



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
612 EAST LAMAR BLVD, SUITE 400  
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May 8, 2009

EA-08-295

James R. Douet, Vice President of Operations  
Grand Gulf Nuclear Station  
Entergy Operations, Inc.  
P.O. Box 756  
Port Gibson, MS 39150

Subject: GRAND GULF NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT  
05000416/2009002

Dear Mr. Douet:

On March 31, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Grand Gulf Nuclear Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on April 13, 2009, with you and other members of your staff.

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

This report documents three NRC identified and self-revealing findings of very low safety significance (Green). All of these findings were determined to involve violations of NRC requirements. Additionally, two licensee-identified violations, which were determined to be of very low safety significance, are listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest the violations or the significance of the noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Grand Gulf Nuclear Station facility.

In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV, and the NRC Resident Inspector at Grand Gulf Nuclear Station. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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

Sincerely,

***/RA D. Proulx for/***

Geoffrey B. Miller, Chief  
Project Branch C  
Division of Reactor Projects

Docket: 50-416  
License: NPF-29

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NRC Inspection Report 05000416/2009002  
w/Attachment: Supplemental Information

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**U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV**

Docket: 50-416

License: NPF-29

Report: 05000416/2009002

Licensee: Entergy Operations, Inc.

Facility: Grand Gulf Nuclear Station

Location: Waterloo Road  
Port Gibson, MS

Dates: January 1 through March 31, 2009

Inspectors: R. Smith, Senior Resident Inspector  
A. Barrett, Resident Inspector  
B. Correll, Reactor Inspector

Approved By: Geoffrey B. Miller, Chief, Project Branch C  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000416/2009002; 01/01/2009 – 03/31/2009; Grand Gulf Nuclear Station, Integrated Resident and Regional Report; Adverse Weather Protection, Operability Evaluations, and Post Maintenance Testing.

The report covered a 3-month period of inspection by resident inspectors. Three Green noncited violations of significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

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

Cornerstone: Mitigating Systems

- Green. 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  $3.04E-8/\text{yr}$ , which represented very low safety significance (Green). (Section 1R01)

- Green. 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-conservatism 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. [H.1(b)] (Section 1R15)

Cornerstone: Barrier Integrity

- Green. 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. [H.4(a)] (Section 1R19)

**B. Licensee-Identified Violations**

Violations of very low safety significance, which were identified by the licensee, have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers (condition report numbers) are listed in Section 4OA7.

## REPORT DETAILS

### Summary of Plant Status

Grand Gulf Nuclear Station (GGNS) began the inspection period at full rated thermal power. On January 2, 2009, operators reduced power to 65 percent for a planned sequence exchange and control rod scram time testing. The plant returned to full rated power on January 4, 2008. On January 30, 2009, the plant reduced reactor power to 93 percent for planned control rod surveillance, and returned to 100 percent power on January 31, 2009. On February 5, 2009, operators reduced power to 85 percent to investigate a low pressure feed water heater level control valve failure. Reactor power was returned to 100 percent on the same day. On March 3, 2009, operators reduced reactor power to 89 percent to perform planned turbine and bypass valve surveillances, and returned to 100 percent power on March 4, 2009. On March 13, 2009, operators reduced reactor power to 94 percent to perform maintenance on the feed water heater drain tank level control valve. Reactor power was returned to 100 percent on March 14, 2009. On March 27, 2009, operators reduced power to 63 percent for a planned sequence exchange and control rod scram time testing. The plant returned to full rated power on March 29, 2008. The plant remained at or near full rated thermal power for the remainder of the inspection period.

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity and Emergency Preparedness

#### 1R01 Adverse Weather Protection (71111.01)

##### .1 Readiness for Seasonal Extreme Weather Conditions

##### a. Inspection Scope

The inspectors performed a review of the licensee's adverse weather procedures for seasonal low temperatures. The inspectors: verified that weather-related equipment deficiencies identified during the previous year were corrected prior to the onset of seasonal extremes; and evaluated the implementation of the adverse weather preparation procedures and compensatory measures for the affected conditions before the onset of, and during, the adverse weather conditions.

During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. Specific documents reviewed during this inspection are listed in the attachment. The inspectors also reviewed corrective action program items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program in accordance with station corrective action procedures. The inspectors' reviews focused specifically on the following plant systems:

- Standby Diesel Generators
- Standby Service Water System
- Fire Water Pump House

These activities constitute completion of one readiness for seasonal adverse weather sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

.2 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

Since thunderstorms with potential tornados and high winds were forecast in the vicinity of the facility for week of March 23, 2009, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On March 24, 2009, the inspectors walked down the standby service water cooling towers and the Auxiliary building, which houses the residual heat removal system, because their safety-related functions could be affected or required as a result of high winds or tornado-generated missiles or the loss of offsite power. The inspectors evaluated the licensee staff's preparations against the site's procedures and determined that the staff's actions were adequate. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors also toured the plant grounds to look for any loose debris that could become missiles during a tornado. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. The inspectors reviewed the licensee's on-line risk evaluations during the storm conditions. They determined that the appropriate risk profile was entered for the adverse weather conditions. Additionally, the inspectors reviewed the UFSAR and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. The inspectors also reviewed a sample of corrective action program items to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the corrective action program in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one readiness for impending adverse weather condition sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

.3 Readiness to Cope with External Flooding

a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the UFSAR for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined that barriers required to mitigate the flood were in place

and operable. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site that would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also reviewed the abnormal operating procedure for mitigating the design basis flood to ensure it could be implemented as written. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one external flooding sample as defined in Inspection Procedure 71111.01-05.

b. Findings

Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50 Appendix B, Criterion V "Procedures", involving the failure to properly clean and inspect the rooftop and associated water drainage systems of the safety-related diesel generator building.

