

# Grand Gulf 1

## 3Q/2009 Plant Inspection Findings

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### Initiating Events

**Significance:**  Jun 23, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Respond to Control Room Alarms in Accordance with Plant Procedures**

A self-revealing noncited violation of Technical Specification 5.4.1(a) was reviewed involving a failure to follow the fire alarm response procedure during a fire in the reactor feedwater pump area. The operators failed to investigate the source of a smoke alarm for an hour, allowing a fire to develop beyond the incipient stage before it was discovered. On November 17, 2008, a fire ignited in oil-soaked insulation on the reactor feedwater Pump B. After two weeks of plant operation following a refueling outage, during the November 17 shift turnover meeting, a fire alarm was received in the control room and was acknowledged by an operator. No notifications were made to the shift manager, and no operator or fire brigade member was dispatched. One hour after shift turnover, during normal operator rounds the turbine building operator discovered the fire in the reactor feedwater pump room. The fire brigade was dispatched to extinguish the fire. The licensee entered this condition in the corrective action program as condition report CR-GGN-2008-06584.

The finding was more than minor because it was associated with the initiating events cornerstone attribute of human performance and affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The finding was assessed by performing a bounding analysis using Appendix M of Inspection Manual Chapter 0609. The bounding analysis indicated that the change in core damage frequency would be  $4.24 \times 10^{-7}$  over a 1-year assessment period, indicating that this finding was of very low safety significance. This finding has a crosscutting aspect in the area of human performance with a work practices component for failure to use proper self checking techniques commensurate with the risk of the assigned task to ensure the work is performed safely because operators failed to use self checking techniques when acknowledging the reactor feedwater pump fire alarm [H.4(a)] (Section 4OA3).

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

**Significance:**  Feb 12, 2009

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Failure to Implement Procedure Requirements for Preventive Maintenance Strategy Development**

A Green self revealing finding was identified for the failure to implement maintenance procedure requirements. Specifically, in June 2007, an incorrect preventive maintenance template was applied to the main transformer auxiliary power transfer switch resulting in a less than optimal preventive maintenance strategy. This was subsequently determined to be a contributing cause to the January 12th reactor scram. This issue is entered in the corrective action program as condition Report 2008 0174.

The performance deficiency associated with this finding is the failure of maintenance and engineering personnel to implement the requirements of Procedure EN-DC-335, "PM Basis Template," Section 5.2, "PM Basis Template Development." The finding is more than minor because it is associated with the equipment performance attribute of the initiating events cornerstone and affects the cornerstone objective to limit those events that upset plant stability. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding is determined to have very low safety significance because it did not result in exceeding the technical specification limit for identified reactor coolant system leakage, did not affect mitigation systems, did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available; and did not increase the likelihood of a fire or internal/external flood. The finding has a cross cutting aspect in the area of human performance associated with work practices, in that the supervisory and management oversight of work activities were not employed such that nuclear safety was supported [H.4.(c)] (Section 4OA4).

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

**Significance:**  Feb 12, 2009

Identified By: NRC

Item Type: FIN Finding

### **Failure to Implement Procurement Engineering Procedure Requirements**

A Green self revealing finding was identified for the failure of engineering and maintenance personnel to implement procurement engineering procedure requirements. Specifically, in January, 2007 a procurement engineering evaluation determined that a difference in part numbers provided by a vendor was an administrative part number change. Consequently, a current transformer with a slightly different form, fit, and operating characteristic was installed in the generator/unit differential trip circuitry. This' combined with other unknown circuit deficiencies and grid reactive load anomalies, resulted in a generator trip and reactor scram on March 21, 2008. The finding is entered in the corrective action program as Condition Report 2008-01476.

The performance deficiency associated with this finding is the failure of procurement engineering personnel to implement the requirements of Procedure EN-DC-313, "Procurement Engineering Process," Section 5.6, "Administrative Part Number Changes," resulting in a less than optimal replacement part for a current transformer in the Unit/Generator differential trip circuitry. The finding is more than minor because it is associated with the equipment performance attribute of the initiating events cornerstone and affects the cornerstone objective to limit those events that upset plant stability. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding is determined to have very low safety significance because it did not result in exceeding the technical specification limit for identified reactor coolant system leakage, did not affect mitigation systems, did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available; and did not increase the likelihood of a fire or internal/external flood. The finding has a cross cutting aspect in the area of human performance associated with decision making in that procurement engineering did not use conservative assumptions and adopt a requirement to demonstrate a proposed action is safe to proceed rather than to demonstrate that an action is unsafe to disprove the action [H.1.(b)] (Section 4OA4).

