



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION IV
1600 E. LAMAR BLVD
ARLINGTON, TX 76011-4511

May 15, 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 05000416/2017001**

Dear Mr. Larson:

On March 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Grand Gulf Nuclear Station. On April 11, 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 three licensee-identified violations, which were determined to be of very low safety significance (Green), in this report. The NRC is treating these violations as NCVs consistent with Section 2.3.2.a of the Enforcement Policy.

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/

Greg Warnick, Branch Chief
Project Branch C
Division of Reactor Projects

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

Enclosure:

Inspection Report 05000416/2017001

w/ Attachments:

1. Supplemental Information
2. Request for Information for the Occupational Radiation Safety Inspection

GRAND GULF NUCLEAR STATION – NRC INTEGRATED INSPECTION
 REPORT 05000416/2017001 DATED MAY 15, 2017

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000416
License: NPF-29
Report: 05000416/2017001
Licensee: Entergy Operations, Inc.
Facility: Grand Gulf Nuclear Station, Unit 1
Location: 7003 Baldhill Road
Port Gibson, MS 39150
Dates: January 1 through March 31, 2017
Inspectors: M. Young, Senior Resident Inspector
N. Day, Resident Inspector
L. Carson II, Senior Health Physicist
M. Phalen, Senior Health Physicist
P. Elkmann, Senior Emergency Preparedness Inspector
S. Hedger, Emergency Preparedness Inspector
E. Uribe, Project Engineer
Approved By: Greg Warnick
Chief, Project Branch C
Division of Reactor Projects

SUMMARY

IR 05000416/2017001; 01/01/2017 – 03/31/2017; Grand Gulf Nuclear Station; Maintenance of Emergency Preparedness.

The inspection activities described in this report were performed between January 1 and March 31, 2017, by the resident inspectors at Grand Gulf Nuclear Station and inspectors from the NRC's Region IV office. 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 three licensee-identified violations of very low safety significance (Green). 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: Emergency Preparedness

- Green. The inspectors identified a non-cited violation of 10 CFR 50.54(q)(2) associated with the licensee's failure to conduct a drill required by the site emergency plan in 2014. The licensee was required to conduct a drill involving both the site first-aid team and a local hospital. This violation is not an immediate safety concern because drills were conducted involving the site first-aid team and other drills were conducted at local hospitals. This issue has been entered into the licensee's corrective action program as Condition Report CR-GGN-2017-00311.

The performance deficiency was more than minor, and therefore a finding, because it was associated with the emergency response organization performance (drills and exercises) cornerstone attribute and adversely affected the Emergency Preparedness Cornerstone objective of being capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding was evaluated using Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," dated September 22, 2015. The finding was determined to be of very low safety significance (Green) because it was a failure to comply with NRC requirements, was not associated with the risk-significant planning standards, and was not a degraded planning standard function. The finding had a cross-cutting aspect in the area of human performance associated with training because the licensee did not maintain a workforce knowledgeable about the requirements of the emergency plan [H.9]. (Section 1EP5)

Licensee-Identified Violations

Violations of very low safety significance (Green) 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

The Grand Gulf Nuclear Station began the inspection period in Mode 4.

On January 31, 2017, operations personnel commenced power ascension, and on February 9, 2017, Grand Gulf Nuclear Station reached 100 percent power.

On February 10, 2017, operations personnel reduced power to 74 percent power due to an issue with the condensate booster pump B outboard mechanical seal.

On February 13, 2017, operations personnel commenced power ascension and reached 100 percent power.

On February 24, 2017, operations personnel reduced power to 74 percent power to perform planned maintenance and testing, and remained at that power level to support troubleshooting a problem with the condensate booster pump C outboard mechanical seal.

On March 9, 2017, operations personnel commenced power ascension to 100 percent power following replacement of condensate booster pump A and C outboard mechanical seals.

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

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

On February 7, 2017, the inspectors completed an inspection of the station's readiness for impending adverse weather conditions. The inspectors reviewed plant design features, the licensee's procedures to respond to tornadoes and high winds, and the licensee's implementation of these procedures. The inspectors' evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant.

These activities constituted one sample of readiness for impending adverse weather conditions, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

One January 29, 2017, inspectors performed a partial system walk-down of the reactor core isolation cooling system following a valve operability test. The inspectors reviewed

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

These activities constituted one partial 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:

- January 6, 2017, northeast auxiliary building passage, 166 feet elevation, Fire Area 8, Zone 1A401
- January 24, 2017, auxiliary building corridors and passages, 93 feet and 103 feet elevations, Fire Areas 7 and 8, Zones 1A101, 1A117, 1A121, and 1A123
- March 3, 2017, Unit 1, turbine building, 93 feet elevation, Fire Area TB1, Zone TB1-01
- March 3, 2017, Unit 2, auxiliary building, 119 feet and 139 feet elevations, Fire Area AB2, Zones AB2-01 and AB2-02

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.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

From January 31, 2017, to February 14, 2017, the inspectors completed inspections of underground bunkers susceptible to flooding. The inspectors selected three

underground vaults that contained risk-significant or multiple-train cables whose failure could disable risk-significant equipment:

- SP45MH01
- SP45MH02
- SP45MH03

The inspectors observed the material condition of the cables and splices contained in the vaults and looked for evidence of cable degradation due to water intrusion. The inspectors verified that the cables and vaults met design requirements.

These activities constituted completion of one bunker/manhole sample, as defined in Inspection Procedure 71111.06.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed three 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:

- January 6, 2017, operation with a potential for draining the reactor vessel during control rod exercising and control rod drive vent valve manipulations
- February 17, 2017, risk associated with preventative maintenance of fuel pool cooling and cleanup pump A, with fuel pool time to 200 degrees Fahrenheit less than 72 hours
- March 6 - 7, 2017, Division 2 emergency diesel generator verification of extended allowed outage time risk management actions required by technical specifications

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.

The inspectors also observed portions of two emergent work activities that had the potential to cause an initiating event:

- February 10, 2017, secured condensate booster pump B and subsequent downpower due to elevated temperatures on the pump's outboard mechanical seal

- February 28, 2017, following a downpower for testing, secured condensate booster pump C due to elevated temperatures on the pump's outboard mechanical seal

The inspectors verified that the licensee appropriately developed and followed a work plan for these activities. The inspectors verified that the licensee took precautions to minimize the impact of the work activities on unaffected structures, systems, and components (SSCs).

These activities constituted completion of five maintenance risk assessments and emergent work control 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 five operability determinations and functionality assessments that the licensee performed for degraded or nonconforming structures, systems, or components (SSCs):

- January 12, 2017, operability determination of high pressure core spray following restricting orifice leakage
- January 28, 2017, operability determination of the high pressure core spray cables due to being wetted
- March 23, 2017, functionality assessment for FLEX debris removal equipment (1FLEXE001 and 1FLEXE002) unable to be started due to dead batteries
- March 23, 2017, functionality assessment of the fire brigade during the time two operators were locked on top of the standby service water basin and during times when brigade members performed walk-downs in the switchyard
- March 24, 2017, operability determination of the Division 1 and 2 emergency diesel generators due to potential crankcase pressure trip condition

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 five 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

The inspectors reviewed two temporary plant modifications that affected SSCs:

- January 31, 2017, installation and removal of the autostart feature for standby service water pumps A and B only when a manual start of residual heat removal system occurred during the outage
- February 24, 2017, modification to remove the linear velocity transducer for flow control valve B

The inspectors verified that the licensee had installed these temporary modifications in accordance with technically adequate design documents. The inspectors verified that these modifications did not adversely impact the operability or availability of affected SSCs. The inspectors reviewed design documentation and plant procedures affected by the modifications to verify the licensee maintained configuration control.

