



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION IV  
1600 E. LAMAR BLVD  
ARLINGTON, TX 76011-4511

August 3, 2017

Mr. Eric Larson  
Site Vice President  
Entergy Operations, Inc.  
Grand Gulf Nuclear Station  
P.O. Box 756  
Port Gibson, MS 39150

**SUBJECT: GRAND GULF NUCLEAR STATION – NRC INTEGRATED INSPECTION  
REPORT 05000416/2017002 AND 07200050/2017007**

Dear Mr. Larson:

On June 30, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Grand Gulf Nuclear Station. On July 5, 2017, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented one finding of very low safety significance (Green) in this report. This finding involved a violation of NRC requirements. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

Further, inspectors documented four licensee-identified violations, which were determined to be Severity Level IV, in this report. The NRC is treating these violations as NCVs consistent with Section 2.3.2.a of the Enforcement Policy.

From July 1, 2016, to June 30, 2017, the NRC issued seven Severity Level IV traditional enforcement violations associated with impeding the regulatory process. Inspection Procedure 92723, "Follow up Inspection for Three or More Severity Level IV Traditional Enforcement Violations in the Same Area in a 12-Month Period," will be performed for three of the violations as described in the 05000416/2016007 report (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16348A222). As a result of the four additional Severity Level IV traditional enforcement violations documented in this report, the NRC plans to conduct an additional Inspection Procedure 92723 inspection to assess your evaluation of these additional violations and review the adequacy of associated corrective actions.

If you contest the violations or significance of these NCVs, 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, DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement; and the NRC resident inspector at the Grand Gulf Nuclear Station.

If you disagree with a cross-cutting aspect assignment 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 U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; and the NRC resident inspector at the Grand Gulf Nuclear Station.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

*/RA/*

Jason Kozal, Branch Chief  
Project Branch C  
Division of Reactor Projects

Docket No. 50-416  
License No. NPF-29

Enclosure:  
Inspection Report 05000416/2017002  
w/ Attachments:  
1. Supplemental Information  
2. Cyber Security Follow-up Document Request

GRAND GULF NUCLEAR STATION – NRC INTEGRATED INSPECTION  
REPORT 05000416/2017002 – AUGUST 4, 2017

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 05000416

License: NPF-29

Report: 05000416/2017002

Licensee: Entergy Operations, Inc.

Facility: Grand Gulf Nuclear Station, Unit 1

Location: 7003 Baldhill Road  
Port Gibson, MS 39150

Dates: April 1 through June 30, 2017

Inspectors: M. Young, Senior Resident Inspector  
S. Graves, Senior Reactor Inspector  
G. Pick, Senior Reactor Inspector  
P. Elkmann, Senior Emergency Preparedness Inspector  
N. Day, Resident Inspector  
M. Stafford, Acting Resident Inspector  
E. Schrader, Emergency Preparedness Specialist, NSIR  
S. Hedger, Emergency Preparedness Inspector

Approved By: Jason Kozal  
Chief, Project Branch C  
Division of Reactor Projects

## SUMMARY

IR 05000416/2017002; 04/01/2017 – 06/30/2017; Grand Gulf Nuclear Station; Follow-up of Events and Notices of Enforcement Discretion, Other Activities.

The inspection activities described in this report were performed between April 1 and June 30, 2017, by the resident inspectors at Grand Gulf Nuclear Station and inspectors from the NRC's Region IV office and other NRC offices. One finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements. Additionally, NRC inspectors documented in this report four licensee-identified violations of Severity Level IV with no associated findings. The significance of inspection findings is indicated by their color (i.e., Green, greater than Green, White, Yellow, or Red), determined using Inspection Manual Chapter 0609, "Significance Determination Process," dated April 29, 2015. Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas," dated December 4, 2014. Violations of NRC requirements are dispositioned in accordance with the NRC Enforcement Policy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," dated July 2016.

### Cornerstone: Mitigating Systems

- Green. The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 5.4.1.a, for the licensee's failure to establish appropriate procedural instructions for performing preventative maintenance on the high pressure core spray jockey pump. Specifically, on January 27, 2017, the high pressure core spray jockey pump failed because the licensee did not establish a preventative maintenance procedure that prescribes oil analysis and additional performance trending for the high pressure core spray jockey pump every 6 months consistent with the licensee's preventative maintenance strategy template. On January 29, 2017, the licensee completed repairs and returned the high pressure core spray jockey pump and high pressure core spray system to operable status. The licensee has also incorporated oil analysis and performance trending into the preventative maintenance for jockey pumps. This issue has been entered into the licensee's corrective action program as Condition Report CR-GGN-2017-0917.

The failure to establish appropriate preventative maintenance instructions for the high pressure core spray jockey pump 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 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. Specifically, the failure to establish appropriate preventative and predictive maintenance work instructions resulted in the unplanned inoperability and unavailability of the high pressure core spray system. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, and Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined that the finding resulted in a loss of system and/or function; therefore, a detailed risk evaluation was performed. A senior reactor analyst performed a detailed risk evaluation in accordance with Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power." The NRC determined that the increase in core damage frequency for internal initiators was 1.59E-7/year, and a bounding analysis of external initiators indicated that these events would not result in a

change in the color of the finding. Therefore, this finding is of very low safety significance (Green). The analyst also determined that an estimation of large early release frequency (LERF) was required. The result was an increase in LERF of  $3.19E-8$ /year, which is of very low safety significance for LERF (Green).

This finding had a cross-cutting aspect in the area of human performance associated with consistent process because the licensee did not use a consistent, systematic approach to make decisions. Specifically, the licensee did not use a consistent approach in developing a preventative maintenance strategy for the high pressure core spray jockey pump by utilizing the approved preventative maintenance strategy template [H.13]. (Section 4OA3)

### **Licensee-Identified Violations**

Violations of Severity Level IV that 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 associated corrective action tracking numbers are listed in Section 4OA7 of this report.

## PLANT STATUS

Grand Gulf Nuclear Station started the inspection period at 100 percent power.

On April 4, 2017, operations personnel reduced power to approximately 75 percent power due to a failure of a 2-inch pipe in the condensate system and ultimately performed a manual scram of the unit.

On April 16, 2017, operations personnel commenced restart of the unit following the manual scram and reached 93 percent power on April 26, 2017.

On April 30, 2017, operations personnel reduced power from 93 to 71 percent due to severe weather and potential grid impact.

On May 1, 2017, operations personnel increased power to 94 percent and held at that power level to troubleshoot an issue with a moisture separator reheater drain valve.

On May 5, 2017, operations personnel reduced power from 94 to 83 percent to repair the moisture separator reheater drain valve.

On May 6, 2017, operations personnel increased power to 100 percent.

On June 27, 2017, operations personnel reduced power to approximately 60 percent to perform suppression testing.

On June 30, 2017, operations personnel increased power to 100 percent.

## REPORT DETAILS

### 1. REACTOR SAFETY

#### Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

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

##### .1 Summer Readiness for Offsite and Alternate AC Power Systems

###### a. Inspection Scope

On June 14, 2017, the inspectors completed an inspection of the station's off-site and alternate-ac power systems. The inspectors inspected the material condition of these systems, including transformers and other switchyard equipment to verify that plant features and procedures were appropriate for operation and continued availability of off-site and alternate-ac power systems. The inspectors reviewed outstanding work orders and open condition reports for these systems. The inspectors walked down the switchyard to observe the material condition of equipment providing off-site power sources. The inspectors verified that the licensee's procedures included appropriate measures to monitor and maintain availability and reliability of the off-site and alternate-ac power systems.

