

# Grand Gulf 1

## 2Q/2015 Plant Inspection Findings

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### Initiating Events

**Significance:** G Sep 30, 2014

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Failure to Implement Corrective Actions Leads to Automatic Plant Scram**

The inspectors reviewed a self-revealing finding for the licensee's failure to follow procedure EN-LI-102, "Corrective Action Process", Revision 12, which requires the licensee to appropriately complete assigned corrective actions within the prescribed time frame. On March 29, 2014, with Grand Gulf Nuclear Station operating at 87 percent power, a capacitor in a multiplier module of the main turbine overspeed protection circuit failed, causing the load reject relay to actuate. The main turbine control valves closed and an automatic actuation of the reactor protection system occurred, resulting in a plant scram. The root cause analysis noted that a corrective action initially assigned in 2007 in association with a single point vulnerability review was not completed in the prescribed time frame. The corrective action required that the module in question, which contained a single point vulnerability, either be rebuilt so as to reduce the probability that an age-related failure capable of triggering the vulnerability would occur, or replaced with a new design that eliminated the vulnerability altogether. The licensee entered this issue into the corrective action program under Condition Report CR-GGN-2014-03131. Immediate corrective actions following the scram included replacing the failed module with a spare module that had been visually inspected and functionally checked. Long term corrective actions include replacing the module with a component that does not exhibit single point vulnerability. The licensee's failure to follow procedure by failing to appropriately complete assigned corrective actions was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the equipment performance attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective, in that it increased the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Using NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," dated June 19, 2012, the inspectors determined that the issue affected the Initiating Events Cornerstone. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19th, 2012, the finding was determined to be of very low safety significance (Green) because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment would not be available. The finding was a latent issue and is not reflective of present licensee performance; therefore, no cross-cutting aspect was assigned.

Inspection Report# : [2014004](#) (*pdf*)

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### Mitigating Systems

**Significance:** G Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Failure to Take Timely Corrective Actions Associated with Division 1 and 2 Standby Service Water Pump House Ventilation System Due to Degraded Relays**

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action,"

for the licensee's failure to take timely corrective actions to correct a condition adverse to quality associated with the division 1 and 2 standby service water pump house ventilation systems. Specifically, in June 2011, the licensee identified that relays associated with the standby service water system pump house ventilation system failed due to age/environmental degradation, which resulted in an unplanned inoperability of the standby service water system. However, the licensee did not implement timely corrective actions for replacing these relays, which resulted in the inoperability of the division 1 standby service water system in December 2014, and again in January 2015. The licensee documented this issue in their corrective action program as Condition Report CR-GGN-2015-00739. The short-term corrective actions included replacing all of the division 1 and 2 standby service water ventilation pump house relays in February and early March 2015.

The inspectors determined that the failure to take timely corrective actions to replace degraded relays in the standby service water pump house ventilation system was a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the equipment performance attribute of the Mitigating System 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 NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," dated June 19, 2012, and NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power," dated June 19, 2012, the inspectors determined the issue to be of very low safety significance (Green) because all applicable screening questions in Manual Chapter 0609, Appendix A, Exhibit 2, were answered "no." The inspectors determined that this performance deficiency was not indicative of current plant performance, and therefore no cross-cutting aspect was considered.

Inspection Report# : [2015001](#) (pdf)

**Significance:**  Mar 31, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

### **Failure to Follow a Procedure Resulting in the Unplanned Inoperability of the Reactor Core Isolation Cooling System**

The inspectors reviewed a self-revealing, non-cited violation of Technical Specification 5.4.1.a, for failure to follow a procedure which resulted in the unplanned inoperability of the reactor core isolation cooling system. This occurred when licensee technicians tested for continuity between incorrect points, while performing surveillance activities related to the residual heat removal system. This resulted in an invalid group 4 isolation signal and an isolation of the reactor core isolation cooling steam supply. The licensee entered this issue into the corrective action program as Condition Report CR-GGN-2015-01532, and took immediate corrective actions to stop the residual heat removal system surveillance activity and restore the reactor core isolation cooling system to service.

