained available, such that no unrecognized increase in risk occurred.

- M-06-2378, Potential for glycol system outboard containment isolation valve to come back open after a containment isolation signal is reset
- M-06-3770, Three phase fault interruption capability for essential MCCs
- M-06-2656, 1A emergency diesel generator room supply fan 1A1 suspected of not producing sufficient flow due to trouble alarm.
- M-06-2284, Possible scenario identified which could allow air to enter the Unit 1 SSF auxiliary feedwater water supply
- M-06-2371, SSF DG manually tripped when speed and frequency increased and could not be reduced from control panel
- M-06-2968, 2A DG tripped during routine run (common cause review)
- M-06-3186, TS change needed for results from new methodology used for main steam line pressure setpoint
- M-06-3187, TS change needed for results from new methodology used for turbine impulse pressure setpoint (P-13)
- M-06-3189, TS change needed for results from new methodology used for pressurizer pressure setpoints including P-11.

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b. Findings

.1 Safe Shutdown Facility UFSAR Update

Introduction: The inspectors identified inadequate corrective action for the last Updated Final Safety Analysis Report (UFSAR) which did not include all the important information for the safe shutdown facility (SSF).

Description: While performing a review of a 10 CFR 50.59 screening for the operability evaluation in PIP M-06-2284, on July 14, the inspectors found that the licensee's UFSAR did not contain key information related to the secondary-side makeup water source for the turbine-driven auxiliary feedwater (TDAFW) pump when used with the safe shutdown facility (SSF). The UFSAR, section 9.5.1.3, indicated that, for SSF operation, the embedded condenser circulating water pipe could be used as a water source for the TDAFW pump for 3.5 days. The inspectors' review of NUREG-0422, Supplement 6, Safety Evaluation Report Related To Operation Of McGuire Nuclear Station Units 1 and 2 (SSER 6), Appendix C, Section 3.7, additionally indicated that the makeup water source is isolated from the AFW pump suction by two dc power-operated valves, which open automatically on low pump suction pressure. The 10 CFR 50.59 screening review had concluded that a safety evaluation was not needed because the dc power-operated valves (1CA-161 and 1CA-162) were not in the UFSAR.

The inspectors noted that the licensee was committed to Regulatory Guide (RG) 1.70, Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants, and that RG 1.70, section 10.4.9.3, identified the importance of demonstrating the system's capability to perform its safety function utilizing diverse power sources to ensure operability without reliance on ac power. Diversity for AFW is described for normal non-SSF operation in UFSAR section 10.4.10 which addresses how the suction sources are aligned, where their power comes from, and the automatic transfer on low suction pressure to nuclear service water. Consequently, the same explanation must be provided in the UFSAR for TDAFW operation with the SSF, and was in the information and analysis provided to the NRC as demonstrated by the NRC evaluation of it in Supplemental Safety Evaluation Report (SSER) 6. Prior to the last UFSAR revision, the licensee did not have any information on the SSF in section 9.5.1. The last UFSAR revision, which inserted the information on the SSF did not include the information on the suction isolation valves.

Analysis: The missing UFSAR information was important because it demonstrated the AFW system capability to perform its safety function without reliance on ac power when used for the secondary heat removal function during operation of the SSF for fire or station blackout where ac power will not be available. The inadequate UFSAR information had been used in a 10 CFR 50.59 screening that resulted in not performing a safety evaluation when required, to determine whether prior NRC approval was needed. This issue was considered as traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. This issue was not minor because it had a material impact on licensed activities and was characterized as a severity level IV violation. The cause of the finding is related to the

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cross-cutting area of Problem Identification and Resolution because the licensee failed to thoroughly evaluate similar problems such that the extent of condition was considered and the cause resolved to prevent recurrence.