These activities constituted one sample of summer readiness of off-site and alternate-ac power systems, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

.2 Readiness to Cope with External Flooding

a. Inspection Scope

On April 18, 2017, the inspectors completed an inspection of the station's readiness to cope with external flooding. After reviewing the licensee's flooding analysis, the inspectors chose three plant areas that were susceptible to flooding:

- Auxiliary building roof
- Enclosure building roof
- Control building roof

The inspectors reviewed plant design features and licensee procedures for coping with flooding. The inspectors walked down the selected areas to inspect the design features, including the material condition of seals, drains, and flood barriers. The inspectors evaluated whether credited operator actions could be successfully accomplished.

These activities constituted one sample of readiness to cope with external flooding, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

**1R04 Equipment Alignment (71111.04)**

.1 Partial Walk-Down

a. Inspection Scope

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

- April 25, 2017, standby service water, train A
- April 28, 2017, high pressure core spray system
- May 3, 2017, control room fresh air, train B, deluge fire protection system

The inspectors reviewed the licensee's procedures and system design information to determine the correct lineup for the systems. They visually verified that critical portions of the systems or trains were correctly aligned for the existing plant configuration.

These activities constituted three partial system walk-down samples, as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

.2 Complete Walk-Down

a. Inspection Scope

On May 4, 2017, the inspectors performed a complete system walk-down inspection of the standby liquid control system, trains A and B, following a surveillance test realignment. The inspectors reviewed the licensee's procedures and system design information to determine the correct system lineup for the existing plant configuration. The inspectors also reviewed outstanding work orders, open condition reports, and other open items tracked by the licensee's operations and engineering departments. The inspectors then visually verified that the system was correctly aligned for the existing plant configuration.

These activities constituted one complete system walk-down sample, as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

**1R05 Fire Protection (71111.05)**

Quarterly Inspection

a. Inspection Scope

The inspectors evaluated the licensee's fire protection program for operational status and material condition. The inspectors focused their inspection on four plant areas important to safety:

- April 19, 2017, Division 1, 2, and 3 emergency diesel generator rooms and corridor, Fire Zones 1D301, 1D302, 1D303, and 1D304
- April 20, 2017, auxillary building 139 foot elevation, electrical switchgear room, motor control cabinet area and corridor, Fire Zones 1A301, 1A302, 1A308, 1A309, 1A314, and 1A316
- April 20, 2017, residual heat removal, trains A and B, heat exchanger and piping penetration rooms, Fire Zones 1A303, 1A304, 1A306, and 1A307
- April 25, 2017, control building 133 foot elevation, control room air conditioning unit rooms, Fire Zones OC302 and OC303

For each area, the inspectors evaluated the fire plan against defined hazards and defense-in-depth features in the licensee's fire protection program. The inspectors evaluated control of transient combustibles and ignition sources, fire detection and suppression systems, manual firefighting equipment and capability, passive fire protection features, and compensatory measures for degraded conditions.

These activities constituted four quarterly inspection samples, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

**1R07 Heat Sink Performance (71111.07)**

a. Inspection Scope

From June 13 – 16, 2017, the inspectors completed an inspection of the readiness and availability of risk-significant heat exchangers. The inspectors observed and reviewed data for the licensee's inspection of the Division 1 emergency diesel generator jacket water heat exchanger and the material condition of the heat exchanger internals. Additionally, the inspectors walked down the heat exchanger to observe its material condition.

These activities constituted completion of one heat sink performance annual review sample, as defined in Inspection Procedure 71111.07.

b. Findings

No findings were identified.

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

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On May 17, 2017, the inspectors observed simulator training for an operating crew. The inspectors assessed the performance of the operators and the evaluators' critique of their performance. The inspectors also assessed the modeling and performance of the simulator during the requalification activities.

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

b. Findings

No findings were identified.

.2 Review of Licensed Operator Performance

a. Inspection Scope

On April 4, 2017, the inspectors observed the performance of on-shift licensed operators in the plant's main control room. At the time of the observations, the plant was in a period of heightened activity and risk due to a leak in the condensate system and

subsequent plant scram. In addition, the inspectors assessed the operators' adherence to plant procedures, including EN-OP-115, "Conduct of Operations," Revision 019, and other operations department policies.

These activities constituted completion of one quarterly licensed operator performance sample, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

**1R12 Maintenance Effectiveness (71111.12)**

a. Inspection Scope

On June 13, 2017, the inspectors reviewed the reactor protection system trains B, C, and D due to the system exceeding the maintenance rule "near (a)(1)" limits. The inspectors reviewed the extent of condition of possible common cause structure, system, and component (SSC) failures and evaluated the adequacy of the licensee's corrective actions. The inspectors reviewed the licensee's work practices to evaluate whether these may have played a role in the degradation of the SSCs. The inspectors assessed the licensee's characterization of the degradation in accordance with 10 CFR 50.65 (the Maintenance Rule), and verified that the licensee was appropriately tracking degraded performance and conditions in accordance with the Maintenance Rule.

These activities constituted completion of one maintenance effectiveness sample, as defined in Inspection Procedure 71111.12.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed two risk assessments performed by the licensee prior to changes in plant configuration and the risk management actions taken by the licensee in response to elevated risk:

- April 9, 2017, risk assessment for maintenance on the recirculation system flow control valve B which was an operation with potential to drain the vessel
- June 5, 2017, risk assessment for Division 2 emergency diesel generator work in combination with condensate storage tank isolation for inspection

The inspectors verified that these risk assessments were performed timely and in accordance with the requirements of 10 CFR 50.65 (the Maintenance Rule) and plant procedures. The inspectors reviewed the accuracy and completeness of the licensee's risk assessments and verified that the licensee implemented appropriate risk management actions based on the results of the assessments.

These activities constituted completion of two maintenance risk assessment inspection samples, as defined in Inspection Procedure 71111.13.

b. Findings

No findings were identified.

**1R15 Operability Determinations and Functionality Assessments (71111.15)**

a. Inspection Scope

The inspectors reviewed four operability determinations and functionality assessments that the licensee performed for degraded or nonconforming SSCs:

- April 24, 2017, operability determination of the Division 1 emergency diesel generator due to a potential crack in the turbocharger
- April 24, 2017, functionality assessment of the control room door, OC516, due to a broken handle which did not allow for the door to open
- April 26, 2017, functionality assessment of the security cables which were found submerged in water
- May 18, 2017, operability determination of the Division 2 emergency diesel generator due to the outside air fan failure to start because its breaker did not close

The inspectors reviewed the timeliness and technical adequacy of the licensee's evaluations. Where the licensee determined the degraded SSC to be operable or functional, the inspectors verified that the licensee's compensatory measures were appropriate to provide reasonable assurance of operability or functionality. The inspectors verified that the licensee had considered the effect of other degraded conditions on the operability or functionality of the degraded SSC.

These activities constituted completion of four operability and functionality review samples, as defined in Inspection Procedure 71111.15.

b. Findings

No findings were identified.

**1R18 Plant Modifications (71111.18)**

a. Inspection Scope

On April 11, 2017, the inspectors reviewed a temporary modification to install acceleratometers on the condensate bypass line for water injection valves. The inspectors verified that the licensee had installed this temporary modification in accordance with technically adequate design documents. The inspectors verified that this modification did not adversely impact the operability or availability of affected SSCs. The inspectors reviewed design documentation and plant procedures affected by the modification to verify the licensee maintained configuration control.

