

## McGuire 2

### 2Q/2005 Plant Inspection Findings

#### Initiating Events

**G****Significance:** Mar 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Comply With RCS Leakage Detection TS for Containment Radiation Gaseous Monitors**

A non-cited violation of Technical Specification (TS) 3.4.15, Reactor Coolant System (RCS) Leakage Detection Instrumentation, was identified by the inspectors for failing to take actions required for containment radiation gaseous monitors being inoperable. Specifically, the monitors were unable to detect a 1 gpm RCS leak in 1 hour due to current activity concentrations (i.e., < 0.1 percent failed fuel) and TS required Actions B.1 (24-hour containment atmosphere sample) or B.2 (24-hour RCS water inventory balance) were not performed. The finding is greater than minor because the containment particulate and gas channel radiation monitors were not capable of performing the design bases function of alerting control room operators of elevated reactor coolant system unidentified leakage, for an extended period of time. This inoperability resulted in a potential impact on reactor safety and adversely affected the availability and reliability of the barrier integrity equipment performance attribute of the initiating events cornerstone. The finding was of very low safety significance because other methods of reactor coolant system leak detection were available to the licensee and no actual leakage above 1 gpm was indicated through the reactor coolant system water balance surveillance. This issue contained elements of problem identification and resolution, as well as human performance, in that licensee operations and engineering personnel determined the radiation monitors to be operable without consideration of all available information. (Section 1R15)

Inspection Report# : [2005002\(pdf\)](#)**G****Significance:** Mar 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Have Adequate Surveillance Procedures for RCS Leakage Detection Instrumentation**

A non-cited violation of TS 5.4.1.a was identified by the inspectors for failing to establish, implement, and maintain adequate Reactor Coolant System Leakage Detection Instrumentation surveillance procedures for surveillance requirement (SR) 3.4.15.2, channel operational test of containment atmosphere radioactivity monitor; SR 3.4.15.3, channel calibration of containment floor and equipment sump (F&ES) level monitoring system; SR 3.4.15.4, channel calibration of containment atmosphere radioactivity monitor; and SR 3.4.15.5, channel calibration of containment ventilation condensate drain tank (VCDT) level monitor. Procedures for containment radiation particulate and gas monitors had not set the alarms to leakage values equivalent to 1 gallon per minute in 1 hour and had not tested the end device used by the operators to provide alarm indication of potentially excessive reactor coolant system unidentified leakage for multiple containment leakage monitors, including level indication (F&ES and VCDT) and radiation monitors. The finding was greater than minor because the surveillance procedures had not provided assurance that the necessary quality of systems or components were maintained. Consequently, this resulted in a potential impact on reactor safety and adversely affected the availability and reliability of the barrier integrity equipment performance attribute of the initiating events cornerstone. The finding was of very low safety significance because excessive leakage had not existed based on reactor coolant inventory water balances and that the alarm indication functioned properly when tested. This issue contained elements of problem identification and resolution, in that the licensee's operability determination failed to adequately evaluate whether surveillance requirements had been met and actions to determine the "time to alarm" given current RCS activity levels were not prompt. (Section 1R22b.(1))

Inspection Report# : [2005002\(pdf\)](#)**G****Significance:** Nov 05, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Corrective Action for Plant Equipment Issues - Two Examples**

The inspectors identified the first example of a non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, Corrective Action, for failure to thoroughly evaluate and take timely corrective actions to resolve a problem with the Instrument Air (VI) supply to the actuator of steam admission valve 2SA-49AB, steam supply from the "B" steam generator to the Unit 2 turbine driven auxiliary feedwater pump (TDCAP). Specifically, following identification of a nitrogen leak into the redundant VI supply for the actuator of steam admission valve 2SA-49AB, the licensee isolated the redundant instrument air supply which backs up the nitrogen supply that maintains the TDCAP steam admission valve in the closed position. Subsequently, high nitrogen usage depleted the available nitrogen and allowed 2SA-49AB to open and inadvertently start the TDCAP. This auxiliary feedwater addition to all four steam generators resulted in an overpower condition and required operator action to mitigate the reactivity event. This finding was considered more than minor because it resulted in an inadvertent TDCAP start which delivered flow to all four steam generators. This caused an over-power condition in the reactor; thereby, affecting the Initiating Events Cornerstone objective by increasing the likelihood of events that upset plant stability. The finding was determined to be of very low safety significance because the operators implemented immediate manual actions to maintain reactor power less than 102% rated thermal power and the TDCAP

was able to perform its design function at all times due to the fail-safe design of the valve actuator to open. (Section 40A2b.(3).1)