Enforcement: McGuire operating license condition 2.C.4 states that the licensee shall maintain in effect and fully implement all provisions of the approved fire protection program as described in the Final Safety Analysis Report, as updated, for the facility and as approved in the NRC Staff's McGuire Safety Evaluation Report (NUREG-0422 ) and its supplements. McGuire UFSAR section 9.5.1 states that the fire protection plan is contained in document MCS-1465.00-0008, Design Basis Specification for Fire Protection. The Fire Protection Plan states, in Appendix A, Section C, Quality Assurance, that the station directives will implement the fire protection quality assurance program. The quality assurance topical report, Duke-1-A, incorporates fire protection into the plant corrective action program and states that problems will be identified and corrected. Procedure NSD 208, Problem Investigation Process, implements that requirement. Contrary to the above, from November 2005 until July 14, 2006, the licensee had not taken adequate corrective action to revise the UFSAR to include the latest information developed in relation to the design of the SSF function provided by the TDAFW pump, in that, the UFSAR did not include that the TDAFW pump suction condenser circulating water makeup source was isolated by two dc power-operated valves which open automatically on low pump suction pressure, even though it was important information to demonstrate required system power source and suction supply diversity. The failure to adequately correct the UFSAR deficiencies for the SSF is characterized as a severity level IV violation. This issue is in the licensee's corrective action program as PIP M-06-3240. The failure to adequately update the UFSAR for the SSF was the subject of two previous violations (NCVs 05000369,370/2004003-02, and NCV 05000369,370/2005004-01 for untimely corrective action). However, because the 2004 violation was greater than 2 years old, and this violation was not for untimely corrective action, this issue was not considered as repetitive and is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy. This issue is identified as NCV 05000369,370/2006004-02: Failure to adequately correct UFSAR deficiencies for the SSF.

## .2 Station Blackout Rule

Introduction: The inspectors identified a failure to adequately update the Updated Final Safety Analysis Report (UFSAR) for the station blackout rule (10 CFR 50.63) implementation.

Description: While performing a review of a 10 CFR 50.59 screening for the operability evaluation in PIP M-06-2284, on July 14, the inspectors found that the licensee's UFSAR did not contain key information and analysis related to the station blackout rule implementation. The inspectors reviewed the NRC Safety Evaluation Report (SER) for Station Blackout dated February 19, 1992. This SER reviewed the information and analysis submitted to the NRC. The inspectors found that the essence of the licensee's submittals and safety analysis for station blackout as described in the Station Blackout SER were not in the UFSAR, although there was a reference to the submittal.

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Analysis: The missing UFSAR information was important because it identified the systems and methodology used to combat a station blackout as described in the station blackout rule. Some station blackout (SBO) mitigating equipment described in the submitted information and analysis have been changed, and because they were not contained in the UFSAR were not evaluated under 10 CFR 50.59 for their effect on station blackout mitigation, to determine whether prior NRC approval was needed. This issue was considered as traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. This issue is not minor because it had a material impact on licensed activities. This issue was considered to meet the criteria for a severity level IV violation. The cause of the finding is related to the cross-cutting area of Problem Identification and Resolution because the licensee failed to thoroughly evaluate similar problems such that the extent of condition was considered and the cause resolved to prevent recurrence.

Enforcement: 10 CFR 50.71(e) requires that licensees shall update periodically the Final Safety Analysis Report (FSAR) originally submitted as part of the application for the operating license, to assure that the information included in the report contains the latest information developed. This submittal shall include the effects of all the changes necessary to reflect information and analysis submitted to the Commission by the licensee or prepared by the licensee pursuant to Commission requirement since the submittal of the original FSAR, or as appropriate the last update of the FSAR under this section. The submittal shall include the effects of all analyses of new safety issues performed by or on behalf of the licensee at Commission request. Contrary to this requirement, prior to July 14, the licensee had not updated the UFSAR to include the latest information and analysis developed in relation to station blackout (10 CFR 50.63). The failure to adequately update the UFSAR for station blackout as required by 10 CFR 50.71(e) is characterized as a severity level IV violation. This issue is in the licensee's corrective action program as PIP M-06-3244. Consequently, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as NCV 05000369,370/2006004-03: Failure to adequately update the UFSAR for station blackout.