These activities constituted completion of one sample of temporary modifications, as defined in Inspection Procedure 71111.18.

b. Findings

No findings were identified.

**1R19 Post-Maintenance Testing (71111.19)**

a. Inspection Scope

The inspectors reviewed seven post-maintenance testing activities that affected risk-significant SSCs:

- April 11, 2017, intermediate range monitor A, following calibration due to three upscale alarms and a half scram condition
- April 13, 2017, condensate system piping maintenance leak test following replacement of failed piping
- April 26, 2017, standby service water, train B, following ventilation maintenance activities
- April 28, 2017, reactor core isolation cooling system following suction and discharge piping relief valve replacement
- June 2, 2017, standby gas treatment system, train B, following an extended maintenance outage
- June 15, 2017, standby gas treatment system, train A, following installation of a new power supply
- June 20, 2017, Division 1 emergency diesel generator, following extended maintenance outage

The inspectors reviewed licensing- and design-basis documents for the SSCs and the maintenance and post-maintenance test procedures. The inspectors observed the performance of the post-maintenance tests to verify that the licensee performed the tests in accordance with approved procedures, satisfied the established acceptance criteria, and restored the operability of the affected SSCs.

These activities constituted completion of seven post-maintenance testing inspection samples, as defined in Inspection Procedure 71111.19.

b. Findings

No findings were identified.

## **1R20 Refueling and Other Outage Activities (71111.20)**

### a. Inspection Scope

From April 4 – 20, 2017, the inspectors evaluated the licensee's outage activities. The forced outage was associated with a failure of a 2-inch line in the condensate system. The inspectors verified that the licensee considered risk in developing and implementing the outage plan, appropriately managed personnel fatigue, and developed mitigation strategies for losses of key safety functions. This verification included the following:

- Review and verification of the licensee's fatigue management activities
- Monitoring of shut-down and cool-down activities
- Verification that the licensee maintained defense-in-depth during outage activities
- Review of operations with a potential for draining the reactor vessel (BWR)
- Monitoring of heat-up and startup activities

These activities constituted completion of one outage activities sample, as defined in Inspection Procedure 71111.20.

### b. Findings

No findings were identified.

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

### a. Inspection Scope

The inspectors observed one risk-significant surveillance test and reviewed test results to verify that these test adequately demonstrated that the SSCs were capable of performing their safety functions:

In-service tests:

- May 25, 2017, standby liquid control pump, train A, functional test

The inspectors verified that this test met technical specification requirements, that the licensee performed the test in accordance with their procedures, and that the results of the test satisfied appropriate acceptance criteria. The inspectors verified that the licensee restored the operability of the affected SSCs following testing.

These activities constituted completion of one surveillance testing inspection sample, as defined in Inspection Procedure 71111.22.

### b. Findings

No findings were identified.

## Cornerstone: Emergency Preparedness

### 1EP1 Exercise Evaluation (71114.01)

#### a. Inspection Scope

The inspectors observed the March 29, 2017, biennial emergency preparedness exercise to verify the exercise adequately tested the major elements of the emergency plan and provided opportunities for the emergency response organization to demonstrate key skills and functions. The exercise demonstrated the licensee's capability to implement its emergency plan by simulating:

- A loss of coolant accident in the drywell
- Failures of residual heat removal system pumps A and B, failure of the high pressure core spray motor breaker, and failure of the low pressure core spray pump discharge valve
- A failure to isolate containment and auxiliary building ventilation dampers, creating a pathway to the environment through the containment vent
- Failure of a feedwater line, resulting in reactor vessel level lowering to below the top of active fuel
- Fuel failure due to core overheating, creating an unfiltered and unmonitored radiological release to the environment

During the exercise the inspectors observed activities in the control room simulator and the following dedicated emergency response facilities:

- Technical Support Center
- Operations Support Center
- Emergency Operations Facility

The inspectors focused their evaluation of the licensee's performance on the risk-significant activities of event classification, offsite notification, recognition of offsite dose consequences, and development of protective action recommendations.

The inspectors also assessed recognition of, and response to, abnormal and emergency plant conditions, the transfer of decision-making authority and emergency function responsibilities between facilities, onsite and offsite communications, protection of emergency workers, emergency repair evaluation and capability, and the overall implementation of the emergency plan to protect public health and safety and the environment. The inspectors reviewed the current revision of the facility emergency plan, emergency plan implementing procedures associated with operation of the licensee's emergency response facilities, procedures for the performance of associated emergency functions, and other documents as listed in the attachment to this report.

The inspectors attended the post-exercise critiques in each emergency response facility to evaluate the initial licensee self-assessment of exercise performance. The inspectors also attended a formal presentation of critique items to plant management, conducted April 6, 2017.

The inspectors reviewed the scenarios of previous biennial exercises and licensee drills, conducted between November 2015 and February 2017, to determine whether the March 29, 2017, exercise was independent and avoided participant preconditioning in accordance with the requirements of 10 CFR Part 50, Appendix E, IV.F(2)(g). The inspectors also compared observed exercise performance with corrective action program entries and after-action reports for drills and exercises, conducted between November 2015 and February 2017, to determine whether identified weaknesses had been corrected in accordance with the requirements of 10 CFR 50.47(b)(14) and 10 CFR Part 50, Appendix E, IV.F.

The inspectors discussed the integrated exercise with staff at the Federal Emergency Management Agency (FEMA), Regions IV and VI, to determine whether the exercise scenario supported the FEMA exercise evaluation objectives and the results continued to support that participants could adequately protect the health and safety of the public.

These activities constituted one exercise evaluation sample, as defined in Inspection Procedure 71114.01.

b. Findings

No findings were identified.

**1EP2 Alert and Notification System Testing (71114.02)**

a. Inspection Scope

The inspectors verified the adequacy of the licensee's methods for testing the primary and backup alert and notification system. The inspectors also reviewed the licensee's program for identifying emergency planning zone locations requiring tone alert radios, for distributing the radios, and reviewed audits of distribution records. The inspectors interviewed licensee personnel responsible for the maintenance of the primary and backup alert and notification system and reviewed a sample of corrective action system reports written for alert and notification system problems. The inspectors compared the licensee's alert and notification system testing program with criteria in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, FEMA Report REP-10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants," and the licensee's current FEMA-approved alert and notification system design report, "Grand Gulf FEMA REP 10 Report," dated March 6, 2017.

These activities constituted completion of one alert and notification system evaluation sample, as defined in Inspection Procedure 71114.02.

b. Findings

No findings were identified.

## **1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)**

### a. Inspection Scope

The inspector performed an on-site review of the Grand Gulf Nuclear Station Emergency Plan, Revision 75. This revision:

- Added route alerting, a back-up to the installed alert and notification system
- Added requirements for annual tests of communications with federal agencies and tests of communications between the control room, Technical Support Center, Emergency Operations Facility, state and local emergency operating centers, and environmental survey teams
- Added a requirement to submit exercise scenarios to the NRC at least 60 days before use
- Changed 6-year exercise cycle requirements to 8-year exercise cycle requirements in accordance with revisions to Appendix E to 10 CFR Part 50
- Added a requirement to conduct hostile action-based exercises
- Updated the Mississippi Emergency Management Agency Letter of Agreement and the State of Louisiana Letter of Agreement
- Made editorial corrections and corrected typographic errors

This revision was compared to its previous revision, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, and to the standards in 10 CFR 50.47(b) to determine if the revision adequately implemented the requirements of 10 CFR 50.54(q)(3) and 50.54(q)(4). The inspector verified that the revision did not reduce the effectiveness of the emergency plan. This review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection.