Description. On January 29, 2009, the inspectors walked down the roof of the diesel generator building. The inspectors identified loose, flexible roofing material that had been placed on the roof to prevent hot particles of corroded exhaust piping from the diesel exhaust from falling onto the roof and damaging the roof liner. Because of the light weight and flexible properties of the roof protectors, the inspectors were concerned that the material could be displaced and clog the rooftop drains. In addition, the diesel exhaust pipes terminate approximately one foot below the level of the roof parapet, so in the event of a predicted maximum precipitation rainfall with clogged drains, water would enter into the diesel exhaust and cause all three standby diesel generators to be non-functional. The roofing material had been displaced and rolled over onto itself. The inspectors noted tears and smaller strips of the material near the roof drains. The inspectors also noted several degraded circular adhesive strips, which contributed to the release of the roofing material from the roof liner. The inspectors identified a large amount of corroded, flaked metal material that had apparently been ejected from the exhaust piping onto the roof. Plant staff removed more than 300 square feet of displaced roofing material, and the remaining loose material was secured to the roof liner. In addition to the roofing material, approximately two cubic feet of debris was removed from the roof of the diesel building. The inspectors reviewed the roof inspection work instructions, and determined that they lacked the proper detail. The work tasks stated to ensure drains are not blocked, but did not provide instructions to inspect the roof area for conditions that could block roof drains or identify clogged drains and defective gratings. The inspectors detailed their concerns regarding the deficient work orders to station management on January 30, 2009.

Analysis. The performance deficiency involved a failure to properly clean and inspect the rooftop and associated water drainage systems of the safety-related diesel generator building. This finding was more than minor since it affects the external factors 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 requires a Phase 3 analysis.

The regional Senior Reactor Analyst performed a Phase 3 analysis, which evaluated the condition where one or more of the five roof drains become clogged or blocked with a potential that large amounts of rain may result in water accumulating on the roof and overflowing into all the emergency diesel generators exhausts. A Probable Maximum Precipitation (PMP) event is the event most likely to result in this scenario since it produces the most amount of rain in the shortest time frame, thus overwhelming the drain system. Grand Gulf UFSAR Table 2.4-7 provides a value of 30.5 inches of accumulation at six hours for the Grand Gulf PMP. The PMP event occurs in an area of ten square miles.

To estimate the core damage frequency impact of the PMP scenario, an estimate of the frequency of a PMP event is multiplied by the conditional core damage probability for a loss of offsite power with all the emergency diesel generators failed. The Senior Reactor Analyst reviewed the licensee's analysis for calculating the PMP frequency for the site. The licensee's analysis used appropriate historical data over the last 130 years from meteorological data from the National Oceanic and Atmospheric Administration and the National Weather Service to determine a PMP frequency estimate for Grand Gulf Nuclear Station. The Senior Reactor Analyst agreed with the licensee's analysis methodology, which determined that the PMP frequency was  $1.90\text{E-}7/\text{yr}$ .

To calculate the conditional core damage probability, the NRC's Grand Gulf Site-specific Standardized Plant Analysis Risk model (revision 3.45) was used with the following assumptions:

1. The water overflowing into the diesel generator exhausts fails Division 1 and 2 emergency diesel generators and the high pressure core spray emergency diesel generator. This was considered conservative since none of the drains inspected were blocked or plugged. The flexible roof material was loose but still attached to the roof surface and although loose metallic particles were accumulated on the large roof, it was unlikely that enough particles would plug all five drains to the point where no water would pass.
2. The PMP event causes a loss of offsite power. This was considered conservative because it assumed that the offsite power system would not withstand the rainfall event and any associated severe weather, such as high winds.
3. It is possible that there could be storms that are smaller than the extreme storm associated with a PMP, but would have higher frequencies. It is assumed that the smaller, more frequent storms are not of sufficient intensity to cause a loss of offsite power or cause the failure of the EDGs due to the excessive accumulation of water on the building roof.

The resulting conditional core damage probability was  $1.6\text{E-}1$ .

Multiplying the PMP frequency by the conditional core damage probability gives the core damage frequency (CDF) impact of the PMP that results in failure of all the emergency diesel generators (due to water in the exhaust) and a loss of offsite power (due to the excessive rainfall).

Change in CDF =  $(1.9\text{E-}7)(1.6\text{E-}1) = 3.04\text{E-}8/\text{yr}$ .

The resulting change in CDF represented a very low safety significant finding (Green).

Enforcement. As required by 10 CFR Part 50, Appendix B, Criterion V, in part, activities shall be prescribed by documented procedures of a type appropriate to the circumstances and shall be accomplished in accordance with the procedures. Contrary to this requirement, the licensee failed to develop an appropriate procedure to ensure the drains on the roof of the diesel generator building were maintained properly to protect the functionality of the emergency diesel generators. Since this violation is of very low safety significance and has been entered in the licensee's corrective action program as Condition Report CR-GGN-2009-00429, this violation is being treated as a noncited violation, consistent with Section VI.A of the Enforcement Policy: Noncited Violation (NCV) 5000416/2009002-01, Inadequate Maintenance Procedures to Maintain Drains on Safety Related Buildings.

