



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION IV  
1600 EAST LAMAR BOULEVARD  
ARLINGTON, TEXAS 76011-4511

February 7, 2019

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 05000416/2018004**

Dear Mr. Larson:

On December 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Grand Gulf Nuclear Station. On January 10, 2019, 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 five findings of very low safety significance (Green) in this report. All of these findings involved violations of NRC requirements. Additionally, NRC inspectors documented one Severity Level IV violation with no associated finding. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

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 nine previous violations in the area of impeding the regulatory process, as described in NRC Inspection Reports: 05000416/2016007 dated December 9, 2016; 05000416/2017002 dated August 3, 2017; 05000416/2017007 dated December 1, 2017; and 05000416/2018001 dated May 14, 2018. The additional Severity Level IV traditional enforcement violation documented in this report will be included in the scope of an Inspection Procedure 92723 inspection to assess your evaluation of the 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 W. Kozal, Chief  
Project Branch C  
Division of Reactor Projects

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

Enclosure:  
Inspection Report 05000416/2018004  
w/attachments:

1. Documents Reviewed
2. Focused Baseline Inspection Request for Information
3. Public Radiation Safety Inspection Request for Information

**U.S. NUCLEAR REGULATORY COMMISSION**  
**Inspection Report**

Docket Number: 05000416

License Number: NPF-29

Report Number: 05000416/2018004

Enterprise Identifier: I-2018-004-0008

Licensee: Entergy Operations, Inc.

Facility: Grand Gulf Nuclear Station, Unit 1

Location: Port Gibson, Mississippi

Inspection Dates: October 1, 2018 to December 31, 2018

Inspectors: T. Steadham, Senior Resident Inspector  
D. Bradley, Senior Resident Inspector, Callaway Plant  
N. Day, Resident Inspector  
B. Parks, Resident Inspector, River Bend Nuclear Station  
C. Young, Senior Project Engineer  
L. Carson II, Sr. Health Physicist  
N. Greene, PhD, Sr. Health Physicist  
B. Baca, Health Physicist  
J. O'Donnell, CHP, Health Physicist  
S. Hedger, Emergency Preparedness Inspector  
G. George, Senior Reactor Inspector  
I. Anchondo, Reactor Inspector  
W. Cullum, Reactor Inspector  
M. Hayes, Operations Engineer

Approved By: Jason W. Kozal  
Branch Chief  
Division of Reactor Projects

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at Grand Gulf Nuclear Station, Unit 1, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. NRC-identified and self-revealed violations, and additional items, are summarized in the tables below.

### List of Findings and Violations

Failure to Update the Updated Final Safety Analysis Report			
Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Not Applicable	Severity Level IV NCV 05000416/2018004-01 Closed	Not Applicable	71111.04 – Equipment Alignment
The inspectors identified a Severity Level IV, non-cited violation of 10 CFR 50.71(e) when the licensee failed to update the Updated Final Safety Analysis Report Table 9.2-16.			

Failure to Implement Lubrication Oil Program for Quality Systems			
Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Mitigating Systems	Green NCV 05000416/2018004-02 Closed	H.2 – Human Performance, Field Presence	71111.12 – Maintenance Effectiveness
The inspectors identified a Green, non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to implement procedures for the lubrication program for safety-related and quality components. Specifically, licensee Procedure SEP-LUB-GGN-001, "GGN Lubrication Program," Revision 1, requires appropriate storage, issuance, and recordkeeping for oils used in safety-related and quality systems. The licensee failed to implement the procedure, including unauthorized storage locations and 28 examples of inadequate records across four safety-related and quality systems.			

Design Control for Reactor Core Isolation Cooling and Emergency Diesel Generators			
Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Mitigating Systems	Green NCV 05000416/2018004-03 Closed	H.12 – Human Performance, Avoid Complacency	71111.12 – Maintenance Effectiveness
The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to correctly translate the design basis of the reactor core isolation cooling system and the emergency diesel generators into specifications and procedures. Specifically, the reactor core isolation cooling system and the emergency diesel generators required governor oil to be filtered; however, the licensee performed this task outside of a quality process and did not specify filtration as a critical characteristic in the commercial grade dedication process for the oil.			

Failure to Adequately Lubricate Motor-Operated Valve Stem Nut			
Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Mitigating Systems	Green NCV 05000416/2018004-04 Closed	None	71111.13 – Maintenance Risk Assessments and Emergent Work Control
A self-revealed, Green, non-cited violation of Technical Specification 5.4.1.a, “Procedures,” was identified when the licensee failed to have adequate instructions to perform preventive maintenance. Specifically, the licensee failed to properly lubricate the Division 1 residual heat removal heat exchanger bypass valve E12F048A and the valve failed to stroke during a surveillance test.			

Failure to Perform Complete Evaluations of the Licensee Interface with Offsite Organizations			
Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Emergency Preparedness	Green NCV 05000416/2018004-05 Closed	H.8 – Human Performance, Procedure Adherence	71114.05- Maintenance of Emergency Preparedness
The inspector identified a Green, non-cited violation of 10 CFR 50.54(t)(2) for the licensee’s failure to include an evaluation of the adequacy of the interfaces with State and local governments in a review of emergency preparedness program elements in Audit Reports QA-07-2017-GGNS-1 and QA-07-2018-GGNS-1. Specifically, audit personnel did not provide offsite officials with an opportunity to provide their view of the adequacy of the interface to the audit team, resulting in a failure to evaluate this interface.			

Failure to Conduct Drills in Accordance with the Site Emergency Plan			
Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Emergency Preparedness	Green NCV 05000416/2018004-06 Closed	H.9 – Human Performance, Training	71114.05- Maintenance of Emergency Preparedness
The inspector identified a Green, non-cited violation of 10 CFR 50.54(q)(2) associated with the licensee’s failure to follow the station’s emergency plan. Specifically, the licensee failed to follow Grand Gulf Nuclear Station Emergency Plan, Revisions 66 to 77, Section 8.3.2.c, which requires an annual drill to determine the effectiveness of the local fire department working in conjunction with the licensee fire brigade. The licensee failed to conduct correctly scoped annual fire brigade drills from 2012 to 2017.			

### Additional Tracking Items

Type	Issue number	Title	Inspection Procedure	Status
VIO	05000416/2017012-01	Failure to Correct Instrument Calibration Process in a Timely Manner	71124.05	Closed
LER	05000416/2016-002-01	Automatic Actuation of the Reactor Protection System Due to B Main Transformer Wiring	71153	Closed
LER	05000416/2016-006-01	Multiple Valid Engineered Safety Feature Actuations	71153	Closed

## PLANT STATUS

Unit 1 began this inspection period at approximately 95 percent power for startup activities and reached full power on October 3, 2018. On November 2, 2018, operators reduced power to approximately 50 percent for control rod pattern adjustments. Full power operation resumed on November 8, 2018. On November 16, 2018, to investigate high vibrations on condensate pump A, power was reduced to approximately 70 percent. The unit returned to full-rated power the following day. On December 12, 2018, operators manually shut down the unit due to turbine bypass valve A drifting open. Following repairs, the unit was started up on December 17, 2018, and reached full power on December 25, 2018, and remained at or near full power for the remainder of the inspection period.

## INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed plant status activities described in IMC 2515, Appendix D, "Plant Status," and conducted routine reviews using IP 71152, "Problem Identification and Resolution." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

## REACTOR SAFETY

### 71111.01—Adverse Weather Protection

#### Seasonal Extreme Weather (1 Sample)

The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of seasonal cold temperatures.

### 71111.04—Equipment Alignment

#### Partial Walkdown (5 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) Division 1 standby service water on November 19, 2018
- (2) Control rod drive system on December 17, 2018
- (3) Low pressure core spray on December 17, 2018
- (4) Circulating water on December 17, 2018
- (5) Division 2 standby gas treatment following system maintenance on December 18, 2018

#### 71111.05AQ—Fire Protection Annual/Quarterly

##### Quarterly Inspection (4 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) Auxiliary building 119 feet elevation, Fire Area 6, Zone 1A201, on October 25, 2018
- (2) Auxiliary building 139 feet elevation, Fire Area 11, Zone 1A322, on October 25, 2018
- (3) Standby service water pump room A, Fire Area 64, Zone 1M110, on November 19, 2018
- (4) Auxiliary building railroad bay, Fire Area 17, Zone 1A325, on November 27, 2018

#### 71111.07—Heat Sink Performance

##### Heat Sink (1 Sample)

The inspectors evaluated control room air conditioning A thermal performance testing on October 23, 2018.

#### 71111.11—Licensed Operator Regualification Program and Licensed Operator Performance

##### Operator Regualification (1 Sample)

The inspectors observed and evaluated a simulated loss-of-coolant accident annual exam scenario on November 27, 2018.

##### Operator Performance (1 Sample)

The inspectors observed and evaluated thyristor voltage regulator post modification testing during 100 percent power, high integrated risk conditions, on October 23, 2018.

##### Operator Exams (1 Sample)

The inspectors reviewed and evaluated requalification examination results on January 15, 2019.

#### 71111.12—Maintenance Effectiveness

##### Routine Maintenance Effectiveness (3 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety-significant functions:

- (1) R14 main transformers on November 26, 2018
- (2) E22 high pressure core spray on November 26, 2018
- (3) P45 floor and equipment drain systems on December 31, 2018

##### Quality Control (1 Sample)

The inspectors evaluated maintenance and quality control activities associated with the following equipment performance issues:



- (1) Oil used in safety-related and technical specification systems including reactor core isolation cooling, emergency diesel generators, residual heat removal, standby service water, low pressure core spray, and high pressure core spray, on October 11, 2018

#### 71111.13—Maintenance Risk Assessments and Emergent Work Control (5 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

- (1) Elevated risk due to residual heat removal B system outage on October 19, 2018
- (2) Condensate pump A high vibration repairs on November 16, 2018
- (3) Yellow risk due to reactor core isolation cooling outage on November 26, 2018
- (4) Risk management actions for startup following Forced Outage 22-02 on December 14, 2018
- (5) Severe weather due to tornado warning in Tensas Parish on December 27, 2018

#### 71111.15—Operability Determinations and Functionality Assessments (4 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Reactor core isolation cooling oil contamination, Condition Report CR-GGN-2018-10179, on October 11, 2018
- (2) Corrosion found on 1A3, Division 1 safety batteries, Condition Report CR-GGN-2018-11724, on October 31, 2018
- (3) Inadequate thread engagement on auxiliary building door guide, Condition Report CR-GGN-2018-12231, on November 15, 2018
- (4) Reactor core isolation cooling operability following delayed injection after December 12, 2018, scram, Condition Report CR-GGN-2018-13050 on December 17, 2018

#### 71111.17T—Evaluations of Changes, Tests and Experiments (26 Samples)

The inspectors evaluated the following from December 10, 2018, to December 14, 2018:

##### 10 CFR 50.59 Evaluations

- (1) Safety Evaluation (SE) 2016-002-R00, Evaluate Negative Pressure in the Reactor Vessel for the Pressure Temperature Curves in the PTLR
- (2) SE-2016-003-00, Implementation of MELLLA+ and Residual Heat Removal Heat Exchanger Bypass Valve Timer
- (3) SE-2016-005-R01, EC 66685 Will Modify the Division III Diesel Generator Engine High Crankcase Pressure Trip to Bypass the Trip for Approximately 10 Seconds

- (4) SE-2016-006, Standby Service Water Cooling Tower Fan Operation During Cold Weather
- (5) SE-2017-001-R01, Change to Reactor Core Isolation Cooling Room Temperature Relay
- (6) SE-2017-002-R00, EC 74136 Calculation MC-Q1P75-17001
- (7) SE-2017-003-R00, Insert Blind Fitting Outboard of Penetration #73 to Eliminate Diving to Perform Local Leak Rate Testing for Containment Penetration #73
- (8) SE-2017-004-R00, Calculation of Maximum Allowable Leakage Limits for Standby Liquid Control System with Restricting Orifice 1C41-RO-D001 Passing Flow During Anticipated Transient Without Scram
- (9) SE-2018-004-R00, Compensatory Actions for Sand Bagging Control Building Diesel Generator and Standby Service Water Pumphouse Doors for CR-GGN-2018-4101 CA-1

#### 10 CFR 50.59 Screening/Applicability Determinations

- (1) Engineering Change (EC) 47972, Increasing the Orifice Size for the P41D013 to Increase SSW Flow to the HPCS Room Cooler and HPCS Diesel Generator Jacket Water Coolers CR-GGN-2013-7465/LO-GLO-2014-0048, CA 19
- (2) EC 48893, EC Will Relocate 4 out of 5 RTDs Located in Each Plant Air Compressor
- (3) EC 51721, Remove UFR Relay from RPS MG Set B, 1C71S001B
- (4) EC 58557, TMod for Leak Repair (Line Crimp) on Drain Line from 1E51F219
- (5) EC 60805, Installation of Two Vent Valves in the RCIC Room at Floor Level and Installs a Sight Glass
- (6) EC 63217, Emergency Temp Mod to Maintain Acceptable Division 1 Battery Room Temperature
- (7) EC 63736, Equivalency for Firmware Version Changes and Approval of New Qualification Report NUS-A076QA Rev 6 for NUS Temperature Monitor Model NUS-A076PA-1
- (8) EC 66961, Leak Repair Evaluation on Affected Welds between the Sock-O-Let Attached to 28"-DBD-16 and 1"-DBD-123 Drain Line Upstream of Drain Valve 1N21F107B
- (9) EC 67917, Operability Input for Division III HPCS Diesel Generator Accepts As-is Condition for Cracked Welds
- (10) EC 74074, Temporary Modification for Commencing Plant Startup while Having Only the Inner ½" Plate Installed for the RHR "A" Room HELB Wall Barrier

- (11) EC 75867, Revise MC-Q1P41-97020 and MC-Q1P41-99003 to Incorporate the Full IST Degradation Allowance of 7% and Incorporate the Use of SRSS Method in Calculations
- (12) EC 76351, Analysis of the Heat Removal Capability of ADHRS in RF21
- (13) EC 76977, Review of Patel Engineering Test Report PEI-TR-841209-04 for Patel Thread Sealants
- (14) EC 77034, Evaluate Use of Oakite 32 for Flushing the Recirc Pump Seal Cooler
- (15) EC 78125, LLRT from Reverse Side for 1E12F028A/B
- (16) EC 75846, Calculation of Maximum Pressure Allow in the SSW Instrument Lines
- (17) Field Change Request 74210, Remove the LCO 3.0.9 Requirement from EC No. 74074

#### 71111.18—Plant Modifications (2 Samples)

The inspectors evaluated the following temporary or permanent modifications:

- (1) CN5080, technical specification bases change to required standby service water flowrate to residual heat removal heat exchangers on November 20, 2018
- (2) Change of thread sealant used in environmental qualification applications on November 26, 2018

#### 71111.19—Post Maintenance Testing (7 Samples)

The inspectors evaluated the following post-maintenance tests:

- (1) Reactor core isolation cooling room cooler post bearing, shaft, and belt maintenance on October 16, 2018
- (2) Secondary containment door post configuration change on November 13, 2018
- (3) Reactor core isolation cooling outage post maintenance test on November 26, 2018
- (4) Division I emergency diesel generator fuel oil fitting replacement on November 27, 2018
- (5) Reactor core isolation cooling injection valve 1E51F013 motor inspection, Work Order 52689971 on December 19, 2018
- (6) Implement Engineering Change 60805, replace reactor core isolation cooling valves and sight glass on December 19, 2018
- (7) Bypass valve A coil replacement on December 20, 2018

#### 71111.22—Surveillance Testing

The inspectors evaluated the following surveillance tests:

#### Routine (1 Sample)

- (1) Reactor core isolation cooling/residual heat removal steam line high flow functional test Channel A on October 30, 2018

#### 71114.02—Alert and Notification System Testing (1 Sample)

The inspector evaluated the maintenance and testing of the alert and notification system between January 3, 2017, and November 2, 2018.

