

# McGuire 2

## 4Q/2009 Plant Inspection Findings

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### Initiating Events

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### Mitigating Systems

**Significance:** SL-IV Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to adequately update the UFSAR for emergency diesel fuel oil storage tank requirements (Section 1R22)**

The inspectors identified a Severity Level IV non-cited violation (NCV) of 10 CFR 50.71(e) for failure to adequately update the Updated Final Safety Analysis Report (UFSAR) for a license amendment to the emergency diesel generator (EDG) fuel oil storage tank requirements. The licensee intends to revise the UFSAR to reflect the licensing basis described in the license amendment and is developing procedural guidance for cross-connecting the fuel oil storage tanks.

This finding was considered as traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. The inspectors used the NRC Enforcement Policy, Supplement I, to determine that the issue was more than minor because not including the new licensing basis for the safety-related fuel oil storage tanks in the UFSAR would have a material impact on licensed activities associated with this equipment. This issue was considered a Severity Level IV violation because the inaccurate information was not used to make an unacceptable change to the facility. No cross-cutting aspect was identified. (Section 1R22)

Inspection Report# : [2009004](#) (*pdf*)

**Significance:**  Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Adequately Implement Design Control Measures For Fire Protection**

Green: A non-cited violation of License Condition 2.C.4, Fire Protection Program (FPP), was identified for inadequate design control measures associated with the downgrading of a 3-hour rated fire barrier between the electrical penetration room and essential switchgear room for each train in both Units. The licensee failed to update the fire strategy plans and the design basis documents, including the fire protection program plan, the fire hazards analysis, and the safe shutdown analysis, to reflect the new fire confinement configurations. The licensee intends to perform the fire hazards analysis and revise the design documents and the fire strategy plans.

This finding is more than minor because it affected the Mitigating Systems Cornerstone objective of availability, reliability, and capability of the fire confinement and fire suppression systems and was associated with the design control and protection against external factors (fire) attribute in that this failure could affect the ability to respond to a fire. The issue was determined to be of very low safety significance (Green) based on the fact that the categories of Fire Prevention and Administrative Controls, and Fire Confinement, were evaluated as having low degradation because the failure to adequately perform design control measures in support of the modification was mitigated by the fact that the fire barrier was not actually removed; would likely have performed its intended function; and that the inspectors' review of the equipment and actions for each of the combined areas indicated that safe shutdown for a fire in the combined areas could be accomplished from either the other redundant train or the alternate safe shutdown facility (both located in other fire areas). There is no cross cutting aspect with this performance deficiency because it was not representative of current licensee performance in that it was a human performance error that occurred 10 years ago. (Section 1R05)

Inspection Report# : [2009003](#) (pdf)

**Significance:**  Jun 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Procedures Not Appropriate to the Circumstances for A Train RN Temporary Testing**

Green: A self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the failure to provide procedures appropriate to the circumstances. The temporary test procedure for flow testing the A Train of nuclear service water (RN) failed to provide adequate pump suction strainer backwash capability resulting in the macrofouling of the 2A RN pump suction strainer. This issue has been entered into the licensee's corrective action program as Problem Investigation Process (PIP) report M-09-02216.

This finding is more than minor because it rendered the 2A RN pump unavailable and affected the availability, reliability, and capability of the RN system (ultimate heat sink), and was related to the external events, configuration control, equipment performance and procedure quality attributes of the Mitigating Systems cornerstone. The finding was determined to be of very low safety significance (Green) because it did not result in a loss of a single train of RN for greater than its Technical Specification (TS) allowed outage time. This finding has a cross-cutting aspect of conservative assumptions [H.1(b)] as described in the Decision-Making component of the Human Performance cross-cutting area, because the licensee's assumption, that macrofouling of the RN pump suction strainers was not a concern while aligned to the standby nuclear service water pond, was non-conservative. (Section 1R13)

Inspection Report# : [2009003](#) (pdf)

**Significance:** SL-IV Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Correct Ultimate Heat Sink Licensing Basis Document Inaccuracies**

SLIV: A non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, was identified for failing to adequately identify and correct ultimate heat sink licensing basis document inaccuracies.