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

**Significance:**  Feb 12, 2009

Identified By: NRC

Item Type: FIN Finding

### **Failure to Implement Preventive Maintenance Procedure Requirements**

A Green self revealing finding was identified for the failure of to implement maintenance procedure requirements. Specifically, between 2002 and 2008, neither the preventive maintenance optimization program, nor the turbine 10-year plan prescribed a preventive maintenance strategy for the thyristor voltage regulator control portion of the main generator voltage regulating system. Consequently, on October 26, 2008, an under-excitation condition existed in the main generator following transfer from automatic to manual voltage regulator control, resulting in a generator and turbine trip and a reactor scram. The finding is entered in the corrective action program as Condition Report 2008-6241.

The performance deficiency associated with this finding is the failure of maintenance and engineering personnel to implement the requirements of Procedure EN-DC-324, "Preventive Maintenance Programs," Section 5.2, "Process Overview," and Procedure EN-DC-335, "PM Basis Template," Section 5.2, "PM Basis Template Development." The finding is more than minor because it is associated with the equipment performance attribute of the initiating events cornerstone and affects the cornerstone objective to limit those events that upset plant stability. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding is determined to have very low safety significance because it did not result in exceeding the technical specification limit for identified reactor coolant system leakage, did not affect mitigation systems, did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available; and did not increase the likelihood of a fire or internal/external flood. The finding has a cross cutting aspect in the area of human performance associated with decision making, in that a systematic process was not employed for risk significant decision making and that roles and authority for decision making was not formally defined [H.1.(a)] (Section 4OA4).

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

**Significance:** G Dec 31, 2008

Identified By: Self-Revealing

Item Type: FIN Finding

### **Trip of a Reactor Recirculation Pump During Pump Up-shift to Fast Speed Due to Ineffective Corrective Actions**

The inspectors reviewed a self-revealing Green finding involving a recirculation pump trip during pump up-shift to fast speed due to ineffective corrective actions. The plant had recently replaced the recirculation motor on Pump A during the refuelling outage and during investigation determined that the instantaneous over-current trip for the breaker had drifted low. The inspectors performed a review of condition reports and determined that reactor recirculation Pump B had tripped following motor replacement for the same reason in September 2007. The licensee entered this issue into the corrective action program as Condition Report CR-GGN-2008-06269.

The finding was more than minor because it was associated with the initiating events cornerstone attribute of equipment performance and affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to be of very low safety significance (Green) since it did not contribute to loss of function of mitigating equipment. The cause of this finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program in that the licensee failed to perform a thorough evaluation of a problem that resulted in a plant transient such that the resolution properly addressed the cause and extent of condition [P.1(c)]. (Section 1R20)

Inspection Report# : [2008005](#) (*pdf*)

**Significance:** G Dec 31, 2008

Identified By: Self-Revealing

Item Type: FIN Finding

### **Automatic Reactor Scram Caused by an Operator Inadvertently Closing Steam Supply Valves to the Reactor Feed Pump Turbine**

The inspectors reviewed a self-revealing Green finding involving an automatic reactor scram caused by an operator inadvertently closing steam supply valves to the reactor feed pump turbine. Site personnel investigating the scram determined that an operator had incorrectly performed actions for the reactor feed Pump B turbine on the reactor feed Pump A turbine control switches at a local panel. The operator inadvertently closed the steam supply valves to the reactor feed Pump A turbine resulting in a total loss of feedwater flow and low reactor water level scram. The licensee entered this issue into the corrective action program as Condition Report CR-GGN-2008-06195.

The finding was more than minor because it was associated with the initiating events cornerstone attribute of human performance and affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the inspectors concluded that an evaluation was required by the regional senior reactor analyst, because the finding impacted both the initiating event and mitigating systems cornerstone. The senior reactor analyst performed a Phase 3 analysis and determined the issue was very low safety significance (Green). The cause of this finding has a crosscutting aspect in the area of human performance associated with work practices because the operator failed to use proper self-checking techniques while performing actions to place feed Pump B in the standby lineup [H.4(a)]. (Section 4OA3)

Inspection Report# : [2008005](#) (*pdf*)

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## **Mitigating Systems**

**Significance:** G Sep 23, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Monitor Performance of a Maintenance Rule Scoped System**

Green. The inspectors identified a Green noncited violation of 10 CFR Part 50.65(a)(2) involving the failure to

adequately monitor the performance of a maintenance rule scoped system. The licensee's maintenance rule program required evaluation of the area radiation monitoring system for classification as a maintenance rule (a)(1) system after three failures within eighteen months. The licensee had identified two functional failures of the residual heat removal heat exchanger 'A' hatch radiation monitor in June and July 2008. The inspectors identified three other instances of functional failures on components that were used in plant emergency operating procedures and emergency preparedness procedures. These failures were not included in the licensee's maintenance rule database. A total of five functional failures occurred in system components before the licensee considered evaluation of area radiation monitoring as a maintenance rule (a)(1) system in September 2009. The licensee entered this condition in the corrective action program as condition reports CR-GGN-2009-04853 and CR-GGN-2009-04857.