The failure to properly follow the surveillance procedure, which resulted in the unplanned inoperability of the reactor core isolation cooling system, was a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the human performance attribute of the Mitigating Systems Cornerstone. Specifically, the licensee's failure to properly follow the surveillance procedure resulted in the unplanned inoperability of the reactor core isolation cooling system, which adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," dated June 19, 2012, and Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power," Exhibit 2, "Mitigating Systems Screening Questions," dated June 19, 2012, the inspectors determined that the finding was of very low safety significance (Green) in that the issue did not affect the design or qualification of the reactor core isolation cooling system; did not represent a loss of the reactor core isolation cooling system function (in that the isolation could have been promptly reset by procedures, had the system operation been required); and did not represent loss of function for greater than the Technical Specification allowed outage time. The inspectors determined this finding had cross-cutting aspect in the area of human performance

associated with avoiding complacency, in that the I&C technicians did not implement appropriate error reduction tools to ensure the meter was connected to the correct points, which resulted in the invalid group 4 isolation signal, and inoperability of the reactor core isolation cooling system [H.12].

Inspection Report# : [2015001](#) (*pdf*)

**Significance:** G Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Adequately Establish Commercial-Grade Items as Basic Components**

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to verify the suitability of replacement parts that were procured from commercial suppliers.

Specifically, the inspectors noted that none of the tests specified by the licensee were sufficient to ensure that the seismic qualification of an auxiliary relay had been maintained. The finding was entered into the licensee’s corrective action system as Condition Report CR-GGN-2014-05049.

The performance deficiency is more than minor, and therefore a finding, because it was associated with the design control 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. In accordance with IMC 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At-Power,” dated June 19, 2012, Exhibit 2, “Mitigating Systems Screening Questions,” the issue screened as having very low safety significance (Green) because the licensee performed an operability determination, which evaluated the safety impacts of postulated relay chatter during a seismic event, for the applications in which these relays were installed. The licensee’s subsequent operability evaluation determined that potential relay chatter would not impact the safety-related functions of the relays in the applications in which they were installed. Thus, all applicable screening questions in Manual Chapter 0609, Appendix A, Exhibit 2, were answered “no.” A cross-cutting aspect is not being assigned to this finding.

Inspection Report# : [2015001](#) (*pdf*)

**Significance:** G Dec 31, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

**Failure to Assure Quality Installation on RCIC Steam Line**

The inspectors reviewed a self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for failure to assure quality installation of the steam line tubing of the reactor core isolation cooling (RCIC) system. Specifically, the licensee failed to assure that rated performance limits of the ferrule connection, installed at the tee between the steam line and the pressure transmitter tube line, were met during initial installation. This failure resulted in an unplanned inoperability of the RCIC system. The licensee entered this issue into the corrective action program as Condition Report CR-GGN-2014-06792. As an immediate corrective action, the licensee replaced the tubing, the failed transmitter, and recalibrated the instruments. Furthermore, the licensee revised their system operation procedure for the RCIC system. This revision requires all steam isolation valves to be closed during this test, and that system recovery starts by opening Valve 1E51F076 (warming bypass valve around the 1E51F063) to allow adequate warming of the steam lines after isolation.