#### 71114.03—Emergency Response Organization Staffing and Augmentation System (1 Sample)

The inspector evaluated the readiness of the Emergency Response Organization between January 3, 2017, and November 2, 2018. The inspector also evaluated the licensee's ability to staff their emergency response facilities in accordance with emergency plan commitments.

#### 71114.04—Emergency Action Level and Emergency Plan Changes (2 Samples)

The inspector evaluated Emergency Plan Revisions 76 and 77, submitted on October 3, 2017, and July 30, 2018, respectively. In addition, the inspector evaluated the 10 CFR 50.54(q) emergency plan change process and practices between January 3, 2017, and November 2, 2018. The evaluation reviewed screenings and evaluations documenting the implementation of this process. The reviews of the change process documentation and the Emergency Plan change do not constitute NRC approval.

#### 71114.05—Maintenance of Emergency Preparedness (1 Sample)

The inspector evaluated the maintenance of the emergency preparedness program between January 3, 2017, and November 2, 2018. The evaluation reviewed activations of the emergency plan, the conduct of drills and exercises, licensee audits and assessments, and the maintenance of equipment important to emergency preparedness.

#### 71114.06—Drill Evaluation

##### Emergency Planning Drill (2 Samples)

The inspectors evaluated:

- (1) A simulated loss-of-coolant accident with offsite release drill on October 2, 2018
- (2) A simulated loss-of-coolant accident with offsite release drill on November 14, 2018

### **RADIATION SAFETY**

#### 71124.05—Radiation Monitoring Instrumentation

##### Walk Downs and Observations (1 Sample)

The inspectors evaluated radiation monitoring instrumentation during plant walkdowns.

#### Calibration and Testing Program (1 Sample)

The inspectors evaluated the licensee's calibration and testing program.

The inspectors reviewed the licensee's responses to Notice of Violation (NOV) 05000416/2017012-01, dated September 21, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17269A031) and December 21, 2017 (ADAMS Accession No. ML17362A041), as documented in a letter to the licensee, dated February 7, 2018 (ADAMS Accession No. ML18038B584). At that time, it was determined that an onsite review of the implementation of the corrective actions would be conducted to determine whether full compliance had been achieved and would be maintained. The inspectors reviewed the aforementioned documents, relevant corrective action documents, the revised procedures, and completed surveillances. The inspectors determined that the causal analysis results, corrective actions taken and planned to address recurrence, and the date when full compliance will be/was achieved for this violation have been adequately addressed; as a result, the NOV is closed.

#### 71124.06—Radioactive Gaseous and Liquid Effluent Treatment

##### Walk Downs and Observations (1 Sample)

The inspectors evaluated the licensee's radioactive gaseous and liquid effluent treatment systems during plant walkdowns.

##### Calibration and Testing Program (Process and Effluent Monitors) (1 Sample)

The inspectors evaluated the licensee's gaseous and liquid effluent monitor instrument calibration and testing.

##### Sampling and Analyses (1 Sample)

The inspectors evaluated radioactive effluent sampling and analysis activities.

##### Instrumentation and Equipment (1 Sample)

The inspectors evaluated radioactive effluent instrumentation and equipment.

##### Dose Calculations (1 Sample)

The inspectors evaluated dose calculations.

#### 71124.07—Radiological Environmental Monitoring Program

##### Site Inspection (1 Sample)

The inspectors evaluated the licensee's radiological environmental monitoring program.

##### Groundwater Protection Initiative Implementation (1 Sample)

The inspectors evaluated the licensee's groundwater monitoring program.

71124.08—Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

Radioactive Material Storage (1 Sample)

The inspectors evaluated the licensee's radioactive material storage.

Radioactive Waste System Walk down (1 Sample)

The inspectors evaluated the licensee's radioactive waste processing facility during plant walkdowns.

Waste Characterization and Classification (1 Sample)

The inspectors evaluated the licensee's radioactive waste characterization and classification.

Shipment Preparations (1 Sample)

The inspectors evaluated the licensee's radioactive material shipment preparation processes.

Shipment Records (1 Sample)

The inspectors evaluated the licensee's non-excepted package shipment records.

**OTHER ACTIVITIES – BASELINE**

71151—Performance Indicator Verification (9 Samples)

The inspectors verified licensee performance indicators submittals listed below:

- (1) MS06: Emergency AC Power Systems (04/01/2017–09/30/2018)
- (2) MS07: High Pressure Injection Systems (07/01/2017–09/30/2018)
- (3) MS08: Heat Removal Systems (07/01/2017–09/30/2018)
- (4) MS09: Residual Heat Removal Systems (07/01/2018–09/30/2018)
- (5) MS10: Cooling Water Support Systems (04/01/2017–09/30/2018)
- (6) BI01: Reactor Coolant System (RCS) Specific Activity Sample (10/01/2017–09/30/2018)
- (7) EP01: Drill/Exercise Performance (DEP) Sample (10/01/2017–09/30/2018)
- (8) EP02: Emergency Response Organization (ERO) Drill Participation Sample (10/01/2017–09/30/2018)
- (9) EP03: Alert And Notification System (ANS) Reliability Sample (10/01/2017–09/30/2018)

## 71152—Problem Identification and Resolution

### Semiannual Trend Review (1 Sample)

The inspectors reviewed the licensee's corrective action program for trends in the licensee's lubrication and predictive monitoring (i.e. oil analysis) program that might be indicative of a more significant safety issue.

### Annual Follow-up of Selected Issues (1 Sample)

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issues:

- (1) Reactor core isolation cooling delayed injection after December 12, 2018, scram, Condition Report CR-GGN-2018-13050, on December 17, 2018

## 71153—Follow-up of Events and Notices of Enforcement Discretion

### Events (1 Sample)

The inspectors evaluated plant and operator response to a manual reactor scram due to open bypass valve and the licensee's response on December 12, 2018.

### Licensee Event Reports (2 Samples)

The inspectors evaluated the following licensee event reports which can be accessed at <https://lersearch.inl.gov/LERSearchCriteria.aspx>:

- (1) Licensee Event Report 05000416/2016-002-01, "Automatic Actuation of the Reactor Protection System Due to B Main Transformer Wiring," on December 11, 2018
- (2) Licensee Event Report 05000416/2016-006-01, "Multiple Valid Engineered Safety Feature Actuations," on December 11, 2018

## **INSPECTION RESULTS**

Failure to Update the Updated Final Safety Analysis Report			
Cornerstone	Severity	Cross-cutting Aspect	Inspection Procedure
Not Applicable	Severity Level IV NCV 05000416/2018004-01 Closed	Not Applicable	71111.04 – Equipment Alignment
The inspectors identified a Severity Level IV, non-cited violation of 10 CFR 50.71(e) when the licensee failed to update the Updated Final Safety Analysis Report Table 9.2-16.			
<b>Description:</b> Updated Final Safety Analysis Report (UFSAR) Table 9.2-16 provided the standby service water (SSW) system cooling duty loads following a design basis accident. Licensee Procedure 17-S-06-22, "SSW A Performance," Revision 15, provided instructions to perform an SSW system flow balance to verify components served by the system received adequate cooling water flow rates under post loss of coolant accident conditions. When reviewing the UFSAR, the inspectors noted that some minimum allowable flow rates from the "SSW A Performance" procedure were lower than specified in Table 9.2-16. Specifically,			

residual heat removal heat exchanger A required flow was 7,900 gallons per minute per Table 9.2-16, versus 7,727 gallons per minute in Procedure 17-S-06-22.

The inspectors reviewed the three most recent SSW A and SSW B flow performance test results and noted that although all of the as-left flow rates were above established procedural requirements, some of the flow rates were below the values contained in Table 9.2-16. The licensee provided justification of system flow per completed Calculation MC-Q1P41-97020, Revision 13, that the SSW flow rates specified in the "SSW A Performance" procedure were appropriate for system loads. However, the inspectors noted that each time the "SSW A Performance" procedure allowable system flow rates were revised, UFSAR Table 9.6-12 was not updated. The licensee entered the UFSAR versus SSW flow performance testing into the corrective action program as Condition Report CR-GGN-2018-12692 for an operability determination. After reviewing the applicable SSW flow calculations and technical specifications, the inspectors concluded that the as-left SSW system flow balance loads did not challenge system operability.

Per Condition Report CR-GGN-2018-12705, UFSAR Table 9.6-12 was based on an original Bechtel design calculation, which had not been updated since Calculation MC-Q1P41-97020 was originally developed and approved on November 25, 1997. Furthermore, the inspectors noted that Calculation MC-Q1P41-97020 had been revised multiple times (currently on Revision 13) and Procedure 17-S-06-22, "SSW A Performance," has been revised multiple times (currently on Revision 15); however, UFSAR Table 9.2-16 was still based on the original Bechtel design calculation. The inspectors compared the required flow rates contained in MC-Q1P41-97020 to Table 9.2-16 and noted that some of the newly calculated flow requirements were non-conservative with respect to the UFSAR.

Corrective Actions: The licensee entered this issue into their corrective action program and planned to perform a broke/fix evaluation to determine long-term corrective actions. This evaluation was still in progress at the conclusion of this inspection period.

Corrective Action Reference: The licensee entered the issue into their corrective action program as Condition Report CR-GGN-2018-13205.

Performance Assessment: The inspectors determined this violation was associated with a minor performance deficiency.

Enforcement:

Severity: The ROP's significance determination process does not specifically consider the regulatory process impact in its assessment of licensee performance. Therefore, it is necessary to address this violation which impedes the NRC's ability to regulate using traditional enforcement to adequately deter noncompliance. This violation was determined to be Severity Level IV in accordance with the NRC Enforcement Policy Example 6.1.d.3. The inspectors determined that there is a material impact on safety or licensed activities because if utilized, lack of up-to-date information in the final safety analysis report, could be a nonconservative impact on design analysis.

Violation: 10 CFR 50.71(e), "Maintenance of Records, Making of Reports," requires, in part, that, "Each person licensed to operate a nuclear power reactor shall update periodically the final safety analysis report originally submitted as part of the application for the license, to assure that the information included in the report contains the latest information developed." This submittal "shall contain all the changes necessary to reflect information and analyses submitted to the Commission by the applicant or licensee, or prepared by the applicant or



licensee pursuant to Commission requirement since the submittal of the original or the last update to the final safety analysis report.”

Contrary to the above, from November 25, 1997, to December 31, 2018, the licensee did not update the final safety analysis report to assure that the information included in the report contained the latest information developed. Specifically, since Calculation MC-Q1P41-97020 was developed on November 25, 1997, to revise the SSW system load analysis and system acceptance criteria contained in Procedure 17-S-06-22, “SSW A Performance,” the UFSAR was impacted and was not revised for accuracy.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.”

#### Failure to Implement Lubrication Oil Program for Quality Systems

Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Mitigating Systems	Green NCV 05000416/2018004-02 Closed	H.2 – Human Performance, Field Presence	71111.12 – Maintenance Effectiveness

The inspectors identified a Green, non-cited violation of Technical Specification 5.4.1.a, “Procedures,” for the licensee’s failure to implement procedures for the lubrication program for safety-related and quality components. Specifically, licensee Procedure SEP-LUB-GGN-001, “GGN Lubrication Program,” Revision 1, requires appropriate storage, issuance, and recordkeeping for oils used in safety-related and quality systems. The licensee failed to implement the procedure, including unauthorized storage locations and 28 examples of inadequate records across four safety-related and quality systems.

Description: On September 19, 2018, the inspectors toured the station and interviewed personnel regarding the process to add oil to safety-related and quality systems. The inspectors identified several concerns, captured in Condition Report CR-GGN-2018-10576, which included five different locations to obtain oil, oil stored in unapproved containers in the turbine building, and an inconsistent understanding of the approved process to add oil to quality systems.

The inspectors performed an independent review of the oil program and recent oil additions to quality systems. The inspectors noted that Section 6 of licensee Procedure SEP-LUB-GGN-001, “GGN Lubrication Program,” Revision 1, requires the following:

Lubricants shall be stored in a manner that prevents contamination or degradation...lubricants shall be issued from stores...containers shall be cleaned or determined to be visually clean before use...waste lubricants shall be disposed of... the type and quantity of oil added should be recorded on the Work Order for each addition or change out of oil...

Stated differently, the approved process to add oil to a quality system requires obtaining it from the warehouse in a clean container, receiving an issue ticket for the amount provided, disposing of any remaining oil after the work is complete, and attaching the issue ticket to the completed work order as the record of the oil added.

The inspectors reviewed recent work orders and identified 28 examples of the licensee failing to keep adequate records of oil additions across four quality systems. In each case, there was missing issue tickets as a record of the source and quality of the oil added:

System	Condition Report	Work Orders Missing Issue Records
Reactor Core Isolation Cooling (RCIC)	CR-GGN-2018-11192 CR-GGN-2018-10957	440942, 505488, 42791450, 52697367, 52756102
Residual Heat Removal (RHR)	CR-GGN-2018-11193	52583375, 52584318, 52580723, 52530869
Emergency Diesel Generator (EDG) Governors	CR-GGN-2018-11197	488101, 52731167, 52621307, 52530874, 446198, 428564, 418838, 52583021, 425352
Standby Service Water (SSW)	CR-GGN-2018-11231	52767435, 460072, 52626683, 52472664, 446478, 52620220, 378356, 52530869, 51208903, 360427

Further, the inspectors determined that the improper storage of oil, such as in the turbine building and in unapproved containers, did not conform to the licensee's program requirements.

The inspectors reviewed the most recent chemistry results for oil samples from all quality systems that use lubrication, governor control, and/or fuel oil. The inspectors did not identify any issues of concern and noted the licensee was monitoring parameters such as particulates, viscosity, and trace elements that could indicate contaminants.

The inspectors concluded the licensee failed to implement procedures for the lubrication program for safety-related and quality components. The inspectors determined the issue was a recurring failure, was programmatic across several quality systems, and that the scope of the failures to follow the lubrication program was not isolated to a small set of technicians but instead represented a programmatic failure to provide oversight by supervisors.