The inspectors identified a second example of a non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, Corrective Action, for failure to take adequate corrective actions to preclude repetitive issues with spent fuel pool (KF) cooling pump motor bearings. Specifically, repetitive challenges to KF pump motor bearings due to inadequate lubrication issues have resulted in increased unavailability of the pumps due to failures and increased unreliability of the system to meet its intended function. This finding was determined to be more than minor, in that it affected the mitigating system cornerstone objective by affecting the availability and reliability of the KF cooling system to maintain the spent fuel pool within the design limits. The improper venting of the spent fuel cooling pump motor oil level resulted in the repetitive failures of the pump motor. Failure of the pump motor adversely affects the ability to reliably maintain cooling in the spent fuel pool. This issue was determined to be of very low safety significance (Green) due to the availability of a redundant SFP cooling pump and because the allowable temperature limits were not exceeded. (Section 40A2c.(3).1)

Inspection Report# : [2004008\(pdf\)](#)

## Mitigating Systems

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**Significance:** Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Have Adequate Procedures to Implement Fire Mitigation Actions For Containment**

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

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

Inspection Report# : [2005003\(pdf\)](#)

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**Significance:** Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Have Adequate Procedures to Implement SLC Test Requirements for Fire Protection Sprinklers**

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

The finding is greater than minor because the finding is associated with both a degradation in the fire protection defense in depth feature and an increase in the likelihood of an initiating event, in that, in the event of a U2 annulus fire, the cables affected by the obstructed sprinklers include those which could cause all four reactor coolant pumps to trip, consequently causing a reactor trip. The finding was determined to be of very low safety significance due to the low number of ignition sources and the availability of one complete safe shutdown train. This issue contained elements of both problem identification and resolution, as well as human performance. The operators failed to properly identify and correct deficiencies associated with the sprinklers, such as obstructions, as specified by the Selected Licensee Commitments (SLC) requirements. In addition, following the discovery of this finding, several procedural issues were found. (Section 40A5.2)

Inspection Report# : [2005003\(pdf\)](#)

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**Significance:** Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

### **MSIV 2SM-1 Fails to Close**

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

The finding is considered greater than minor because it had a direct impact on the MSIV to perform its safety function, which is to close during a high energy line break or steam generator tube rupture. The finding affects both the Mitigating Systems and Barrier Integrity cornerstones, in that the failure to close impacts the equipment performance (reliability, availability) attribute and containment isolation (minimization of radiological releases) attribute, respectively. Based on the results of the Phase 3 SDP analysis, the finding is considered of very low safety

significance. This issue contained elements of problem identification and resolution, as it involved failures to properly evaluate data and deficiencies associated with the MSIVs; therefore, failing to take prompt corrective action to prevent recurrence of adverse conditions and preclude the valve from becoming inoperable. (Section 40A5.3)

Inspection Report# : [2005003\(pdf\)](#)

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**Significance:** Sep 11, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to comply with design control for a design assumption associated with the nuclear service water system**

A non-cited violation of 10CFR50, Appendix B, Criterion III was identified by the inspectors for inadequate design control involving an assumption that supported nuclear service water flow following a seismic event. The assumption was that non-seismic condenser circulating water pipe would be available for an extended period of time after a seismic event as the discharge path for nuclear service water train A. Similar to Example 3.a. of Inspection Manual Chapter 0612, this issue is more than minor because it affects the mitigating systems cornerstone objective to ensure reliability of systems that respond to initiating events and associated attributes of design control and protection from external factors (seismic). Following the identification of the issue, the licensee performed a seismic evaluation of the piping and determined that it would sufficiently perform the relied upon minimal service water flow function after a seismic event. Consequently, the issue was determined to be of very low safety significance. (Section 1R15)