These activities constituted completion of two samples 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 three post-maintenance testing activities that affected risk-significant SSCs:

- February 28, 2017, control room air conditioning A following replacement of the compressor seal
- March 6, 2017, condensate booster pump A following replacement of the outboard mechanical seal and orifice installation
- March 12, 2017, Division 2 emergency diesel generator following an 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 three post-maintenance testing inspection samples, as defined in Inspection Procedure 71111.19.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

In-service tests:

- February 13, 2017, standby service water pump A quarterly surveillance test

Other surveillance tests:

- January 29, 2017, intermediate-range monitor E surveillance test

The inspectors verified that these tests met technical specification requirements, that the licensee performed the tests 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 two surveillance testing inspection samples, as defined in Inspection Procedure 71111.22.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP3 Emergency Response Organization Staffing and Augmentation System (71114.03)

a. Inspection Scope

The inspectors verified that the licensee's emergency response organization on-shift and augmentation staffing levels were in accordance with the licensee's emergency plan commitments. The inspectors reviewed documentation and discussed with licensee staff the operability of primary and backup systems for augmenting the on-shift emergency response staff to verify the adequacy of the licensee's methods for staffing emergency response facilities, including the licensee's ability to staff pre-planned alternate facilities. The inspectors also reviewed records of emergency response organization augmentation tests and events to determine whether the licensee had maintained a capability to staff emergency response facilities within emergency plan timeliness commitments.

These activities constituted completion of one emergency response organization staffing and augmentation testing sample, as defined in Inspection Procedure 71114.03.

b. Findings

No findings were identified.

1EP5 Maintenance of Emergency Preparedness (71114.05)

a. Inspection Scope

The inspectors reviewed the following documents for the period November 2014 through December 2016:

- After-action reports for emergency classifications and events
- After-action evaluation reports for licensee drills and exercises
- Independent audits and surveillances of the licensee's emergency preparedness program
- Self-assessments of the emergency preparedness program conducted by the licensee
- Licensee evaluations of changes made to the emergency plan and emergency plan implementing procedures
- Drill and exercise performance issues entered into the licensee's corrective action program
- Emergency preparedness program issues entered into the licensee's corrective action program
- Maintenance records for equipment supporting the emergency preparedness program
- Emergency response organization and emergency planner training records

The inspectors reviewed summaries of 161 corrective action program reports associated with emergency preparedness, and selected 30 to review against program requirements to determine the licensee's ability to identify, evaluate, and correct problems in accordance with planning standard 10 CFR 50.47(b)(14) and 10 CFR Part 50, Appendix E, IV.F. The inspectors verified that the licensee accurately and appropriately identified and corrected emergency preparedness weaknesses during critiques and assessments.

The inspectors reviewed summaries of 91 licensee evaluations of the impact of changes to the emergency plan and implementing procedures, and selected 14 to review against program requirements to determine the licensee's ability to identify reductions in the effectiveness of the emergency plan in accordance with the requirements of 10 CFR 50.54(q)(3) and 50.54(q)(4). The inspectors verified that evaluations of

proposed changes to the licensee emergency plan appropriately identified the impact of the changes prior to being implemented.

The inspectors reviewed summaries of records pertaining to the maintenance of equipment and facilities used to implement the emergency plan to determine the licensee's ability to maintain equipment in accordance with the requirements of 10 CFR 50.47(b)(8) and 10 CFR Part 50, Appendix E, IV.E. The inspectors verified that equipment and facilities were maintained in accordance with the commitments of the licensee's emergency plan.

These activities constituted completion of one sample of the maintenance of the licensee's emergency preparedness program, as defined in Inspection Procedure 71114.05.

b. Findings

Introduction. The inspectors identified a Green, non-cited violation of 10 CFR 50.54(q)(2) associated with the licensee's failure to follow their emergency plan. Specifically, the licensee failed to follow Emergency Plan, Revision 72, Section 8.3.2(d), which requires that a drill involving the first-aid team and local support hospital(s) be conducted on an annual basis. The licensee failed to conduct a drill involving the first-aid team and local support hospitals during 2014.

Description. The inspectors reviewed drills and exercises conducted by the licensee between July 2014 and December 2016, and compared the drill and exercise evaluation reports to the requirements of the licensee Emergency Plan.

The inspectors determined that Emergency Plan, Revisions 70 through 72, Section 8.3.2(d), required that a drill involving the first-aid team and local support hospital(s) be conducted on an annual basis. The inspectors identified that an on-site drill involving the site first-aid team was conducted in August 2014 and that a Medical Service – 1 (MS-1) drill simulating a contaminated and injured person was conducted on April 16, 2014, involving Northeast Louisiana Ambulance Service and Riverland Medical Center, Ferriday, Louisiana. The inspectors reviewed the post drill evaluation report(s) for the Riverland Medical Center and determined that licensee staff did not materially participate in this drill. Specifically, licensee staff were only present as observers.

The inspectors determined, from a review of letters of agreement between the licensee and offsite hospitals, that the hospitals relied upon by the licensee to treat contaminated and injured individuals originating at the licensee's site were Claiborne County Hospital, River Region Medical Center, and Ochsner Clinic. The inspectors determined that the April 2014 drill was not conducted at a hospital credited in the site emergency plan as being relied upon to treat contaminated and injured employees from the licensee's site.

The inspectors found that licensee Document 2014/00183, "2014 Annual Site Medical Drill," dated September 2, 2014, reported that although hospital response was not observed, hospital response, "was demonstrated during the FEMA-evaluated MS-1 drill earlier this year." However, the inspectors concluded the licensee was required to drill with a hospital relied upon to treat contaminated and injured employees from the licensee's site to ensure that proficiency was maintained for rarely-performed tasks that directly affect the radiological protection of site employees.

The inspectors reviewed site implementation procedures and conducted licensee staff interviews. Emergency preparedness staff explained that they believed they were in compliance with the emergency plan because, although the site first-aid team and local hospitals were not evaluated at the same time, the direction of the site drill and exercise procedure was met. Procedure EN-EP-306, "Drills and Exercises," Revisions 5 through 8, Attachment 9.1, stated for drill/exercise, Type 6, that the annual Medical Emergency Drill, "contains provisions for participation by the local medical support service agencies." While the site procedure stated this, the procedure also contained a site-specific emergency plan commitment list (Section 8.0). This list documented that the text in Attachment 9.1 was subject to site commitments in the Emergency Plan, Section 8.3.2. Licensee emergency preparedness staff failed to recognize that the wording of the site emergency plan commitment required the site to complete the drill requirement in a manner different than the general description in the site procedure.

The inspectors determined that the licensee did not conduct a drill in which both the site first-aid team and a hospital participated. Therefore, the inspectors concluded that the licensee did not follow the requirements of the site emergency plan.