In response to the NRC's conclusion, the licensee initiated Standing Order "Maint-18-0003," which implemented additional controls for oil additions including supervisory oversight. The inspectors noted the licensee initiated condition reports for each of the issues as described previously.

**Corrective Actions:** The licensee locked the alternate oil issue facilities, issued a standing order to obtain oil for safety related applications only from the warehouse, and entered the issues into the corrective action program.

**Corrective Action Reference:** Condition Report CR-GGN-2018-10576

### Performance Assessment:

**Performance Deficiency:** The failure to implement procedures for the lubrication program for safety-related and quality components was a performance deficiency.

**Screening:** The inspectors determined the performance deficiency was more than minor, and therefore a finding, because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, the inspectors conducted a limited scope sample of four safety systems over a recent time period, and determined that the licensee routinely failed to implement the procedure, including unauthorized storage locations and 28 examples of inadequate records. The inspectors determined this was indicative of a programmatic failure to implement procedures for appropriate storage, issuance, and recordkeeping for oils used in multiple safety-related and quality systems.

**Significance:** Using Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," dated June 19, 2012, the inspectors determined that the finding was of very low safety significance (Green) because: (1) the finding was not a deficiency affecting the design or qualification of a mitigating system; (2) the finding did not represent a loss of system and/or function; (3) the finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time; and (4) the finding does not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours.

**Cross-cutting Aspect:** The finding had a cross-cutting aspect in the area of human performance associated with field presence because licensee leadership failed to promptly correct deviations from standards and expectations while ensuring supervisory and management oversight of work activities [H.2]. Specifically, the scope of the failures to follow the lubrication program was not isolated to a small set of technicians and instead represented a programmatic failure to provide oversight by supervisors.

### Enforcement:

**Violation:** 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 9.a of Appendix A to Regulatory Guide 1.33, Revision 2, requires that procedures for maintenance that can affect the performance of safety-related equipment should be properly pre-planned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. The licensee established Procedure SEP-LUB-GGN-001, "GGN Lubrication Program," in part, to meet this requirement. Procedure SEP-LUB-GGN-001, "GGN Lubrication Program," Revision 1, step 6, required appropriate storage, issuance, and recordkeeping for oils used in safety-related and quality systems.

Contrary to the above, from November 13, 2017, to September 19, 2018, the licensee failed to ensure appropriate storage, issuance, and recordkeeping for oils used in safety-related and quality systems. Specifically, the inspectors identified unauthorized storage locations and 28 examples of inadequate records across four safety-related and quality systems.

**Enforcement Action:** This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Design Control for Reactor Core Isolation Cooling and Emergency Diesel Generators			
Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Mitigating Systems	Green NCV 05000416/2018004-03 Closed	H.12 – Human Performance, Avoid Complacency	71111.12 – Maintenance Effectiveness
<p>The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to correctly translate the design basis of the reactor core isolation cooling system and the emergency diesel generators into specifications and procedures. Specifically, the reactor core isolation cooling system and the emergency diesel generators required governor oil to be filtered; however, the licensee performed this task outside of a quality process and did not specify filtration as a critical characteristic in the commercial grade dedication process for the oil.</p> <p><u>Description:</u> On October 9, 2018, as part of a focused baseline sample on the oil program for quality systems, the inspectors reviewed vendor manuals and operating experience. The inspectors focused on systems with oil governors, such as reactor core isolation cooling (RCIC) and the emergency diesel generators (EDGs).</p> <p>The Terry Steam Turbine vendor manual associated with RCIC states, "Important: All oil should be filtered through a filter press or through a temporary 5 micron filter before adding it to the system." In a letter from Dresser-Rand to the Terry Turbine Users Group, dated March 27, 2000, the vendor expanded on this requirement stating, "It is also important to filter new oil before refilling the oil system. The new oil should be filtered to a cleanliness better than the expected operating cleanliness of the new unit. This will remove any contaminants in the new oil and help ensure that the new oil will meet the cleanliness acceptance criteria in operation."</p> <p>The licensee documented oil system filtration requirements for the emergency diesel generator governors in a letter dated April 29, 1999, and numbered GIN 1999-01132. In this letter, the licensee reviewed operating experience OMR 418, "Recent Problems with Woodward Governor Control Systems for Auxiliary Turbines and Emergency Diesel Generators," as follows:</p> <p style="padding-left: 40px;">OMR 418 identified six areas, or causes, for governor malfunctions...</p> <p style="padding-left: 40px;">(1) Governor hydraulic oil impurities...</p> <p style="padding-left: 40px;">Recommendation: New oil should be filtered...</p> <p style="padding-left: 40px;">Response: Currently, when the oil is changed in the governors, or oil is added the new oil is not filtered. New oil should be filtered before being added to the governors. This can be accomplished by filtering to 5 microns as is done with adding oil to the RCIC turbine governor.</p> <p>The inspectors then reviewed the process that the licensee used to provide quality oil to the RCIC and EDG systems for governor use. At the time of inspection, the oil was procured commercially and then dedicated per Procedure EN-DC-306, "Acceptance of Commercial-Grade Items/Services in Safety-Related Applications," Revision 6. The now-quality oil was then placed in the warehouse, labeled as quality, kept separate from the commercial-grade version, and issued as requested by work orders via issue tickets. The inspectors noted that</p>			

filtration to specific particulate size was not a critical characteristic used in the commercial-grade dedication process.

Since the oil was not procured or dedicated to a particulate level of 5 microns or less, the licensee then filtered the oil via a commercially obtained filtration skid and the result is the oil used in RCIC and EDG governors. Licensee Procedure 07-S-15-6 SU, "Lubricating Oil Collection," Revision 24, implemented vendor requirements to filter RCIC turbine oil and EDG governor oil to 5 microns. The inspectors challenged the licensee's process for filtering oil with the following two concerns.

First, the process of taking a quality item and putting it through a non-quality process calls into question the final quality of the item. The oil filtration skid used is a non-quality commercial grade setup with a commercially-procured Ultipor III filter. Since the licensee does not perform analysis of the oil after filtration, it is plausible that the commercial-grade filter could have added contaminants or otherwise altered the critical characteristics specified in the dedication process. The inspectors noted that there was not any explicit guidance on how to use the filtration skid, such as minimum purge volumes, periodic maintenance, or periodic cleaning.

Second, the vendor requirements and operating experience, as incorporated by the licensee, require filtration for oil used in governor systems, but filtration is not listed as a critical characteristic during commercial-grade dedication. Procedure EN-DC-306 defines critical characteristic as "the important design, material, and performance characteristics of a commercial-grade item that – once verified – will provide reasonable assurance that the item will perform its intended safety function." Section 5.10 of Procedure EN-DC-306 requires identification of critical characteristics including via "review of available technical data provided by the supplier including supplier information letters...[and] review of operating experience." This section of the procedure continues, "critical characteristics are selected from the design characteristics necessary to preclude failure of the item to perform its safety function...are based on credible failure modes and effects...include performance and dependability..." The inspectors determined that OMR 418 was incorporated, per the licensee's own analysis of the operating experience, to prevent malfunctions of governors which could lead to failure of the system to perform its safety function. By not considering filtration as a critical characteristic, the licensee is vulnerable to failures caused by an unmonitored oil parameter when the oil is first placed in the system.

The inspectors reviewed the most recent chemistry results for oil samples. The inspectors did not identify any issues of concern and noted the licensee was monitoring parameters such as particulates, viscosity, and trace elements that could indicate contaminants. Note that these samples are performed after the system is run and would not detect an initial oil addition that was contaminated.

The inspectors concluded the licensee failed to correctly translate the design basis of the RCIC system and the EDGs into specifications and procedures. The RCIC system and the EDGs require governor oil to be filtered; however, the licensee performed this task outside of a quality process and did not specify filtration as a critical characteristic.

Corrective Action: The licensee entered issues into the corrective action program.

Corrective Action References: Condition Reports CR-GGN-2018-11203 and CR-GGN-2018-11216.

Performance Assessment:

Performance Deficiency: The failure to correctly translate the design basis of the RCIC system and the EDG system into specifications and procedures was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor, and therefore a finding, because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, licensee Procedure 07-S-15-6 SU, "Lubricating Oil Collection," Revision 24, implements vendor requirements to filter RCIC turbine oil and EDG governor oil to 5 microns. This filtration, however, is performed with a nonquality and nondedicated commercial-grade filter. Further, this filtration was performed after the lubrication oil had been dedicated per Procedure EN-DC-306, "Acceptance of Commercial-Grade Items/Services in Safety-Related Applications." The filtration of oil outside of a quality process can jeopardize the ability of the quality systems to perform their specified safety function.

Significance: Using Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," dated June 19, 2012, the inspectors determined that the finding was of very low safety significance (Green) because: (1) the finding was not a deficiency affecting the design or qualification of a mitigating system; (2) the finding did not represent a loss of system and/or function; (3) the finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time; and (4) the finding does not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours.

Cross-cutting Aspect: The finding had a cross-cutting aspect in the area of human performance associated with avoiding complacency because the licensee failed to recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes [H.12]. Specifically, licensee staff performing the filtration, supervising the work, and reviewing the program data were complacent to the latent risk of working outside of a quality process.

Enforcement:

Violation: As required by 10 CFR Part 50, Appendix B, Criterion III, "Design Control," applicable regulatory requirements and the design basis, as defined in Section 50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions.

Contrary to the above, from April 29, 1999, to October 9, 2018, for the quality-related structure and components associated with the RCIC system and EDG governors, to which 10 CFR Part 50, Appendix B, applies, the licensee failed to correctly translate applicable regulatory requirements and the design basis, as defined in Section 50.2 and as specified in the license application, into specifications, drawings, procedures, and instructions. Specifically, the design basis for the RCIC system and the EDGs included requirements for governor oil to be filtered; however, the licensee failed to appropriately translate these

requirements into specifications and procedures, since the licensee performed this task outside of a quality process and did not specify filtration as a critical characteristic.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

#### Failure to Adequately Lubricate Motor-Operated Valve Stem Nut

Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Mitigating Systems	Green NCV 05000416/2018004-04 Closed	None	71111.13 – Maintenance Risk Assessments and Emergent Work Control

A self-revealed, Green, non-cited violation of Technical Specification 5.4.1.a, "Procedures," was identified when the licensee failed to have adequate instructions to perform preventive maintenance. Specifically, the licensee failed to properly lubricate the Division 1 residual heat removal heat exchanger bypass valve E12F048A and the valve failed to stroke during a surveillance test.

Description: On August 23, 2018, during a quarterly surveillance test on residual heat removal subsystem (RHR) A heat exchanger bypass valve E12F048A failed to stroke open on demand. During the surveillance, operators observed indications that valve E12F048A went full open as expected; however, RHR A flow decreased and the RHR A pump minimum flow valve opened, which was an unexpected system response for this system configuration. Upon investigating, operators noticed that with the valve actuator operating the valve stem did not move, which indicated that the valve did not actually reposition open when demanded.

Operators entered the issue into their corrective action program as CG-GGN-2018-09705 and declared RHR subsystem A inoperable. The licensee identified that the stem nut threads had significant wear, preventing positive contact with the valve stem threads. As a consequence, the actuator was not able to move the valve. Further investigation identified degraded/hardened grease in the stem nut.

The licensee performed an equipment failure evaluation to determine why the valve failed to reposition. The licensee determined that although the stem grease was inspected, cleaned, and re-lubricated every 2 years, the stem was not being properly lubricated. In accordance with Procedure 07-S-14-4, "Valve Actuator Gearbox Lubricant Sampling and Stem Lubrication Manual/Power Actuated Valves," Revision 24, the licensee lubricated the exposed portion of the stem. Because an anti-rotation device restricted routine access to the full length of the stem, the exposed portion was over 9 inches below the stem nut. However, with a valve stroke length of 9 inches, the fresh lubrication added to the stem did not lubricate the stem nut when the valve was fully stroked open and closed.

The inspectors visually inspected other risk significant RHR motor-operated valves to determine if the valves had similar metallic particles in the stem grease. Based on their observations, the inspectors did not identify any additional concerns. The inspectors also reviewed work order history and determined that:

- Valve E12F048A was last lubricated on August 29, 2017, under Work Order 52628141;
- the first documented instance where the E12F048A valve stem was lubricated was April 13, 1999, under Work Order 50895906, using Revision 15 of Procedure 07-S-14-4, dated March 17, 1998; and
- no documented work was performed on valve E12F048A after April 13, 1999, which would have properly lubricated the stem nut (such as an actuator refurbishment).

The inspectors reviewed Revision 15 of Procedure 07-S-14-4 and determined that the instructions to lubricate valve E12F048A remained unchanged through Revision 24. The inspectors reviewed Work Order 52628141 and concluded that, based on the procedure used at the time and the valve design, the valve was not properly lubricated. Based on interviews with engineering personnel, the inspectors determined the last time the stem nut was adequately lubricated was likely in the late 1990s, but prior to the April 13, 1999, stem lubrication.

**Corrective Actions:** Licensee corrective actions included replacing the stem nut, performing motor-operated valve (MOV) diagnostic testing, and re-performing the surveillance test satisfactorily. The licensee revised procedures, including the applicable lubrication procedure, MOV periodic test procedures, and maintenance procedures to include specific instructions on lubricating this style of valve to ensure the stem nut was properly lubricated.

**Corrective Action Reference:** The licensee entered the issue into their corrective action program as Condition Report CR-GGN-2018-09705.

#### Performance Assessment:

**Performance Deficiency:** The failure to establish adequate instructions to properly lubricate the E12F048A valve was a performance deficiency.

**Screening:** The inspectors determined the performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the performance deficiency contributed to the failure of the E12F048A valve to reposition open on demand, which affected the operability of RHR subsystem A.

**Significance:** The inspectors assessed the significance of the finding using Inspection Manual Chapter 0609, Appendix A, Exhibit 2, Section A. Since the finding does not affect the design or qualification and does not represent a loss of system function, the finding screens to a Green significance. Specifically, the heat exchanger inlet and outlet valves remained available and would have allowed for RHR system flow to the reactor through the heat exchanger with sufficient flow to maintain the low pressure coolant injection function.

**Cross-Cutting Aspect:** No cross-cutting aspect was assigned to this finding because the lubrication instructions for this valve were developed in 1998. Therefore, the inspectors determined the cause of the finding is not indicative of current licensee performance.



Enforcement:

Violation: Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained for activities that are recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Appendix A, Section 9.a of Regulatory Guide 1.33 requires that maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances.