These activities constituted completion of one emergency action level and emergency plan changes sample, as defined in Inspection Procedure 71114.04.

### b. Findings

No findings were identified.

## **1EP8 Exercise Evaluation – Scenario Review (71114.08)**

### a. Inspection Scope

The licensee submitted the preliminary exercise scenario for the March 29, 2017, biennial exercise to the NRC on January 27, 2017, in accordance with the requirements of 10 CFR Part 50, Appendix E, IV.F(2)(b). The inspectors performed an in-office review of the proposed scenario to determine whether it would acceptably test the major

elements of the licensee's emergency plan, and provide opportunities for the emergency response organization to demonstrate key skills and functions. The inspectors discussed the preliminary scenario with staff from FEMA, Regions IV and VI, to determine whether the preliminary scenario supported the FEMA exercise evaluation objectives.

These activities constituted completion of one exercise scenario evaluation sample, as defined in Inspection Procedure 71114.08.

b. Findings

No findings were identified.

**4. OTHER ACTIVITIES**

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

**40A1 Performance Indicator Verification (71151)**

.1 Safety System Functional Failures (MS05)

a. Inspection Scope

For the period of April 1, 2016, through March 31, 2017, the inspectors reviewed licensee event reports (LERs), maintenance rule evaluations, and other records that could indicate whether safety system functional failures had occurred. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and NUREG-1022, "Event Reporting Guidelines: 10 CFR 50.72 and 50.73," Revision 3, to determine the accuracy of the data reported.

These activities constituted verification of the safety system functional failures performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index: Emergency AC Power Systems (MS06)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of April 1, 2016, through March 31, 2017, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for emergency ac power systems, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index: Cooling Water Support Systems (MS10)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of April 1, 2016, through March 31, 2017, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for cooling water support systems, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

**40A2 Problem Identification and Resolution (71152)**

.1 Routine Review

a. Inspection Scope

Throughout the inspection period, the inspectors performed daily reviews of items entered into the licensee's corrective action program and periodically attended the licensee's condition report screening meetings. The inspectors verified that licensee personnel were identifying problems at an appropriate threshold and entering these problems into the corrective action program for resolution. The inspectors verified that the licensee developed and implemented corrective actions commensurate with the significance of the problems identified. The inspectors also reviewed the licensee's problem identification and resolution activities during the performance of the other inspection activities documented in this report.

b. Findings

No findings were identified.

## .2 Annual Follow-up of Selected Issues

### a. Inspection Scope

The inspectors selected three issues for an in-depth follow-up:

- April 3 - April 5, 2017, during an in-office inspection, the inspector reviewed the four cyber security-related findings documented in Inspection Report 05000416/2015405, "Inspection of Implementation of Interim Cyber Security Milestones 1-7," for in-depth follow-up review. The inspector reviewed a sample of updated program documents and procedures, updated critical digital asset listings, training documents, and corrective action documents.

The inspectors assessed the licensee's extent of condition reviews, compensatory actions, and completed corrective actions. The inspectors verified that the licensee appropriately prioritized the corrective actions and that these actions were adequate to correct the conditions.

- May 18, 2017, review of a Part 21 issued by FlowServe pertaining to the recirculation pumps A and B suction and discharge valves. The inspectors reviewed the actions planned and already taken by the licensee and determined that the licensee is taking appropriate actions to address the concern of potential wedge pin failure.
- April 20 through June 15, 2017, the inspectors reviewed the control of contaminated areas and locked high radiation areas. The inspectors identified two instances where the licensee did not follow station procedures when controlling these areas.
  - The inspectors identified a steel hose penetrating a contamination area boundary that was not secured from movement. The inspectors recognized this could potentially spread contamination and reported the condition to the licensee. The licensee immediately secured the hose and entered the issue into the corrective action program as Condition Report CR-GGN-2017-04037.

Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2. Section 7.e(4) of Appendix A of Regulatory Guide 1.33, Revision 2, requires radiation protection procedures for contamination control. Licensee Procedure EN-RP-100, "Radiation Worker Expectations," Revision 11, Step 5.6[1] states, in part, to secure all hoses that penetrate contamination area boundaries. Contrary to the above, on April 20, 2017, the licensee failed to secure all hoses that penetrate contamination area boundaries. The safety significance of the performance deficiency is minor because it is similar to Example 4.a of Inspection Manual Chapter 0612, Appendix E, "Examples of Minor Issues," and the procedural error did not have a safety impact. This failure to comply with Technical Specification 5.4.1.a constitutes a minor

violation that is not subject to enforcement action in accordance with the NRC's Enforcement Policy.

- The inspectors identified a scaffold installed in the residual heat removal (RHR) B piping penetration room that could allow access to a barricaded locked high radiation area (LHRA). The inspectors compared this to the LHRA in the RHR A piping penetration room and noted that a similar scaffold was built in this room. However, the LHRA in the RHR A piping penetration room had an additional barricade installed to prevent access from the scaffold. The inspectors notified the licensee of this condition. The licensee surveyed the LHRA and determined that the area had been conservatively posted as a LHRA. The licensee entered this issue into the corrective action program as Condition Report CR-GGN-2017-04215.

Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2. Section 7.e(1) of Appendix A of Regulatory Guide 1.33, Revision 2, requires radiation protection procedures for access control to radiation areas. Licensee Procedure EN-RP-101, "Access Control for Radiologically Controlled Areas," Revision 13, Step 5.5[1] states, in part, barricades shall be installed in a manner such that they prevent unauthorized access, and Step 5.5[2] states, in part, no equipment shall be used in a manner that would allow unauthorized access over the enclosure. Contrary to the above, on April 20, 2017, the licensee did not install barricades in a manner such that they prevent unauthorized access to a LHRA and did not ensure that equipment (scaffold) was not used in a manner that would allow unauthorized access over the enclosure. The safety significance of the performance deficiency is minor because it is similar to Example 6.g of Inspection Manual Chapter 0612, Appendix E, "Examples of Minor Issues," the LHRA was conservatively posted, and the radiological conditions did not actually constitute a LHRA in the area. This failure to comply with Technical Specification 5.4.1.a constitutes a minor violation that is not subject to enforcement action in accordance with the NRC's Enforcement Policy.

The inspectors assessed the licensee's problem identification threshold, cause analyses, extent of condition reviews and compensatory actions. The inspectors verified that the licensee appropriately prioritized the planned corrective actions and that these actions were adequate to correct the condition.

These activities constituted completion of three annual follow-up samples, as defined in Inspection Procedure 71152.

b. Findings

No findings were identified.

#### 40A3 Follow-up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report (LER) 05000416/2017001-00, "High Pressure Core Spray (HPCS) Jockey Pump Trip"

a. Inspection Scope

On January 27, 2017, the HPCS jockey pump tripped unexpectedly, which resulted in the HPCS system being declared inoperable. The licensee appropriately entered Technical Specification 3.5.1 Condition B. The licensee disassembled and rebuilt the HPCS jockey pump. On January 29, 2017, the licensee satisfactorily tested the pump and returned the high pressure core spray system to an operable status. The inspectors reviewed station operating logs, reviewed station risk procedures, reviewed system drawings and design characteristics, interviewed control room operators, interviewed operations management, observed maintenance activities of the emergent pump maintenance, and reviewed pump maintenance documents.

b. Findings

Introduction. The inspectors reviewed a self-revealed, Green non-cited violation of Technical Specification 5.4.1.a, for the licensee's failure to establish appropriate procedural instructions for performing preventative maintenance on the HPCS jockey pump. Specifically, on January 27, 2017, the HPCS jockey pump failed because the licensee did not establish a preventative maintenance procedure that prescribes oil analysis and additional performance trending for the HPCS jockey pump every 6 months consistent with the licensee's preventative maintenance strategy template.