Analysis. The failure to conduct a drill required by the licensee's emergency plan is a performance deficiency within the licensee's ability to foresee and correct. The performance deficiency was more than minor, and therefore a finding, because it was associated with the emergency response organization performance (drills and exercises) cornerstone attribute and adversely affected the Emergency Preparedness Cornerstone objective of being capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The licensee's ability to take adequate measures to protect the health and safety of the public is degraded when the licensee does not perform drills and exercises to ensure emergency response organization proficiency. The finding was evaluated using Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," dated September 22, 2015. The finding was determined to be of very low safety significance (Green) because it was a failure to comply with NRC requirements, was not associated with the risk significant planning standards, and was not a loss of planning standard function. The planning standard function was not lost because the licensee conducted other required drills during 2014, including drills involving the first-aid team.

The finding had a cross-cutting aspect in the area of human performance associated with training because the licensee did not maintain a workforce knowledgeable about the requirements of the emergency plan. Specifically, the review of drill report's text and responses in licensee interviews showed examples of insufficient knowledge of content of the site emergency plan by emergency preparedness staff. This contributed to the misconception by the licensee that their actions were in compliance with the plan [H.9].

Enforcement. Title 10 CFR 50.54(q)(2) requires, in part, that a power reactor licensee follow an emergency plan which meets the requirements of Appendix E to 10 CFR Part 50 and the standards of 10 CFR 50.47(b). Planning standard 10 CFR 50.47(b)(14) requires, in part, that the licensee conduct periodic drills to maintain key skills. Emergency Plan, Revisions 70 through 72, Section 8.3.2(d), requires, in part, that, "[a] drill involving the first-aid team and local support hospitals is conducted on an annual basis." Contrary to the above, between December 31, 2014,

and January 13, 2017, Grand Gulf Nuclear Station failed to follow an emergency plan which met the requirements of Appendix E and the standards of 10 CFR 50.47(b). Specifically, the licensee failed to conduct an annual drill involving the first-aid team and local support hospital(s) as required by Emergency Plan, Revisions 70 through 72, Section 8.3.2(d), to maintain key emergency response organization skills. The licensee's ability to take adequate measures to protect the health and safety of the public is degraded when the licensee does not perform drills and exercises to ensure emergency response organization proficiency. The inspectors determined that all drills required to be conducted by the emergency plan were conducted in 2015 and 2016. This issue has been entered into the licensee's corrective action program as Condition Report CR-GGN-2017-00311. Because this violation has been determined to be of very low safety significance (Green) and has been entered into the licensee's corrective action program, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the Enforcement Policy. (NCV 05000416/2017001-01, "Failure to Conduct a Drill Required by the Site Emergency Plan in 2014")

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed an emergency preparedness drill on February 22, 2017, to verify the adequacy and capability of the licensee's assessment of drill performance. The inspectors reviewed the drill scenario, observed the drill from the Technical Support Center and the simulator, and attended the post-drill critique. The inspectors verified that the licensee's emergency classifications, off-site notifications, and protective action recommendations were appropriate and timely. The inspectors verified that any emergency preparedness weaknesses were appropriately identified by the licensee in the post-drill critique and entered into the corrective action program for resolution.

These activities constituted completion of one emergency preparedness drill observation sample, as defined in Inspection Procedure 71114.06.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstones: Public Radiation Safety and Occupational Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

a. Inspection Scope

The inspectors evaluated the licensee's performance in assessing the radiological hazards in the workplace associated with licensed activities. The inspectors assessed the licensee's implementation of appropriate radiation monitoring and exposure control measures for both individual and collective exposures. During the inspection, the inspectors interviewed licensee personnel, walked down various areas in the plant, performed independent radiation dose rate measurements, and observed postings and physical controls. The inspectors reviewed licensee performance in the following areas:

- Radiological hazard assessment, including a review of the plant's radiological source terms and associated radiological hazards. The inspectors also reviewed the licensee's radiological survey program to determine whether radiological hazards were properly identified for routine and nonroutine activities and assessed for changes in plant operations.
- Instructions to workers, including radiation work permit requirements and restrictions, actions for electronic dosimeter alarms, changing radiological condition, and radioactive material container labeling.
- Contamination and radioactive material control, including release of potentially contaminated material from the radiologically controlled area, radiological survey performance, radiation instrument sensitivities, material control and release criteria, and control and accountability of sealed radioactive sources.
- Radiological hazards control and work coverage. During walk-downs of the facility and job performance observations, the inspectors evaluated ambient radiological conditions, radiological postings, adequacy of radiological controls, radiation protection job coverage, and contamination controls. The inspectors also evaluated dosimetry selection and placement as well as the use of dosimetry in areas with significant dose rate gradients. The inspectors examined the licensee's controls for items stored in the spent fuel pool and evaluated airborne radioactivity controls and monitoring.
- High radiation area and very high radiation area controls. During plant walk-downs, the inspectors verified the adequacy of posting and physical controls, including areas of the plant with the potential to become risk-significant high radiation areas.
- Radiation worker performance and radiation protection technician proficiency with respect to radiation protection work requirements. The inspectors determined if workers were aware of significant radiological conditions in their workplace, radiation work permit controls/limits in place, and electronic dosimeter dose and dose rate set points. The inspectors observed radiation protection technician job performance, including the performance of radiation surveys.
- Problem identification and resolution for radiological hazard assessment and exposure controls. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constituted completion of the seven required samples of radiological hazard assessment and exposure control program, as defined in Inspection Procedure 71124.01.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

a. Inspection Scope

The inspectors evaluated whether the licensee controlled in-plant airborne radioactivity concentrations are consistent with ALARA principles, and that the use of respiratory protection devices did not pose an undue risk to the wearer. During the inspection, the inspectors interviewed licensee personnel, walked down various areas in the plant, and reviewed licensee performance in the following areas:

- Engineering controls, including the use of permanent and temporary ventilation systems to control airborne radioactivity. The inspectors evaluated installed ventilation systems, including review of procedural guidance, verification the systems were used during high-risk activities, and verification of airflow capacity, flow path, and filter/charcoal unit efficiencies. The inspectors also reviewed the use of temporary ventilation systems used to support work in contaminated areas such as high efficiency particulate air (HEPA)/charcoal negative pressure units. Additionally, the inspectors evaluated the licensee's airborne monitoring protocols, including verification that alarms and set points were appropriate.
- Use of respiratory protection devices, including an evaluation of the licensee's respiratory protection program for use, storage, maintenance, and quality assurance of National Institute for Occupational Safety and Health (NIOSH) certified equipment, air quality and quantity for supplied air devices and self-contained breathing apparatus (SCBA) bottles, qualification and training of personnel, and user performance.
- Self-contained breathing apparatus for emergency use, including the licensee's capability for refilling and transporting SCBA air bottles to and from the control room and operations support center during emergency conditions, hydrostatic testing of SCBA bottles, status of SCBA staged and ready for use in the plant including vision correction, mask sizes, etc., SCBA surveillance and maintenance records, and personnel qualification, training, and readiness.
- Problem identification and resolution for airborne radioactivity control and mitigation. The inspectors reviewed audits, self-assessments, and corrective action documents to verify problems were being identified and properly addressed for resolution.

These activities constituted completion of the four required samples of in-plant airborne radioactivity control and mitigation program, as defined in Inspection Procedure 71124.03.