## **1R04 Equipment Alignments (71111.04)**

### **.1 Partial Walkdown**

#### **a. Inspection Scope**

The inspectors performed partial system walkdowns of the following risk-significant systems:

- January 14, 2009, the inspectors walked down the high pressure core spray system while the reactor core isolation cooling system was inoperable for a system outage
- January 24, 2009, the inspectors walked down the standby gas treatment system Train B while Train A was inoperable due to a failed pressure drawdown test
- February 17, 2009, the inspectors walked down the fire water supply loop following system maintenance
- February 23, 2009, the inspectors walked down residual heat removal Train C while residual heat removal Train A was inoperable for a system outage

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could affect the function of the system, and therefore potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, UFSAR, technical specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four partial system walkdown samples as defined by Inspection Procedure 71111.04-05.

b. Findings

No findings of significance were identified.

.2 Complete Walkdown

a. Inspection Scope

On March 9 through March 13, 2009, the inspectors performed a complete system alignment inspection of the standby service water system to verify the functional capability of the system. The inspectors selected this system because it was considered both safety-significant and risk-significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications (as appropriate), component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. The inspectors reviewed a sample of past and outstanding work orders to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program database to ensure that system equipment-alignment problems were being identified and appropriately resolved. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one complete system walkdown sample as defined by Inspection Procedure 71111.04-05.

b. Findings

No findings of significance were identified.

**1R05 Fire Protection (71111.05)**

.1 Quarterly Fire Inspection Tours

a. Inspection Scope

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Main Control Room (OC503, OC507 and OC512 )
- Division I and II Remote Shutdown Panels (OC208 and OC208A)
- Division III Switchgear Room and Division III Battery Room (OC209 and OC210)
- Division III Diesel Generator Room (1D301)
- Division I and II Diesel Generator Rooms (1D302 and 1D303)

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and had implemented

adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of five quarterly fire-protection inspection samples as defined by Inspection Procedure 71111.05-05.

b. Findings

No findings of significance were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On March 26, 2009, the inspectors observed fire brigade activation during a fire drill with reported smoke in the turbine building lube oil pump area. The observation evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies; openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient firefighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of pre planned strategies; (9) adherence to the pre planned drill scenario; and (10) drill objectives.

These activities constitute completion of one annual fire-protection inspection sample as defined by Inspection Procedure 71111.05-05.

b. Findings

No findings of significance were identified.

**1R11 Licensed Operator Requalification Program (71111.11)**

a. Inspection Scope

On February 16 and 26, 2009, the inspectors observed a crew of licensed operators in the plant's simulator during an "as found" and "as left" evaluations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee

procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Crew's ability to take timely actions in the conservative direction
- Crew's prioritization, interpretation, and verification of annunciator alarms
- Crew's correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors
- Crew's ability to identify and implement appropriate technical specification actions and emergency plan actions and notifications

The inspectors compared the crew's performance in these areas to pre-established operator action expectations and successful critical task completion requirements. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one quarterly licensed-operator requalification program sample as defined in Inspection Procedure 71111.11.

b. Findings

No findings of significance were identified.

**1R12 Maintenance Effectiveness (71111.12)**

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk significant systems:

- Load Control and Motor Control Centers (R20)
- Reactor Recirculation System (B33)
- Reactor Feedwater and Feedwater Heater Systems (N21 and N23)

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR 50.65(b)

- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65(a)(1) or (a)(2)
- Verifying appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR 50.65(a)(2), or as requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR 50.65(a)(1)

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings of significance were identified.

**1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)**

a. Inspection Scope

The inspectors reviewed licensee personnel's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Reactor core isolation cooling system outage the week of January 12, 2009
- Division 2 diesel generator functional test week of January 19, 2009
- Feedwater drain tank level control valve issue the week of February 2, 2009
- Division 2 diesel generator tachometer replacement on February 17, 2009
- Division 1 system outage during the week of February 23, 2009

The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that licensee personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When licensee personnel performed emergent work, the inspectors verified that the licensee personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed the technical specification requirements

and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of five maintenance risk assessments and emergent work control inspection samples as defined by Inspection Procedure 71111.13-05.

b. Findings

No findings of significance were identified.

**1R15 Operability Evaluations (71111.15)**

a. Inspection Scope

The inspectors reviewed the following issues:

- CR-GGN-2009-00194, repacking of reactor core isolation cooling steam supply bypass Valve E51-F095 affecting operating current and as-left packing gland torque setting
- CR-GGN-2009-00199, standby service water pump house ventilation high air flow rate
- CR-GGN-2009-00363, standby gas treatment system enclosure building registers failed to provide adequate flow during auxiliary building pressure draw-down test
- CR-GGN-2009-00601, offgas system isolation function lost due to improper system clearance
- CR-GGN-2009-00811, diesel generator operability with tachometer failure
- CR-GGN-2009-00955, standby service water cooling tower drift eliminators degraded

The inspectors selected these potential operability issues based on the risk-significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and UFSAR to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of six operability evaluations inspection samples as defined in Inspection Procedure 71111.15-05

b. Findings

Introduction. 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.

Description. On October 3, 2008, during refueling outage 16, the inspectors discovered damaged fiberglass drift eliminators in the standby service water cooling towers cells. The standby service water cooling tower drift eliminators are fiberglass z-shaped vertical blades that are pre-assembled into rectangular bundles, which are inserted between I-beams above the cooling tower spray piping and below the cooling tower fans. The drift eliminators are integral to the standby service water system design basis requirement to maintain thirty days of water inventory to the plant. There are three primary mechanisms of inventory loss from the standby service water system: system leakage, evaporation and water vapor carry over. The function of the drift eliminators is to remove water vapor from the air flow passing through the cooling tower while the fans are in service. While in the fan cells, the inspectors noted that the drift eliminators showed signs of embrittlement and discoloration, with several of the bundles displaced, cracked and broken. The inspectors identified broken pieces of drift eliminator resting on the cooling tower fill and also noted various types of foreign material resting on top of the drift eliminators. Plant personnel documented the identified issues in a condition report and evaluated the operability of the components.