The inspectors determined that the failure to assure quality installation of the ferrule connection on the steam line flow Transmitter 1E31N083B was a performance deficiency. The performance deficiency is more than minor and therefore a finding because it is associated with the design control attribute of the Mitigating Systems Cornerstone. Specifically, failure to assure steam lines in the RCIC system meet rated performance limits, may result in the unavailability and unreliability of a system that is relied upon to respond to initiating events to prevent undesirable consequences. Using

NRC Inspection Manual Chapter 0609, Appendix A, “The Significance Determination Process for Findings at Power,” dated June 19, 2012, the inspectors determined that the issue required a detailed risk evaluation by the regional senior reactor analyst. This was because the finding represented an actual loss of a safety function due to the RCIC system being a single train system that was out of service for approximately 40 hours for repairs. The senior reactor analyst determined the change to the core damage frequency was  $8.7E-8$ /year, and since the change to core damage frequency was less than  $E-7$ , no evaluation of external events or the large early release frequency was required. The finding was of very low safety significance (Green). The inspectors did not identify a cross-cutting aspect, as the performance deficiency is not reflective of current plant performance.

Inspection Report# : [2014005](#) (*pdf*)

**Significance:**  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Failure to Control Transient Combustible Material in Accordance with a Fire Protection Procedure**

The inspectors identified a non-cited violation of License Condition 2.C(41), “Fire Protection Program,” for the failure to control transient combustibles in accordance with a fire protection program procedure. On August 13, 2014, the inspectors identified unattended transient combustible material stored within a combustible exclusion zone in Fire Zone 1A222 of the auxiliary building 119’ elevation. The inspectors reported the occurrence to the operations shift manager and determined licensee personnel had not performed a transient combustible evaluation of the contents of the carts. The licensee documented this issue in Condition Report CR-GGN-2014-05842. As an immediate corrective action, the licensee moved the material to an appropriate designated area.

The failure to control transient combustible material in accordance with the approved fire protection program is a performance deficiency. The performance deficiency was more than minor and therefore a finding because it was associated with the protection against external factors attribute of the Mitigating System Cornerstone and adversely affected the cornerstone objective in that the transient combustible materials decreased the external event mitigation for fire prevention. Using NRC Inspection Manual Chapter 0609, Attachment 4, “Initial Characterization of Findings,” June 19, 2012, the inspectors determined that the issue affected the Mitigation Systems Cornerstone and that the finding pertained to a failure to adequately implement fire prevention and administrative controls for transient combustible materials. As a result, the inspectors were directed to Inspection Manual Chapter 0609, Appendix F, “Fire Protection Significance Determination Process,” September 20, 2013. The inspectors evaluated the finding through Appendix F, Attachment 1, “Fire Protection Significance Determination Process Worksheet,” September 20, 2013, and determined that the finding was of very low safety consequence (Green) because the Fire Prevention and Administrative Controls finding would not prevent the reactor from reaching and maintaining a safe shutdown condition. The apparent cause of this finding was incorrect assumptions and mental shortcuts or biases. This finding had a cross-cutting aspect in the human performance area associated with conservative bias, in that licensee staff failed to use decision making-practices that emphasize prudent choices over those that are simply allowable [H.14].

Inspection Report# : [2014004](#) (*pdf*)

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## Barrier Integrity

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## Emergency Preparedness

**Significance:**  Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Emergency Action Level Scheme for Nonfunctional Seismic Monitor**

The inspectors identified a non-cited violation of 10 CFR 50.54(q)(2) for the licensee's failure to follow and maintain the effectiveness of an emergency plan that meets the requirements of the planning standard 50.47(b)(4), which requires that a standard emergency classification and action level scheme, is in use by the licensee. Specifically, the licensee had identified, on October 15, 2013, that the seismic monitoring instrumentation was non-functional, but had not further evaluated the plant configuration, and the effect on emergency action level declaration capabilities for seismic events. The licensee documented this issue in Condition Report CR-GGN-2015-00713. The corrective actions, based on CR-GGN-2013-06514, were implemented, and a new seismic monitor was installed, tested, and brought into service on January 30, 2015.