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

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams per 7000 Critical Hours (IE01)

a. Inspection Scope

The inspectors reviewed licensee event reports (LERs) for the period of January 1, 2016, through December 31, 2016, to determine the number of scrams that occurred. The inspectors compared the number of scrams reported in these LERs to the number reported for the performance indicator. Additionally, the inspectors sampled monthly operating logs to verify the number of critical hours during the period. 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 data reported.

These activities constituted verification of the unplanned scrams per 7000 critical hours performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Unplanned Power Changes per 7000 Critical Hours (IE03)

a. Inspection Scope

The inspectors reviewed operating logs, corrective action program records, and monthly operating power reports for the period of January 1, 2016, through December 31, 2016, to determine the number of unplanned power changes that occurred. The inspectors compared the number of unplanned power changes documented to the number reported for the performance indicator. Additionally, the inspectors sampled monthly operating logs to verify the number of critical hours during the period. 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 data reported.

These activities constituted verification of the unplanned power changes per 7000 critical hours performance indicator, as defined in Inspection Procedure 71151.

b. Findings

(Opened) Unresolved Item (URI) 05000416/2017001-02, "Grand Gulf Unplanned Power Changes per 7000 Critical Hours Performance Indicator"

Introduction. The inspectors identified an URI associated with the unplanned power changes per 7000 critical hours performance indicator related to events that occurred on June 17, 2016.

Description. On June 17, 2016, during turbine stop valve testing, stop valve B was to be cycled closed. Upon performing that action, stop valve B closed as expected; however, stop valve D unexpectedly closed. In response to the unexpected valve closure, the electro-hydraulic control trip fluid pressure fluctuated at an increased rate which caused the turbine control valves to cycle. This valve cycling resulted in numerous unplanned reactor pressure and power changes for approximately 42 minutes. During this time, operations personnel repeatedly performed troubleshooting activities by attempting to reset the stop valves, which caused additional system instability and increased the magnitude of the power oscillations. Ultimately, operations personnel decided to insert control rods in an attempt to stabilize the power and pressure oscillations. The operator action to insert control rods failed to stabilize the power and pressure oscillations, and approximately 1 minute later, an automatic reactor scram occurred due to a valid oscillating power range monitor input to the reactor protection system. This event was documented in Licensee Event Report 05000416/2016004-00, and NRC Inspection Reports 05000416/2016002 and 05000416/2016003.

The unplanned power changes per 7000 critical hours performance indicator measures the rate of unplanned power changes per year of operation at power and provides an indication of initiating event frequency. The licensee did not include any unplanned power changes as inputs into this performance indicator for the second quarter of 2016. The inspectors questioned whether any unplanned power changes should have been reported with this performance indicator, and the licensee submitted a frequently asked question (FAQ) to the NRC reactor oversight process working group (ADAMS Accession No. ML17100A235, "03/23/2017 Reactor Oversight Process Working Group Public Meeting"). This FAQ (FAQ 17-01) is currently under review to determine whether the above events should be captured as inputs to the unplanned power changes performance indicator.

The inspectors concluded that additional inspection would be required to assess whether the unplanned power changes should have been reported in the unplanned power changes per 7000 critical hours performance indicator. This issue was identified as URI 05000416/2017001-02, "Grand Gulf Unplanned Power Changes per 7000 Critical Hours Performance Indicator."

.3 Unplanned Scrams with Complications (IE04)

a. Inspection Scope

The inspectors reviewed the licensee's basis for including or excluding in this performance indicator each scram that occurred from January 1, 2016, through December 31, 2016. 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 data reported.

These activities constituted verification of the unplanned scrams with complications performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.4 Occupational Exposure Control Effectiveness (OR01)

a. Inspection Scope

The inspectors reviewed corrective action program records documenting unplanned exposures and losses of radiological control over locked high radiation areas and very high radiation areas during the period of January 1, 2016, to December 31, 2016. The inspectors reviewed a sample of radiologically controlled area exit transactions showing exposures greater than 100 millirem. 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 occupational exposure control effectiveness performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.5 Radiological Effluent Technical Specifications (RETS)/Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrences (PR01)

a. Inspection Scope

The inspectors reviewed corrective action program records for liquid and gaseous effluent releases, and leaks and spills that occurred between January 1, 2016, and December 31, 2016, to verify the performance indicator 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 RETS/ODCM radiological effluent occurrences performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

40A2 Problem Identification and Resolution (71152)

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.

40A5 Other Activities

(Closed) Temporary Instruction (TI) 2515/192, "Inspection of the Licensee's Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems"

a. Inspection Scope

The objective of this performance based temporary instruction is to verify implementation of interim compensatory measures associated with an open phase condition design vulnerability in electric power systems for operating reactors. The inspectors conducted an inspection to determine if the licensee had implemented the following interim compensatory measures. These compensatory measures are to remain in place until permanent automatic detection and protection schemes are installed and declared operable for the open phase condition design vulnerability. The inspectors verified the following:

- The licensee identified and discussed with plant staff the lessons learned from the open phase condition events at the United States operating plants, including the Byron Station open phase condition and its consequences. This included conducting operator training for promptly diagnosing, recognizing consequences, and responding to an open phase condition.
- The licensee updated plant operating procedures to help operators promptly diagnose and respond to open phase conditions on off-site power sources credited for safe shutdown of the plant.
- The licensee established and implemented periodic walk-down activities to inspect switchyard equipment such as insulators, disconnect switches, and transmission line and transformer connections associated with the off-site power circuits to detect a visible open phase condition.

- The licensee ensured that routine maintenance and testing activities on switchyard components have been implemented and maintained. As part of the maintenance and testing activities, the licensee assessed and managed plant risk in accordance with 10 CFR 50.65(a)(4) requirements.

b. Findings and Observations

No findings were identified.

The inspector identified that the licensee did not implement any operator training focused on the changes to operating procedures related to the open phase condition vulnerability. The licensee documented this feedback in the corrective action program as Condition Report CR-GGN-2017-03246.

40A6 Meetings, Including Exit

Exit Meeting Summary

On January 13, 2017, the inspectors presented the emergency preparedness program inspection results to Mr. V. Fallacara, Acting 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 February 22, 2017, the inspectors presented the radiation safety inspection results via teleconference, to Mr. T. Coutu, Director, Regulatory 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.

On March 30, 2017, the inspectors presented the open phase temporary instruction inspection results via teleconference, 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 April 11, 2017, the inspectors presented the quarterly baseline 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.

40A7 Licensee-Identified Violations

The following licensee-identified violations of NRC requirements were determined to be of very low safety significance (Green) and meet the NRC Enforcement Policy criteria for being dispositioned as non-cited violations:

- Title 10 CFR 50.54(q)(2) requires, in part, that a power reactor licensee follow an emergency plan which meets the requirements of Appendix E to 10 CFR Part 50 and the standards of 10 CFR 50.47(b). Planning Standard 10 CFR 50.47(b)(4) requires, in part, that a standard emergency classification and action level scheme is in use by the licensee. Contrary to the above, on June 7, 2015, Grand Gulf Nuclear Station failed to follow an emergency plan which met the requirements of Appendix E and the standards

of 10 CFR 50.47(b). Specifically, the licensee failed to accurately classify a Notification of Unusual Event in accordance with the licensee's emergency action level scheme. The licensee declared the emergency based on a fire condition, which did not exist, as identified in the licensee's after-action report dated July 13, 2015. The finding was evaluated using Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," dated September 22, 2015, and was determined to be of very low safety significance (Green) because it was a failure to comply with NRC requirements, was associated with a risk-significant planning standard, and was not a lost or degraded planning standard function. The licensee entered this issue into the corrective action program as Condition Reports CR-GGN-2015-03345 and CR-GGN-2017-00288.