The finding was more than minor because it was similar to Inspection Manual Chapter 0612, Appendix E, Example 7.d, in that equipment performance problems were such that effective control of performance or condition through appropriate preventive Maintenance Under (a)(2) could not be demonstrated. In addition, it affected the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding was characterized under the significance determination process as having very low safety significance because the maintenance rule aspect of the finding did not cause an actual loss of safety function of the system nor did it cause a component to be inoperable. There is no crosscutting aspect associated with this performance deficiency since the cause of this issue does not reflect current licensee performance. (Section 1R12)

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

**Significance:**  Sep 23, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Maintain Operator Response Times to Fires**

Green. The inspectors identified a Green non-cited violation of Technical Specification 5.4.1(a), for failure to ensure that operators can respond in timely manner to safe shutdown panels in the auxiliary building with a fire in the main control room. The inspectors reviewed a condition report associated with response times of operators to a fire in the protected area with Mississippi river at flood stage. The inspectors questioned the adequacy of response times for fire brigade members and the safe shutdown operator in the event of fire in the control room with the designated operators being outside the protected area. The licensee determined a time critical task would not have been completed due to the safe shutdown operator being outside the protected area. The licensee entered this condition in the corrective action program as condition report CR-GGN-2009-01416.

The inspectors determined this finding to be more than minor since it affected the external events attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, it was determined that the finding screened as potentially risk significant due to external events and required the regional senior reactor analyst to perform a Phase 3 evaluation. The senior reactor analyst determined the likelihood that control room abandonment occurs while the safe shutdown operator is out of the protected area is 9.78E-8. The change in core damage frequency is lower than this value and small enough that large early release frequency is not required to be considered. Therefore the issue is (Green) of very low safety significance. The cause of this finding has a crosscutting aspect in the area of problem identification and resolution associated with corrective action program in that the licensee failed to perform an appropriate extent of condition when implementing corrective action associated with fire brigade response issue in 2008 [P.1(c)]. (Section 4OA2)

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

**Significance:**  Jun 23, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Incorporate Design Changes to Protect the Standby Service Water Slab**

The inspectors identified a Green noncited violation of 10 CFR 50 Appendix B, Criterion III involving the failure to incorporate design changes required to limit dynamic loads on the standby service water basin slab. In 1997, the plant

experienced damage to the standby service water basin slabs resulting from unanalyzed dynamic loads. During a standby service water system inspection on April 18, 2009, inspectors observed several different tire tracks on the seismically-designed concrete slab that covers and is integral to the safety-related standby service water basin. The inspectors also noted small placards attached to the basin slabs which prohibited moving vehicles on the slabs, and other signs requiring protective mats under any items placed on the slabs. Plant personnel evaluated the loading of the vehicle and determined that the load limits on the basin slab had not been exceeded. The licensee entered this issue into their corrective action program as Condition Report CR GGN 2009 002087.

The inspectors determined this finding affected the design control attribute of the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In addition, the finding was more than minor because the failure to prevent dynamic loads on the standby service water basin slabs, if left uncorrected, could become more significant safety concern. Using the Manual Chapter of 0609, "Significance Determination Process," Phase 1 Worksheet, this finding was determined to have very low safety significance, because it did not represent an actual loss of a safety function of the standby service water system. There is no crosscutting aspect associated with this performance deficiency since the cause of this issue occurred several years ago and does not reflect current licensee performance (Section 1R04).

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

**Significance:**  Jun 23, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Operability Evaluation for Debris Left in the Condensate Storage Tank**

The inspectors identified a Green noncited violation of 10 CFR Part 50 Appendix B, Criterion V involving a failure to follow procedures which resulted in an inadequate operability evaluation. During the week of May 18, 2009, the site conducted debris removal in the condensate storage tank. This debris removal was necessary because of a failure to remove all debris in the condensate storage tank during their spring 2007 cleanup project. The licensee performed an operability evaluation for objects left in the condensate storage tank which stated that the high pressure core spray system and reactor core isolation cooling would remain operable for all postulated events. Upon review by the inspectors, the operability evaluation did not address several issues including objects left in the condensate storage tank and condensate system return flow to the condensate storage tank following a plant shutdown/scram. The licensee entered this issue into their corrective action program as Condition Reports CR-GGN-2009-02815 and CR-GGN-2009-02837.