## 1R17 Permanent Plant Modifications

### a. Inspection Scope

The inspectors reviewed the modification described in design change package MD200559, 2ELXD Transformer Installation, to verify that:

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

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The inspectors reviewed the associated PIPs to verify that the licensee identified and implemented appropriate corrective actions. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

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

- PT/2/A/4401/002A, KC Train A Valve Stroke Timing - Quarterly, Enclosure 13.2 (bushing replacement on 2KC-3A)
- PT/2/A/4403/002D, RN Train A Valve Stroke Timing - Quarterly Plant Evolution Valves, Enclosure 13.5 (limit switch replacement on 2RN-189A)
- OP/0/B/6350/004, Standby Shutdown Facility Diesel Operation, Enclosure 4.1 (fuel filter replacement)
- PT/2/A/4350/002A, Diesel Generator 2A Operability Test (hot web deflection and adjustment to governor valve)
- PT/1/A/4350/002A, Diesel Generator 1A Operability Test (routine preventative maintenance)
- PT/2/A/4350/002B, Diesel Generator 2B Operability Test using PT/2/A/4350/004B, 2B Periodic and Load Sequencer Test to start (various preventive maintenance during 2EOC17)

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

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

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- Decay Heat Removal
- Inventory Control
- Reactivity Control
- Containment Control
- Spent Fuel Cooling
- Power Availability

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 10 CFR 50.65(a)(4).

The inspectors observed portions of the cooldown process on September 16 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.

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

The inspectors reviewed the licensee's responses to emergent work and unexpected conditions, to verify that resulting configuration changes were controlled in accordance with the outage risk control plan. The inspectors also observed fuel handling operations (removal) and other ongoing activities, to verify that those operations and activities were being performed in accordance with technical specifications and procedure PT/0/A/4150/037, Total Core Unloading. Additionally, the inspectors observed refueling activities to verify that the location of the fuel assemblies was tracked, including new fuel, for core off-load.

Prior to mode changes and on a sampling basis, the inspectors reviewed system lineups and/or control board indications to verify that TSs, license conditions, and other requirements, commitments, and administrative procedure prerequisites for mode changes were met prior to changing modes or plant configurations. Also, the inspectors periodically reviewed Reactor Coolant System (RCS) boundary leakage data, and observed the setting of containment integrity, to verify that the RCS and containment boundaries were in place and had integrity when necessary.

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

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outage activities at an appropriate threshold and had entered them into the corrective action program.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

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

- PT/1/A/4252/001, #1 Turbine Driven CA Pump Performance Test \*
- PT/0/A/4350/038A, 125 VDC GNB Vital I and C Battery Service Test Using BCT-2000
- PT/2/A/4350/036B, DG 2B 24 Hour Run
- RCS Leakage TS Instrumentation Calibrations (VUCDT) and containment floor and equipment sump (CFAE) tests are listed in the Attachment)
- PT/0/A/4200/032, Periodic Inspection of Ice Condenser Lower Inlet Doors
- PT/1/A/4252/001A, 1A CA Pump Performance Test \*
- PT/2/A/4255/003C, SM Valve Timing Test at Full Temperature and Pressure\*\*

\*This procedure included inservice testing requirements.

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

The inspectors reviewed the associated PIPs to verify that the licensee identified and implemented appropriate corrective actions. Documents reviewed are listed in the Attachment.

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 July

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26, 2006 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 simulated control room to verify that event classification and notifications were done in accordance with RP/0/A/5700/000, Classification of Emergency, Revision 13. 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 verify whether the licensee was properly identifying failures.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution

.1 Review of Items Entered Into the Corrective Action Program

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

.2 Annual Sample Review

a. Inspection Scope

The inspectors selected PIP M-02-2427 for detailed review. This PIP was associated with returning the nuclear service water strainers to safety-related status after they had been downgraded in 1993. The inspectors reviewed this report to verify that the licensee identified the full extent of the issue, performed an appropriate evaluation, and specified and prioritized appropriate corrective actions. The inspectors evaluated the report against the requirements of the licensee's corrective action program as delineated in corporate procedure NSD 208, Problem Identification Process, and 10 CFR 50, Appendix B .

The inspectors performed a review of the 19 priority 1-3 operator workarounds (OWAs) listed in the licensee's June 2006 OWA report to determine whether the OWAs were identified in the corrective action program and whether corrective actions have been properly identified and dates established for completion. In some cases the review included the PIPs associated with the OWA and a review of the system health report for the associated system. In addition, the 5 priority 4 OWAs (licensee intends to take no action) were reviewed to ensure that they should not be rated higher. A review of

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selected workarounds closed in the last 2 years was conducted to determine whether the closed OWAs were corrected.

b. Observations and Findings

From the review of this PIP, no findings of significance were identified.