Description. On January 27, 2017, the HPCS jockey pump tripped unexpectedly. The main control room received the "HPCS PMP SUCTION PRESS ABNORMAL" annunciator. An operator and electrician identified that the HPCS jockey pump breaker was in the normal (ON) position, the HPCS jockey pump was not running, and there were no other obvious signs of failure. After further troubleshooting, it was determined that the HPCS jockey pump had a failed thrust bearing and groove damage in the bearing housing.

The licensee performed an equipment failure evaluation for the damaged bearing and bearing housing and determined that preventative maintenance performed on the pump was not capable of predicting or preventing this failure. Furthermore, the preventative maintenance strategy for the HPCS jockey pump was inconsistent with the station preventative maintenance template for this type of pump. Specifically, the template recommends additional oil analysis and performance trending at a 6-month frequency, which was not being done. Therefore, since the pump is a continuously running piece of equipment, and had not had adequate maintenance, the pump failed unexpectedly.

Due to system suction pressure, and in order to establish conditions necessary to repair the pump, the HPCS system was rendered inoperable and unavailable at 6:08 p.m. on January 27, 2017. The HPCS jockey pump was repaired, retested, and returned to available status at 12:12 p.m. on January 29, 2017, and to operable status at 7:17 p.m. on January 29, 2017.

This issue was documented in Condition Report CR-GGN-2017-0917, and the licensee has since repaired the HPCS jockey pump and created corrective actions to revise the

preventative maintenance strategies for this and similar pumps.

Analysis. The failure to establish appropriate preventative maintenance instructions for the HPCS jockey pump 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 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. Specifically, the failure to establish appropriate preventative and predictive maintenance work instructions resulted in the unplanned inoperability and unavailability of the HPCS system. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, and Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined that the finding resulted in a loss of system and/or function; therefore, a detailed risk evaluation was performed.

The analyst used the Grand Gulf Nuclear Station SPAR model Version 8.50 to evaluate the risk of this condition. Using the bounding assumption that the failure of the jockey pump would prevent operation of the High Pressure Core Spray system, the analyst set the system to a failed state. The resulting quantification provided a core damage frequency of  $3.65E-5$  /year. Subtracting the model baseline of  $3.32E-6$  /year, the delta was  $3.32E-5$  /year. Over the exposure period of 42 hours, the change in core damage frequency was  $1.59E-7$  for internal events. The dominant core damage sequences were various initiating events with failure of the high pressure core spray and reactor isolation core cooling systems with a failure to depressurize the reactor coolant system. This left the plant in a high pressure core damage state at the time of postulated vessel breach.

The analyst evaluated the contributions to risk from external events as required by Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power," because the internal events detailed risk evaluation result was greater than  $1.0E-7$ . By reviewing the licensee's Individual Plant Examination of External Events submittal, the analyst determined that the dominant external events were earthquakes, internal fires, high winds, and external floods. Qualitatively external floods, high winds, and earthquakes were screened out because the initiating event frequency of those conditions that would impact the site was so low that, when combined with the short exposure period, the total risk was inconsequential. The analyst used quantitative bounding analysis to show that the internal fire risk would not change the color of the finding. As a result the total increase in core damage frequency from internal and external events was estimated to be of very low safety significance (Green).

In accordance with Inspection Manual Chapter 0609, Appendix H, "Containment Integrity Significance Determination Process," the analyst determined that a Phase 2 estimation of large early release frequency (LERF) was required. In accordance with Appendix H, Table 5.2, "Phase 2 Assessment Factors – Type A Findings at Full Power," the appropriate LERF factor for this assessment would be 0.2 because the dominant core damage sequences would go to core damage and reactor vessel breach with the reactor at high pressure. This resulted in an increase in LERF of  $3.19E-8$ , which is of very low safety significance for LERF (Green).

This finding had a cross-cutting aspect in the area of human performance associated with consistent process because the licensee did not use a consistent, systematic

approach to make decisions. Specifically, the licensee did not use a consistent approach in developing a preventative maintenance strategy for the HPCS jockey pump by utilizing the approved preventative maintenance strategy template [H.13].

Enforcement. Technical Specification 5.4.1.a, requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable processes recommended in Appendix A of Regulatory Guide 1.33, Revision 2. Section 9.b of Appendix A to Regulatory Guide 1.33, Revision 2, requires procedures for performing maintenance, and that preventative maintenance schedules should be developed to specify lubrication schedules, inspections of equipment, replacement of such items as filters and strainers, and inspection or replacement of parts that have specific lifetimes, such as wear rings. Contrary to the above, until January 27, 2017, Grand Gulf Nuclear Station did not establish preventative maintenance schedules to specify lubrication schedules, inspections of equipment, replacement of such items as filters and strainers, and inspection or replacement of parts that have specific lifetimes, such as wear rings. Specifically, Grand Gulf Nuclear Station did not establish a preventative maintenance procedure that prescribes oil analysis and additional performance trending for the HPCS jockey pump every 6 months consistent with the station preventative maintenance strategy template. This resulted in the unplanned inoperability and unavailability of the HPCS system. On January 29, 2017, the licensee completed repairs and returned the HPCS jockey pump and HPCS system to operable status. The licensee has also incorporated oil analysis and performance trending to the preventative maintenance for jockey pumps. Because this finding was determined to be of very low safety significance (Green) and has been entered into the licensee's corrective action program as Condition Report CR-GGN-2017-00917, this violation is being treated as a non-cited violation consistent with Section 2.3.2.a of the NRC Enforcement Policy. (NCV 05000416/2017002-01, "Failure to Establish an Appropriate Preventative Maintenance Procedure for the HPCS Jockey Pump")

## .2 Manual Reactor Scram Following a Leak in the Condensate System

### a. Inspection Scope

On April 4, 2017, the inspectors responded to the Grand Gulf Nuclear Station control room to observe recovery actions following a manual reactor scram. At approximately 12:10 am, operations personnel performed a manual scram due to a failure of a 2-inch line in the condensate system. Operations personnel had to isolate the condensate and feedwater systems to stop the leak and preserve inventory in the condensate storage tank. Operations personnel initiated reactor core isolation cooling to maintain reactor core cooling and maintain reactor water level in the required band throughout the recovery.

The inspectors independently reviewed data logs, toured plant areas and observed control room indications to evaluate operator actions in response to the equipment failure and to determine whether the appropriate plant response was attained to achieve safe shutdown conditions. The licensee entered this event into their corrective action program as Condition Report CR-GGN-1-2017-03333.

### b. Findings

No findings were identified.

These activities constituted completion of two event follow-up samples, as defined in Inspection Procedure 71153.