- Technical Specification 5.7.1 states, in part, that each high radiation area, as defined in 10 CFR Part 20, shall be barricaded and conspicuously posted as a high radiation area. Contrary to the above, on April 20, 2016, an accessible area of the auxiliary building 185 feet south, new fuel pool heat exchanger room, was a high radiation area as defined in 10 CFR Part 20 and was not barricaded or conspicuously posted. This finding was determined to be of very low safety significance (Green) because the finding was not an ALARA planning issue, there was no overexposure or potential for overexposure, and the licensee's ability to assess dose was not compromised. The licensee entered this issue into the corrective action program as Condition Report CR-GGN-2016-03482.
- Technical Specification 5.7.2 states, in part, that in addition to the requirements of Specification 5.7.1, areas with radiation levels greater than 1000 mrem/hr shall be provided with locked or continuously guarded doors to prevent unauthorized entry. Contrary to the above, on April 6, 2016, the reactor water cleanup pump B room had accessible areas with radiation levels greater than 1000 mrem/hr and was not locked or continuously guarded to prevent unauthorized entry. This finding was determined to be of very low safety significance (Green) because the finding was not an ALARA planning issue, there was no overexposure or potential for overexposure, and the licensee's ability to assess dose was not compromised. The licensee entered this issue into the corrective action program as Condition Report CR-GGN-2016-03146.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Benson, Manager (Acting), Radiation Protection
A. Burks, Supervisor, Radiation Protection
D. Burnett, Director, Emergency Preparedness, Entergy South
T. Coutu, Director, Regulatory Assurance and Performance Improvement
J. Dorsey, Manager, Security
V. Fallacara, Acting Site Vice President
E. Garrison, Manager, Training
J. Keir, Manager, Nuclear Oversight
R. Meister, Regulatory Assurance
J. Nadeau, Manager, Regulatory Assurance
K. Petersen, Manager, Recovery
J. Seiter, Manager, Emergency Preparedness
P. Stokes, Supervisor, Radiation Protection
S. Sweet, Licensing Specialist
P. Williams, Director, Engineering
E. G. Wright, Supervisor, Radiation Protection
R. Young, Auditor

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000416/2017001-02	URI	Grand Gulf Unplanned Power Changes per 7000 Critical Hours Performance Indicator (Section 4OA1)
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Opened and Closed

05000416/2017001-01	NCV	Failure to Conduct a Drill Required by the Site Emergency Plan in 2014 (Section 1EP5)
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Closed

2515/192	TI	Inspection of the Licensee's Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems (Section 4OA5)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Miscellaneous Document

<u>Number</u>	<u>Title</u>	<u>Date</u>
LBDR 2016-026	Removal of LBDCR 95-017 concerning TORMIS from the UFSAR	February 11, 2016

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
01-S-18-6	Risk Assessment of Maintenance Activities	018
05-1-02-VI-02	Hurricanes, Tornados, and Severe Weather	130

Condition Report (CR-GGN-)

2015-04760

Section 1R05: Fire Protection

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
GG USFAR	Grand Gulf Nuclear Station Appendix 9A Fire Hazards Analysis Report	
MC-QSP64-86058	Fire Calculation for Fire Loads	August 8, 2001

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
10-S-03-8	Fire Watch Program	13
Fire Pre-Plan A-01	Fire preplan for Unit 1 auxiliary building corridors and passages, 93' and 103' elevations	2
Fire Pre-Plan A-29	Fire preplan for Unit 1 auxiliary building northeast passage area, elevation 166'	2
Fire Pre-Plan AB2-01	Fire preplan for Unit 2 auxiliary building, 119' elevation	0
Fire Pre-Plan AB2-02	Fire preplan for Unit 2 auxiliary building, 139' elevation	1
Fire Pre-Plan TB1-01	Fire preplan for Unit 1 turbine building, elevation 93'	2

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
Section 9A.5.19.4	Fire Hazard Analysis for Fire Zone 1A424	

Condition Reports (CR-GGN-)

2016-09877	2017-00113	2017-01481	2017-00209	2017-02232
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Section 1R06: Flood Protection Measures

Procedure

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-MA-125	Troubleshooting Control of Maintenance Activities	20

Condition Reports (CR-GGN-)

2017-01092	2017-01356	2017-01359
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Work Orders (WOs)

52735565	52737575	52737576
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Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Daily Plant Status Report	February 17, 2017
Section 9.1.3	Final Safety Analysis Report for Fuel Pool Cooling and Cleanup System	

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
01-S-18-6	Risk Assessment of Maintenance Activities	018
03-1-01-2	Attachment VII: Rapid Power Reduction	168
04-1-03-C11-8	Control Rod Exercising, Modes 3, 4 or 5	104
05-S-02-V-1	Response to Fires	004

Condition Report (CR-GGN-)

2017-00174	2017-01486	2017-01494	2017-01516	2017-01736
2017-01940	2017-02068	2017-02193	2017-02275	2017-02362
2017-02949				

Work Orders (WOs)

00378922	00468484	52737575	52737576
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Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
FSAR Figure 9.1-28	Filter Demineralizer System	4
FSAR Figure 9.1-29	Filter/Demineralizer System	4
FSAR Figure 9.1-30	Fuel Pool Cooling and Cleanup System	4
M-1088C	Fuel Pool Cooling and Cleanup System	023
M-1088D	Fuel Pool Cooling and Cleanup System	011
M-1088E	Fuel Pool Cooling and Cleanup System	021
M-1088X	Fuel Pool Cooling and Cleanup System	003

Section 1R15: Operability Determinations and Functionality Assessments

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Component Report for 1CA7021 Cabling	January 28, 2017
	Component Report for 1ACTDG01 Cable Tray	January 28, 2017
	Cable Construction for E029.0-QSR21T000A-1.3-001	December 13, 1979
	Specification for 9645-E-029.0	8
16-0018	Standing Order for Tornado Warning issued for GGNS	July 18, 2016
Section 8.2	Final Safety Analysis Report for Onsite Emergency Power Distribution System	
Section 8.3	Final Safety Analysis Report for Emergency Power Distribution System	

Procedure

<u>Number</u>	<u>Title</u>	<u>Revision</u>
02-S-01-27	Operations Section Procedure – Operation’s Philosophy	069
05-S-01-FSG-005	Initial Assessment and FLEX Equipment Staging	0
10-S-03-2	Response to Fires	027
EN-OP-104	Operability Determination Process	011
EN-OP-115	Conduct of Operations	018

Condition Reports (CR-GGN-)

2017-00047	2017-00085	2017-00093	2017-00748	2017-01559
2017-02202	2017-02915	2016-09582	FIRE CR	

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
A-0010	General Floor Plan 93’ & 103’	10
E-KB1673	Raceway Plan Aux. Bldg. Elev. 93’-0”, Area 8	B