The inspectors identified several deficiencies in the operability evaluation. First, the operability evaluation assumed a linear relationship between rate of drift and drift eliminator surface area. The inspectors challenged the assumption, stating that the drift rate would increase exponentially as air velocities increase in damaged areas. Plant personnel modified the standby service water system loss calculations to include a valid drift rate. The revised drift rate was a factor of ten higher than the previously calculated drift rate. Second, the operability evaluation failed to address impacts from design basis events such as severe weather and seismic events. Third, the operability evaluation failed to properly designate the damaged drift eliminators as a substantially degraded, non-conforming condition. The inspectors brought these concerns to the attention of plant management and the condition was re-evaluated for external event impact and designated as a substantially degraded, non-conforming condition.

Analysis. The failure to implement station procedures is a performance deficiency. 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 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 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)].

Enforcement. Title 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," states, in part, that activities affecting quality shall be prescribed by

documented instructions and shall be accomplished in accordance with those instructions. On October 6, 2008, plant engineers failed to accomplish activities affecting quality in accordance with documented instructions. Specifically, Section 5.4[2] of EN-OP-104, "Operability Determinations," Revision 3, required operability evaluations to provide a technical basis for each item in the detailed problem statements per Step 5 of Attachment 9.5 of the procedure. Contrary to the above, plant engineers failed to provide a technical basis for the operability of the degraded standby service water cooling tower drift eliminators. Because this violation was of very low safety significance and was entered in the corrective action program as CR-GGN-2009-01222, this violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000416/2009002-02, Inadequate Operability Evaluation for Standby Service Water Cooling Tower Drift Eliminators.

#### **1R18 Plant Modifications (71111.18)**

##### a. Inspection Scope

The inspectors reviewed the following temporary/permanent modifications to verify that the safety functions of important safety systems were not degraded:

- Lifted auxiliary contact lead to control room Annunciator 1R20L685

The inspectors reviewed the temporary modification and the associated safety evaluation screening against the system design bases documentation, including the UFSAR and the technical specifications, and verified that the modification did not adversely affect the system operability/availability. The inspectors also verified that the installation and restoration was consistent with the modification documents and that configuration control was adequate. Additionally, the inspectors verified that the temporary modification was identified on control room drawings, appropriate tags were placed on the affected equipment, and licensee personnel evaluated the combined effects on mitigating systems and the integrity of radiological barriers.

These activities constitute completion of one sample for temporary plant modifications as defined in Inspection Procedure 71111.18-05

##### b. Findings

No findings of significance were identified.

#### **1R19 Postmaintenance Testing (71111.19)**

##### a. Inspection Scope

The inspectors reviewed the following postmaintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- Turbine first stage pressure Transmitter B replacement and post maintenance testing
- Reactor core isolation cooling system outage and post maintenance testing
- Low pressure core spray system outage and post maintenance testing

- Division 2 diesel generator post maintenance testing following generator tachometer transducer replacement
- Residual heat removal Train A valves post maintenance testing valve maintenance
- Division 1 diesel generator post maintenance testing following an allowed outage time

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated these activities for the following (as applicable):

- The effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed
- Acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate

The inspectors evaluated the activities against the technical specifications, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with postmaintenance tests to determine whether the licensee was identifying problems and entering them in the corrective action program and that the problems were being corrected commensurate with their importance to safety. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of six post maintenance testing inspection samples as defined in Inspection Procedure 71111.19 05.

b. Findings

Introduction. The inspectors identified a Green noncited violation of Technical Specification 3.6.1.3 involving the failure to enter a limiting condition for operation action statement for primary containment isolation valves.

Description. On February 26, 2009, the inspectors performed a review of post-maintenance data from residual heat removal system valve testing. They identified that surveillance test data for the Train A minimum flow valve was missing. The operations shift manager informed the inspectors that the work for the valve had been canceled. The inspectors contacted electrical maintenance personnel and determined that the work had actually been performed on February 24, 2009. The inspectors relayed this information to operations management. Subsequently, operations performed the postmaintenance retest of the minimum flow valve. The inspectors discovered that operations staff had failed to properly review the work order for the valve work. The operations shift supervisor, reviewing the work order electronically, noted that the first two tasks on the work order were canceled and made the assumption the entire work order had been canceled. The operations shift supervisor contacted the maintenance coordinator to verify the work order's status. The maintenance coordinator incorrectly confirmed the assumption of the shift supervisor.

Operations management reviewed the identified issue for extent of condition. The review identified that in addition to missed postmaintenance stroke test of the minimum flow valve, operations personnel had also lost administrative control of the minimum flow valve and low pressure coolant injection valve. Operations personnel concluded that they had failed to enter the required limiting conditions for operations for both containment isolation valves per requirements of Technical Specification 3.6.1.3. For each valve, Technical Specification 3.6.1.3 requires, per Action statement A.1, that within 4 hours the affected penetration flow path should have been isolated with one closed manual valve or a closed and deactivated automatic valve. Since the valve penetration flow paths were not isolated within 4 hours per action statement A.1, Technical Specification 3.6.1.3 required entry into action statement E.1 which would have required entry into Mode 3 within 12 hours. Total time for Technical Specification non-compliance was 16 hours and 22 minutes. The valves were subsequently declared operable following successful performance of the required postmaintenance stroke time testing.

Analysis. The performance deficiency involved inadequate control of limiting conditions for operations. Specifically, operations failed to maintain proper administrative control of the primary containment isolation valves. 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-checking and peer-checking and proper documentation of the completed work order [H.4(a)].