The finding is more than minor because the failure to have an accurate description of the ultimate heat sink (UHS) in the licensing basis documents had a material impact on licensed activities. In addition, an accurately defined UHS is necessary to adequately assess plant modifications, operability determinations, and technical specification entry conditions. This issue was treated as traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. This finding was characterized as a Severity Level IV violation because the NRC determined the standby nuclear service water pond met the requirements of Regulatory Guide (RG) 1.27 in the Safety Evaluation Report (SER) and it does not result in a condition evaluated as having low to moderate, or greater safety significance (i.e., white, yellow, or red). This finding has a cross-cutting aspect of corrective action [P.1(c)] in the Corrective Action Program component of the Problem Identification and Resolution cross-cutting area because the licensee failed to thoroughly evaluate this issue such that the resolutions addressed all the causes and extent of conditions, as necessary. (Section 1R15)

Inspection Report# : [2009003](#) (pdf)

**Significance:**  Jun 18, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Procedure for RN System Flow Balancing**

The team identified a finding of very low safety significance involving a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to provide adequate procedures for flow balancing of the service water (RN) system. The RN flow balance procedure was inadequate in that it made no provision in the acceptance criteria to limit or evaluate minimum flow control valve seat/disc clearance, and subsequent potential for increased flow obstruction, resulting from system flow balancing. The licensee entered this deficiency into their corrective action program (CAP) for resolution.

The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of procedure quality and affected the cornerstone objective of ensuring the capability of systems that respond

to initiating events to prevent undesirable consequences. Specifically, changing position of the flow control valves without consideration of potential flow obstruction could impact the capability to adequately cool safety related equipment. The team assessed this finding for significance in accordance with the SDP for Reactor Inspection Findings for At-Power Situations, and determined that it was of very low safety significance (Green), in that no actual loss of safety system function was identified. No cross-cutting aspect was identified because the performance deficiency did not reflect current performance.

Inspection Report# : [2009006](#) (pdf)

**Significance:**  Jun 18, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Correctly Translate Design Basis Information Related to the Isolation Time for Safety Related MOVs into Instructions and Procedures**

The team identified a finding of very low safety significance involving a NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to assure that the applicable design bases were correctly translated into the in-service test (IST) acceptance criteria for safety-related motor operated valves (MOVs). Specifically, the licensee's testing did not account for test inaccuracies associated with limit switch actuation or minimum EDG frequency into IST stroke time testing. The licensee entered this deficiency into their CAP for resolution.

The finding was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Not accounting for test inaccuracies and EDG under frequency, the IST did not ensure that MOV isolation times referenced in the Updated Final Safety Analysis Report (UFSAR) were verified by testing. The team assessed this finding for significance in accordance with the SDP for Reactor Inspection Findings for At-Power Situations and determined that it was of very low safety significance (green), in that no actual loss of safety system function was identified. No cross-cutting aspect was identified because the performance deficiency did not reflect current performance.

Inspection Report# : [2009006](#) (pdf)

**Significance:**  Jun 18, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Verification of the Design Adequacy of the Control Circuit Voltage for 600 VAC Safety Related Motors**

The team identified a finding of very low safety significance involving a NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," for failure to establish measures to verify the design capability of the control circuit voltage for 600 VAC safety related motors fed from motor control centers. Specifically, there was no voltage drop calculation or cable configuration specification for the control circuits that established the adequacy of the control circuit to energize the safety related motors. The licensee entered this deficiency into their CAP for resolution.

The finding was more than minor because it was associated with the design control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Due to the lack of appropriate analysis, the 600V motor control circuit design basis accident capability was not assured and further evaluation was required to demonstrate that the equipment could perform its safety function. The team assessed this finding for significance in accordance with the SDP for Reactor Inspection Findings for At-Power Situations, and determined that it was of very low safety significance (Green), because it was a design deficiency determined not to have resulted in the loss of safety function. No cross-cutting aspect was identified because the performance deficiency did not reflect current performance.