Contrary to the above, between April 13, 1999, and August 29, 2017, the licensee failed to ensure that maintenance that can affect the performance of safety-related equipment was properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Specifically, the licensee failed to develop preventive maintenance instructions to adequately lubricate the valve stem and stem nut on the Division 1 RHR bypass valve E12F048A.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Failure to Perform Complete Evaluations of the Licensee Interface with Offsite Organizations			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Emergency Preparedness	Green NCV 05000416/2018004-05 Closed	H.8 – Human Performance, Procedure Adherence	71114.05- Maintenance of Emergency Preparedness
The inspector identified a Green, non-cited violation of 10 CFR 50.54(t)(2) for the licensee's failure to include an evaluation of the adequacy of the interfaces with State and local governments in a review of emergency preparedness program elements in Audit Reports QA-07-2017-GGNS-1 and QA-07-2018-GGNS-1. Specifically, audit personnel did not provide offsite officials with an opportunity to provide their view of the adequacy of the interface to the audit team, resulting in a failure to evaluate this interface.			
<u>Description:</u> The inspector reviewed Quality Assurance Audit Reports QA-07-2017-GGNS-1 and QA-07-2018-GGNS-1, dated May 30, 2017, and May 14, 2018, respectively. These reports documented adequacy evaluations of the licensee's emergency preparedness program performed by persons who had no direct responsibility for the implementation of the program, as required by 10 CFR 50.54(t). Since the licensee staff performing the evaluation were independent from the program, they needed to take action to develop first-hand understanding of the program in addition to documentation reviews. This would allow them to gage whether there were unidentified issues that the emergency preparedness staff had not recognized and whether action had been taken on previously identified issues. In order to evaluate the adequacy of interfaces between the staff and State and local agencies (one of the evaluation areas), an outreach to State and local agencies is needed to allow these agencies communication opportunities to help the evaluator recognize such issues.			
It was determined that the report sections addressing "Program Element 1: Responsibility and Organization," and "Audit Contacts/Meeting Attendees – List," described the audit team's evaluation of the interface between the Grand Gulf Nuclear Station emergency preparedness staff and offsite response organizations for each report. Based on the reports, the evaluations consisted of the following:			

- In 2017, the evaluation was based on a document review of other audit reports dealing with drill observations, review of documentation associated with monthly teleconferences between State and local agencies and the emergency preparedness department, and review of records related to the annual review of Emergency Action Levels (EALs) with the agencies.
- In 2018, the evaluation was based on review of records related to the annual review of EALs with the agencies and records of annual training provided to the agencies.

The inspector discussed the content of the 2017 and 2018 audit reports with several audit staff members involved in the efforts and reviewed informal notes kept by auditor staff. The inspector confirmed the following:

- In 2017, an opportunity was provided to Louisiana Department of Environmental Quality (LDEQ) to provide information about the quality of the interface with the licensee. No evidence was identified of an opportunity being provided to the State of Mississippi or to local officials in Tensas Parish or Claiborne County.
- In 2018, an opportunity was provided to Mississippi Emergency Management Agency (MEMA) to provide similar information. No such opportunity was provided to officials in the State of Louisiana or with local officials in Tensas Parish or Claiborne County.

From 2012 to 2017, the procedure for audit performance had been used by auditors to establish contact with both State and local government agencies. Previously, interviews or surveys were provided to fire and police departments in Claiborne County and Port Gibson; MEMA, Mississippi Department of Health/Division of Radiological Health; LDEQ, Governor's Office of Homeland Security and Emergency Preparedness (GOSHEP); Port Gibson/Claiborne County Civil Defense; and Tensas Parish Office of Homeland Security and Emergency Preparedness. Based on the reports, auditor notes, and interviews, this was not implemented correctly during the 2017-2018 time period.

The inspector concluded that Grand Gulf Nuclear Station did not conduct an adequate evaluation of the interface between the station's emergency preparedness organization and offsite officials because the evaluation did not provide offsite officials the opportunity to provide their view of the adequacy of the interface to the audit team.

**Corrective Actions:** The licensee entered these issues into the corrective action program. In addition, the licensee is taking action to contact each of the State and local agencies to identify any issues between their organizations.

**Corrective Action Reference:** Condition Report CR-GGN-2018-12103

**Performance Assessment:**

**Performance Deficiency:** The failure to perform an evaluation for adequacy of the interface with State and local governments in accordance with 10 CFR 50.54(t)(2) was a performance deficiency.

**Screening:** The performance deficiency was determined to be more than minor, and therefore a finding, because it was associated with the offsite emergency preparedness attribute of the Emergency Preparedness Cornerstone, and affected the cornerstone objective to ensure that

the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the ability to implement adequate measures to protect the health and safety of the public could be affected if communication and coordination problems between the licensee and offsite agencies are not detected and corrected.

Significance: Using Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 4, Tables 1, 2, and 3, worksheets (effective date October 7, 2016); and the corresponding Appendix B, "Emergency Preparedness Significance Determination Process," Attachment 2 (issue date September 22, 2015); the performance deficiency was determined to have very low safety significance (Green) because it was a failure to comply with NRC requirements, was not a loss of planning standard function, and was not a degraded risk significant planning standard function.

Cross-Cutting Aspect: The finding had a cross-cutting aspect in the area of procedural adherence associated with human performance because the licensee failed to follow processes, procedures, and work instructions [H.8]. Specifically, Entergy Nuclear Emergency Plan Standard Audit Template, Audit Number 7, Revisions 11 and 12, Performance Element 1, Attribute 2, Auditor Instruction (e) contained instructions to solicit comments from State and local agencies, but the audit teams failed to implement this portion of the audit instruction with the applicable governmental population.

Enforcement:

Violation: Title 10 CFR 50.54(t)(2) requires, in part, that the review of emergency preparedness program elements must include an evaluation for adequacy of the interfaces with State and local governments.

Contrary to the above, from May 30, 2017, to December 17, 2018, the licensee's review of emergency preparedness program elements failed to include an evaluation for adequacy of the interfaces with State and local governments. Specifically, the reviews conducted under Audit Reports QA-07-2017-GGNS-1 and QA-07-2018-GGNS-1 did not provide offsite response organizations the opportunity to provide information about the adequacy of their interface with the licensee as specified in the Entergy Standard Audit Template.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy, because it was very low safety significance (Green) and was entered into the licensee's corrective action program as Condition Report CR-GGN-2018-12103.

**Failure to Conduct Drills in Accordance with the Site Emergency Plan**

Cornerstone	Significance	Cross-cutting Aspect	Report Section
Emergency Preparedness	Green NCV 05000416/2018004-06 Closed	H.9 – Human Performance, Training	71114.05 - Maintenance of Emergency Preparedness

The inspector 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 Grand Gulf Nuclear Station Emergency Plan, Revisions 66 to 77, Section 8.3.2.c, which requires an annual drill to determine the effectiveness of the local fire department working in

conjunction with the licensee fire brigade. The licensee failed to conduct correctly scoped annual fire brigade drills from 2012 to 2017.

Description: The inspector reviewed drills and exercises conducted by the licensee between January 2017 and November 2018, and compared the drill and exercise evaluation reports to the requirements of the licensee emergency plan.

The inspector determined that Grand Gulf Nuclear Station Emergency Plan, Revisions 66 to 77, Section 8.3.2.c, required that a fire brigade drill be conducted on an annual basis to determine the effectiveness of the local fire department working in conjunction with the fire brigade.

The inspector evaluated the drill reports for the 2017 annual fire brigade drill. The report indicated that Claiborne County Fire responded and provided support as requested. However, it indicated in the event timeline that the offsite fire department came on site after the drill was terminated. Interviews with licensee fire protection staff revealed that Claiborne County Fire came onsite and stopped with their equipment at the protected area access point. No interaction took place with any fire brigade staff during the drill. Therefore, there was no opportunity to evaluate the effectiveness of the fire brigade and Claiborne County Fire working together. Further interview responses, validated by review of other annual fire brigade drill reports, showed that there were no evaluated interactions between the fire brigade and offsite fire departments from 2012 to 2015. In addition, no fire brigade drill was conducted in 2016 to meet this annual requirement. Interviews indicated that the off-site fire department did receive training at the plant every year.

The inspector reviewed site implementation procedures and conducted licensee staff interviews to gauge whether there was an understanding of the specific fire brigade drill requirements. Site staff had various understandings of what the fire brigade drill requirements were as documented in the emergency plan. Procedure EN-EP-306, "Drills and Exercises," Revisions 2 through 9, Attachment 9.1, stated for drill/exercise, Type 7, that the fire drills are conducted in accordance with "Tech Specs and/or Fire Protection Program/Procedures." The procedure, which contained a site-specific emergency plan commitment list (Section 8.0), had commitments related to the content of Attachment 9.1, but did not document the specific details of the annual fire brigade drill. Therefore, there has not been recognition by licensee staff that the procedure's fire drill description was different than what is contained in the emergency plan.

The inspector determined that the licensee did not conduct annual fire brigade drills in which the fire brigade and off-site fire departments were evaluated working in conjunction with each other. Therefore, the inspector concluded that the licensee did not follow the requirements of the site emergency plan.

Corrective Actions: The licensee entered these issues into the corrective action program.

Corrective Action Reference: Condition Report CR-GGN-2018-12101

Performance Assessment:

Performance Deficiency: The inspector determined that the failure to conduct drills required by the emergency plan is a performance deficiency within the licensee's ability to foresee and correct.

**Screening:** The performance deficiency was more than minor 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.

**Significance:** Using Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 4, Tables 1, 2, and 3 worksheets (effective date October 7, 2016); and the corresponding Appendix B, "Emergency Preparedness Significance Determination Process," Attachment 2 (issue date September 22, 2015); the performance deficiency was determined have very low safety significance (Green) because it was a failure to comply with NRC requirements, was not a loss of planning standard function, and was not a degraded risk significant planning standard function. The planning standard function was not lost because the licensee did conduct drills and off-site organization training that addressed portions of the related emergency plan commitments.

**Cross-Cutting Aspect:** 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]. Specifically, the review of drill reports' text and licensee interviews, compared against the implementing procedures, showed examples of insufficient knowledge of content of the site emergency plan. This contributed to the misconception by the licensee that their actions were in compliance with the plan.

**Enforcement:**

**Violation:** 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. Grand Gulf Nuclear Station Emergency Plan, Revisions 66 to 77, Section 8.3.2.c, states, in part, that a drill is conducted on an annual basis to determine the effectiveness of the local fire department working in conjunction with the fire brigade.

Contrary to the above, between April 11, 2012, and December 20, 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 annual fire brigade drills with the scope of evaluation required by the emergency plan to maintain key emergency response organization skills.

**Enforcement Action:** This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy, because it was very low safety significance (Green) and was entered into the licensee's corrective action program as Condition Report CR-GGN-2018-12101.

Observation	71152 – Problem Identification and Resolution
<p>The inspectors reviewed the licensee’s corrective action program, system health reports, and other documentation to identify trends that might be indicative of a more significant safety issue for lubrication and hydraulic control oil for the reactor core isolation cooling (RCIC) system.</p> <p>The inspectors reviewed adverse issues that had been identified for these RCIC oil subsystems in the past 3 years. During this period, 19 condition reports were generated. The majority of these condition reports were for low-level issues such as housekeeping, requesting oil additions, and enhancements to processes such as job briefs.</p> <p>The inspectors focused on three condition reports that documented adverse chemistry data and questions on the oil program:</p> <ul style="list-style-type: none"> <li>• CR-GGN-2018-10179 documented elevated phosphorus and particulates from oil samples drawn from the RCIC turbine lubrication oil subsystem</li> <li>• CR-GGN-2018-10576 documented NRC concerns about the traceability of oil used in safety-related systems</li> <li>• CR-GGN-2018-10445 documented NRC concerns about an unauthorized oil storage area where containers were found labeled “RCIC Oil”</li> </ul> <p>The inspectors noted that the licensee performed a prompt operability determination for the elevated oil contaminants in the RCIC turbine lubrication oil subsystem. Corrective actions included flushing of the system, post-flush oil sampling, and a standing corrective action to perform more frequent oil analysis during system operation. The inspectors independently reviewed surveillance test data for the RCIC system including vibrations and temperatures to validate that the system was not adversely impacted.</p> <p>Regarding traceability of oil used in safety-related systems and unauthorized oil storage, the inspectors documented two non-cited violations in this inspection report.</p> <p>The inspectors also identified several issues that did not rise to a more-than-minor safety significance:</p> <ul style="list-style-type: none"> <li>• The 2015 problem identification and resolution inspection shared a comment with the licensee, captured in Condition Report CR-GGN-2015-05831, that the tracking of oil additions to systems could use improvement. This represented a missed opportunity to enhance the program prior to the focused baseline inspection of 2018.</li> <li>• Previous revisions of Procedure 07-S-15-6 SU, "Lubricating Oil Collection," specified that oil filtration was to be performed at the component stating, “If sampling RCIC turbine or diesel governor, then ensure 5 micron or better filter connected to fill line.” The licensee, prior to Revision 24, had been performing the filtering in a different location and transporting the filtered oil to the component. This was contrary to the</li> </ul>	

written instructions. This observation was captured in Condition Report CR-GGN-2018-11203.

- Procedure SEP-LUB-GGN-02, "GGN Oil Analysis Program," Revision 0, states, "elevated particle count is a correctable condition, either with filtration or lubricant change, and does not constitute an operability issue." This guidance is contrary to NRC Information Notice 2001-06, "Centrifugal Charging Pump Thrust Bearing Damage Not Detected Due to Inadequate Assessment of Oil Analysis Results and Selection of Pump Surveillance Points." This generic communication discusses an undetected emergency core cooling system (ECCS) pump failure with elevated particulates in the oil. Although the ECCS pump in the Information Notice passed in-service and other surveillance tests, the Information Notice concludes that, "the failure of both [surveillance] tests to indicate bearing degradation appears to have biased the decision to not investigate the elevated particle count" and "If trends of condition monitoring data are not actively investigated when they deviate from an established baseline, a licensee may overlook significant pump degradation that is not detected by performance testing." This observation was captured in Condition Report CR-GGN-2018-11215.
- The inspectors noted that the licensee did not have any additional oil samples saved from the elevated phosphates issue in RCIC. This represented a lost opportunity for additional chemistry analysis to determine the precise source of the oil contaminants.
- The inspectors noted the station was inconsistent in the practice of applying foreign material exclusion controls to the filtration skids used for RCIC and emergency diesel generator oils. This observation was captured in Condition Report CR-GGN-2018-11149.

The inspectors verified that all issues were addressed within the scope of the corrective action program and that the completed and planned actions were appropriate to correct the identified causes. The inspectors did not identify any new trends or concerns that might be indicative of a more significant safety issue for the lubrication and hydraulic control oil for the RCIC system.

## **EXIT MEETINGS AND DEBRIEFS**

On October 11, 2018, the inspector presented the Focused Baseline Inspection results to Mr. E. Larson, Site Vice President, and other members of the licensee staff. The inspectors verified no proprietary information was retained or documented in this report.

On November 9, 2018, the inspector provided a debrief for the Emergency Preparedness Program Inspection to Mr. E. Larson, Site Vice President, and other members of the licensee staff. On December 17, 2018, the inspector communicated the emergency preparedness program inspection results telephonically to Mr. E. Larson, Site Vice President, and other members of the licensee staff. The inspector verified no proprietary information was retained or documented in this report.