Section 1R18: Plant Modifications

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EC 64812	Auto Initiation of SSW pump upon RHR Pump Start Disabled	0
EC 69522	Removal of the Velocity Feedback Signal for Recirculation Flow Control Valve B	0
Section 15.1	Final Safety Analysis Report for Transient Analysis	

Procedure

<u>Number</u>	<u>Title</u>	<u>Revision</u>
04-1-01-P41-1	Standby Service Water System	143

Condition Report (CR-GGN-)

2017-01145	2017-02693
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Section 1R19: Post-Maintenance Testing

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Equipment Failure Evaluation for 01/27/2017 HPCS Jockey Pump Failure	0
	PRG meeting notes, for management discretion to categorize CR-GGN-2017-00917 from A to B	February 2, 2017
2017-001-00	Licensee Event Report for High Pressure Core Spray Jockey Pump Trip	March 28, 2017

Procedure

<u>Number</u>	<u>Title</u>	<u>Revision</u>
04-S-01-Z51-1	Control Room HVAC System	056
04-1-03-P75-1	Div 1/2 Diesel Generator Unexcited Run	008

Condition Reports (CR-GGN-)

2017-00132	2017-00917	2017-01943	2017-02607
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Work Orders (WOs)

00378922	00466256	00468479
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Section 1R22: Surveillance Testing

Miscellaneous Document

<u>Number</u>	<u>Title</u>	<u>Date</u>
MAI00310583	Flow Balance SSW A Loop	March 29, 2002

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
06-OP-1C51-V-0002-6	IRM Functional Test	January 30, 2017
06-OP-1P41-Q-0004	Standby Service Water Loop A Valve AND Pump Operability Test	122
EN-OP-115	Conduct of Operations	018

Condition Report (CR-GGN-)

2017-01559

Work Order (WO)

52730530

Section 1EP3: Emergency Response Organization Staffing and Augmentation System

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
2015-00033	Off-Hours Unannounced Drill Report, First Quarter 2015	February 5, 2015
2015-00129	Off-Hours Unannounced Drill Report, Second Quarter 2015	June 30, 2015
2015-00177	Off-Hours Unannounced Drill Report, Third Quarter 2015	September 29, 2015
2015-00232	Off-Hours Unannounced Drill Report, Fourth Quarter 2015	December 3, 2015
2016-00092	Off-Hours Unannounced Drill Report, First Quarter 2016	May 3, 2016
2016-00132	Quarterly Off-Hours Unannounced Everbridge Test, Second Quarter 2016	June 29, 2016
2016-00195	Off-Hours Unannounced Everbridge Test Report, Third Quarter 2016	September 28, 2016
2016-00243	Off-Hours Unannounced Everbridge Test Report, Fourth Quarter 2016	December 14, 2016

Procedure

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-EP-310	Emergency Response Organization Notification System	5

Condition Reports (CR-GGN-)

2015-00548	2015-03906	2015-05682	2015-05685	2015-05686
2015-05687	2015-05688	2015-05699	2015-05969	2015-06201
2015-06485	2015-06862	2015-07036	2016-03024	2016-05770
2016-06344	2016-06350	2016-07759		

Section 1EP5: Maintenance of Emergency Preparedness

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	10CFR50.54(q) Screening and Evaluation for Procedure 10-S-01-1, Revision 124	October 23, 2014
	10CFR50.54(q) Screening and Evaluation for Procedure 10-S-01-1, Revision 125	February 16, 2015
	10CFR50.54(q) Screening and Evaluation for Procedure 10-S-01-12, Revision 44	October 23, 2014
	10CFR50.54(q) Screening and Evaluation for Procedure 10-S-01-19, Revision 21	
	Emergency Preparedness Surveillance Log, 2014, 2015, 2016	
	Evaluation Report for the On-Shift Chemist Drill	December 10, 2016
	Evaluation Report for the Semi-Annual Health Physics Drill conducted December 15, 2016	
	Grand Gulf Nuclear Station Emergency Plan	74
	Nuclear Independent Oversight Function Area Performance Report, Group A	March 8, 2016
	Nuclear Independent Oversight Function Area Performance Report, Group A	May 8, 2016
	Nuclear Independent Oversight Function Area Performance Report, Group A	July 13, 2016
	Nuclear Independent Oversight Function Area Performance Report, Group A	October 26, 2016
	Nuclear Oversight Monthly Functional Area Summary Report	February 14, 2015
	Nuclear Oversight Monthly Functional Area Summary Report	March 14, 2015
	Nuclear Oversight Monthly Functional Area Summary Report	April 9, 2015
	Nuclear Oversight Monthly Functional Area Summary Report	June 17, 2015
	Nuclear Oversight Monthly Functional Area Summary Report	July 27, 2015
	Nuclear Oversight Monthly Functional Area Summary Report	September 15, 2015

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Nuclear Oversight Monthly Functional Area Summary Report	November 12, 2015
	Training Observation Category Trend Report, July 1, 2014, through January 5, 2017	
2014/00183	Evaluation Report for the Medical Drill conducted August 20, 2014	September 2, 2014
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
2015/00074	Quarterly Emergency Response Facilities Inventory Report, First Quarter 2015	April 16, 2015
2015/00103	Evaluation Report for the Medical Drill conducted May 28, 2015	June 2, 2015
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
2015/00138	Quarterly Emergency Response Facilities Inventory Report, Second Quarter 2015	July 27, 2015
2015/00140	Evaluation Report for the July 2015 Red Team Exercise	July 29, 2015
2015/00161	Grand Gulf Nuclear Station 2015 Annual ETE Update	September 8, 2015
2015/00176	Evaluation Report for the MS-1 Drill conducted September 28, 2015, for River Region Medical Center	September 29, 2015
2015/00186	Quarterly Emergency Response Facilities Inventory Report, Third Quarter 2015	October 26, 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
2016/00007	Evaluation Report for the Off-Hours On-site Accountability Drill conducted December 15, 2015	January 10, 2016

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
2016/00013	Quarterly Emergency Response Facilities Inventory Report, Fourth Quarter 2015	January 14, 2016
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
2016/00169	Grand Gulf Nuclear Station 2016 Annual ETE Update	August 24, 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
2016/00216	Evaluation Report for the Medical Drill conducted October 26, 2016	October 26, 2016
2016/00219	Evaluation Report for the MS-1 Drill at RiverLand Medical Center	October 31, 2016
2016/00242	Evaluation Report for the Off-Hours On-site Accountability Drill conducted December 11, 2016	December 14, 2016
LO-GLO-2015-00010	CR-GGN-2015-4475 CA6 Effectiveness Review	March 29, 2016
LO-GLO-2015-00030	GGNS Pre NRC Inspection/Exercise Assessment	May 1, 2015
LO-GLO-2016-00023	Grand Gulf Nuclear Station Pre NRC Inspection/INPO Evaluation Assessment	August 12, 2016
LO-GLO-2016-00083	2016 EP FLEX Drill Snapshot Benchmark	May 24, 2016
LO-GLO-2016-00084	Self-Assessment: Weekly ERO Proficiency Testing	June 27, 2016
QA-07-2015-GGNS-1	Quality Assurance Audit Report, Emergency Preparedness	May 12, 2015