4OA3 Event Follow-up

a. Inspection Scope

The inspectors reviewed licensed operator performance during the shutdown of Unit 2 for a scheduled refueling outage to determine whether procedures were followed and whether activities were accomplished in accordance with the outage plan and just-in-time training.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

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

a. Inspection Scope

The Inspectors reviewed the Institute of Nuclear Power Operations (INPO) July 2006 Evaluation - Interim Report, dated September 11, 2006, for McGuire Nuclear Station. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of licensee performance and to verify if any significant safety issues were identified that required further NRC follow-up.

b. Findings

No findings of significance were identified.

.2 Initial Cask Loading and Storage Observation

a. Inspection Scope (IP 60855.1)

The inspectors reviewed the Unit 1 documentation package for the casks listed below that were created using procedure XSM-006, Workplace Procedure For Selecting Spent Fuel For Use Of NAC-UMS System at McGuire and Regulatory Guide 3.54, Spent Fuel Heat Generation to verify that the selected fuel assemblies and burnable poison inserts met the requirements for insertion in dry cask storage.

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- NAC-UMS TSC-MNZ-015 (Document Control NO MCEI 0400-169),
- NAC-UMS TSC-MNZ-017 (Document Control NO MCEI 0400-170),

The inspectors reviewed the cask loading verification video tapes for each of the above casks to verify that the alpha-numeric identification numbers stamped on the loaded fuel assemblies and burnable poison assemblies matched the identification numbers used in the documentation package as required by procedure OP/0/A/6550/028, NAC UMS Fuel Assembly Loading/Unloading Procedure. The casks were loaded on July 11, 2006 and July 25, 2006, respectively. The inspectors reviewed selected licensee activities as specified in procedure MP/0/A/7650/212, Loading Spent Fuel Assemblies Into NAC-UMS casks, to verify that activities were being accomplished in accordance with procedural requirements.

b. Observations and Findings

Overall, the licensee established and maintained adequate oversight for the dry cask storage evolution. The Technical Specifications requirements and acceptance criteria as outlined in the FSAR for the NAC-UMS casks and the procedures were followed appropriately.

.3 Independent Spent Fuel Storage 10 CFR 72.48 Evaluations Review

a. Inspection Scope (IP 60855)

The inspectors reviewed the screening evaluations performed pursuant to 10 CFR 72.48 since January 1, 2005, for the independent spent fuel storage installation (ISFSI) TN-32 and NAC-UMS storage casks. There were no modifications performed during this period and all procedure changes screened as not needing a 72.48 evaluation. One NAC-UMS TS change was approved during that period which pertained to drying. The screening reviews are listed in the Attachment. The last 10 CFR 72.48 Summary Report was issued December 8, 2004.

The inspector also reviewed PIP M-06-1849 which identified that a 10 CFR 72.212 written evaluation had not been revised to assess having greater than 12 NAC-UMS casks in the ISFSI when 13 had been placed there, to verify that the licensee identified and implemented appropriate corrective actions.

b. Findings

Introduction: The inspectors identified a violation of 10 CFR 72.212 for failing to evaluate changes to the written evaluations required by 72.212(b)(2) using the requirements of 72.48(c).



Description: While reviewing PIP M-06-1849, the inspectors found, on September 11, 2006, that the licensee had not performed an evaluation under 10 CFR 72.48(c) for Revision 2 to the Independent Spent Fuel Storage Installation 10 CFR 72.212 Evaluation (NAC UMS casks), prepared on July 27, 2006. The inspectors discussed this issue with onsite personnel and found that they were unaware that the requirement to perform the 72.48(c) evaluation was included in the rule, even though licensee procedure NSD 211, 10 CFR 72.48 Process, section 211.3, required that one be performed. Consequently, the licensee had not performed any 72.48(c) evaluations for any changes to the 72.212(b)(2) written evaluations for the NAC-UMS casks or the TN-32 casks since the requirement was included in the rule (5 revisions). The licensee issued PIP M-06-3729 to address this deficiency.

Analysis: The failure to recognize that 10 CFR 72.212(b)(2)(ii), and licensee procedure NSD 211, required that 10 CFR 72.48(c) evaluations be performed for changes to 72.212(b)(2) written evaluations is important because the 72.48(c) evaluation determines whether prior NRC approval is needed before a change can be implemented to the facility or spent fuel storage cask design. This issue is greater than minor because the failure to perform 72.48(c) evaluations on any changes to 72.212 written evaluations had a reasonable likelihood that the changes could require NRC review and approval. This issue was considered as traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function and was characterized as a severity level IV violation.