Inspection Report# : [2009006](#) (pdf)

**Significance:**  May 14, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

## **Failure to Take Adequate Corrective Action for Appendix R Emergency Lighting Credited for Operator Action**

The inspectors identified a non-cited violation of McGuire Unit 2 Operating License Condition 2.C.4 for failure to implement and maintain their Fire Protection Program as described in design basis document MCS-1465.00-00-008, "Plant Design Basis Specification for Fire Protection." Specifically, the licensee failed to take prompt, adequate corrective action to ensure installation of an emergency light for a local operator manual action at Breaker 2EMXB-2A. The licensee entered the issue into the corrective action program and issued a night order informing Operations staff to carry flashlights until the light can be installed.

This finding is more than minor because it is associated with the reactor safety Mitigating Systems cornerstone attribute of protection against external factors (i.e., fire) and it affects the objective of ensuring reliability and capability of systems that respond to initiating events. The inspectors determined the finding was of very low safety significance (Green) based on the high likelihood of operators completing the task using flashlights. This finding has a cross-cutting aspect of Human Performance in the area of Resources [H.2.c], because the licensee failed to ensure the modification package was accurate to reflect the correct breaker that required an emergency light as described in the corrective action. (Section 1R05.01)

Inspection Report# : [2009007](#) (*pdf*)

**Significance:**  May 14, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Pertinent Fire Brigade Information and Guidance Not Identified in Fire Fighting Strategies**

The inspectors identified a non-cited violation of Unit 2 Operating License Condition 2.C.4 and the Fire Protection Program as contained in design basis document MCS-1465.00-00-008, "Plant Design Basis Specification for Fire Protection." Specifically, the licensee implemented a deficient fire pre-plan strategy in fire areas 10/12 which failed to provide pertinent information and guidance on alternate available communications to assist the fire brigade for a fire within the area as required by the licensing basis. The licensee entered the problem into their corrective action program and issued a night order informing Operations staff of the potential inability to use radios in fire areas 10/12.

The finding is greater than minor because it affected the ability of the licensee to maintain communications for a fire in fire areas 10/12 and is associated with the Mitigating Systems cornerstone and respective attribute of protection against external factors, i.e. fire. The safety significance of the deficient fire pre-plan strategy was determined to be very low because the fire pre-plan strategy would not impede the fire brigade's ability to extinguish a fire in the specified fire areas. This finding has a cross-cutting aspect in the area of Problem Identification & Resolution for the Corrective Action Program component [P.1c] because the licensee failed to thoroughly evaluate the previously identified problems associated with the fire preplans to ensure that the corrective actions were effective in identifying and correcting issues with the communications availability for the fire brigade. (Section 1R05.08)

Inspection Report# : [2009007](#) (*pdf*)

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Correct a Condition Adverse to Quality Associated with Abnormal Procedures for Loss of Nuclear Service Water**

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, for the failure to promptly correct a condition adverse to quality associated with the sharing of the nuclear service water system between units in abnormal operating procedures (APs). Specifically, the licensee had neither developed a safety analysis to demonstrate the safety of this activity nor revised the procedural steps that allowed sharing. This finding is more than minor because it affected the availability, reliability, and capability of the Nuclear Service Water (RN) system (ultimate heat sink) and was related to the design control and procedure quality attributes of the Mitigating Systems cornerstone. In addition, this finding could be reasonably viewed as a precursor to a significant event (i.e., loss of RN on both units). The issue was determined to be of very low safety significance in IMC 0609 SDP Phase 1 screening based on the fact that it did not represent an actual loss of system safety function nor a loss of

a single train of RN for greater than its Technical Specification allowed outage time, because the subject procedural steps of the APs had never been used. This finding has a cross-cutting aspect of corrective action in the area of Problem Identification and Resolution [P.1.d], because the licensee failed to take appropriate corrective action in a timely manner. The licensee plans to revise the procedure, complete a calculation to support the donating of one train of nuclear service water to the other unit when two trains are available from the donor unit, and perform an associated 10 CFR 50.59 review. (Section 1R11)