#### **40A6 Meetings, Including Exit**

##### Exit Meeting Summary

On February 26, 2017, the inspectors discussed the in-office review of the preliminary scenario for the 2017 biennial exercise, submitted January 27, 2017, with Mr. J. Seiter, Manager, Emergency Preparedness, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On April 5, 2017, the inspector presented the results of the cyber security follow-up inspection to Mr. S. Soudah, Senior Manager, Information Technology/Office of Information Technology Nuclear, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On April 18, 2017, the inspectors presented the results of the onsite inspection of the biennial emergency preparedness exercise conducted March 29, 2017, to Mr. E. Larson, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On July 5, 2017, the inspectors presented the inspection results to Mr. E. Larson, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On July 26, 2017, the inspectors presented the inspection results to Mr. G. Hawkins, Director, Regulatory Assurance and Performance Improvement, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

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

The following licensee-identified violations of NRC requirements were determined to be Severity Level IV and meet the NRC Enforcement Policy criteria for being dispositioned as non-cited violations:

- Title 10 CFR 72.44(d)(3) requires, in part, that an annual report be submitted to the Commission, specifying the quantity of each of the principal radionuclides released to the environment in liquid and in gaseous effluents during the previous 12 months of operation and such other information as may be required by the Commission to estimate maximum potential radiation dose commitment to the public resulting from effluent releases. The report must be submitted within 60 days after the end of the 12-month monitoring period. Contrary to the above, from March 2, 2017, until April 27, 2017, the licensee did not submit the annual report within 60 days after the end of the 12-month monitoring period. The NRC's significance determination process is not designed to

assess the significance of violations that impact or impede the regulatory process. Therefore, the issue of an untimely annual report submittal was assessed using the traditional enforcement process in accordance with the Enforcement Policy. The inspectors determined the violation to be at Severity Level IV because the licensee submitted the annual report approximately 2 months late, and it is similar to examples in the Enforcement Policy, Section 6.9.d. Since this issue was entered into the licensee's corrective action program as Condition Report CR-GGN-1-2017-03092, compliance was restored within a reasonable period of time, the violation was not repetitive, and the violation was not willful, this violation is being treated as a non-cited violation (NCV), consistent with Section 2.3.2.a of the Enforcement Policy. Traditional enforcement violations are not assigned a cross-cutting aspect.

- License Condition 2.C(46)(f) requires, during the first two scheduled refueling outages after reaching full EPU (extended power uprate) conditions, Entergy shall conduct a visual inspection of all accessible, susceptible locations of the steam dryer in accordance with BWRVIP-139 and GE inspection guidelines. Entergy shall report the results of the visual inspections of the steam dryer to the NRC staff within 60 days following startup. Contrary to the above, on August 16, 2012, and May 15, 2014, the licensee did not report the results of the visual inspections of the steam dryer to the NRC staff within 60 days following startup. The NRC's significance determination process is not designed to assess the significance of violations that impact or impede the regulatory process. Therefore, the issue of an untimely inspection results submittal was assessed using the traditional enforcement process in accordance with the Enforcement Policy. The inspectors determined the violation to be at Severity Level IV because it is similar to examples in the Enforcement Policy Section 6.9.d. Since this issue was entered into the licensee's corrective action program as Condition Report CR-GGN-1-2017-03404, compliance was restored within a reasonable period of time, the violation was not repetitive, and the violation was not willful, this violation is being treated as a non-cited violation (NCV), consistent with Section 2.3.2.a of the Enforcement Policy. Traditional enforcement violations are not assigned a cross-cutting aspect.
- License Condition 2.C(46)(g) requires, at the end of the second refueling outage following the implementation of the EPU, the licensee shall submit a long-term steam dryer inspection plan based on industry operating experience along with the baseline inspection results for NRC review and approval. Contrary to the above, since May 15, 2014, the licensee did not submit a long-term steam dryer inspection plan based on industry operating experience along with the baseline inspection results for NRC review and approval. The NRC's significance determination process is not designed to assess the significance of violations that impact or impede the regulatory process. Therefore, the issue of an untimely inspection plan submittal was assessed using the traditional enforcement process in accordance with the Enforcement Policy. The inspectors determined the violation to be at Severity Level IV because it is similar to examples in the Enforcement Policy Section 6.9.d. Since this issue was entered into the licensee's corrective action program as Condition Report CR-GGN-1-2017-03404, compliance was restored within a reasonable period of time, the violation was not repetitive, and the violation was not willful, this violation is being treated as a non-cited violation (NCV), consistent with Section 2.3.2.a of the Enforcement Policy. Traditional enforcement violations are not assigned a cross-cutting aspect.
- Title 10 CFR 50.72(b)(2)(iv)(B) requires, in part, the licensee shall notify the NRC as soon as practical, and in all cases within 4 hours of the occurrence, of any event or

condition that results in actuation of the reactor protection system (RPS) when the reactor is critical. Contrary to the above, on April 4, 2017, the licensee did not notify the NRC within 4 hours of the occurrence of any event or condition that resulted in actuation of the RPS when the reactor was critical. Specifically, the licensee failed to notify the NRC within 4 hours after they performed a manual scram of the reactor due to a failure in the condensate system. The NRC's significance determination process is not designed to assess the significance of violations that impact or impede the regulatory process. Therefore, the issue of an untimely notification was assessed using the traditional enforcement process in accordance with the Enforcement Policy. The inspectors determined the violation to be at Severity Level IV in accordance with Enforcement Policy Section 6.9.d.9. Since this issue was entered into the licensee's corrective action program as Condition Report CR-GGN-1-2017-03331, compliance was restored within a reasonable period of time, the violation was not repetitive, and the violation was not willful, this violation is being treated as a non-cited violation (NCV), consistent with Section 2.3.2.a of the Enforcement Policy. Traditional enforcement violations are not assigned a cross-cutting aspect.

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

R. Benson, Manager (Acting), Radiation Protection  
D. Burnett, Director, Emergency Preparedness  
D. Ellis, Regulatory Assurance  
M. Giacini, General Manager, Plant Operations  
A. Hasanat, Regulatory Assurance  
G. Hawkins, Director, Regulatory Assurance and Performance Improvement  
E. Larson, Site Vice President  
C. Lewis, Operations Information Technology Manager  
J. Mathis, Supervisor, Regulatory Assurance  
R. Meister, Regulatory Assurance  
J. Nadeau, Manager, Regulatory Assurance  
J. Seiter, Manager, Emergency Preparedness  
S. Sweet, Regulatory Assurance  
T. Vehec, Director, Recovery  
P. Williams, Director, Engineering

#### **Other Contacts**

D. Bordelon, Branch Chief, Technological Hazards Branch, FEMA Region VI  
K. Keyes, Acting Branch Chief, Technological Hazards Branch, FEMA Region IV  
G. McLemore, Site Specialist, FEMA Region IV  
N. Williams, Chairperson, Radiological Assistance Committee, FEMA Region VI

### **LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

#### **Opened and Closed**

05000416/2017002-01 NCV Failure to Establish an Appropriate Preventative Maintenance Procedure for the HPCS Jockey Pump (Section 4OA3)

#### **Closed**

05000416/2017001-00 LER High Pressure Core Spray Jockey Pump Trip (Section 4OA3)

## LIST OF DOCUMENTS REVIEWED

### Section 1R01: Adverse Weather Protection

#### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
GEXI 2015-0001	Nuclear Plant Operating Agreement for Grand Gulf Nuclear Station	December 19, 2013

#### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-DC-150	Condition Monitoring of Maintenance Rule Structures	12
ENS-DC-201	ENS Transmissin Grid Monitoring	7
ENS-PL-158	Switchyard and Transmission Interface Requirements	3
ENS-DC-199	Off Site Power Supply Design Requirements Nuclear Plant Interface Requirements	9
PL-159	Summer Reliability Plan	0
05-1-02-I-1	Reactor Scram	128
05-1-02-I-2	Turbine and Generator Trips	036
05-1-02-I-4	Loss of AC Power	050

#### Condition Reports (CR-GGN-)

2014-05389	2015-00225	2016-00370	2016-01850	2016-03292
2016-03520	2016-03522	2016-07818	2017-00814	2017-03911
2017-03916	2016-06774	2017-05166	2017-05167	

### Section 1R04: Equipment Alignment

#### Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
XC-Q1111-98017	LOCA Dose Analysis with Revised Source Terms	0, 1, 2, 3, 4

#### Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M-0035J	Fire Protection System Unit 1	19
M-1082	Standby Liquid Control System Unit 1	28

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	Maintenance Rule Database System	
ER-GG-2001-0315	Removal of Charcoal Filters	0
ER-GG-2005-0032	Fire Zone OC303	0

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
04-1-01-C41-1	Standby Liquid Control System	123
04-1-01-E22-1	High Pressure Core Spray System	122
04-1-01-P41-1	Standby Service Water System	143

Condition Reports (CR-GGN-)

2010-07674	2015-05189	2015-06437	2015-07265	2016-00239
2016-00257	2016-00758	2016-00862	2016-07395	2016-07480
2017-01641	2017-01795	2017-04143	2017-04246	2017-04432
2017-04542	2017-04551	2017-04552		

Work Order (WO)

435370	453397	463175	468351	473971
50884490				

**Section 1R05: Fire Protection**

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
A-0634	Unit 1 Aux. & Diesel Generator Building and SSW Pump House – Fire Protection	5

Miscellaneous Documents

<u>Number</u>	<u>Title</u>
FHA	Fire Hazards Analysis

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
A-19	Fire Pre-Plan – Train B MCC Area and Corridor	1
A-20	Fire Pre-Plan – Train A MCC Area and Corridor	3
A-21	Fire Pre-Plan – RHR A Heat Exchanger and Piping Penetration Room	1
A-23	Fire Pre-Plan – RHR B Heat Exchanger and Piping Penetration Room	0
A-24	Fire Pre-Plan – Train B Electrical Switchgear Room	1
A-25	Fire Pre-Plan – Train A Electrical Switchgear Room	2
C-08	Fire Pre-Plan – Train B ESF HVAC	4
C-09	Fire Pre-Plan – Train A ESF HVAC	3
DG-01	Fire Pre-Plan – Fresh Air Corridor	5
DG-02	Fire Pre-Plan – Division I Diesel Generator Room	6
DG-03	Fire Pre-Plan – Division II Diesel Generator Room	6
DG-04	Fire Pre-Plan – HPCS Diesel Generator	7

Condition Reports (CR-GGN-)

2016-00421	2016-09190	2017-03967	2017-04195	2017-04197
2017-04209	2017-04246			

Work Order (WO)

257451	454964
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**Section 1R07: Heat Sink Performance**

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	P75B004A – Jacket Water Heat Exchanger Tube Sheet Map	June 15, 2017

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EC 40821	Justification of Plugging 10% tubes on the Diesel Generator Jacket Water Cooler (1P75B004A/B) for CR-GGN-2012-12060	0

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EC 48092	Division I and II Standby Diesel Generator Heat Exchanger CR-GGN-2012-12060, CA 15	0

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-DC-316	Heat Exchange Performance and Condition Monitoring	8
EN-EP-S-039-G	Testing Standard for Safety-Related Heat Exchangers Cooled by Standby Service Water	2

Condition Reports (CR-GGN-)

2017-05910	2017-05960
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Work Order (WO)

52660374	52659513
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**Section 1R11: Licensed Operator Requalification Program and Licensed Operator Performance**

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-OP-115	Conduct of Operations	019
GSMS-LOR- CPE03	Licensed Operator Requalification Scenario	1
02-S-01-27	Operations Philosophy	069
05-S-01-EP-2	RPV Control	045
05-S-01-EP-3	Containment Control	029
05-S-02-V-1	Response to Fires	005
05-1-02-I-1	Reactor Scram	127
05-1-02-I-4	Loss of AC Power	050
05-1-02-III-5	Automatic Isolations	049
05-1-02-V-1	Loss of Component Cooling Water	024
05-1-02-V-5	Loss of Feedwater Heating	118
10-S-01-4	Activation of the Emergency Plan	126
10-S-03-2	Response to Fires	027

**Section 1R12: Maintenance Effectiveness**

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-DC-203	Maintenance Rule Program	3
EN-DC-204	Maintenance Rule Scope and Basis	4
EN-DC-205	Maintenance Rule Monitoring	6
EN-DC-206	Maintenance Rule (a)(1) Process	3
EN-DC-207	Maintenance Rule Periodic Assessment	3

Condition Reports (CR-GGN-)

2016-03104	2016-04786	2016-05020	2016-05616	2016-05617
2016-06104	2016-07981	2017-03797	2017-04963	

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Operations Narrative Log – Abort Criteria	April 9, 2017
03-1-01-5	Refueling, Attachment III - Associated with Potential for Draining Vessel	April 9, 2017

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
03-1-01-5	Refueling	137
EN-WM-104	On Line Risk Assessment	15

Condition Reports (CR-GGN-)

2017-05981	2016-05617
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Work Order (WO)

472048	472114
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## Section 1R15: Operability Determinations and Functionality Assessments

### Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E-0660	Site Raceway Plan Units 1 & 2	031
M-1106A	D. Gen., ECCS, ESF, Elec. Swgr., SSW & Circ. Wtr. PP. Hse. Vent Sys. – Unit 1	013

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
89/6166	Engineering Evaluation Report	
00392150-23	Manhole Inspection	April 26, 2017

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-OP-104	Operability Determination Process	11
02-S-01-17	Control of Limiting Conditions for Operation	129
06-OP-1P75-M-0001	Standby Diesel Generator (SDG) 11 Functional Test	139

### Condition Reports (CR-GGN-)

2017-02595	2017-03999	2017-04000	2017-04120	2017-04130
2017-04173	2017-04190	2017-04204	2017-04256	2017-04281

### Work Order (WO)

00392150

## Section 1R18: Plant Modifications

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
71032	Temp Modification to Install Accelerometers for Vibration Data Collection for Bypass Lines for Water Injection Valves	1

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-DC-136	Temporary Modifications	013

Condition Reports (CR-GGN-)

2017-03334

Work Order (WO)

472042

**Section 1R19: Post-Maintenance Testing**

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
06-OP-1C51-V-0002	IRM Functional Test	April 11, 2017
00471713-08	Maintenance Leak Tests – Post Weld NDE on Condensate Piping	April 10, 2017

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
06-ME-1000-R-0003	Safety and Relief Valve Functional Test	111
06-OP-1C51-V-0002	IRM Functional Test	110
06-OP-1T48-M-0002	Standby Gas Treatment System Operability	108
06-OP-1T48-R-0003	Standby Gas Treatment Logic and Vacuum Test: Test Logic	119

Condition Reports (CR-GGN-)

2017-03576

Work Order (WO)

00471713          465517

## Section 1R20: Refueling and Other Outage Activities

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
03-1-01-1	Cold Shutdown to Generator Carrying Minimum Load – Drywell Closeout Checksheet	April 16, 2017