Enforcement. Technical Specification 3.6.1.3 requires, while the plant is in Modes 1, 2, and 3, that each primary containment isolation valve shall be operable. The Technical Specification Action statement requires that, "within 4 hours the affected penetration flow path should be isolated with one closed manual valve or a closed and deactivated automatic valve or be in Mode 3 in following 12 hours and be in Mode 4 in the following 36 hours." Contrary to this, between February 25, 2009 and February 26, 2009 while the plant was in Mode 1, primary containment isolation valves in the residual heat removal Train A loop were inoperable due to maintenance performed with no retest, and actions were not taken to isolate the penetrations or place the plant in Mode 3 within 12 hours and Mode 4 within 36 hours. Because this issue was documented in the licensee's corrective action program per CR-GGN-2009-01069, this violation is being treated as a noncited violation, consistent with Section VI.A of the Enforcement Policy: NCV 05000416/2009002-03, Failure to Enter a Limiting Condition for Operation for Primary Containment Isolation Valves.

## **1R22 Surveillance Testing (71111.22)**

### **a. Inspection Scope**

The inspectors reviewed the UFSAR, procedure requirements, and technical specifications to ensure that the five surveillance activities listed below demonstrated that the systems, structures, and/or components tested were capable of performing their

intended safety functions. The inspectors either witnessed or reviewed test data to verify that the significant surveillance test attributes were adequate to address the following:

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Jumper/lifted lead controls
- Test data
- Testing frequency and method demonstrated technical specification operability
- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints

The inspectors also verified that licensee personnel identified and implemented any needed corrective actions associated with the surveillance testing.

- January 21-22, 2009, Diesel Generator 12, 18 Month Functional Test, 24 Hour Load Test / Hot Restart Test
- January 27, 2009, Standby Gas Treatment Train A Logic and Vacuum Test
- February 24, 2009, RHR Train A Quarterly Pump In-service Test
- February 10, 2009, Division 1 Hydrogen Analyzer leakage test
- March 27-28, 2009, Scram Time Testing

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of five surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

**1EP6 Drill Evaluation (71114.06)**

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of an unannounced off-hours licensee emergency drill on March 9, 2009, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator control room and the emergency operations facility to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

**4OA1 Performance Indicator Verification (71151)**

.1 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the fourth Quarter 2009 performance indicators for any obvious inconsistencies prior to its public release in accordance with Inspection Manual Chapter 0608, "Performance Indicator Program."

This review was performed as part of the inspectors' normal plant status activities and, as such, did not constitute a separate inspection sample.

b. Findings

No findings of significance were identified.

.2 Performance Indicator Verification

a. Inspection Scope

The inspectors sampled licensee submittals for the following performance indicator for the period from the first quarter 2008 through fourth quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Inspection reports for the period of January 2008 through December 2008 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's condition report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

- Unplanned scrams per 7000 critical hours
- Unplanned scrams with complications
- Unplanned transients per 7000 Critical Hours

These activities constitute completion of one unplanned scrams per 7000 critical hours, unplanned scrams with complications, and unplanned transients per 7000 critical hours, sample as defined by Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

**40A2 Identification and Resolution of Problems (71152)**

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. The inspectors reviewed attributes that included: the complete and accurate identification of the problem; the timely correction, commensurate with the safety significance; the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews; and the classification, prioritization, focus,

and timeliness of corrective actions. Minor issues entered into the licensee's corrective action program because of the inspectors' observations are included in the attached list of documents reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings of significance were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. The inspectors accomplished this through review of the station's daily corrective action documents.

The inspectors performed these daily reviews as part of their daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings of significance were identified.

.3 Selected Issue Follow-up Inspection: Roof Drains on Safety Related Structures

a. Inspection Scope

The inspectors reviewed condition reports and corrective actions associated with clogged drains and inadequate maintenance work instructions on safety related structure rooftops. The inspectors reviewed a condition report that identified a clogged parapet drain on the control building. The inspectors also reviewed corrective actions associated with a control building drain cover issue identified by NRC inspectors in December of 2007 to ensure (1) complete and accurate identification of the problem in a timely manner; (2) consideration of extent of condition; (3) classification and prioritization of the resolution of the problem; (4) identification of root and contributing causes of the problem; (5) identification of corrective actions; and (6) completion of corrective actions in a timely manner. The inspectors then observed the performance of maintenance instructions detailing rooftop inspections of safety-related structures.

b. Findings

No findings of significance were identified.

.4 Selected Issue Follow-up Inspection: Standby Service Water Cooling Tower Drift Eliminators

a. Inspection Scope

The inspectors reviewed condition reports and corrective actions associated with the standby service water system cooling tower drift eliminators. The inspectors reviewed multiple condition reports detailing standby service water system cooling tower drift eliminators to ensure (1) complete and accurate identification of the problems in a timely manner; (2) consideration of extent of condition; (3) classification and prioritization of the resolution of the problems; (4) identification of root and contributing causes of the problems; (5) identification of corrective actions; and (6) completion of corrective actions in a timely manner.

These activities constitute completion of two in-depth problem identification and resolution sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings of significance were identified.