The licensee's inability to promptly declare Emergency Action Level (EAL) HA6, as required in the approved emergency classification and action level scheme per 10 CFR Part 50.47(b)(4), was a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the procedure quality attribute of the Emergency Preparedness Cornerstone and adversely affects the cornerstone objective to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, it negatively impacts the cornerstone attribute of procedure quality in that the plant configuration prohibited the timely declaration of the facility EALs, as written. Using NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," dated June 19, 2012, the inspectors determined that the issue affected the Emergency Preparedness Cornerstone. In accordance with NRC Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," dated September 23, 2014, the inspectors determined that the issue is of very low safety significance (Green) because an Emergency Action Level was rendered ineffective such that HA6 would not be declared, consistent with Table 5.4-1 and Figure 5.4-1. The inspectors determined the finding had a cross-cutting aspect in the area of problem identification and resolution associated with evaluation, in that the organization did not thoroughly evaluate issues to ensure that resolutions address causes, and extent of conditions, commensurate with their safety significance; in that while following Technical Requirements Manual requirements for a non-functional piece of equipment (seismic monitor), the complete effect was not evaluated to ensure the EALs were still capable of being implemented [P.2].

Inspection Report# : [2015001](#) (*pdf*)

## **Occupational Radiation Safety**

**Significance:**  Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Properly Calibrate Main Steam Line Radiation Monitors and Containment/Drywell High Range Radiation Monitors**

The inspectors identified a non-cited violation of 10 CFR 20.1501(c) for the licensee's failure to properly calibrate the main steam line radiation monitors and the containment/drywell high range radiation monitors. The violation was of very low safety significance and was entered into the licensee's corrective action program as Condition Report CR-GGNS-2015-01832.

The failure to properly calibrate radiation monitors was a performance deficiency. The performance deficiency is more than minor, and therefore a finding, because it adversely affects the cornerstone objective to ensure adequate protection of employee health and safety and is associated with the cornerstone attribute of plant instrumentation. Specifically, the failure to properly calibrate radiation monitors impacts their ability to be used to assess dose rates. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination

Process,” dated August 19, 2008, the inspectors determined the finding to be of very low safety significance because it was not an as low as reasonably achievable (ALARA) issue, there was no overexposure or substantial potential for overexposure, and the licensee’s ability to assess dose was not compromised. This finding has a cross-cutting aspect in the resources component of the human performance area because the licensee did not ensure that calibration procedures were adequate, nor was proper calibration equipment designed, characterized, and made available [H.1].  
Inspection Report# : [2015001](#) (*pdf*)

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## Public Radiation Safety

**Significance:**  Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Establish, Implement, and Maintain Appropriate Changes to the Offsite Dose Calculation Manual For REMP Airborne Sampling**

The inspectors identified a non-cited violation of Technical Specification 5.5.1, “Offsite Dose Calculation Manual (ODCM).” Specifically, when changes were made to the Offsite Dose Calculation Manual in 1997, the licensee failed to establish an airborne sampling location for a community with the highest deposition factor (D/Q) for the site. As immediate corrective actions, the licensee evaluated their Offsite Dose Calculation Manual, evaluated the dose differential for the monitoring locations, and developed a plan to meet the environmental sampling requirements. The issue was documented in Condition Report CR-GGNS-2015-01835.

The failure to establish an air sampling location in the vicinity of a community having the highest D/Q was a performance deficiency. The performance deficiency is more than minor, and therefore a finding, because it adversely affects the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the environment and public domain. Specifically, the failure to maintain the Offsite Dose Calculation Manual with appropriate airborne radionuclide sampling requirements adversely impacts the licensee's ability to validate offsite radiation dose assessments for members of the public under certain effluent release conditions. Using Inspection Manual Chapter 0609, Appendix D, dated February 12, 2008, “Public Radiation Safety Significance Determination Process,” the inspectors determined that the violation had very low safety significance because it involved the environmental monitoring program. This finding has a cross-cutting aspect in the procedure adherence component of the human performance area because licensee personnel failed to follow procedures when they determined the airborne sampling locations for the updated Radiological Environmental Monitoring Program [H.8].

Inspection Report# : [2015001](#) (*pdf*)

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## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## **Miscellaneous**

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