Enforcement: 10 CFR 72.212(b)(2)(ii) requires that the licensee shall evaluate any changes to the written evaluations required by this paragraph using the requirements of 10 CFR 72.48(c). Contrary to the above, prior to September 11, 2006, the licensee had not performed a 10 CFR 72.48(c) evaluation for changes to their 10 CFR 72.212 written evaluations. The failure to perform these evaluations was considered a violation and is characterized as a severity level IV violation. This issue is in the licensee's corrective action program as PIP M-06-3729. Consequently, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as NCV 05000369,370/2006004-04: Failure to perform 72.48 evaluations for 72.212 changes.

#### 4OA6 Meetings, Including Exit

On October 10, 2006, 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.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee personnel

Black, D., Security Manager  
Boyle, J., Manager, Modification Engineering  
Bradshaw, S., Superintendent, Plant Operations  
Bramblett J., Outage Manager  
Brown, S., Manager, Engineering  
Crane, K., Licensing Specialist  
Evans, K., Superintendent, Maintenance  
Harrall, T., Station Manager, McGuire Nuclear Station  
Hull, P., Chemistry Manager  
Kammer, J., Manager, Safety Assurance  
Mooneyhan, S., Radiation Protection Manager  
Nolan, J., Manager, Mechanical and Civil Engineering (MCE)  
Parker, R., Superintendent, Work Control  
Peterson, G., Site Vice President, McGuire Nuclear Station  
Snyder, S., Manager, RES Engineering  
Thomas, J., Manager, Regulatory Compliance

#### NRC personnel

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

### **LIST OF ITEMS OPENED AND CLOSED**

#### Opened and Closed

05000369,370/2006004-01	NCV	Failure to Monitor the Off-Site Power System Under 10 CFR 50.65 a(1) (Section 1R12)
05000369,370/2006004-02	NCV	Failure to Adequately Correct UFSAR Deficiencies for the SSF (Section 1R15)
05000369,370/2006004-03	NCV	Failure to Adequately Update the UFSAR for Station Blackout (Section 1R15)
05000369,370/2006004-04	NCV	Failure to Perform 72.48 Evaluations for 72.212 Changes (Section 4OA5.3)

## LIST OF DOCUMENTS REVIEWED

### **Section 1R01: Adverse Weather Protection**

#### ***For hot weather:***

PT/0/B/4700/039, Warm Weather Equipment Checkout, dated 4/13/06  
licensee's hot weather computer spreadsheet for 2005 and 2006

### **Section 1R04: Equipment Alignment**

#### **Partial System Walkdown**

Safety Injection system:

Drawing MCFD-2562-03.00, "Flow Diagram of Safety Injection System (NI)

Drawing MCFD-2562-03.01, "Flow Diagram of Safety Injection System (NI)

Emergency Diesel Generator 1A:

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

Drawing MCFD-1609-03.00, Flow Diagram of the Diesel Generator Engine 1A 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

OP/1/A/6350/002, Diesel Generator, Rev. 103, Enclosure 4.7, Valve Checklist

Auxiliary Feedwater Pump 1A:

Drawing MCFD-1592-01.00, Flow Diagram of Auxiliary Feedwater System (CA)

Drawing MCFD-1592-01.01, Flow Diagram of Auxiliary Feedwater System (CA)

Drawing MCFD-1592-01.02, Flow Diagram of Auxiliary Feedwater System (CA)

Drawing MCFD-1592-02.00, Flow Diagram of Auxiliary Feedwater System (CA)

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

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

OP/1/A/6350/002, Diesel Generator, Rev. 103, Enclosure 4.8, Valve Checklist

### **Section 1R05: Fire Protection**

#### **Procedures:**

McGuire Nuclear Station IPEEE Submittal Report dated June 1, 1994

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

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

### **Section 1R12: Maintenance Effectiveness**

PIP M-05-5407, Unit 2 performed rapid downpower to 50% due to loss of 2B transformer cooling group