**40A3 Event Follow-up (71153)**

.1 Main Generator Power Swings during turbine testing

a. Inspection Scope

On January 23, 2009, during the performance of main turbine mechanical overspeed test, generated power swung approximately 200 MWe, all three bypass valves opened for a total time of two minutes, and main steam control Valve D ranged in position from 28 to 79 percent open (steady state position is normally 59 percent open). The inspectors responded to the main control room and observed the plant return to a stable condition. The inspectors verified that no limits were exceeded. Upon further investigation, site personnel determined that the changeover valve that allows this testing to be performed without tripping the turbine generator was not performing correctly. The testing port orifice may have been limiting full flow as indicated by the pressure being 20 psig below normal. The licensee initiated a standing order to perform turbine overspeed testing from the front standard using Attachment 2 of the testing procedure. Operators will continue testing from the front standard for the rest of the cycle. Documents reviewed in this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 (Closed) LER 05000416/2008-004-00, "Automatic Reactor SCRAM On Decreasing Coolant Level Due To Inadvertent Reactor Feed Pump Steam Supply Valve Closure"

On October 23, 2008, Grand Gulf Nuclear Station was operating in Mode 1 at approximately 10 percent power when an actuation of the reactor protection system occurred due to decreasing reactor coolant level. The decreasing level was the result of closure of the reactor feed Pump A turbine steam inlet valves. During restoration of the reactor feed Pump B turbine overspeed trip test, a non-licensed operator closed the

steam supply drain valves on the reactor feed Pump A turbine instead of the reactor feed Pump B turbine. Upon discovery of the mistake, the non-licensed operator tried to correct the error and closed the reactor feed Pump A turbine steam inlet valves. This led to the loss of feedwater flow to the reactor vessel.

The event described in this LER was previously discussed in NRC Inspection Report 05000416/2008005 and documented as FIN 05000416/2008005-08, "Automatic Reactor Scram Cause by an Operator Inadvertently Closing Steam Supply Valves to the Reactor Feed Pump Turbine," and as FIN 05000416/2008005-09, "Failure to Properly Monitor Plant Parameters to Control Reactor Coolant System Cooldown Rate." The event was also discussed in NRC Inspection Report 05000416/2009007. The inspectors reviewed this LER and no additional findings were identified. This LER is closed.

.3 (Closed) LER 05000416/2008-005-00, "Automatic Reactor Scram Due to Turbine Control Valve Fast Closure Caused by an Electrical Generator Trip"

On October 26, 2008, Grand Gulf Nuclear Station was in Mode 1 at approximately 50 percent power when an automatic reactor scram was initiated by the reactor protection system on detection of fast closure of the turbine control valves. A failure in the main generator voltage regulation system resulted in an under excited condition of the main generator field. This condition resulted in a main generator trip, which in turn caused the main turbine control valve fast closure.

The event described in this LER was previously discussed in NRC Inspection Report 05000416/2009007, and documented as FIN 05000416/2009007-03, "Failure to Implement Preventive Maintenance Procedure Requirements". The inspectors reviewed this LER and no additional findings were identified. This LER is closed.

#### **40A5 Other Activities**

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors performed observations of security force personnel and activities to ensure that the activities were consistent with GGNS security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

.2 (Closed) VIO 05000416/2008-004-03, "Failure to Perform an Adequate Inspection of PMP Door Seals Protecting Safety Related Equipment"

On October 17, 2008, the NRC issued a Notice of Violation due to the licensee's failure to restore compliance from NCV 05000416/2008002-01, which detailed a failure to perform an adequate inspection of PMP door seals protecting safety related equipment.

The inspectors reviewed the adequacy of the condition reports and corrective actions associated with this violation. No findings of significance were identified. This VIO is closed.

#### **40A6 Meetings**

##### Exit Meeting Summary

On March 24, 2009, the branch chief conducted a regulatory performance meeting with Mr. R. Douet, Site Vice President, and other members of the licensee staff to review corrective actions taken related to the White performance indicator for unplanned scrams per 7000 critical hours in the fourth quarter of 2008.

On April 13, 2009, the inspectors presented the inspection results to Mr. R. Douet, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

#### **40A7 Licensee-Identified Violations**

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as noncited violations.

- Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," states, in part, that activities affecting quality shall be prescribed by documented procedures and shall be accomplished in accordance with those procedures. On February 4, 2009, plant operations management failed to implement section 6.9.3 of safety-related Procedure 02-1-S-17, "Control of Limiting Conditions for Operation." The procedure states that the shift supervisor is responsible for ensuring that maintenance activities and required retests are completed prior to clearing the Limiting Condition for Operation. Contrary to this, a Limiting Condition for Operation was cleared without returning the offgas system hi-hi-hi automatic isolation to a functional status. Key information regarding the lifting of the leads that defeated the isolation function was not exchanged between shifts during shift turnover. This issue was documented in the licensee's corrective action program per CR-GGN-2009-00601. This finding is of very low safety significance because it did not represent a degradation of the radiological barrier function provided for the control room, it did not represent a degradation of the barrier function of the control room against smoke or a toxic atmosphere, it did not represent an open pathway in containment, and did not impact the hydrogen igniters in containment.
- Title 10 CFR Part 50, Appendix E IV.D.3, "Emergency Planning and Preparedness for Production and Utilization Facilities" states, in part, that licensees shall have the capability to notify responsible State and local government agencies within 15 minutes after declaring an emergency. On November 17, 2008, plant operations management failed to implement Attachment 1 HU4 of safety-related Procedure 10-S-01-1, "Emergency Plan Procedure Activation of the Emergency Plan." The procedure states that the shift manager/emergency director will declare a notice of unusual event for a fire within the protected area boundary not extinguished within 15 minutes of detection. Contrary to this, the licensee received a fire computer alarm for FZ1088 "High Pressure Heater and Reactor Feed Pump Turbine Room" that was acknowledge and silenced at 7:59 a.m., but no personnel were dispatched to investigate the alarm. The

fire was reported to the control room by an operator at 8:53 a.m. This resulted in untimely implementation of the plant emergency plan. This issue was documented in the licensee's corrective action program per CR-GGN-2008-06789. Applying Manual Chapter 0612, Appendix B, "Emergency Preparedness significance determination process Sheet 2 - Actual Event Implementation Problem," the inspectors determined this finding to be of very low safety significance.