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
QA-07-2016-GGNS-1	Quality Assurance Audit Report, Emergency Preparedness	May 2, 2016

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
01-S-10-3	Emergency Planning Department Responsibilities	21, 22
01-S-10-5	Control of Emergency Response Equipment and Facilities	14, 15
01-S-10-6	Emergency Response Organization	30, 31
05-S02-VI-3	Off-Normal Event Procedure Earthquake, Revision 113	March 19, 2015
10-S-01-38	EAL Contingency Planning, Revision 4	March 17, 2015
10-S-02-1	ERF Inspections, Inventories, Operability Checks, and Maintenance	19
10-S-04-1	Emergency Operations Facility Equipment	2, 3
EN-EP-305	Emergency Planning 10CFR50.54(q) Review Program	3, 4
EN-LI-102	Corrective Action Program	27, 28
EPP 33-14	Back Up Emergency Operations Facility	5

Condition Reports (CR-GGN-)

2014-04271	2014-05230	2014-05236	2014-05539	2014-07052
2014-08338	2015-00713	2015-01236	2015-02375	2015-02582
2015-02596	2015-04256	2015-04475	2015-04512	2015-04689
2015-05126	2015-05131	2015-05679	2015-05967	2015-06217
2016-03351	2016-03352	2016-03353	2016-03362	2016-03386
2016-03765	2016-04379	2016-08383	2016-08394	2016-08731
2017-00288	2017-00289	2017-00363	2017-00364	2017-00365
2017-00366				

Work Tracking System (WT-GGN)

2014-00023	2016-00194
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Section 1EP6: Drill Evaluation

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
05-S-01-EP-3	Containment Control	029
10-S-01-1	Activation of Emergency Plan	126

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Audits and Self-Assessments

<u>Number</u>	<u>Title</u>	<u>Date</u>
	CFAM Deep Dive Assessment Report – Grand Gulf Radiation Protection	May 2016
GLO-2015-00037	Pre-NRC Radiological Hazard Assessment and Exposure Controls – Focused Assessment	August 2015
GLO-2016-00019	Pre-NRC Radiological Hazard Assessment and Exposure Controls	September 2016

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Spent Fuel Pool Inventory Records	January 17, 2017
	National Source Tracking System GG Source Records	January 17, 2017
00459752-01	Work Order – Unnecessary Items Stored in the Pools are of FME Concern	January 04, 2017
52638633.01	2015 Source Leak and Inventory Records	November 11, 2015
52664731.01	2016 Source Leak and Inventory Records	June 20, 2016

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
07-S-14-428	Operation and Maintenance of the TRI-NUC Underwater Filtration System	00
08-S-02-075	Radiation Protection Instruction – Coverage and Control of Refueling Operations and Movement of Irradiated Materials	16
EN-RP-100	Radiation Worker Expectations	11

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-RP-101	Access Control for Radiologically Controlled Areas	12
EN-RP-106	Radiological Survey Documentation	07
EN-RP-106-01	Radiological Survey Guidelines	03
EN-RP-108	Radiation Protection Posting	18
EN-RP-121	Radioactive Material Control	13
EN-RP-123	Radiological Control for Highly Radioactive Objects	01
EN-RP-143	Source Control	12
EN-RP-152	Conduct of Radiation Protection	01
EN-RP-202	Personnel Monitoring	12
EN-RP-203	Dose Assessment	09
EN-RP-204	Special Monitoring Requirements	11
EN-RP-204-01	Effective Dose Equivalent (EDEX) Monitoring	01
EN-RP-205	Prenatal Monitoring	03

Radiation Surveys

<u>Number</u>	<u>Title</u>	<u>Date</u>
GG-1610-0252	113 TB Condensate Demineralizers	October 24, 2016
GG-1701-0117	93' RW Spent Resin Tank and Pump Room	January 9, 2017
GG-1702-0126	93' AB RCIC Pump Room	February 7, 2017

Radiation Work Permits

<u>Number</u>	<u>Title</u>	<u>Revision</u>
20171003	Chemistry Sampling, Surveillances, and Tours	00
20171006	Rad Waste Tank and Pump Room Decon	00
20171300	Drywell Entry	00

Condition Reports (CR-GGN-)

2016-00473	2016-01673	2016-02783	2016-03146	2016-03151
2016-03482	2016-03698	2016-03507	2016-03703	2016-06532

2016-06813 2016-07566 2016-08022 2016-08811 2016-09268

Section 2RS3: In-plant Airborne Radioactivity Control and Mitigation

Audits, Self-Assessments, and Surveillances

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Selected Records of Monthly SCBA and Face Piece Inspection Log	2015 – 2016
LO-GLO-2016-0019	Pre-NRC Inspection for In-Plant Airborne Radioactivity Controls and Mitigation Assessment	September 28, 2016

Miscellaneous Documents

<u>Title</u>	<u>Date</u>
Air Hawk SCBA Qual Matrix	January 16, 2016
Fire Hawk SCBA Qual Matrix	January 16, 2016

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-RP-402	DOP Challenge Testing of HEPA Vacuum and Portable Ventilation Units	04
EN-RP-404	Operation and Maintenance of HEPA Vacuum Cleaners and HEPA Ventilation Units	06
EN-RP-501	Respiratory Protection Program	5
EN-RP-502	Inspection and Maintenance of Respiratory Protection Equipment	9
EN-RP-502-01	Fire Hawk M7 SCBA	1
EN-RP-502-03	Air Hawk II SCBA	0
EN-RP-503	Selection, Issue, and Use of Respiratory Protection Equipment	7
EN-RP-504	Breathing Air	3

Condition Reports (CR-GGN-)

2014-00325 2014-00965 2016-02668 2014-03704 2015-04319

Section 4OA1: Performance Indicator Verification

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
EN-LI-114	Performance Indicator Process, Unit 1	007
EN-LI-114	NRC Performance Indicator Technique/Data Sheet – Unplanned Scrams per 7,000 Critical Hours	1 st Quarter 2016
EN-LI-114	NRC Performance Indicator Technique/Data Sheet – Unplanned Scrams per 7,000 Critical Hours	2 nd Quarter 2016
EN-LI-114	NRC Performance Indicator Technique/Data Sheet – Unplanned Scrams per 7,000 Critical Hours	3 rd Quarter 2016
EN-LI-114	NRC Performance Indicator Technique/Data Sheet – Unplanned Scrams per 7,000 Critical Hours	4 th Quarter 2016
EN-LI-114	NRC Performance Indicator Technique/Data Sheet – Unplanned Scrams with Complications	1st Quarter 2016
EN-LI-114	NRC Performance Indicator Technique/Data Sheet – Unplanned Scrams with Complications	2nd Quarter 2016
EN-LI-114	NRC Performance Indicator Technique/Data Sheet – Unplanned Scrams with Complications	3rd Quarter 2016
EN-LI-114	NRC Performance Indicator Technique/Data Sheet – Unplanned Scrams with Complications	4th Quarter 2016
EN-LI-114	NRC Performance Indicator Technique/Data Sheet – Unplanned Power Changes per 7,000 Critical Hours	1st Quarter 2016
EN-LI-114	NRC Performance Indicator Technique/Data Sheet – Unplanned Power Changes per 7,000 Critical Hours	2nd Quarter 2016
EN-LI-114	NRC Performance Indicator Technique/Data Sheet – Unplanned Power Changes per 7,000 Critical Hours	3rd Quarter 2016
EN-LI-114	NRC Performance Indicator Technique/Data Sheet – Unplanned Power Changes per 7,000 Critical Hours	4th Quarter 2016