On November 30, 2018, the inspector presented the Baseline Radiation Safety Inspection results to Mr. E. Larson, Site Vice President, and other members of the licensee staff. The inspectors verified no proprietary information was retained or documented in this report.

On December 14, 2018, the inspectors presented the preliminary evaluations of Changes, Tests, and Experiments Inspection results to Mr. R. Franssen, General Manager Plant Operations, and other members of the licensee staff. On December 20, 2018, the inspectors presented the final evaluations of Changes, Tests, and Experiments Inspection results to Mr. E. Larson, Site Vice President, and other members of the licensee staff. The inspectors confirmed that proprietary information was controlled to protect from public disclosure.

On January 10, 2019, the inspectors presented the Quarterly Resident Inspector Inspection results to Mr. E. Larson, Site Vice President, and other members of the licensee staff. The inspectors verified no proprietary information was retained or documented in this report.



## DOCUMENTS REVIEWED

### 71111.12 – Maintenance Effectiveness

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

2018-10957	2018-11192	2018-11193	2018-11197	2018-11203
2018-11215	2018-11216	2018-11231		

#### Work Orders

368342	472585	52472664
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#### Procedures Number

#### Title

#### Revision

04-01-02-1H13-P601-21A-E5	Alarm Response Instruction E51-PDAH-L614	100
07-S-15-6	Lubricating Oil Sample Collection	24
EN-DC-310	Predictive Maintenance Program	8

#### Miscellaneous Documents Number

#### Title

	Oil Analysis Reports	
	Terry Steam Turbine Manual	
	Woodward Governor Manual	
EC 40251	Evaluate Replacing DTE 797 Oil with DTE 732 Oil	
Maint-18-0003	Standing Order: Interim Actions for Lube Oil Additions, Oil Changes	

### 71111.15 – Operability Determinations and Functionality Assessments

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

2018-10179
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#### Work Orders

52697367	52791450
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### 71111.17T – Evaluations of Changes, Tests, and Experiments

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

2016-00299	2016-01499	2016-08294	2016-08297	2016-08298
2016-08327	2016-08328	2016-08329	2016-08912	2017-04143
2018-13028	2018-13090			

#### Condition Reports Generated During Inspection (CR-GGN-)

2018-12983	2018-12990	2018-13006	2018-13015	2018-13029
2018-13054	2018-13062	2018-13074	2018-13090	

## Work Orders

336989	431520	434226	439316	461847	483308
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Procedures Number	Title	Revision
01-S-06-49	Control of Engineering Documents	9
01-S-17-17	Periodic System Pressure Testing for the ISI Ten Year Plan	108
03-1-01-1	Cold Shutdown to Generator Carrying Minimum Load	178
04-1-01-E12-1	System Operating Instruction Residual Heat Removal System	151
04-1-01-E12-2	System Operating Instruction Shutdown Cooling And Alternate Decay Heat Removal Operation	128
05-1-02-VI-2	Hurricanes Tornadoes and Severe Weather	137
06-OP-1C41-Q-001	Standby Liquid Control Functional Test	130
17-S-05-C41	Performance and System Engineering Instruction System Pressure Test Standby Liquid Control System	8
CEP-PT-001	ASME Section XI Pressure Testing Program	308
EN-FAP-LI-001	Performance Improvement Review Group (PRG) Process	13
EN-FAP-OM-021	Critical Decision Procedure	6
EN-FAP-OP-023	Operations Performance Indicators	4
EN-LI-100	Process Applicability Determination	24
EN-LI-101	10 CFR 50.59 Evaluations	16
EN-OM-119	On-Site Safety Review Committee	19
EN-OP-104	Operability Determination Process	16
EN-OP-111	Operation Decision-Making Issue (ODMI) Process	16
M-195.0	Technical Specification for Protection against Dynamic Effects Associated with the Postulated Rupture of Piping	7

Drawings Number	Title	Revision
795E802	Standby Liquid Control System	3
E1267-005	Z77 Safeguard Switchgear and Battery Room Ventilation System Heating Coil	10
E1267-019	Z77 Safeguard Switchgear and Battery Room Air Handling Unit and Supply Fan	2
J1359-002	Z77 Safeguard Switchgear and Battery Rooms Outside Air Temperature	7
P-1083A	ISI Boundary Diagram Reactor Core Isolation Cooling System	11

Miscellaneous Documents Number	Title	Revision or Date
460000498	Installation Operation and Maintenance Instructions for Air Handling Units	4
EGS-TR-23004-01	Instructions for using Patel Thread Sealant P-1	0
EQDP-EQ34.1_003	Environmental Qualification Documentation Package for Patel Electrical Connectors and Conduit Seals	3
ES-10	Design Standard for Environmental Sealing	7
ES-19	Design Standard for Environmental Equipment Qualification Maintenance	9
LO-GLO-2017-00054	Self-Assessment for 2018 NRC Inspection for Evaluation of Changes Tests and Experiments	November 15 2018
QA-4-2018-GGNS-01	Engineering (Design Control) Audit Notification/Audit Plan Memorandum	February 26 2018

Calculations Number	Title	Revision
CC-Q1111-16001	Maximum Leakage Past Sand Bag Wall during PMP Flood	1
M5.8.23	Equipment Environmental Qualification Calculation	1
M5.8.23-2	Supplement 2 to Equipment Environmental Qualification Calculation	0
XC-Q1N11-94004	Dose Consequences of a Main Steam Line Break Outside Containment	2

#### 71114.02 – Alert and Notification System Testing

Procedures Number	Title	Revision
01-S-10-3	Emergency Planning Department Responsibilities	24

Miscellaneous Documents Title	Date
REP-10 Design Review Report, Entergy Grand Gulf Nuclear Station, Port Gibson, Mississippi	May 2013
Grand Gulf Public Notification System Preventative Maintenance Record, Site: LAA	May 3, 2017
Grand Gulf Public Notification System Preventative Maintenance Record, Site: LAA	October 27, 2017
Grand Gulf Public Notification System Preventative Maintenance Record, Site: LAA	March 27, 2018

#### 71114.03 – Emergency Response Organization Staffing and Augmentation System

Procedures Number	Title	Revision
10-S-01-6	Notification of Offsite Agencies and Plant On-Call Emergency Personnel	56
Miscellaneous Documents Number	Title	Date
GIN 2017-00055	Quarterly Off-Hours Unannounced Everbridge Test - 5748251086942785	March 23, 2017
GIN 2017-00100	Quarterly Off-Hours Unannounced Everbridge Test – 2 <sup>nd</sup> Quarter 2017	June 2, 2017
GIN 2017-0196	Quarterly Off-Hours Unannounced Everbridge Test - 7973662619809853	September 27, 2017
GIN 2017-0269	Quarterly Off-Hours Unannounced Everbridge Test – Broadcast ID Ending in 1360 Attached	December 20, 2017
GIN 2018-00045	Quarterly Off-Hours Unannounced Everbridge Test - 7982458713958410	March 26, 2018
GIN 2018-00109	Quarterly Off-Hours Unannounced Everbridge Test - 7973662621076652	June 22, 2018
GIN 2018-00165	Quarterly Off-Hours Unannounced Everbridge Test - 7969264575072408	October 4, 2018

#### 71114.04 – Emergency Action Level and Emergency Plan Changes

Procedures Number	Title	Revision
EN-EP-305	Emergency Planning 10CFR50.54(q) Review Program	6
Miscellaneous Documents Number	Title	Date
Attachment 9.1, 10 CFR 50.54(q)(2) Review	01-S-10-5, Revision 16	October 17, 2017
Attachment 9.1, 10 CFR 50.54(q)(2) Review	01-S-10-33, Revision 24	May 13, 2018
Attachment 9.1, 10 CFR 50.54(q)(2) Review	10-S-01-12, Revision 46	November 7, 2017
Attachment 9.1, 10 CFR 50.54(q)(2) Review	EN-EP-306, Revision 9	November 15, 2017

Miscellaneous Documents Number	Title	Date
Attachment 9.1, 10 CFR 50.54(q)(2) Review	EN-EP-801, Revision 15	January 11, 2018
Attachment 9.2, 10 CFR 50.54(q)(3) Screening	10-S-01-38, Revision 5	May 2, 2017
Attachment 9.2, 10 CFR 50.54(q)(3) Screening	10-S-01-39, Revision 5	May 2, 2017
Attachment 9.2, 10 CFR 50.54(q)(3) Screening	Emergency Plan, Revision: 76	June 21, 2017
Attachment 9.2, 10 CFR 50.54(q)(3) Screening	Emergency Plan, Revision: 77	June 25, 2018
Attachment 9.3, 10 CFR 50.54(q)(3) Evaluation	10-S-01-38, Revision 5	May 2, 2017
Attachment 9.3, 10 CFR 50.54(q)(3) Evaluation	10-S-01-39, Revision 5	May 2, 2017
Attachment 9.3, 10 CFR 50.54(q)(3) Evaluation	Emergency Plan, Revision: 76	June 21, 2017
Attachment 9.3, 10 CFR 50.54(q)(3) Evaluation	EN-EP 801, Revision 16	October 2, 2018
Attachment 9.3, 10 CFR 50.54(q)(3) Evaluation	LBDCR 2017-044, Revision 0	August 29, 2018
GNRO-2017-00062	Emergency Plan Revision 76, Grand Gulf Nuclear Station, Unit 1; Docket No. 50-416, License No. NPF-29	October 3, 2017
GNRO-2018-00035	Emergency Plan Revision 77, Grand Gulf Nuclear Station, Unit 1; Docket No. 50-416, License No. NPF-29	July 30, 2018

#### 71114.05 – Maintenance of Emergency Preparedness

Condition Reports (CR-GGN-)				
2017-00311	2017-01874	2017-04068	2017-10467	2017-11842
2018-00027	2018-02697	2018-02806	2018-02857	2018-03243
2018-03743	2018-04694	2018-06606	2018-08241	2018-09809
2018-09810	2018-09813	2018-10335	2018-12022	2018-12057
2018-12101	2018-12103	2018-12104		

## Work Orders

364738      488789      490278      504491

Procedures Number	Title	Revision
01-S-10-3	Emergency Planning Department Responsibilities	24
10-S-01-37	Communications Drills	1
10-S-01-38	Emergency Plan Procedure: EAL Contingency Planning	5
10-S-01-39	Grand Gulf Equipment Important to Emergency Response	5
10-S-02-1	ERF Inspection, Inventories, Operability Checks and Maintenance	20
EN-EP-202	Equipment Important to Emergency Response	1
EN-EP-306	Drills and Exercises	2, 3, 4, 5, 6, 7, 9
EN-FAP-EP-013	Emergency Preparedness Program Maintenance	2
EN-LI-102	Corrective Action Program	35
EN-LI-104	Self-Assessment and Benchmark Process	13
EN-TQ-125	Fire Brigade Drills	4
Miscellaneous Documents Number	Title	Revision or Date
	Fire Drill Scenario, Unit 1, Date: 12-20-17, Time: 10:45, Shift/Team: D	December 20, 2017
	Grand Gulf Nuclear Station After Action Report/Improvement Plan, Exercise Date – September 18-19, 2018, Radiological Emergency Preparedness (REP) Program	November 6, 2018
	Grand Gulf Nuclear Station Emergency Drill Scenario, August 2017 Red Team (Yellow Controlling Team)	July 21, 2017
	Grand Gulf Nuclear Station February 22, 2017 Blue Team Drill Report	
	Project Title: 3853 – MO2580 – Upgrade Gai-Tronics (FTP)	November 15, 2017
Attachment 9.3, 10 CFR 50.54(q)(3) Evaluation	Emergency Plan, Revision: 75	March 2, 2017
GDRL-FP-FBD	Fire Brigade Drill	April 11, 2012
GDRL-FP-FBD	Fire Brigade Drill	December 16, 2013
GDRL-FP-FBD	Fire Brigade Drill	December 7, 2014
GDRL-FP-FBD	Fire Brigade Drill	December 13,

Miscellaneous Documents Number	Title	Revision or Date
		2015
GDRL-FP-FBD	Fire Brigade Drill	December 20, 2017
GIN 2017-00064	2017 MS-1 Drill for Merit, River Region Medical Center	April 10, 2017
GIN 2017-00071	GGN 2017 March 29 Blue Team Wertz Biennial Exercise Report	April 18, 2017
GIN 2017-00149	GGN 2017 July 12 Red Team Collins Training Drill Report	August 8, 2017
GIN 2017-00176	Review of Census Growth Rates and Methodology for the Grand Gulf Nuclear Station 2017 ETE Update	September 12, 2016
GIN 2017-00177	GGN 2017 August 16 Red Team Collins Training Drill Report	September 12, 2017
GIN 2017-00203	Quarterly Emergency Response Facilities Inventory Report – 3 <sup>rd</sup> Qtr. 2017	October 3, 2017
GIN 2017-00231	Emergency Preparedness Letter of Agreement (LOA) Annual Review - 2017	November 13, 2017
GIN 2017-00244 Rev. 001	GGN 2017 October 25 Green Team Sumrall ERO Training Drill Report	January 11, 2018
GIN 2017-00262	2017 Annual Media Training	December 18, 2017
GIN 2017-00263	GGN 2017 November 15-16 Onsite Medical Drill Report	November 25, 2017
GIN 2017-00278	Quarterly Emergency Response Facilities Inventory Report – 4 <sup>th</sup> Q 2017	January 8, 2018
GIN 2018-00047	GGN 2018 February 28 Red Team – Collins Alternate Facility ERO Training Drill Report Scenario # GDRL-EP-FD01	March 29, 2018
GIN 2018-00047	GGN 2018 February 28 Blue Team – Sumrall Alternate Facility ERO Training Drill Report Scenario # GDRL-EP-FD01	March 29, 2018
GIN 2018-00047	GGN 2018 February 28 Green Team – Wertz Alternate Facility ERO Training Drill Report Scenario # GDRL-EP-FD01	March 29, 2018
GIN 2018-00047	GGN 2018 February 28 Yellow Team – Wertz/Roach Alternate Facility ERO Training Drill Report Scenario # GDRL-EP-FD01	March 29, 2018
GIN 2018-00054	Quarterly Emergency Response Facilities Inventory Report – 1 <sup>st</sup> Q 2018	April 4, 2018
GIN 2018-00060	GGN 2017 October 2 Semi Annual Health Physics Drill Report	April 12, 2018
GIN 2018-00106	Quarterly Emergency Response Facilities Inventory Report – 2nd Q 2018	June 19, 2018