Inspection Report# : [2004005\(pdf\)](#)

**Significance:** SL-IV Sep 11, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to obtain a license amendment prior to implementing an unreviewed safety question associated with the nuclear service water system**

The inspectors identified a non-cited violation of 10CFR50.59 for failure to obtain a license amendment prior to implementing a change to plant procedures that involved an unreviewed safety question. The unreviewed safety question dealt with extending the availability of non-seismic condenser circulating water piping to perform a safety-related function following a seismic event. This issue is more than minor because it would require NRC review prior to implementation. A subsequent engineering evaluation determined that the non-seismic piping would not collapse or kink, and although it may leak, it will provide the necessary minimal service water flow function. Since the technical issue was determined to be of very low safety significance, the regulatory significance was categorized as a Severity Level IV violation. (Section 40A2b.(1))

Inspection Report# : [2004005\(pdf\)](#)

**Significance:** SL-IV Sep 11, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to obtain a license amendment prior to implementing a design change to the facility associated with the auxiliary feedwater system**

A non-cited violation of 10CFR50.59 was identified by the inspectors for changing the design of the auxiliary feedwater system as described in the Updated Final Safety Analysis Report without performing a safety evaluation or obtaining a Technical Specification change. The change reduced the required number of trains of auxiliary feedwater from three independent trains to two independent trains to safely shutdown the reactor.

This failure to perform a safety evaluation and submit a Technical Specification change is more than minor because it would require an NRC review prior to implementation. Because there was no evidence to indicate that the licensee had used the change the safety significance was determined to be very low. Consequently, the regulatory significance was categorized as a Severity Level IV violation. (Section 40A2b.(2))

Inspection Report# : [2004005\(pdf\)](#)

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**Significance:** Sep 11, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Separation and Protection of Cables Associated With Redundant Trains of Instrumentation Located in the Same Fire Area**

A non-cited violation of Unit 1 Operating License Condition 2.C.4 and Unit 2 Operating License Condition 2.C.7 was identified by the inspectors for failure to comply with McGuire's approved fire protection program and 10 CFR Part 50, Appendix R, Section III.G.2. Specifically, Train A and Train B cables for the primary and backup power supplies for all four reactor protection system (RPS) channels were routed in close proximity in Room 803A (Unit 1 Fire Area 15/17) and Room 805A (Unit 2 Fire Area 16/18). The cables did not have adequate protection (i.e., 20-foot separation or fire barriers) to remain free of fire damage in the event of a fire. The licensee entered this issue into its corrective action program. The finding is greater than minor because it is associated with the protection against external factors attribute, and degraded the reactor safety mitigating systems cornerstone objective. The finding degraded the defense-in-depth for fire protection. This finding is of very low safety significance because the likelihood of a fire, in either room 803A or 805A, that would damage all four reactor protection system channels was relatively low due to the small ignition sources and the horizontal distance of the ignition sources from the cables. (Section 40A5)

Inspection Report# : [2004005\(pdf\)](#)

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## Barrier Integrity

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## Emergency Preparedness

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## Occupational Radiation Safety

**Significance:**  Mar 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Follow Procedural Guidance for Conducting ISFSI Radiation Surveys**

The inspectors identified a non-cited violation of Technical Specification 5.4.1(a) for failure to follow radiation protection procedures used to demonstrate compliance with 10 CFR Parts 20 and 72. Specifically, on August 24, 2004, Independent Spent Fuel Storage Installation (ISFSI) area dose rate surveys were conducted using portable radiation monitoring instrumentation, a RO-20 ion chamber survey meter, which did not cover the lower range of radiation levels expected (i.e., less than 0.05 millirem per hour), for selected boundary trending points. Further, the dose rate values documented (i.e., less than 0.1 mrem/hr) for the subject trending point locations, did not allow verification that the established procedural limits used to demonstrate compliance with 10 CFR Parts 20 and 72 requirements were met. This finding is more than minor in that the failure to accurately monitor and properly evaluate the quarterly dose rate results could prevent identification of unexpected/elevated dose rates associated with ISFSI operations and is associated with the Program and Process attribute of the Occupational Radiation Safety