This finding is more than minor because the failure to perform an adequate operability evaluation, if left uncorrected, could become a more significant safety concern. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, this finding was of very low safety significance since it did not result in a loss of operability, nor did it screen as potentially risk significant due to a seismic, flooding, or severe weather-initiating event. The cause of this finding had a crosscutting aspect in the area of problem identification and resolution associated with corrective actions because licensee personnel failed to thoroughly identify all materials left in the condensate storage tank during their original operability determination [P.1(a)] (Section 1R15).

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

**Significance:**  Jun 23, 2009

Identified By: NRC

Item Type: FIN Finding

#### **Failure to Perform a Timely Operability Evaluation Following the Discovery of a SSW Fan Failure Mechanism**

The inspectors identified a Green finding involving the failure to perform an operability determination after a new failure mechanism was discovered for standby service water Fan B. The inspectors were performing a follow up review of a condition report that detailed a trip of Division 1 standby service water Fan B. The fan had tripped on start up from the control room on December 31, 2007. The licensee had initially determined the trip was due to a faulty solid state trip device. Subsequent testing in failed to identify a problem with the trip device, and the apparent cause of the fan trip was attributed to reverse rotation of the fan. Operations personnel were not informed of this new information as required by the corrective action program procedure. The licensee entered this issue into their corrective action program as Condition Report CR-GGN-2009-01726.

This finding is more than minor because it was associated with the equipment performance attribute of the reactor safety mitigating systems cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the inspectors determined that the finding had very low safety significance (Green) since it did not represent an actual loss of a safety function of the standby service water cooling towers, nor did it screen as potentially risk significant due to a seismic, flooding, or severe weather-initiating event. The cause of this finding had a crosscutting aspect in the area of human performance associated with work practices in that licensee personnel failed to apply procedural requirements to write a new condition report when new information was acquired related to the trip of the Division 1 standby service water Fan B [H.4(b)] (Section 40A2).

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

**Significance:**  Apr 02, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Preconditioning of Division II Standby Diesel Generator Jacket Water Heat Exchanger**

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for failure to comply with the licensee's Generic Letter 89 13 program, which specifically states that cleaning of heat exchangers covered by this program is prohibited prior to performing an as-found thermal performance test. Specifically, in early 2006, the Division II Standby Diesel Generator (i.e. Emergency Diesel Generator) jacket water cooling heat exchanger was cleaned just prior to performing a five year thermal performance test. The licensee has entered this into their corrective action program as CR-GGN-2009-00904.

This finding is more than minor because it affected the mitigating systems cornerstone attribute of equipment performance of ensuring the availability, reliability, and capability of safety systems that respond to initiating events. Also, using Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, Section 1-3, "Screen for More than Minor – ROP," question 2, the finding is more than minor because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding was determined to have very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a Technical Specification allowed outage time, and did not affect external event mitigation. The inspectors reviewed the finding for cross-cutting aspects and none were identified.

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

**Significance:**  Apr 02, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Non-conservative Bias in Instrumentation Used for Standby Service Water Leak Detection**

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for failure to establish adequate measures for the selection and review for suitability of equipment and processes that are essential to the safety-related functions of structures, systems and components. Specifically, the licensee failed to properly design for pulsation effects on flow rate instrumentation used for leak detection in the Standby Service Water system. This instrumentation is needed to meet licensee commitment 10 CFR Part 50, Appendix A, General Design Criterion 13, "Instrumentation and Control," to monitor trends in the ultimate heat sink basin inventory with the system in operation. The system was designed to detect a leakage rate of 1250 gallons per minute, and alarm in the control room at this leak rate, but due to design inadequacies in the instrumentation, the leak rate would have to exceed 3350 gallons per minute before activating the alarm. The licensee has entered this into their corrective action program as CR GGN 2009-00054.

This finding was more than minor because it affected the mitigating systems cornerstone attribute of equipment performance of ensuring the availability, reliability, and capability of systems that respond to initiating events. Also, using Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, Section 1 3, "Screen for More than Minor – ROP," question 2, the finding is more than minor because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Using the Inspection Manual Chapter

0609, "Significance Determination Process," Phase 1 Worksheets, the finding was determined to have very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a Technical Specification allowed outage time, and did not affect external event mitigation. The finding was reviewed for cross-cutting aspects and none were identified.