Section 4OA2: Problem Identification and Resolution

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-LI-102	Corrective Action Program	028
EN-LI-118	Causal Evaluation Process	023
EN-LI-118	Causal Evaluation Process	024

Section 4OA5: Other Activities

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
14-0002	Guidelines for Single Phase Failure Events	
17-0006	Single Phase Failure Events	
GNRO-2012/200126	90-Day Response to Bulletin 2012-01, Design Vulnerability in Electric Power System	October 24, 2012
GNRO-2014/00009	Request for Additional Information Regarding Response to Bulletin 2012-01, "Design Vulnerability in Electric Power System"), dated December 20, 2013	February 3, 2014

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
02-S-01-35	Outside Rounds	081
05-1-02-I-4	Loss of AC Power	048
05-1-02-I-4	Loss of AC Power	049
05-1-02-I-4	Loss of AC Power	050

Condition Reports (CR-GGN-)

2012-01836	2015-05384	2016-01787	2016-05471	2016-05472
2016-05473	2016-06341	2017-02358*	2017-03192*	2017-03245*
2017-03246*				

*Issued as a result of inspection activities

The following items are requested for the
Occupational Radiation Safety Inspection
Grand Gulf Nuclear Plant
Inspection Dates February 13 to 17, 2017
Integrated Report 2017001

Inspection areas are listed in the attachments below.

Please provide the requested information on or before **January 17, 2017.**

Please submit this information using the same lettering system as below. For example, all contacts and phone numbers for Inspection Procedure 71124.01 should be in a file/folder titled "1- A," applicable organization charts in file/folder "1- B," etc.

If information is placed on *ims.certrec.com*, please ensure the inspection exit date entered is at least 30 days later than the onsite inspection dates, so the inspectors will have access to the information while writing the report.

In addition to the corrective action document lists provided for each inspection procedure listed below, please provide updated lists of corrective action documents at the entrance meeting. The dates for these lists should range from the end dates of the original lists to the day of the entrance meeting.

If more than one inspection procedure is to be conducted and the information requests appear to be redundant, there is no need to provide duplicate copies. Enter a note explaining in which file the information can be found.

If you have any questions or comments, please contact Martin Phalen at (817) 200-1158 or martin.phalen@nrc.gov.

PAPERWORK REDUCTION ACT STATEMENT

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, control number 3150-0011.

1. **Radiological Hazard Assessment and Exposure Controls (71124.01) and Performance Indicator Verification (71151)**

Date of Last Inspection: March 7 through 18, 2016

- A. List of contacts and telephone numbers for the Radiation Protection Organization Staff and Technicians.
- B. Applicable organization charts.
- C. ALL radiation protection related licensee (Grand Gulf) and corporate (Entergy) assessments and audits, all independent or third party radiation protection related assessments and audits, all radiation protection related self-assessments, and all radiation safety related LERs, including but not limited to radiation monitoring instrumentation and radioactive effluents, releases and / or spills, written since January 1, 2016.
- D. Procedure indexes for the radiation protection procedures.
- E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures may be requested by number after the inspector reviews the procedure indexes.
 - 1. Radiation Protection Program Description
 - 2. Radiation Protection Conduct of Operations
 - 3. Personnel Dosimetry Program
 - 4. Posting of Radiological Areas
 - 5. High Radiation Area Controls
 - 6. RCA Access Controls and Radiation Worker Instructions
 - 7. Conduct of Radiological Surveys
 - 8. Radioactive Source Inventory and Control
 - 9. Declared Pregnant Worker Program
- F. List of corrective action documents (including corporate and sub-tiered systems) since January 1, 2016.
 - a. Initiated by the radiation protection organization
 - b. Assigned to the radiation protection organization

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.

If not covered above, a summary of corrective action documents since January 1, 2016 involving unmonitored releases, unplanned releases, or releases in which any dose limit or administrative dose limit was exceeded (for Public Radiation Safety Performance Indicator verification in accordance with IP 71151)

Additionally, a copy of ALL radiation protection AND chemistry department root cause evaluations, apparent cause evaluation, and condition evaluations performed since January 1, 2016.

- G. List of radiologically significant work activities scheduled to be conducted during the inspection period (if the inspection is scheduled during an outage, please also include a list of work activities greater than 1 rem, scheduled during the outage with the dose estimate for the work activity).
- H. List of active radiation work permits.

- I. Radioactive source inventory list.
 - a. All radioactive sources that are required to be leak tested.
 - b. All radioactive sources that meet the 10 CFR Part 20, Appendix E, Category 2 and above threshold. Please indicate the radioisotope, initial and current activity (w/assay date), and storage location for each applicable source.
 - J. The last two leak test results for the radioactive sources inventoried and required to be leak tested. If applicable, specifically provide a list of all radioactive source(s) that have failed its leak test within the last two years.
 - K. A current listing of any non-fuel items stored within your pools, and if available, their appropriate dose rates (Contact / @ 30cm).
 - L. Computer printout of radiological controlled area entries greater than 100 millirem since the previous inspection to the current inspection entrance date. The printout should include the date of entry, some form of worker identification, the radiation work permit used by the worker, dose accrued by the worker, and the electronic dosimeter dose alarm set-point used during the entry (for Occupational Radiation Safety Performance Indicator verification in accordance with IP 71151).
- 3. In-Plant Airborne Radioactivity Control and Mitigation (71124.03)**
 Date of Last Inspection: February 24 through 28, 2014
- A. List of contacts and telephone numbers for the following areas:
 - 1. Respiratory Protection Program
 - 2. Self-contained breathing apparatus
 - B. Applicable organization charts
 - C. Copies of audits, self-assessments, vendor or NUPIC audits for contractor support (SCBA), and LERs, written since date of last inspection related to:
 - 1. Installed air filtration systems
 - 2. Self-contained breathing apparatuses
 - D. Procedure index for:
 - 1. Use and operation of continuous air monitors
 - 2. Use and operation of temporary air filtration units
 - 3. Respiratory protection
 - E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures may be requested by number after the inspector reviews the procedure indexes.
 - 1. Respiratory protection program
 - 2. Use of self-contained breathing apparatuses
 - 3. Air quality testing for SCBAs
 - 4. Use of installed plant systems, such as containment purge, spent fuel pool ventilation, and auxiliary building ventilation
 - F. A summary list of corrective action documents (including corporate and sub-tiered systems) written since date of last inspection, related to the Airborne Monitoring program including:
 - 1. Continuous air monitors

2. Self-contained breathing apparatuses
3. Respiratory protection program

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.

- G. List of SCBA qualified personnel - reactor operators and emergency response personnel.
- H. Inspection records for self-contained breathing apparatuses (SCBAs) staged in the plant for use since date of last inspection.
- I. SCBA training and qualification records for control room operators, shift supervisors, STAs, and OSC personnel for the last year.

A selection of personnel may be asked to demonstrate proficiency in donning, doffing, and performance of functionality check for respiratory devices.
- J. List of respirators (available for use) by type (APR, SCBA, PAPR, etc.), manufacturer, and model.