EDM-210, Engineering Responsibilities for the Maintenance Rule  
PIP M-05-0393, 2WLLT5260 would not respond as expected  
PIP M-06-0089, 1A CFAE Sump level is not responding as expected  
PIP M-06-0192, CFAE sump A level is decreasing slowly  
PIP M-06-0258, Recently installed probe for 1A CFAE sump is wrong probe  
PIP M-06-2515, 2A CFAE Sump Level is inoperable  
PIP M-06-1735, Offsite Power System (OSP) MR SSC is now considered A(1)  
PIP M-06-1729, Level Transmitters require classification as MR A(1)  
Maintenance Rule Expert Panel Meeting Minutes (April, May, July, August- 2006)  
UFSAR Chapter 5, Section 5.2.7. Reactor Coolant Boundary Leakage Detection Systems  
Regulatory Guide 1.97

**Section1R13: Maintenance Risk Assessments and Emergent Work Evaluation**

PIP M-06-2808, With SSF D/G unavailable, severe weather resulted in ORAM orange condition for both units

**Section1R15: Operability Evaluations**

M-06-3604, PSA calculation shows 17 HFP MCC breakers will not provide sufficient interrupting capability  
M-01-5425, Short circuit calculation shows fault current exceeded breaker rating for non safety related breakers

**Section1R17: Permanent Plant Modifications**

MD200559, 2ELXD Transformer Installation

National Electric Code, NFPA 70, Article 110

Updated Final Safety Analysis Report Section 8.3.1, Onsite AC Power System

IEEE Standard 308-1991, Standard Criteria for Class 1E Power Systems for Nuclear Stations

Drawing MCCD-2700-00.00, "One Line Diagram Essential Power System", Revision 3

**Section1R20: Refueling and Outage Activities**

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

**Section 1R22: Surveillance Testing**

IP/0/B/3050/017A, Containment Ventilation Condensate Drain Tank Level Calibration and Functional Test (Corresponding Work Orders for Units 1 and 2, 2004-2006)

IP/0/B/3050/016, Containment Floor and Equipment Sump Level Calibration and Functional Test (Corresponding Work Orders for Units 1 and 2, 2004-2006)

**Section 4OA2: Identification and Resolution of Problems**

PIP M-02-2427: PIP M89-290, MGDS-224, MGMM3794, MGMM14403, DBD MCS-1574.RN-00-001

**Section 4OA5: Other**

COC No. 1015, Amendment 3, For The NAC International UMS Universal Storage System, Effective 3/31/04, including Appendix A, Technical Specification for the NAC-UMS System Final Safety Analysis Report for the UMS Universal Storage System, May 2004, Revision 3C

10 CFR 72.48 Screening Reviews:

Procedure MP/0/A/7650/212, R1, Loading Spent Fuel Assemblies into NAC-UMS Casks

Procedure MP/0/A/7650/212, R4, Loading Spent Fuel Assemblies into NAC-UMS Casks

Procedure OP/0/A/6550/028, R 00, NAC-UMS Fuel Assembly Loading/Unloading

Procedure MP/0/A/7700/119, R 00, Cask-NAC-UMS Transportable Storage Canister Welding

Fuel Management Workplace Procedure XSFM-006, R0, Selecting Spent Fuel for Use of NAC-UMS System at McGuire

Criteria to meet Intact Fuel requirement in XSFM-006, R1, Selecting Spent Fuel for Use of NAC-UMS System at McGuire

Fuel Management Workplace Procedure XSFM-006, R2, Selecting Spent Fuel for Use of NAC-UMS System at McGuire

Procedure MP/0/A/7650/212, R7, Loading Spent Fuel Assemblies into NAC-UMS Casks

Procedure MP/0/A/7650/212, R8, Loading Spent Fuel Assemblies into NAC-UMS Casks

Procedure MP/0/A/7650/212, R9, Loading Spent Fuel Assemblies into NAC-UMS Casks

Procedure MP/0/A/7650/212, R12, Loading Spent Fuel Assemblies into NAC-UMS Casks

Procedure MP/0/A/7650/204, R4, Spent Fuel Dry Storage Cask Troubleshooting

Procedure MP/0/A/7650/188, R14, Operation of Dry Cask Transporter

Engineering Change ME500553, Remove of Amphenol connectors from ISFSI RTD circuits and revise RTD error alarm software.