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

**Significance:**  Apr 02, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Motor-Operated Valve Calculations Used Non-Conservative Inputs and Methodologies**

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control" for failing to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. Specifically, the licensee used non conservative inputs or methodologies in calculating terminal voltages to safety related motor-operated valve motors that would be required to operate for mitigation of design bases events. The licensee's electrical calculations used non conservative 50 percent locked rotor currents and neglected thermal overload resistance to determine the terminal voltages to safety related motor-operated valves which would predict higher terminal voltages than would actually exist. The calculated terminal voltages were direct design inputs into the applicable motor-operated valves mechanical thrust and torque calculations. The licensee has entered this issue into their corrective action program as CR GGN 2009 00985.

This finding was more than minor because it affected the mitigating systems cornerstone attribute of equipment performance of ensuring the availability, reliability, and capability of systems that respond to initiating events. Also, using Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, Section 1 3, "Screen for More than Minor – ROP," question 2, the finding is more than minor because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding was determined to have very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a Technical Specification allowed outage time, and did not affect external event mitigation. This finding has a cross cutting aspect in the area of Problem Identification and Resolution, in that self assessments are of sufficient depth, are comprehensive, are appropriately objective, and are self critical. The licensee had conducted a Component Design Bases Assessment, LO GLO 2008 00044 in August 2008, and failed to adequately assess an identical finding identified at River Bend Station during their 2008 Component Design Bases Inspection. The licensee had determined that this issue was not applicable at Grand Gulf Nuclear Station.

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

**Significance:**  Apr 02, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Corrective Actions for Replacement of Safety-Related Batteries**

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," for failure to identify and correct a condition adverse to quality related to the seismic qualification of the Division III High Pressure Core Spray safety-related battery. Specifically, the licensee failed to identify an incorrectly installed end bracket after replacement of the Division III safety-related battery in 2002 using procedures, work instructions, and drawings that were supposed to have been corrected after this same issue was identified during a 1997 battery replacement activity. The licensee has entered this into their corrective action program as CR-GGN-2009-00830.

This finding was more than minor because it affected the mitigating systems cornerstone attribute of external events for ensuring the availability, reliability, and capability of systems that respond to initiating events. Also, using Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, Section 1-3, "Screen for More than Minor – ROP," question 2, the finding is more than minor because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding was determined to have very low safety significance (Green) because it was confirmed to not result in a loss of operability or functionality. The finding was reviewed for cross-cutting aspects and none were identified.

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

**Significance:**  Apr 02, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Two Examples of a Failure to Meet 10 CFR Part 50, Appendix B, Criterion XI, "Test Control"**

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," with two examples. Specifically, the team identified that the licensee failed to develop and implement adequate testing programs for Class 1E molded-case circuit breakers, and for the voltage and frequency response of the standby diesel generators that met design or vendor requirements and recommendations. In response, the licensee entered these examples in the corrective action program as CR GGN 2009 01024, and CR GGN-2009-01057.

This finding was more than minor because it affected the mitigating systems cornerstone attribute of external events for ensuring the availability, reliability, and capability of systems that respond to initiating events. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, each example was determined to be of very low safety significance (Green) because they did not represent a loss of system safety function, did not represent an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time, did not represent an actual loss of one or more risk-significant non-Technical Specification trains of equipment for greater than 24 hours, and did not screen as potentially risk-significant due to seismic, flooding, or severe weather. This finding has a cross cutting aspect in the area of Problem Identification and Resolution, in that self assessments are of sufficient depth, are comprehensive, are appropriately objective, and are self critical. The licensee had conducted a Component Design Bases Assessment, LO-GLO-2008-00044 in August 2008, and failed to adequately assess an identical finding identified at River Bend Station during their 2008 Component Design Bases Inspection. The licensee had determined that this issue was not applicable at Grand Gulf Nuclear Station.

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

**Significance:**  Apr 02, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Design Control for Standby Service Water Pump Cables and Electrical Vaults**

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for failure to adequately demonstrate operability for the 4160 volt Standby Service Water Pump kerite cables through adequate testing and analysis in a continuously submerged environment. Furthermore, the environment for these continuously submerged cables exists because each of the two vaults that contain these cables (MH 20 and MH 21) has a design flaw, in that several other vaults gravity drain to them and the design of these vaults did not include a sump pump or other means for water to be removed or drained from them. The licensee has entered this into their corrective action program as CR-GGN-2009-01028.

This finding is more than minor because it affected the mitigating systems cornerstone attribute of design control of ensuring the availability, reliability, and capability of safety systems, and closely parallels Inspection Manual Chapter 0612, Appendix E, Example 3.j, because there was reasonable doubt on the continued operability of the Standby Service Water system. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding was determined to be of very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a Technical Specification allowed outage time, and did not affect external event mitigation. The inspectors determined that the finding has a crosscutting aspect in the area of Problem Identification and Resolution in that the licensee failed to implement Operating Experience directly communicated with a Generic Letter through changes to station processes, procedures, and equipment.