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee Personnel

D. Barfield, Director, Engineering  
R. Brinkman, Operations Shift Manager, Work Control Center  
J. Browning, General Manager, Plant Operations  
S. Byrd, Systems Engineer  
S. Cameron, Equipment Reliability Coordinator  
M. Causey, Maintenance Rule Engineer  
K. Christian, Engineering Program Supervisor  
A. Cockrum, Site Welding Engineer  
R. Collins, Manager, Corrective Actions and Assessments  
D. Coulter, Licensing Specialist, Plant Licensing  
P. Different, Senior Lead Engineer, Reactor Engineering  
R. Douet, Vice President, Operations  
B. Edwards, Minority Owner Specialist  
R. Gardner, Manger, Maintenance  
E. Harris, Manager, Quality Assurance  
K. Higginbotham, Manager, Operations  
R. Jackson, Licensing Specialist, Plant Licensing  
D. Jones, Manager, System Engineering  
M. Krupa, Director, Nuclear Safety and Assurance  
G. Lantz, Supervisor, Design Engineering  
M. Larson, Licensing Engineer  
M. McAdory, Senior Operations Instructor  
R. McGaha, ISI Engineering  
S. Osborn, Licensing  
J. Owens, Licensing Specialist, Plant Licensing  
C. Perino, Licensing Manager  
M. Rohrer, Manager, Component Engineering  
J. Smyrl, ISI Engineering, Level III  
T. Tankersley, Manager, Training  
T. Thornton, Manager, Design Engineering  
W. Trichell, Supervisor, Radiation Protection  
D. Wilson, Supervisor, Design Engineering  
F. Wilson, Manager, Planning, Scheduling and Outages  
M. Wilson, Manager, Emergency Preparedness  
R. Wilson, Radiation Protection Manager  
J. Shew, Supervisor, Engineering  
E. Wright, ALARA Specialist, Radiation Protection

#### NRC Personnel

W. Walker, Senior Project Engineer  
D. Loveless, Senior Reactor Analyst  
S. Burgess, Senior Reactor Analyst, RIII  
B. Correll, Reactor Inspector  
J. Bashore, Resident Inspector Palo Verde

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

None

### Opened and Closed

05000416/2009002-01	NCV	Inadequate Maintenance Procedures to Maintain Drains on Safety Related Buildings (Section 1R01)
05000416/2009002-02	NCV	Inadequate Operability Evaluation for Standby Service Water Cooling Tower Drift Eliminators (Section 1R15)
05000416/2009002-03	NCV	Failure to Enter a Limiting Condition for Operation for Primary Containment Isolation Valves (Section 1R19)

### Closed

05000416/2008-004-00	LER	Automatic Reactor SCRAM On Decreasing Coolant Level Due To Inadvertent Reactor Feed Pump Steam Supply Valve Closure (Section 40A3.2)
05000416/2008-005-00	LER	Automatic Reactor Scram Due to Turbine Control Valve Fast Closure Caused by an Electrical Generator Trip (Section 40A3.3)
05000416/2008-004-03	VIO	Failure to Perform an Adequate Inspection of PMP Door Seals Protecting Safety Related Equipment (Section 40A5.2)

### Discussed

None

## LIST OF DOCUMENTS REVIEWED

### Section 1RO1: Adverse Weather Protection

#### CONDITION REPORTS

CR-GGN-2008-06476	CR-GGN-2008-05310	CR-GGN-2008-02227
CR-GGN-2008-01123	CR-GGN-2008-00693	CR-GGN-2009-00429
CR-GGN-2009-00400	CR-GGN-2008-06452	CR-GGN-2008-00247

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05-1-02-VI-2	Off-Normal Event Procedure Hurricanes, Tornados and Severe Weather	113

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WO041743	WO171973-01	WO51649159-01	WO51208958-01
WO141765-01	WO141766-01	WO141764-01	WO51656878-01
WO51641436-01	WO51561018-01	WO51515863-01	WO51567400
WO172069	WO136105		

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Drawing M-1363A, System Piping Isometric HPCS Diesel Intake & Exhaust Piping – Diesel Gen. Bldg. – Unit 1, Revision 8

Drawing M-1325B, System Piping Isometric Standby Diesel Generator “A” Diesel Starting Air Intake & Exhaust – Diesel Gen. Bldg. – Unit 1, Revision 10

Drawing M-1325A, System Piping Isometric Standby Diesel Generator “B” Diesel Starting Air Intake & Exhaust – Diesel Gen. Bldg. – Unit 1, Revision 10

GNRO-2008/00073, Reply to Notice of Violation EA-98-295  
Calculation Sheet C-T-187, Control Building Roof-Determine Height of Rainwater Permitted on Control Bldg. Roof (EL. 206'-0”) for Respond to a Licensing Question from the NRC SEB, 8/81, Revision 6

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## Section 1RO4: Equipment Alignment

### CONDITION REPORTS

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CR-GGN-2008-06708	CR-GGN-2008-05836	CR-GGN-2008-05583
CR-GGN-2008-05537	CR-GGN-2008-05434	CR-GGN-2008-03213
CR-GGN-2008-02262	CR-GGN-2008-01408	CR-GGN-2008-01355
CR-GGN-2008-01272	CR-GGN-2008-01164	CR-GGN-2007-05914
CR-GGN-2007-05626	CR-GGN-2007-04997	CR-GGN-2007-04126
CR-GGN-2007-03868	CR-GGN-2007-03575	CR-GGN-2007-03514
CR-GGN-2007-03380	CR-GGN-2007-03335	CR-GGN-2007-03311
CR-GGN-2007-03265	CR-GGN-2007-03089	CR-GGN-2007-03080
CR-GGN-2007-02625	CR-GGN-2007-02608	CR-GGN-2007-01142
CR-GGN-2007-01019	CR-GGN-2007-00979	CR-GGN-2007-00906
CR-GGN-2007-00488	CR-GGN-2007-00406	CR-GGN-2007-00370
CR-GGN-2007-00269	CR-GGN-2007-00151	CR-GGN-2007-00033