Miscellaneous Documents Number	Title	Revision or Date
GIN 2018-00143	Onsite Health Physics Drill, GGNS-EP-2018HPDRILL-A, Drill Scenario and Report, Drill 06/22/2018	July 20, 2018
GIN 2018-00158	Quarterly Emergency Response Facilities Inventory Report – 3 <sup>rd</sup> Q 2018	September 11, 2018
GIN 2018-00209	Onsite Health Physics Drill, GGNS-EP-2018HPDRILL-B, Drill Scenario and Report, Drill 09/18/2018	October 18, 2018
GIN 2018-00210	GGN 2018 October 3 Red Team Wertz ERO Training Drill Report	November 5, 2018
KLD TR-941	Grand Gulf Nuclear Station 2017 Population Update Analysis	0
O2C-GGN-2017-0055	Oversight Observation Checklist, Activity: Emergency Response Organization Drill, Associated Briefs, and Critiques for Drill Conducted on 02/22/2017 (Blue Team)	February 22, 2017
O2C-GGN-2017-0100	Oversight Observation Checklist, Activity: Emergency Response Organization Exercise, Associated Briefs, and Critiques for Exercise Conducted on 03/29/2017 (Blue Team)	March 29, 2017
O2C-GGN-2017-0201	Oversight Observation Checklist, Activity: Emergency Response Organization Drill and Associated Critiques for Drill Conducted on 07/12/2017 (Red Team)	July 12, 2017
O2C-GGN-2017-0299	Oversight Observation Checklist, Activity: Emergency Response Organization Drill and Associated Critiques for Drill Conducted on 10/25/2017 (Green Team)	October 25, 2017
O2C-GGN-2018-0039	Oversight Observation Checklist, Activity: Backup Facility Emergency Response Organization Drills and Associated Critiques for Drills Conducted on 02/22/2017 (Red, Blue, Green, & Yellow Teams)	February 28, 2018
QA-7-2013-GGNS-1	Quality Assurance Audit Report	July 18, 2013
QA-7-2014-GGNS-1	Quality Assurance Audit Report	May 29, 2014
QA-7-2015-GGNS-1	Quality Assurance Audit Report	May 12, 2015
QA-7-2016-GGNS-1	Quality Assurance Audit Report	May 2, 2016
QA-7-2017-GGNS-1	Quality Assurance Audit Report, Audit Area: Emergency Plan	May 30, 2017
QA-7-2018-GGNS-1	Quality Assurance Audit Report, Audit Area: Emergency Preparedness	May 14, 2018
QS-2012-GGNS-016	GGNS Quality Assurance Surveillance Report	May 10, 2012



Miscellaneous Documents Number	Title	Revision or Date
QS-2018-GGNS-018	Grand Gulf Nuclear Station Quality Assurance Surveillance Report	December 11, 2018

71124.05 – Radiation Monitoring Instrumentation

Condition Reports (CR-GGN-)

2015-01775	2017-00612	2017-06876	2017-08404	2017-08486
2017-09537	2017-10692	2017-10767	2017-11076	2018-01415
2018-01534	2018-07518	2018-11802	2018-11808	2018-11860
2018-11935	2018-12061	2018-12235	2018-12252	2018-12253
2018-12365	2018-12619			

Condition Reports (CR-HQN-)

2018-02416

Work Orders (WO-GGN-)

Number	Title	Date
471192	1D21K603 – Repair Alarm Issues	November 8, 2017
512256	TS/CORR FHA Monitor of AXM Channel Test	November 5, 2018
52584284	1D21K601 Calibrate Residual Heat Removal Room “A” Radiation Monitor per Attached	November 8, 2017
52632817	06-IC-1D21-R-1002 – Channel B (Containment) – Containment/Drywell High Range Area Radiation Monitor Calibration (1D21K648B)	Sept 9, 2017
52633366	06-IC-1D21-R-1002 – Channel C (Containment) – Containment/Drywell High Range Area Radiation Monitor Calibration (1D21K648C)	Sept 9, 2017
52634227	06-IC-1D21-R-1002 – Channel C (Containment) – Containment/Drywell High Range Area Radiation Monitor Calibration (1D21K648C)	March 1, 2018
52671679	06-IC-1D17-R-1002 – Channel B – Main Steam Line High Radiation Monitor (PCIS) Calibration (1D17K610B)	Sept 16, 2017
52671888	06-IC-1D17-R-1002 – Channel C – Main Steam Line High Radiation Monitor (PCIS) Calibration (1D17K610C)	Sept 17, 2017
52677687	06IC121-R-1001-06 - New Fuel Handling Area, Div N (1D21K625)	November 10, 2017
52707405	06-IC-1D21-R-1002 – Channel A (Drywell) – Containment/Drywell High Range Area Radiation Monitor Calibration (1D21K648A)	August 31, 2017
52708600	06-IC-1D21-R-1002 – Channel D (Drywell) –	August 31, 2017

Work Orders (WO-GGN-) Number	Title	Date
	Containment/Drywell High Range Area Radiation Monitor Calibration (1D21K648D)	
52729513	06IC1D17-A-1003-02 - Channel B, Schedule with Channel C - Fuel Handling Area Pool Sweep Rad Monitor Cal (1D17K618B)	February 15, 2018
52729514	06IC1D17-A-1003-03 - Channel C, Schedule with Channel B - Fuel Pool Sweep Exhaust Radiation Monitor Cal (1D17K618C)	February 15, 2018
52733749	06IC1D17-A-1003-01 - Channel A, Channel D to be Schedule with this - Fuel Pool Sweep Exhaust Radiation Monitor (1D17K618A)	January 25, 2018
52733750	06IC1D17-A-1003-04 - Channel D, Channel A to be Schedule with this - Fuel Pool Sweep Exhaust Radiation Monitor (1D17K618D)	January 25, 2018
52734775	06-IC-1D17-R-1002 - Channel D - Main Steam Line High Radiation Monitor (PCIS) Calibration (1D17K610D)	Sept 16, 2017
52736717	06IC1D17-A-0008-01 - Channel A - Containment/Drywell Vent Exhaust (PCIS) Radiation Monitor (1D17K609A)	October 18, 2017
52745761	06-IC-1D17-R-1002 - Channel A - Main Steam Line High Radiation Monitor (PCIS) Calibration (1D17K610A)	Sept 16, 2017
52756945	06IC1D17-A-0008-03 Channel C - Containment/Drywell Vent Exhaust (PCIS) Radiation Monitor (1D17K609C)	July 28, 2018
52758320	06IC1D17-A-0008-02 Channel B - Containment/Drywell Vent Exhaust (PCIS) Radiation Monitor (1D17K609B)	July 28, 2018
52770600	06IC1D17-A-1001-01 Channel A - Fuel Handling Area Ventilation Exhaust Radiation Monitor Calibration Channel A (1D17K617A)	September 28, 2018
52779921	06ICSD17-A-1004-04 Channel D, Schedule to work with Channel A - Control Room Vent Radiation Monitor (SD17K621D)	October 18, 2018
52787228	06IC1D17-A-0008-04 Channel D - Containment/Drywell Vent Exhaust (PCIS) Radiation Monitor (1D17K609D)	October 25, 2018
52789277	06IC1D17-A-1007 Radiation Calibration - Off-Gas Pre Treat Radiation Recorder (1D17R604)	October 31, 2018
52802197	06-IC-1D21-R-1002 - Channel A (Drywell) - Containment/Drywell High Range Area Radiation Monitor Calibration (1D21K648A)	May 2, 2018
52847974-01	04103-D21-1-01 Monthly Area Rad Monitors Functional Test	November 14, 2018

Procedures Number	Title	Revision
04-1-03-D21-1	Monthly Area Radiation Monitors Functional Test	41
06-IC-1D17-A-1026	Accident Range Monitor AXM Calibration	100
06-IC-1D17-A-1027	Eberline (SPING) Radiation Monitor Calibration	100
06-IC-1D17-R-1002	Main Steam Line High Radiation Monitor (PCIS) Calibration	110, 111
06-IC-1D21-R-1002	Containment/Drywell High Range Area Radiation Monitor Calibration	110, 111, 112
08-S-07-83	Operation and Calibration of the ND-9000 Whole Body Counter	10
EN-FAP-RP-007	Operation of the RP Central Calibration Facility	2
EN-MA-105	Control of Measuring and Test Equipment (M&TE)	13
EN-RP-301	Radiation Protection Instrument Control	11
EN-RP-303	Source Checking of Radiation Protection Instrumentation	4
EN-RP-305	Source Maintenance	0
EN-RP-306	Calibration and Operation of the Eberline PM-7	3
EN-RP-308	Operation and Calibration of Gamma Scintillation Tool Monitors	8
EN-RP-312	Operation and Calibration of the Canberra GEM-5	2
EN-RP-315	Operation and Calibration of the CRONOS Contamination Monitor	3
EN-RP-317	Central Calibration Facility	2
EN-RP-317-02	Calibration of Portable Air Samplers	1
EN-RP-317-04	Calibration of Portable Area Radiation Monitors	1
EN-RP-317-05	Calibration of Extendable Dose Rate Instruments	1
EN-RP-317-07	Calibration of Portable Count Rate Instruments	3
EN-RP-317-08	Calibration of Portable Scalers	2
EN-RP-317-09	Calibration of Dosimeters	2
EN-RP-317-10	Calibration of Portable Dose Rate Instruments	1
Miscellaneous Documents Number	Title	Date
	Certificate of Calibration for Sr-90/Y-90 S/N B6-321	March 15, 2004
	Certificate of Radioactivity Calibration for Kr-85 S/N 65089-9	October 1, 1981
	Instruction Manual for High-Range Containment Monitor 875	March 24, 1986

Miscellaneous  
Documents  
Number

Number	Title	Date
	Operation and Maintenance Instructions: NUMAC Logarithmic Radiation Monitor	November 1987
	Source Certificate and Certificate of Calibration for CS-137 Unit S/N M-008, Source S/N Y-155 (94-001)	December 30, 1993
2017-B2-28-LABSTN-0003	Laboratory Standard Calibration/Verification Data – V-570 Meter (3587M)	June 29, 2017
2017-B2-28-SRCVER-0005	Laboratory Standard Verification Data – Model 81-6 (7010)	September 14, 2017
2017-B2-28-SRCVER-0008	Laboratory Standard Source Verification Data – Model 89 (JLS-8254)	October 12, 2017
2017-B2-28-SRCVER-0009	Laboratory Standard Source Verification Data – Model 89 (2414)	December 27, 2017
GIN 2006-00023	Streamlining Work Request Reviews for Preventative Maintenance Optimization (PMO) Preventative Maintenance (PM) Changes	January 13, 2006
MAI 275342	Task 18953, “Transverse In-core Probe (TIP) Mechanism Area Radiation Monitor (1D21K605)”	April 10, 2000

Audits and Self-  
Assessments  
Number

Number	Title	Date
LO-GLO-2017-21	Pre NRC Inspection Self-Assessment of RP Instrumentation Program using 71124 Attachment 5	May 24, 2017
LO-GLO-2017-62	Self-Assessment for Pre NRC Inspection: Radiation Monitoring Instrumentation Assessment (IP 71124.05)	August 21, 2018
LO-GLO-2018-73	Chemistry Laboratory QA/QC Program	September 5, 2018
QA-14/15-2017-GGNS-01	Combined Radiation Protection and Radwaste Audit Notification/Audit Plan Memorandum	October 23, 2017

Portable Instrumentation Calibration Data Sheet

Number	Title	Date
2017-B2.28-CALDAT-06663	CHP-CR-193, LM-177	December 5, 2017
2017-B2-28-CALDAT-06664	2192, LM-177	December 5, 2017
2018-B2-28-CALDAT-00003	11047, SAC-4	January 1, 2018
2018-B2-28-CALDAT-00369	CHEM-002, LV-1D	January 15, 2018
2018-B2.28-CALDAT-01492	CHP-DR-279, Model 9-3	February 19, 2018
2018-B2-28-CALDAT-01718	CHP-ASA011, H-810	February 21, 2018
2018-B2-28-CALDAT-02038	CHP-ASL049, RMA-25	February 28, 2018
2018-B2-28-CALDAT-02043	CHP-ASL024, RMA-25	February 28, 2018
2018-B2-28-CALDAT-02271	HP-DS-048, SAC-4	February 5, 2018

# Portable Instrumentation Calibration Data Sheet

Number	Title	Date
2018-B2-28-CALDAT-02411	11649, AMP-100	March 7, 2018
2018-B2-28-CALDAT-02430	CHP-DR-151, RO-20	March 7, 2018
2018-B2-28-CALDAT-03310	CHPAMSD025, AMS-4 PART DET	March 23, 2018
2018-B2-28-CALDAT-04077	CHP-DR-579, RDS-31 (iTx)	May 21, 2018
2018-B2-28-CALDAT-04315	CHP-TEL085, Telepole II	June 18, 2018
2018-B2-28-CALDAT-05552	HP-DR-347, WR Telepole	August 28, 2018
2018-B2-28-CALDAT-05572	CHP-DR-418, RDS-31(iTx)	May 31, 2018
2018-B2-28-CALDAT-05581	CHP-TEL074, WR Telepole	August 30, 2018
2018-B2-28-CALDAT-05749	2991.3, RO-7H	September 4, 2018
2018-B2-28-CALDAT-05750	RHP-CR-158, LM-177	September 6, 2018
2018-B2-28-CALDAT-06176	CHP-CR-214, LM-177	September 19, 2018

# Stationary Radiation Instrument Calibration Records

Number	Title	Date
	Calibration of the Canberra/Nuclear Data People Mover WBC System at the Entergy Grand Gulf Nuclear Station	August 17, 2017
17-GEM-004	GEM-004, Canberra GEM-5	March 17, 2017
17-GEM-005	GEM-005, Canberra GEM-5	March 14, 2017
18-GEM-004	GEM-004, Canberra GEM-5	March 20, 2018
18-GEM-005	GEM-005, Canberra GEM-5	March 20, 2018
CCF1701	CRONOS CALIBRATION DATA SHEET (1701-013-CR0400G)	April 4, 2018
CRONOS-001	CRONOS CALIBRATION DATA SHEET (1106-123)	January 16, 2017
CRONOS-001	CRONOS CALIBRATION DATA SHEET (1106-123)	January 11, 2018
CRONOS-002	CRONOS CALIBRATION DATA SHEET (1107-092)	September 27, 2017
CRONOS-003	CRONOS CALIBRATION DATA SHEET (1106-124)	January 16, 2017
CRONOS-003	CRONOS CALIBRATION DATA SHEET (1106-124)	July 2, 2018
CRONOS-004	CRONOS CALIBRATION DATA SHEET (1107-096)	January 11, 2018
CRONOS-004	CRONOS CALIBRATION DATA SHEET (1107-096)	July 2, 2018

# 71124.06 – Radioactive Gaseous and Liquid Effluent Treatment

## Condition Reports (CR-GGN-)

2014-02598	2017-00336	2017-06224	2017-08668	2017-08747
2017-11406	2017-12122	2017-12501	2018-03230	2018-06199
2018-06533	2018-06689	2018-06921	2018-08668	2018-09300