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

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Maintenance Procedures to Maintain Drains on Safety Related Buildings**

The inspectors identified a Green noncited violation of 10 CFR Part 50 Appendix B, Criterion V, involving the failure

to properly clean and inspect the rooftop and associated water drainage systems of the safety-related diesel generator building. The inspectors identified loose, flexible roofing material that could have covered roof drains and result in loss of functionality for all of the standby diesel generators during a design basis heavy rainfall event. The licensee entered this issue into the corrective action program as Condition Report CR-GGN-2009-00429.

This finding is more than minor since it affects the protection against external events attribute of mitigating system cornerstone. The roofing material and debris represented a degrading condition that if left uncorrected could have affected the availability, reliability, and capability of the standby diesel generators to respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding screened as potentially risk significant due to a flooding or severe weather initiating event, which then required a Phase 3 analysis. The Phase 3 analysis calculated a change in core damage frequency of  $3.04E-8$ /yr, which represented very low safety significance.

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

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Operability Evaluation for Standby Service Water Cooling Tower Drift Eliminators**

The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, involving a failure to perform an adequate operability evaluation. The inspectors identified non-conservatisms in the evaluation with regards to standby service water cooling tower drift rate, a failure to consider external events design basis impacts, and a failure to properly classify the condition as a substantially degraded, non-conforming condition, because it was subsequently determined that the deficiency could increase drift losses by a factor of ten. The licensee entered this issue into the corrective action program as Condition Report CR-GGN-2009-01222.

This finding is more than minor because the failure to perform adequate operability evaluations, if left uncorrected, could become a more significant safety concern because the loss rates could become worse over time. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, this finding was of very low safety significance since it did not result in a loss of operability, nor did it screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The cause of this finding has a crosscutting aspect in the area of human performance associated with decision making because licensee personnel failed to use conservative assumptions and did not verify the validity of the underlying assumptions used in making safety-significant decisions.

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

**Significance:**  Dec 31, 2008

Identified By: NRC

Item Type: FIN Finding

### **Inadequate Fire Drill Critique**

The inspectors identified a finding for fire brigade performance deficiencies that were not identified by the licensee during a fire drill critique. The inspectors identified several deficiencies during the drill including issues relating to command and control, fire fighting strategy and use of fire fighting equipment. The inspectors provided feedback to plant personnel on the identified performance issues and the inadequate drill evaluation. The licensee entered this issue into the corrective action program as Condition Report CR GGN 2008 06522.

This finding was more than minor because it was associated with the protection against external factors attribute of the reactor safety mitigating systems cornerstone objective and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," was used to analyze the finding since the inadequate critique had an adverse effect on fire brigade effectiveness, in relation to defense-in-depth strategies. Manual Chapter 0609, Appendix F states that findings associated with the onsite manual fire brigade are excluded. Therefore, in accordance with Manual Chapter 0609, the safety significance was determined by regional management review. Regional management concluded that the finding was of very low safety significance because it reflected fire brigade performance during a training drill, rather than during an actual fire. The cause of this finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because the licensee failed to have a low enough threshold in identifying performance issues associated with a plant fire drill [P.1(a)]. (Section 1R05)

Inspection Report# : [2008005](#) (pdf)

**Significance:**  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Monitor Performance of the Engineering Safety Features Electrical Switchgear and Battery Room Ventilation System**

The inspectors identified a noncited violation of 10 CFR 50.65(a)(2) for the failure to adequately monitor the performance of the engineering safety features electrical switchgear and battery room ventilation system. The inspectors identified a condition report from March 2004 that had not been screened and evaluated in the maintenance rule database as a maintenance preventable functional failure. The condition report identified a room cooler that had tripped due to excessive current on the fan motor because an incorrectly sized sheave was installed during previous maintenance. The licensee entered this issue into the corrective action program as Condition Report CR GGN 2008 02219.