Cornerstone. The finding affects the cornerstone objective to prevent/minimize radiation exposure to personnel. The issue is of very low safety significance because the procedurally established dose rate limits are based on conservative occupancy factors, and results of proper dose rate surveys conducted prior and subsequent to the subject date were within established dose rate limits. (Section 2OS1)

Inspection Report# : [2005002\(pdf\)](#)

**Significance:**  Mar 31, 2005

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

### **Failure to Provide Adequate Breathing Air Capacity for Supplied-Air Respiratory Equipment**

A self-revealing non-cited violation of 10 CFR 20.1703(e) was identified for use of inadequate in-service breathing air (VB) system equipment to supply 'Delta Suit' respiratory protective equipment. Specifically, on March 25, 2004, available VB system capacity was inadequate to supply adequate air flow to six workers using supplied-air 'Delta Suits' for steam generator (SG) work activities. The finding is more than minor in that it is associated with the Occupational Radiation Safety Cornerstone Plant Equipment and Instrumentation attribute and adversely affects the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radioactive material during routine civilian nuclear reactor operations. The issue is of very low safety significance because the flow monitoring equipment used to identify degraded or failed VB system operations alerted responsible staff. The subject SG workers immediately ceased work activities and exited the work area without any unexpected internal contamination or resultant doses. (Section 2OS3)

Inspection Report# : [2005002\(pdf\)](#)

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## Public Radiation Safety

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## Physical Protection

[Physical Protection](#) information not publicly available.

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## Miscellaneous

**Significance:** N/A Nov 05, 2004

Identified By: NRC

Item Type: FIN Finding

### PI&R SUMMARY

Overall, the licensee maintained an effective program for the identification and correction of conditions adverse to quality. The licensee was effective at identifying problems at a low threshold and entering them into the Corrective Action Program (CAP). In general, the licensee consistently prioritized issues in accordance with their CAP and routinely performed adequate evaluations that were technically accurate and of sufficient depth. Minor problems were identified related to thoroughness of corrective action program issue documentation. The inspectors considered the licensee's CAP tracking program adequately supported tracking of identified issues, as well as the proposed corrective actions to resolve problems and implement improvement initiatives. The system also supported the ability to perform efficient and productive CAP trending at a variety of plant employee levels.

Formal root cause evaluations for significant conditions adverse to quality were thorough and detailed. Corrective actions developed for lower level root and contributing causes were generally timely, effective, and commensurate with the safety-significance of the issue. Although the licensee incorporated a wide variety of root cause techniques, the use of simplistic root and apparent cause evaluations techniques for lower level Problem Investigation Process reports (PIPs), such as change analysis, could improve the reliability of apparent causes for some lower level issues and provide improved basis for PIP documentation. Several examples were identified where immediate corrective actions were not through or timely, as well as where vendor oversight could have been improved.

The licensee's periodic self-assessments and audits were effective in identifying deficiencies in the CAP and covered all areas of plant performance. Corrective actions for previous performance examples were being actively monitored within self-assessments and audits of the CAP. Overall, the ability to perform critical self-assessments was considered an effective program attribute, especially when identifying repetitive equipment issues. Assessments were also effective in evaluating human performance areas for improvement, which indicated an emphasis on continuous improvement. With few exceptions, reviews of sampled operating experience information were comprehensive. Improved review of operating experience between other sites from the same utility was noted.

Site management was adequately involved in the CAP and focused appropriate attention on significant plant issues. Previous non-compliance issues documented as non-cited violations were properly tracked and resolved via the corrective action program. The results of the last comprehensive corrective action program audit conducted by the licensee were properly entered and dispositioned in the corrective action program. Improvements were seen in the area of trending reviews identifying areas warranting increased management attention and focus. In one specific area of corrective actions for previous containment cleanliness issues, the licensee was not effective in precluding NRC identification of foreign material inadvertently left in the containment.

Based on discussions with plant personnel and the low threshold for items entered in the corrective action program database, the inspectors concluded that workers at the site generally felt free to raise safety concerns to their management and that a safety conscious work environment existed.

Inspection Report# : [2004008\(pdf\)](#)

Last modified : August 24, 2005