Procedures Number	Title	Revision
01-S-08-11	Radioactive Discharge Control	116
06-CH-SD17-A-0027	Radwaste Effluent Liquid Process Monitor Calibration	103
06-CH-SG17-M-0042	Radwaste Release Dissolved Gases	102
06-CH-SG17-M-0043	Radwaste Release Monthly Composite	108
06-CH-SG17-M-0045	Radwaste Release Post-Release Calculations	105
06-CH-SG17-O-0045	Liquid Radwaste Post Release	105
06-IC-SD17-A-1024	Liquid Radwaste Effluents Radiation Monitor Calibration	105
06-IC-SD17-R-1025	Effluent System Flow Rate Monitor Calibration	106
06-IC-SD17-R-1028	Effluent System Redundant Flow Rate Monitor Calibration	104
06-IC-SG17-R-1001	Liquid Radwaste Effluent Flow Calibration	101
07-S-14-314	In-Place Testing of Containment Cooling System Charcoal Filter Trains	3
07-S-53-T48-4	SBGT Differential Pressure System Operation	5
08-S-04-220	Ventilation Exhaust Gaseous Radwaste Operations	111
EN-CY-102	Laboratory Analytical Quality Control	13
EN-OP-102	Protective and Caution Tagging	23
Miscellaneous Documents Number	Title	Date
	2016 Grand Gulf Nuclear Station Land Use Census	December 16, 2016
2018-00175	Quantification of Unmonitored Gaseous Effluent Release Due to Evaporation of Tritiated Water in the CST/RWST Basin	October 8, 2018
GNRO-2017/00055	Revised Grand Gulf Nuclear Station Annual Radioactive Effluent Release Report	September 7, 2017
GNRO-2017/00058	Special Report - Gaseous Radwaste Treatment System Out of Service	September 14, 2017
GNRO-2018/00021	Grand Gulf Nuclear Station Annual Radioactive Effluent Release Report	April 25, 2018
W.O. 52851098	Containment Building Vent Gaseous Isotopic	November 29, 2018

#### Audits and Self-Assessments

Number	Title	Date
LO-GLO-2017-0063	Radioactive Gaseous and Liquid Effluent Treatment	August 16, 2018

#### Effluent Monitor Calibration Records

Number	Title	Date
06-IC-SD17-A-1022	SSW System Radiation Monitor Calibration	January 28, 2017
06-IC-SD17-A-1024	Liquid Radwaste Effluents Radiation Monitor Calibration	August 1, 2016
06-IC-SD17-A-1024	Liquid Radwaste Effluents Radiation Monitor Calibration	October 19, 2017
06-IC-SD17-A-1026	Offgas & Radwaste Ventilation Radiation Monitor Calibration	March 14, 2018
06-IC-SD17-A-1026	Fuel Handling Area Ventilation Radiation Monitor Calibration	April 11, 2018
06-IC-SD17-A-1026	Containment Ventilation Radiation Monitor Calibration	July 25, 2018

#### In-Place Filter Testing and Carbon Testing Records

##### Standby Gas Treatment System Filter Leak Tests

##### Air Cleaning System Surveillance Test Records

Number	Title	Date
WO 465517-18	Train-B SBGT	June 3, 2017
WO 52619171	Train-A SBGT	June 23, 2017
WO 52726107	Train-A Control Room Ventilation	August 23, 2018
WO 52733218	Train-B Control Room Ventilation	October 10, 2017

#### Liquid Radwaste Release Permits

Number	Title	Date
18-11-10-01	Batch Liquid Radwaste Discharge Permit	November 10, 2018
2017-069	Liquid Radwaste Post Release	November 9, 2017
2018-023	Liquid Radwaste Post Release	March 5, 2018
2018-024	Liquid Radwaste Post Release	March 5, 2018
2018-060	Liquid Radwaste Post Release	May 31, 2018
2018-148	Liquid Radwaste Post Release	September 29, 2018
2018-149	Liquid Radwaste Post Release	September 30, 2018

#### 71124.07 – Radiological Environmental Monitoring Program

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

2017-08045	2017-08571	2017-10702	2017-10887	2018-00319
2018-03506	2018-08320	2018-11076		

Procedures Number	Title	Revision
04-S-02-SH13-P862-1A-F6	Met System Trouble	22
06-EN-S000-A-0002	Biannual Land Use Census	101
06-EN-S000-V-0001	Radiological Environmental Sampling	112
06-IC-SC84-SA-1003	Primary Tower Wind Speed/Direction, Air Temperature (T/dT) and RH Calibration	107
06-OP-1000-D-0001	Surveillance Procedure Data Package	156
07-S-53-C84-7	Backup Tower Wind Speed/Direction & Air Temperature Calibration	00
08-S-04-964	Chemistry Instruction: Met Data Processing	02
EN-CY-102	Laboratory Analytical Quality Control	12
EN-CY-111	Radiological Groundwater Protection Program	08
EN-CY-127	Land Use Census	00
EN-RP-113	Response to Contaminated Spills/Leaks	09

Miscellaneous  
Documents

Number	Title	Date
	2016 Grand Gulf Nuclear Station Land Use Census	December 16, 2016
	Data Review of 2017 GG Meteorological Data-Final	March 29, 2018
EN-LI-104-Att. 9.2	REMP Benchmarks Reports	June 28, 2018
GNRO-2017/00029	Grand Gulf Nuclear Station Annual Radiological Environmental Report	April 27, 2017
GNRO-2017/00055	Revised Grand Gulf Nuclear Station Annual Radioactive Effluent Release Report	September 7, 2017
GNRO-2018/00021	Grand Gulf Nuclear Station Annual Radioactive Effluent Release Report	April 25, 2018
GNRO-2018/00022	Grand Gulf Nuclear Station Annual Radiological Environmental Report	April 28, 2018
GPF-CRMP-AIR	Collect and Prepare Air Samples Training	November 26, 2013
LPN GLP-ICCT-MET 2018	Meteorological Monitoring Training	June 20, 2018

Audits and Self-Assessments

Number	Title	Date
	Entergy Audit # WT-WTHQN-2015-00728-Audit Closure-TB	October 26, 2016



#### Audits and Self-Assessments

Number	Title	Date
	Teledyne Brown Engineering 2 <sup>nd</sup> Quarter 2018 Quality Assurance Report	August 6, 2018
LO-GLO-2017-00064	Pre-NRC REMP 71124.07 Self-Assessment	August 2, 2018

#### Groundwater Protection Documents

Number	Title	Revision or Date
	GGNS Groundwater Monitoring Program Improvements Report	April 10, 2017
	Groundwater Monitoring Plan for Grand Gulf Nuclear Station	06
6045-0032-002	Tritium in Groundwater GGNS Upland Complex – 2 <sup>nd</sup> Quarter 2018	July 24, 2018

#### Meteorological Calibration Records

Number	Title	Date
52785928	Primary Tower Wind Speed/Direction, Air Temperature (T/dT) and Relative Humidity Calibration	March 9, 2018
52811406	Primary Tower Wind Speed/Direction, Air Temperature (T/dT) and Relative Humidity Calibration	October 8, 2018
CHEM-001	Air Sampler Calibration Data Sheet	February 20, 2018
CHEM-003	Air Sampler Calibration Data Sheet	January 11, 2018
CHEM-005	Air Sampler Calibration Data Sheet	January 11, 2018
CHEM-008	Air Sampler Calibration Data Sheet	January 11, 2018

#### 71124.08 – Radioactive Solid Waste Processing, and Radioactive Material Handling, Storage, and Transportation

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

2017-10774	2018-07380	2018-08573
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##### Condition Reports (CR-HQN-)

2017-01543	2017-01544	2018-01427
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#### Procedures

Number	Title	Revision
02-S-01-11	Radwaste Operations	22
08-S-06-50	Loading Radioactive Material	9
EN-RP-121	Radioactive Material Control	14
EN-RP-121-01	Receipt of Radioactive Material	4

Procedures Number	Title	Revision
EN-RW-101	Radioactive Waste Management	3
EN-RW-102	Radioactive Shipping Procedure	16
EN-RW-103	Radioactive Waste Tracking Procedure	4
EN-RW-104	Scaling Factors	13
EN-RW-105	Process Control Program	5
EN-RW-106	Integrated Transportation Security Plan	6

Miscellaneous Documents Number	Title	Revision or Date
2017	Annual Radiological Effluent Release Report	April 25, 2018
ASP-077	Calibration Data Sheet: ASP-1 (SPA-3)	February 20, 2018
BR-D-NA SRT Bead Resin	10 CFR Part 61 Waste Stream Sample Screening and Evaluation	August 9, 2018
DAW-U-NA	10 CFR Part 61 Waste Stream Sample Screening and Evaluation	March 9, 2017
EC-18365	Process Applicability Determination	0
HP-644	Type A Cask Loading and Shipping Check-Off Sheet	16

#### Audits and Self-Assessments

Number	Title	Date
LO-GLO-2017- 00065 CA-00002	Self-Assessment: Pre-NRC Inspection Module 71124-08	August 16, 2018
QA-14/15-2017- GGNS-01	Combined Radwaste and Radiation Protection Audit	September 12, 2017

#### Radioactive Material and Waste Shipments

Number	Title	Package
GGN-2017-0708	>A LSA-II RQ Cat 2 (RWCU-A Partial Liner)	Type A
GGN-2017-1101	Type A Package (RWCU-B Sample - 5-gallon drum)	Type A
GGN-2017-1202	LSA-II, RQ-Radionuclides (RWCU-B/CPS-B)	Type A
GGN-2018-0906	UN 2916, Radioactive Material - Type B)(U) Package, 7 Fissile Excepted, RQ Radionuclide (Irradiated Hardware)	Type B(U)
GGN-2018-1010	UN 2916, Radioactive Material - Type B)(U) Package, 7 Fissile Excepted, RQ Radionuclide (Irradiated Hardware)	Type B(U)

#### Radiation Surveys (GG-)

1710-0418	1806-1153	1806-1179	1806-1198	1806-1220
1806-1244	1806-1286	1806-1339	1807-0028	

#### 71151 – Performance Indicator Verification

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

2017-09975	2017-10167
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##### Miscellaneous Documents

Number	Title	Date
GIN 2017-210	Alert Notification System Test	October 9, 2017
GIN 2017-253	Alert Notification System Test	December 6, 2017
GIN 2017-264	Alert Notification System Test	November 15, 2017
GIN 2018-00001	Alert Notification System Test	January 6, 2017
GIN 2018-00028	Alert Notification System Test	February 7, 2018
GIN 2018-00037	Alert Notification System Test	March 13, 2018
GIN 2018-00055	GGNS Emergency Response Organization Duty Roster	April 5, 2018
GIN 2018-00076	GGNS Emergency Response Organization Duty Roster	April 30, 2018
GIN 2018-00078	Alert Notification System Test April 2018	May 1, 2018
GIN 2018-00079	Alert Notification System Test	May 3, 2018
GIN 2018-00123	June 2018 Alert Notification System Test	July 18, 2018
GIN 2018-00124	July 2018 Alert Notification System Test	July 31, 2018
GIN 2018-00138	Alert Notification System Test	August 6, 2018
GIN 2018-00166	Alert Notification System Test	September 25, 2018

#### 71152 – Problem Identification and Resolution

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

2016-02442	2018-08059	2018-11148	2018-11149	2018-11172
2018-11179	2018-11230			

##### Work Orders

440940	505473
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**Request for Information  
Focused Baseline Inspection  
Grand Gulf**

Inspection Report: 05000416/2018004

Inspection Dates: October 1 – December 31, 2018

Inspection Procedure: IP 71111 series, IP 71151, IP 71152

Lead Inspector: Dan Bradley, Senior Resident Inspector

**Information Requested For 4<sup>th</sup> Quarter 2018**

The following information should be sent in electronic format (Certrec IMS preferred) to the attention of Dan Bradley by **October 8, 2018**. Please provide requested documentation electronically in “pdf” files, Excel, or other searchable formats, if possible. The information should contain descriptive names and be indexed or hyperlinked to facilitate ease of use. If requested documents are large and/or only hard copy formats are available, please inform the inspector for clarification.

Please provide information for the following topic:

Lubrication oil, fuel oil, and hydraulic control oil used in the following systems:

- a. Reactor Core Isolation Cooling (RCIC)
  - b. Low Pressure Core Spray (LPCS)
  - c. Low Pressure Cooling Injection (LPCI/RHR)
  - d. High Pressure Core Spray (HPCS)
  - e. Standby Liquid Control (SLC)
  - f. Standby Service Water (SSW)
  - g. High Pressure Core Spray Service Water (HPCS SWS)
  - h. Emergency Diesel Generators
1. Condition reports associated with the selected topic for the last 3 years including the associated operability determination.
2. Vendor manuals and industry standards used for the selected topic.
3. Preventative maintenance schedules and basis for the selected topic, including oil changes and samples.
4. A table with oil used for the selected topic that lists type/manufacturer of the oil, how it is procured (commercial or safety-related), if any additional processes are applied to it prior to use (such as filtration), and critical specifications (temperature range, maximum particulate size, etc.).
5. Oil analysis results for the selected topic for the last 3 years.
6. A list of work orders associated with the selected topic for the last 3 years, including open work orders.

7. Complete work orders for associated with the selected topic for the last 3 years that involved adding oil. Please include quality assurance records for the oil.
8. Site procedures for the selected topic including normal operations, maintenance, offnormal, chemistry, and surveillance testing. Please include filtration procedures, storage of the filtration skid components, preventative maintenance performed on the filtration skid, and procedures that involve use of the oil issue facility in the Turbine Building for the selected topic.
9. Administrative and/or program procedures for the selected topic including operability determinations, Corrective Action Program (including trending requirements and definitions of prompt/promptly resolving adverse conditions), storage of quality parts, foreign material exclusion, system performance monitoring programs, dedicating commercial-grade components for safety-related use, oil programs, post-maintenance testing program, and operating experience.
10. A list of allowed storage areas for the selected topic.
11. A list of any engineering evaluations or calculations with low design margins for the selected topic.
12. A list of maintenance rule components and functions; based on engineering or expert panel judgment, for the selected topic.
13. A list of maintenance rule functional failure evaluations for the last 3 years for the selected topic.
14. A list of operating experience evaluations for the last 3 years for the selected topic.
15. A list of root cause and apparent cause evaluations associated initiated/completed in the last 3 years for the selected topic.
16. A list of Corrective Actions to Prevent Recurrence (CAPRs) for the selected topic.
17. A list of any common-cause failures of components in the last 3 years for the selected topic.
18. A mechanical drawing of the RCIC system and piping that includes the safety-related boundaries of the system.
19. An electronic copy of the design bases documents for the selected topic.
20. An electronic copy of the system health notebooks for the selected topic.

Inspector Contact Information:

Dan Bradley  
Senior Resident Inspector  
573-676-3181  
[Dan.Bradley@nrc.gov](mailto:Dan.Bradley@nrc.gov)

**The following items are requested for the  
Public Radiation Safety Inspection  
at Grand Gulf**

**Dates of Inspection: 11/26/2018 to 11/30/2018**

**Integrated Report 2018004**

Inspection areas are listed in the attachments below.