The inspectors determined that this finding was more than minor since the engineering safety features electrical switchgear and battery room ventilation system was not placed in (a)(1) monitoring status in a timely manner. In addition, the finding was more than minor since violations of 10 CFR 50.65(a)(2) necessarily involve degraded system performance, which, if left uncorrected, could become a more significant safety concern. This finding has very low safety significance because the maintenance rule aspect of the finding did not lead to an actual loss of safety function of the system or cause a component to be inoperable, nor did it screen as potentially risk significant due to a seismic, flooding, or severe weather-initiating event. (Section 1R12)

Inspection Report# : [2008005](#) (pdf)

**Significance:**  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

**Two Examples of Inadequate Operability Evaluations**

The inspectors identified a Green noncited violation of 10 CFR Part 50 Appendix B, Criterion V involving two examples of a failure to follow procedures which resulted in inadequate operability evaluations. The first example involved an inadequate evaluation of foreign material in the condensate storage tank. The evaluation relied on an assumption that the high-pressure core spray and reactor core isolation cooling pumps would not be damaged by metal debris entrained in the pumps suction. The second example involved an inadequate evaluation of the structural integrity of the standby service water cooling towers that only considered the loss of structural support from a single beam. The licensee entered these issues into the corrective action program as Condition Reports CR GGN 2008 05685 and CR GGN 2008 06044.

This finding is more than minor because the failure to perform adequate operability evaluations, if left uncorrected, could become a more significant safety concern. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, this finding was of very low safety significance since it did not result in a loss of operability, nor did it screen as potentially risk significant due to a seismic, flooding, or severe weather-initiating event. The cause of this finding has a crosscutting aspect in the area of human performance associated with decision making because licensee personnel failed to use conservative assumptions and did not verify the validity of the underlying assumptions used in making safety-significant decisions [H.1(b)]. (Section 1R15)

Inspection Report# : [2008005](#) (pdf)

**Significance:**  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Prevent Recurrence of Standby Service Water Corrosion**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, involving a failure to take corrective actions to prevent recurrence of severe corrosion in piping hangers, piping supports, and piping in the standby service water basin cooling towers. Significant corrosion of the standby service water supports in October

2008 had been previously identified by plant personnel during a ten-year in-service inspection on October 3, 1993. At that time, plant personnel determined this to be a significant degraded condition of a safety related system, requiring replacement of the piping and associated supports. The licensee entered this issue into the corrective action program as Condition Report CR-GGN-2008-05434.

This finding was more than minor because the corrosion represented a degrading condition that if left uncorrected could become more significant safety concern. The finding was also more than minor because it was associated with the protection against external factors attribute of the reactor safety mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, this finding was of very low safety significance since it did not represent an actual loss of safety function, nor did it screen as potentially risk significant due to a seismic, flooding, or severe weather-initiating event. (Section 40A3)

Inspection Report# : [2008005](#) (*pdf*)

**Significance:**  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **Untimely Corrective Actions Following Identification of Degrading Standby Service Water Supports**

The inspectors identified a Green noncited violation of 10 CFR Part 50 Appendix B, Criterion XVI, involving the failure to take timely corrective actions for corrosion on distribution beam structural support posts in the standby service water basin cooling towers. The licensee entered this issue into the corrective action program as Condition Report CR-GGN-2008-05434.

The finding was more than minor because it was associated with the protection against external factors attribute of the reactor safety mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to be of very low safety significance since it did not represent an actual loss of safety function of the standby service water cooling towers, nor did it screen as potentially risk significant due to a seismic, flooding, or severe weather-initiating event. The cause of this finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because licensee personnel failed to identify issues completely, accurately, and in a timely manner commensurate with their safety significance [P.1(a)]. (Section 40A3)

Inspection Report# : [2008005](#) (*pdf*)

**Significance:**  Nov 06, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **B.5.b. Phase 2 and 3 Mitigating Strategy**

This finding, affecting the Mitigating Systems Cornerstone, is related to mitigative measures developed to cope with losses of large areas of the plant; in response to Section B.5.b. of the February 25, 2002, Interim Compensatory Measures (ICM) Order (EA-02-026) and related NRC guidance. This finding has been designated as "Official Use Only - Security-Related Information;" therefore, the details of this finding are being withheld from public disclosure. This finding has no cross-cutting aspect. See inspection report 2008-007 for more details.

Inspection Report# : [2008007](#) (*pdf*)

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## **Barrier Integrity**

**Significance:**  Jun 23, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

## **Failure to Fully Close a LPCS Manual Valve Resulted in Leakage of Water into the Condensate and Refueling Water Storage System**

The inspectors reviewed a self-revealing Green noncited violation of Technical Specification 5.4.1(a) involving a failure to implement the low pressure core spray system operating instruction correctly. On April 20, 2009, the site was performing a low pressure core spray quarterly surveillance. During the test, the suppression pool level lowered approximately 0.8 inches, which equates to approximately 3600 gallons of water. Plant personnel investigated these anomalies and determined that the low pressure core spray pump had pressurized the condensate and refueling water storage system due to a partially opened manual fill valve. This valve is a chain-fall operated valve and was approximately five turns open. The licensee entered this issue into their corrective action program as Condition Report CR-GGN-2009-02073.