Inspection Report# : [2009002](#) (pdf)

**Significance:** SL-IV Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Adequately Describe the Load Sequencer Function in the FSAR**

The inspectors identified a non-cited violation of 10 CFR 50.34(b)(2) for failing to include in the Updated Final Safety Analysis Report (UFSAR) a description and analysis of the separate accelerated sequencer function that loads the safety-related equipment onto the safety-related emergency A.C. power system buses using different criteria than the committed sequencer function described in the UFSAR. This issue is greater than minor because the failure to have a description of the accelerated sequencer function in the UFSAR had a material impact on licensed activities, in that any modifications to safety-related systems, such as the modification that removed the seal-in function from the control room chiller digital control system, would need to consider the interaction with the accelerated sequencer (in addition to the separate committed load sequencer) to ensure that risk significant equipment, as modified, would function as analyzed. This issue was treated as traditional enforcement, because it had the potential for impacting the NRC's ability to perform its regulatory function. It was characterized as a Severity Level IV violation, because the occurrence of the control room chiller failing to start (after being dropped by the accelerated load sequencer) when required by the committed load sequencer function during testing, had very low safety significance. This issue has a cross-cutting aspect of appropriate corrective action in the area of problem identification and resolution [P.1.(d)]. This aspect was chosen because the licensee recognized, as documented in a January 12, 2007 letter to the NRC, that there were content problems with the UFSAR and was in the process of trying to correct it. However, the inspectors could not find any completed interim corrective action documented in the licensee's corrective action program that would alert/caution UFSAR users that compensatory actions were needed in order to perform adequate evaluations such as for operability, reportability, or 10 CFR 50.59. The licensee intends to add the accelerated sequence function to the UFSAR and install seal-in functions for the affected load blocks in the accelerated sequence. (Section 4OA5.4)

Inspection Report# : [2009002](#) (pdf)

**Significance:** **W** Aug 20, 2008

Identified By: NRC

Item Type: VIO Violation

**Failure to Take Adequate Corrective Action for Implementation of Safety-Related RN Strainer Backwash**

10 CFR 50 Appendix B Criterion XVI, Corrective Action, states that measures shall be established to assure that conditions adverse to quality, such as deficiencies, deviations, and non-conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. This requirement is implemented through the Duke Quality Assurance Program Topical Report and procedure NSD 208, Problem Identification Process.

Contrary to the above, between 2003 and August 7, 2007, the licensee failed to correct a significant condition adverse to quality related to macro-fouling of the nuclear service water (RN) strainers, in that the corrective action that was implemented failed to ensure that the design and licensing basis required capability for manual strainer backwash be maintained during accident conditions. Specifically, the 2003 plant modification that was implemented to address macro-fouling (i.e., upgrade and reclassification of the strainer backwash function to safety-related): (1) utilized non-safety-related instrument air (VI) to maintain each RN pump's strainer backwash discharge valve open, but did not provide a means to manually open (or bypass) the discharge valve to support backwash operations

upon a loss of VI; and (2) did not account for the impact on timely operator response from higher strainer macro-fouling rates and expected (nuisance) strainer differential pressure alarms (without fouling) at the onset of high RN flow events (i.e., safety injection (SI) and loss of VI). As such, there was a lack of reasonable assurance that the RN system would be able to perform its safety-related function upon a SI or loss of VI event during periods of macro-fouling.

This violation is associated with a White finding for Units 1 and 2.  
Inspection Report# : [2008009](#) (*pdf*)

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## Barrier Integrity

**Significance:**  Jun 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Untimely Corrective Actions for Containment Isolation Valve Inadequate Closing Margins**

Green: A self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, was identified for untimely corrective action for containment isolation valves (CIVs) which could spuriously open during an event requiring containment isolation. Specifically, the licensee had not completed an extent of condition review, from a previously reported event, to identify other CIVs which could spuriously open. The licensee immediately declared the Unit 1 CIVs inoperable and took actions through plant modifications and procedural alignment changes necessary to restore operability. CIV operability was not required because Unit 2 was in Mode 5, but similar changes were made on Unit 2 CIVs prior to Unit 2 re-entering Mode 4 when CIV operability was required.