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04-1-01-T48-1	Standby Gas Treatment	031
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M-1061A, P & I Diagram Standby Service Water System Unit 1, Revision 60

M-1061B, P & I Diagram Standby Service Water System Unit 1, Revision 47

M-1061C, P & I Diagram Standby Service Water System Unit 1, Revision 36

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Fire Pre-Plan C-13, Control Room, Control Panel, Suspended Ceiling and Support Areas, Revision 1

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Fire Pre-Plan TB1-02, Turbine Building (113' Elevation), Revision 0

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CR-GGN-2008-03944	CR-GGN-2007-03425	CR-GGN-2007-02967
CR-GGN-2007-02066	CR-GGN-2006-01147	CR-GGN-2006-00483
CR-GGN-2004-03339	CR-GGN-2005-02968	CR-GGN-2006-04621
CR-GGN-2007-04201	CR-GGN-2008-04576	CR-GGN-2007-05657
CR-GGN-2008-06238	CR-GGN-2008-06318	CR-GGN-2009-00464
CR-GGN-2009-00635	CR-GGN-2009-00638	CR-GGN-2009-01337
CR-GGN-2004-01429	CR-GGN-2005-00629	CR-GGN-2006-01178

CR-GGN-2007-04128	CR-GGN-2008-01409	CR-GGN-2008-02302
CR-GGN-2008-06195	CR-GGN-2008-06576	CR-GGN-2004-00522
CR-GGN-2004-01527	CR-GGN-2006-04870	CR-GGN-2007-01562
CR-GGN-2008-00349	CR-GGN-2008-01547	CR-GGN-2008-02310

WORK ORDERS

WO38845	WO46011	WO47420	WO81373	WO106264
WO106808	WO113348	WO115699	WO107185	WO142304
WO155420	WO167106			

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Maintenance Rule Program (a)(1) Evaluation Reactor Recirculation (B33) System

Maintenance Rule Expert Panel, February 10, 2009 Meeting Minutes

Maintenance Rule Database, System Description: N21 Feedwater System

Maintenance Rule Database, System Description: N23 Heater, Vents and Drains Systems

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EN-WM-101, On-Line Emergent Work Addition/Deletion Approval Forms, Week of January 12, 2009.

EN-WM-101, On-Line Emergent Work Addition/Deletion Approval Forms, Week of January 19, 2009.

EN-WM-101, On-Line Emergent Work Addition/Deletion Approval Forms, Week of February 2, 2009.

EN-WM-101, On-Line Emergent Work Addition/Deletion Approval Forms, Week of February 23, 2009.

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CR-GGN-2009-00194	CR-GGN-2009-00199	CR-GGN-2009-00363
CR-GGN-2009-00601	CR-GGN-2009-00811	CR-GGN-2009-00955
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CR-GGN-2009-00763	CR-GGN-2009-00811	

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ER-GG-2002-0006-000, Recalibration of Turbine First Stage Pressure Instrumentation,  
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**Section 1R22: Surveillance Testing**

CONDITION REPORTS

CR-GGN-2006-00672 CR-GGN-2009-00390 CR-GGN-2009-00380  
CR-GGN-2009-00363 CR-GGN-2009-00301

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06-OP-1T48-R-0002	Standby Gas Treatment A Logic and Vacuum Test	109
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CR-GGN-2009-01362	CR-GGN-2009-01361	CR-GGN-2009-01359
CR-GGN-2009-01354	CR-GGN-2009-01349	CR-GGN-2009-01348
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CR-GGN-2008-06195	CR-GGN-2008-02089	CR-GGN-2008-01952
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LER 2008-001-00, Manual Reactor SCRAM Due to Loss Of Main Electrical Output Transformer Cooling

LER 2008-002-00, Reactor SCRAM Due to Main Generator Trip Caused by Current Transformer Lockout

LER 2008-004-00, Automatic Reactor SCRAM On Decreasing Coolant Level Due to Inadvertent Reactor Feed Pump Steam Supply Valve Closure

LER 2008-005-00, Automatic Reactor SCRAM Due to Turbine Control Valve Fast Closure Caused by an Electrical Generator Trip

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CR-GGN-2009-01049  
CR-GGN-2009-00338

CR-GGN-2009-01051  
CR-GGN-2009-01048  
CR-GGN-2008-06195

CR-GGN-2009-01050  
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LER 2008-005-00, Automatic Reactor SCRAM Due to Turbine Control Valve Fast Closure Caused by an Electrical Generator Trip

Safety Culture Review for Unplanned SCRAMS, February 3, 2009

GGNS 2009 'Focused Training' Course Description, Revision 0

2009 Focused Training Generic Schedule, Revision January 24, 2009

Root Cause Analysis Report, Loss of Feedwater Results in Plant SCRAM, November 24, 2008

RF16 Peer Checking Standards/Independent Verification Memo

Reactor Trip / Downpower Common Causes, Incorporates events from April 15, 2007 through December 2, 2008, Revision February 6, 2009

2009 Grand Gulf Nuclear Station Performance Improvement Plan

Root Cause Analysis Report, Main Generator Trip, November 17, 2008

Turbine Generator Ten Year Maintenance Plan

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