The finding was more than minor because it was associated with configuration control attribute of the reactor safety barrier integrity cornerstone, and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers would protect the public from the radionuclide releases caused by accident or events. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to be of very low safety significance (Green) since it only represents a degradation of the radiological barrier function provided for the auxiliary building. The cause of this finding has a crosscutting aspect in the area of human performance associated with resources in that the operators did not have specific training in chain-fall type valve operation [H.2(b)] (Section 1R22).

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

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Enter a Limiting Condition for Operation for Primary Containment Isolation Valves**

The inspectors identified a Green noncited violation of Grand Gulf Nuclear Station Technical Specifications 3.6.1.3, for failure to enter a limiting condition for operation action statement for primary containment isolation valves. As a result, the limiting condition for operation action statement time was exceeded. The inspectors identified that surveillance test data for the residual heat removal Train A minimum flow valve was missing. The inspectors discovered that operations staff failed to properly review the work order for the valve work, and they had made an assumption the work order had been canceled. The licensee reviewed the identified issue for extent of condition and identified that in addition to a missed postmaintenance stroke test, they had also failed to enter the limiting condition for operation for two containment isolation valves. The licensee entered this issue into the corrective action program as Condition Report CR-GGN-2009-01069.

This finding was more than minor since it affects the configuration control attribute of barrier integrity cornerstone, in that failing to properly test containment isolation valves could affect the assurance that physical design barriers that protect the public from radionuclide releases caused by accidents or events. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to be of very low safety significance (Green) since it did not represent an actual open pathway in the physical integrity of the containment system. The cause of this finding has a crosscutting aspect in the area of human performance associated with work practices, in that the operations shift supervisor and maintenance coordinator failed to perform proper self- and peer-checking and proper documentation of the completed work activity.

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

**Significance:**  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Correct Leaking Reactor Water Cleanup System Primary Containment Isolation Valves**

The inspectors identified a Green noncited violation of 10 CFR Part 50 Appendix B, Criterion XVI, involving the failure to correct leaking reactor water cleanup system primary containment isolation valves. During refuelling Outage 16, plant personnel were performing local leak rate testing of reactor water cleanup backwash containment penetration. Testing determined that these primary containment isolation valves exceeded the allowable leakage rate by greater than 10 times the leakage limits. The inspectors determined that for four consecutive operating cycles, the

site had failed to take corrective actions to correct the excessive leakage through these valves. The licensee entered this issue into the corrective action program as Condition Report CR GGN 2008 05139.

The finding was more than minor because it was associated with systems, structures, and components and the reactor coolant system barrier performance attribute of the barrier integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers would protect the public from radionuclide releases caused by accident or events. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to be of very low safety significance (Green) since it did not represent an actual open pathway in the physical integrity of the containment system. The cause of this finding has a crosscutting aspect in the area of human performance associated with resources in that the licensee failed to take actions to correct a long-standing equipment issue associated with excessive leakage from primary containment isolation valves [H.2 (a)]. (Section 1R20)

Inspection Report# : [2008005](#) (*pdf*)

**Significance:** G Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Properly Monitor Plant Parameters to Control Reactor Coolant System Cooldown Rate**

The inspectors identified a Green finding involving the failure to demonstrate proper monitoring of plant parameters to control reactor coolant system cooldown rate to within expected management standards. The plant experienced a reactor scram from approximately 15 percent power during plant start-up from a refuelling outage due to a total loss of feedwater. Reactor pressure decreased at a faster rate than expected due to low decay heat levels and the injection of relatively cold condensate storage tank water to reactor vessel. The control room supervisor did not give a pressure band after pressure decreased below the low end of the emergency operating procedure band of 800 psig or assign a licensed operator to monitor reactor pressure during the event. The inspectors identified to the operators that the plant was approaching the procedural limit for cooldown rate; operators then closed the inboard main steam isolation valves to prevent exceeding the cooldown rate. The licensee entered this issue into the corrective action program as Condition Report CR GGN 2008 06201.

The finding is more than minor since it affects the human performance attribute of the barrier integrity cornerstone and affects the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, inspectors determined that the finding has very low safety significance (Green) since it did not represent an actual degradation of the radiological barrier function of the reactor coolant system barrier. The cause of this finding has a crosscutting aspect in the area of human performance associated with decision making because control room supervision failed to maintain proper oversight to ensure reactor coolant cooldown rate was maintained within procedural limits [H.4(c)].

Inspection Report# : [2008005](#) (*pdf*)

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## **Emergency Preparedness**

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## **Occupational Radiation Safety**

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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

Last modified : December 10, 2009