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
03-1-01-1	Cold Shutdown to Generator Carrying Minimum Load	171
En-MA-118	Foreign Material Exclusion	10

## Section 1R22: Surveillance Testing

### Calculations

<u>Number</u>	<u>Title</u>	<u>Date</u>
1.5.5-A-Q	SLC (Standby Liquid Control) Pump Discharge Pressure	March 25, 1977

### Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
J-1244-001	Standby Liquid Control Pumps Logic Diagram	4
M-1082	Standby Liquid Control System	028

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
460000042	Standby Liquid Control Pumps – Union Pump Company Vendor Manual	July 21, 2009

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
02-S-01-27		069
06-OP-1C41-Q-001	Standby Liquid Control Functional Test	128

### Work Order (WO)

52743252

## Section 1EP1: Exercise Evaluation

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Grand Gulf Nuclear Station Emergency Plan	74, 75
2014/00209	Evaluation Report for the Red Team DEP Mini Drill 2014-003	October 1, 2014
2014/00303	Evaluation Report for the 2014 On-Shift Chemist Drill	December 29 2014
2015/00112	Evaluation Report for the 2014-004 Blue Team DEP Mini-Drill	June 15, 2015
2015/00113	Evaluation Report for the Third Quarter 2014 Green Team Exercise	June 15, 2015
2015/00115	Evaluation Report for the Second Quarter 2015 Yellow Team Exercise	June 17, 2015
2015/00140	Evaluation Report for the July 2015 Red Team Exercise	July 29, 2015
2015/00187	Evaluation Report for the Red Team Hostile Action Exercise	November 4, 2015
2016/00003	Evaluation Report for the Fourth Quarter Blue Team Exercise	January 10, 2016
2016/00006	Evaluation Report for the 2015 On-Shift Chemist Drill	December 29, 2015
2016/00090	Evaluation Report for the Second Quarter Yellow Team Exercise	May 9, 2016
2016/00124	Evaluation Report for the Red Team DEP 2016-002	June 22, 2016
2016/00148	Evaluation Report for DEP Mini Drill 2016-002, Operations Crew E	July 28, 2016
2016/00155	Evaluation Report for DEP Mini Drill 2016-002, Yellow Team	August 4, 2016
2016/00181	Evaluation Report for the OSC Manager Drill Conducted September 13, 2016	September 13, 2016
2016/00203	Evaluation Report for the Fourth Quarter Blue and Red Team Exercise	October 18, 2016
2016/00215	Evaluation Report for the Yellow Team DEP 2016-003	October 26, 2016

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
01-S-06-05	Reportable Events or Conditions	111
10-S-01-1	Activation of the Emergency Plan	122, 123, 124, 125, 126
10-S-01-6	Notification of Offsite Agencies and Plant On-Call Emergency Personnel	55
10-S-01-11	Evacuation of Onsite Personnel	24
10-S-01-12	Radiological Assessment and Protective Action Recommendations	45
10-S-01-14	Emergency Radiological Monitoring	25
10-S-01-20	Administration of Thyroid Blocking Agents	16
10-S-01-26	Offsite Emergency Response	14
10-S-01-35	Core Damage Assessment	6
10-S-01-38	EAL Contingency Planning	4
10-S-01-39	Equipment Important to Emergency Preparedness	4
10-S-02-01	ERF Inspections, Inventories, Operability Checks and Maintenance	019
EN-EP-308	Emergency Planning Critiques	4
EN-EP-310	Emergency Response Organization Notification System	5
EN-EP-313	Offsite Dose Assessment using the Unified RASCAL Interface	2
EN-EP-609	Emergency Operations Facility Operations	2
EN-EP-610	Technical Support Center Operations	2
EN-EP-611	Operations Support Center Operations	3
EN-EP-801	Emergency Response Organization	14
EN-LI-108	Event Notification and Reporting	14

Condition Reports (CR-GGN-)

2017-01917	2017-03118	2017-03222	2017-03226	2017-03228
2017-03229	2017-03230	2017-03232	2017-03233	2017-03307
2017-03308	2017-03312	2017-03314	2017-03315	2017-03336

## Section 1EP2: Alert and Notification System Testing

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
01-S-10-3	Emergency Planning Department Responsibilities	22

### Condition Reports (CR-GGN-)

2014-06867	2015-02307	2015-04475	2015-04689	2015-05126
2015-05131	2015-05679	2015-05780	2015-06093	2015-06460
2016-07758				

## Section 1EP4: Emergency Action Level and Emergency Plan Changes

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
EN-EP-305	10 CFR 20.54(Q)(3) Screening for Emergency Plan Revision 75	March 20, 2017
EN-EP-305	Emergency Planning 10 CFR 50.54(q) Review Program	4

## Section 40A1: Performance Indicator Verification

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
	GGNS MSPI Program – P75, P41	Second Quarter 2016
	GGNS MSPI Program – P75, P41	Third Quarter 2016
	GGNS MSPI Program – P75, P41	Fourth Quarter 2016
	GGNS MSPI Program – P75, P41	First Quarter 2017

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-LI-114	Regulatory Performance Indicator Process	007

## Section 40A2: Problem Identification and Resolution

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	ARINC SOCA Video Network Drawing – For Reference Only	May 14, 2015
	Discussion Paper, Program Changes since MS1-7 Table, New CDAs since Inspection	
CSG-0001	Plant Process Computer Network Connection Diagram Network Switch Layout – For Reference Only	0
E7309	Room C91 Data Diode Installation	000
GNRO-2015/00062	Entergy's Response to NRC Letter, "Grand Gulf Nuclear Station – NRC Temporary Instruction 2201/004, "Inspection of Implementation of Interim Cyber Security Milestones 1-7," Inspection Report 05000416/2015405," Dated August 7, 2015	October 7, 2015

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-FAP-IT-008	Nuclear Cyber Security Training and Awareness	4
EN-IT-103	Nuclear Cyber Security Program	12
EN-IT-103-01	Control of Portable Digital Media Connected to Critical Digital Assets	8, 11
EN-IT-103-02	Cyber Security Periodic Activities	3
EN-IT-112	Control of Plant Computers	3
EN-RP-100	Radiation Worker Expectations	11
EN-RP-101	Access Control for Radiologically Controlled Areas	13

### Condition Reports (CR-GGN-)

2014-04922	2014-05337	2014-07539	2015-00668	2015-01146
2015-01527	2015-03268	2015-03304	2015-03318	2015-03343
2015-04618	2017-04037	2017-04215	2017-05433	HQN-2014-00877
HQN-2015-00593	2013-01720	2013-02041	2013-03060	

### Work Orders (WO)

3577439	357440	352748	352749
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## Cyber Security Follow-up Document Request

NOTE: If any requested documents are identified as security-related, please notify the lead inspector:

Sam Graves  
RIV/DRS/EB2  
1600 E. Lamar Blvd.  
Arlington, TX 76011

1. Corrective action documents for NRC- and Licensee-identified performance deficiencies described in the Milestones (MS) 1-7 Inspection Report (2015405). Please provide the plant documents that corrected the deficiencies (e.g., revised procedures, work orders, modification packages, new equipment, et cetera).
2. Current Cyber Security Program document(s)
3. Cyber Security program procedures
4. List of contacts with contact information
5. Cyber security group organization chart
6. Diagram of defensive network
7. A list of critical digital assets identified since the last onsite week of the MS 1-7 Inspection
8. A list of Cyber Security Program changes since the MS 1-7 Inspection

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