This finding is more than minor because it affects the availability, reliability, and capability of the containment in that CIVs may not remain closed when required during design basis accidents and is related to the containment isolation attribute of the Barrier Integrity cornerstone. Because the 2008 CIV deficiency revealed itself through a change in functionality of equipment, this issue is considered self-revealing. The violation was determined to be of very low safety significance (Green) in IMC 0609 SDP Phase 1 screening based on the penetrations involved closed piping within containment such that even if both the inboard and outboard CIVs were to open, a significant breach in the piping would need to occur to provide a viable release pathway. This finding has a cross-cutting aspect of procedures [H.2(c)] in the Resources component of the Human Performance cross-cutting area because the licensee's corrective action program procedures failed to establish timeliness criteria for the reviews. (Section 40A3).

Inspection Report# : [2009003](#) (*pdf*)

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## Emergency Preparedness

**Significance:**  Dec 21, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Biennial exercise was not an adequate test**

The inspectors identified a Green NCV of 10 CFR50.47(b)(14) for failure to conduct a biennial exercise that was technically accurate and challenging, to the extent that it was not an adequate test of the plans, procedures, equipment, and implementation of the licensee's emergency response capabilities. The licensee entered the deficiency into their corrective action program, as Problem Investigation Process (PIP) M-09-04560, M-09-05183, and M-09-05186, and planned to conduct a re-demonstration drill in May 2010. This finding is greater than minor because it is associated with the Emergency Response Organization Performance attribute of the Emergency Preparedness Cornerstone, in that a biennial exercise that is not technically accurate and challenging is not an adequate test of the plans, procedures, equipment, and implementation of the licensee's emergency response capabilities. The finding does not represent an immediate safety concern. This finding was

evaluated using the Emergency Preparedness SDP and determined to be a finding of very low safety significance because there was no loss of planning standard function. The cause of the finding was directly related to the cross-cutting component of work practices in the area of Human Performance, because the licensee did not ensure the supervisory and management oversight of work activities supported nuclear safety

[H.4(c)]. (Section 1EP1)

Inspection Report# : [2009501](#) (*pdf*)

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## Occupational Radiation Safety

**Significance:**  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to properly calibrate area radiation monitors (Section 2OS3)**

The inspectors identified a Green non-cited violation (NCV) of 10 CFR 20.1501(b) for the licensee's failure to ensure that area radiation monitors (ARMs) used for quantitative measurements were calibrated. The licensee failed to complete the detector sensitivity verification with an appropriate radioactive source during the previous two calibrations of the reactor coolant (NC) filter area ARMs. The licensee initiated Problem Investigative Process (PIP) M-09-4036 to evaluate this issue.

The finding is greater than minor because it was associated with the Occupational Radiation Safety cornerstone attribute of Plant Facilities/Equipment and Instrumentation and adversely affected the cornerstone objective in that the failure to properly calibrate the ARMs could compromise the evaluation of radiological hazards causing unintended dose to radiation workers. The finding was determined to be of very low safety significance (Green) because it was not related to ALARA planning, did not involve an overexposure or substantial potential for overexposure, and did not compromise the ability to assess dose. The finding had a cross-cutting aspect of "maintaining long term plant safety" in the area of Human Performance, under the Resources component, because the licensee did not ensure procedures and other resources were available and adequate to assure nuclear safety by maintenance of design margins (i.e. appropriate calibration) and minimization of preventative maintenance deferrals (i.e. allowing for critical steps to be marked N/A, effectively deferring the calibration until the next calibration cycle) [H.2(a)]. (Section 2OS3).

Inspection Report# : [2009004](#) (*pdf*)

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## Public Radiation Safety

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## Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## Miscellaneous

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