Please provide the requested information on or before **Monday, October 29, 2018**.

Please submit this information using the same lettering system as below. For example, all contacts and phone numbers for Inspection Procedure 71124.05 should be in a file/folder titled "5-A," applicable organization charts in file/folder "5-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 Natasha Greene at 817-200-1154 or via e-mail at [Natasha.Greene@nrc.gov](mailto:Natasha.Greene@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.

## 5. Radiation Monitoring Instrumentation (71124.05)

Date of Last Inspection: **July 10, 2017**

- A. List of contacts and telephone numbers for the following areas below. Please include area code and prefix. If work cell numbers are appropriate, then please include them as well.
1. Process monitor calibration (Include Chemistry, Systems Engineering and I&C, as applicable)
  2. Radiation protection instrument calibration (Portable and Stationary)
  3. Installed instrument calibrations (Include Systems Engineering and I&C)
  4. Count room and Laboratory instrument calibrations (Include RP and Chemistry, as applicable)
  5. EP contacts for Equipment Important to Emergency Response/Preparedness (EITER)
  6. Licensing/Regulatory Affairs
  - 7.
- B. Applicable organization charts, including position or job titles. Please include as appropriate for your site, Site Management, RP, Chemistry, Maintenance (I&C), Engineering, and Emergency Protection. (Recent pictures are appreciated.)
- C. Copies of audits, self-assessments, vendor or NUPIC audits for contractor support, LARs, and LERs, performed since the date of the last inspection, related to:
1. Portable Radiation instruments: Area radiation monitors, portable continuous air monitors (AMS3/4), portable survey instruments (count rate, dose rate, occupational air sampling), electronic dosimeters, teledosimetry
  2. Stationary Radiation Instruments: Portal monitors, small article monitors, personnel contamination monitors, or whole body counters
  3. Installed Radiation Instruments: Area radiation monitors (RMS), process monitors (non-effluent), criticality monitors, accident monitors
  4. Count Room instrumentation (Chemistry and RP, if separate RP Ops and Effluents): Gamma Spec, LSC, Gross Alpha, Gross Beta, including bench-top counters
  - 5.
- D. Procedure indexes for radiation protection procedures and other related disciplines.
1. Calibration, use, and operation of continuous air monitors, portable survey instruments, temporary area radiation monitors, electronic dosimeters, teledosimetry
  2. Calibration use and operation of portal monitors, small article monitors, personnel contamination monitors, and whole body counters
  3. Calibration of installed area radiation monitors, process monitors, criticality monitors, and accident monitors
  4. Calibration use and operation of Count Room instrumentation (GS, LSC, GA, GB) (include bench top counters here)  
NOTE: Please ensure that RP, Chemistry, and I&C procedures are included, as appropriate.
- E. Please provide specific procedures related to the following areas noted below. Additional procedures may be requested by number after the inspector reviews the procedure index.
1. Calibration of portable ion chambers
  2. Calibration of Friskers

3. Calibration of telescoping high range instruments
  4. Calibration of portable neutron instruments
  5. Calibration of SAMs
  6. Whole body counter calibration
  7. Laboratory instrumentation quality control
  8. Calibration of Containment/Drywell high range radiation monitor
- F. Please provide a list of NRC Regulatory Guides and NUREGs that you are currently committed to relative to this program. Please include the revision and/or date for the commitment and where this may be located in your current licensing basis documents.
- G. Please provide a summary list of corrective action documents (including corporate and sub-tiered systems) written since the date of the last inspection, related to the following programs:
1. Area radiation monitors, continuous air monitors, portable survey instruments, electronic dosimeters, and teledosimetry
  2. Portal monitors, small article monitors, personnel contamination monitors, and whole body counters
  3. Installed radiation monitors, criticality monitors, accident range monitors
  4. Count room radiation instruments
- NOTE: These lists should include a description of the condition that provides sufficient detail that the inspectors can ascertain the regulatory impact, the significance level assigned to the condition, the status of the action (e.g., open, working, closed, etc.) and the search criteria used. Please provide in document formats which are "sortable" and "searchable" so that inspectors can quickly and efficiently determine appropriate sampling and perform word searches, as needed. (Excel spreadsheets are the preferred format.) If codes are used, please provide a legend for each column where a code is used.
- H. State the required calibration frequency and provide the most recent calibration data for the whole body counters, at least one portable survey instrument, one area radiation monitor, one air sampler, one continuous air monitor, and one drywell/containment high-range monitor.
- I. Provide a list of any scheduled calibrations, while we are onsite, for the instrumentation noted in request above, in 5-I.
- J. Provide the alarm set point values for the portal and personnel contamination monitors in operation.
- K. Radiation Monitoring System health report for the previous 12 months
- L. Provide the following lists of instruments to include make, model, identifier (S/N or plant ID), and location:
1. Portable radiation instruments currently in use (for EADs just make, model, and quantity).
  2. Stationary radiation instruments currently in use.
  3. Installed Radiation monitors
    - a. Area radiation monitors and
    - b. Process radiation monitors.
 (Include their instrumentation designator, function and calibration procedure



number and title.) Please indicate which, if any, detectors have been replaced within the past 2 years (since the last inspection).

- c. Radiation instrumentation abandoned in place.
- d. Radiation instrumentation covered by the maintenance rule.

- M. Provide a list of sources used routinely for source check of portable, stationary, and installed radiation monitoring instruments.
- N. Provide the NIST traceability and calibration or verification of the primary sources for instrument calibration and the procedures used to achieve this.

**6. Radioactive Gaseous and Liquid Effluent Treatment (71124.06)**

Date of Last Inspection: **July 10, 2017**

- A. List of contacts and telephone numbers for the following areas. Please include area code and prefix. If work cell numbers are appropriate, then please include them as well.
1. Radiological effluent control (liquid & gaseous) and reporting (RP, Chemistry, RW, Ops, etc.)
  2. Effluent Monitor calibration (liquid and gaseous) and maintenance (RP, Chemistry, I&C, Maintenance, Systems Engineering, EP, etc.)
  3. Engineered safety feature air cleaning systems for effluent release (Systems Engineering, I&C, Maintenance, etc.)
  4. Licensing/Regulatory Affairs
- B. Applicable organization charts including position or job titles for the above individuals and also for their supportive Management. Please include as appropriate for your site, Site Management, RP, Chemistry, Maintenance (I&C), Engineering, and Emergency Protection. (Recent pictures are appreciated.)
- C. Copies of audits, self-assessments, vendor, or NUPIC audits of contractor support, and LERs written since the date of the last inspection, related to:
1. Radioactive effluents and effluent radiation monitors
  2. Engineered Safety Feature Air cleaning systems
- D. Procedure indexes for the following areas and related disciplines.
1. Radioactive effluents and effluent radiation monitors (to include the flow monitors)
  2. Engineered Safety Feature Air cleaning systems (both TS and non-TS systems for effluents)
- E. Please provide specific procedures related to the following areas noted below. Additional procedures may be requested by number after the inspector reviews the procedure indexes.
1. Sampling and analysis of radioactive effluents
  2. Effluent monitor setpoint determination
  3. Generating radioactive effluent release permits
  4. Effluent Monitor Calibrations (Include associated flow monitors)
  5. Laboratory instrumentation quality control
  6. In-place testing of HEPA filters and charcoal adsorbers for TS effluent exhaust systems and other effluent air-cleaning systems, but not breathing air systems
- F. Please provide a list of NRC Regulatory Guides and NUREGs that you are currently committed to relative to this program. Please include the revision and/or date for the commitment and where this may be located in your current licensing basis documents.
- G. Please provide a summary list of corrective action documents (including corporate and sub-tiered systems) written since the date of the last inspection, associated with:
1. Radioactive effluents
  2. Effluent radiation monitors (include associated effluent flow monitors)
  3. Engineered Safety Feature Air cleaning systems (effluents, not breathing air)

NOTE: These lists should include a description of the condition that provides sufficient detail that the inspectors can ascertain the regulatory impact, the

significance level assigned to the condition, the status of the action (e.g., open, working, closed, etc.) and the search criteria used. Please provide in document formats which are “sortable” and “searchable” so that inspectors can quickly and efficiently determine appropriate sampling and perform word searches, as needed. (Excel spreadsheets are the preferred format.) If codes are used, please provide a legend for each column where a code is used.

- H. Annual Radioactive Effluent Release Reports for the latest two calendar years
- I. Current revision of the Offsite Dose Calculation Manual (or other name, but include all parts for effluents) and any changes made since the last inspection.
- J. The inter-laboratory comparison results for laboratory quality control performance of effluent sample analysis for the latest two calendar years
- K. Effluent sampling schedule for the week of the inspection
- L. Provide the last three annual trends of vent/stack effluent flow rates, by chart or table.
- M. Operations department (or other responsible dept.) log records for effluent monitors removed from service or out of service or a list of the same and compensatory actions taken during the out of service condition.
- N. Listing or log of liquid and gaseous release permits since the date of the last inspection
- O. A list of the technical specification-required air cleaning systems with the two most recent surveillance test dates of in-place filter testing (of HEPA filters and charcoal adsorbers) and laboratory testing (of charcoal efficiency) and the work order numbers associated with the surveillances (and their system number/name).
- P. System Health Report for radiation monitoring instrumentation. Also, please provide a specific list of all effluent radiation monitors that were considered inoperable for 7 days or more since the date of the last inspection. If applicable, please provide the relative Special Report and condition report(s). If not covered by maintenance rule, please provide rationale.
- Q. A list of significant changes made to the gaseous and liquid effluent process monitoring system since the date of the last inspection. If applicable, please provide the corresponding UFSAR section in which this change was documented.
- R. A list of any occurrence in which a non-radioactive system was contaminated by a radioactive system since the date of the last inspection. Please include any relevant condition report(s).
- S. Current Part 61 analyses for hard to detect radionuclides
- T. Latest Land Use Census (coordinate with 71124.07)
- U. Effluent based procedures for EALs or EOPs.
- 7. Radiological Environmental Monitoring Program (71124.07)**

Date of Last Inspection: **July 10, 2017**

- A. List of contacts and telephone numbers for the following areas. Please include area code and prefix. If work cell numbers are appropriate, then please include them as well.
  - 1. Radiological environmental monitoring (RP, Chemistry, I&C, etc.)
  - 2. Meteorological monitoring (RP, Chemistry, EP, I&C, System Engineering, etc.)

3. Maintenance and calibration of the above equipment
4. Licensing/Regulatory Affairs
- B. Applicable organization charts including position or job titles. Please include as appropriate for your site, Site Management, RP, Chemistry, Maintenance (I&C), Engineering, and Emergency Protection. (Recent pictures are appreciated.)
- C. Copies of audits, self-assessments, vendor or NUPIC audits of contractor support, and LERs written since the date of the last inspection, related to:
  1. Radiological environmental monitoring program (including contractor environmental laboratory audits, if used to perform environmental program functions)
  2. Environmental TLD processing facility
  3. Meteorological monitoring program
- D. Procedure index for the following areas and other related disciplines.
  1. Radiological environmental monitoring program
  2. Meteorological monitoring program
  3. Maintenance and calibration of related instrumentation, including the meteorological tower
- E. Please provide specific procedures related to the following areas noted below. Additional procedures may be requested by number after the inspector reviews the procedure indexes.
  1. Sampling, collection and preparation of environmental samples
  2. Sample analysis (if performed onsite)
  3. Laboratory instrumentation quality control
  4. Meteorological Tower sensor calibrations
- F. Please provide a list of NRC Regulatory Guides and NUREGs that you are currently committed to relative to this program. Please include the revision and/or date for the commitment and where this may be located in your current licensing basis documents.
- G. Please provide a summary list of corrective action documents (including corporate and sub-tiered systems) written since the date of the last inspection, related to the following programs:
  1. Radiological environmental monitoring (include TLDs and air sample pumps or their infrastructure)
  2. Meteorological monitoring (include Met Tower sensors and support equipment)
 

These lists should include a description of the condition that provides sufficient detail that the inspectors can ascertain the regulatory impact, the significance level assigned to the condition, the status of the action (e.g., open, working, closed, etc.) and the search criteria used. Please provide in document formats which are "sortable" and "searchable" so that inspectors can quickly and efficiently determine appropriate sampling and perform word searches, as needed. (Excel spreadsheets are the preferred format.) If codes are used, please provide a legend for each column where a code is used.
- H. Copies of the two most recent calibration packages for the meteorological tower instruments
- I. Copies of the Annual Radiological Environmental Operating Reports and Land Use Census for the latest two calendar years, and current revision of the Offsite Dose Calculation Manual. Please include any supportive documentation for the changes made to the ODCM since the last inspection.

- J. Copy of the environmental laboratory's inter-laboratory comparison program results for the latest two calendar years, if not included in the Annual Radiological Environmental Operating Report
- K. Data from the environmental laboratory documenting the analytical detection sensitivities for the various environmental sample media (i.e., air, water, soil, vegetation, and milk)
- L. Quality Assurance audits (e.g., NUPIC) for contracted services
- M. Current NEI Groundwater Protection Initiative (GPI) Plan and status. Provide the most recent monitoring results for each monitoring well per the GPI. Provide a separate list of any missed samples, as applicable.
- N. Technical requirements manual or licensee controlled specifications which list the meteorological instruments' calibration requirements
- O. If applicable, per NEI 07-07, provide any reports that document any spills/leaks to groundwater since the date of the last inspection. Please indicate what external communications were made regarding each spill/leak.
- P. Provide any new entries into 10 CFR 50.75(g) files since the date of the last inspection.
- Q. Please identify your three *highest* X/Q (chi/Q) and/or D/Q sectors, as currently used in the selection of your required REMP sampling locations. If these are *different* values from your most recent meteorological assessment, please provide that assessment and indicate the three *highest* X/Q and/or D/Q sectors per your latest assessment. Also indicate your noted *predominant* and *least prevalent* wind direction/sector, as used in your REMP analysis.
- R. Provide the height of the highest effluent release point. Please indicate if the height accounts for plant grade elevation.
- 8. **Radioactive Solid Waste Processing, and Radioactive Material Handling, Storage, and Transportation (71124.08)**

Date of Last Inspection: **July 10, 2017**

- A. List of contacts and telephone numbers for the following areas. Please include area code and prefix. If work cell numbers are appropriate, then please include them as well.
  - 1. Solid Radioactive waste processing (RP, Chemistry, Ops, Maintenance, I&C, Engineering, etc.)
  - 2. Transportation of radioactive material/waste (RP, Maintenance, Ops, Security, Chemistry, etc.)
  - 3. personnel involved in solid radwaste processing, transferring, and transportation of radioactive waste/materials)
  - 4. Licensing/Regulatory Affairs
- B. Applicable organization charts including position or job titles. Please include as appropriate for your site, Site Management, RP, Chemistry, Maintenance (I&C), Engineering, and Emergency Protection. (Recent pictures are appreciated.)
- C. Copies of audits, department self-assessments, and LERs written since the date of the last inspection, related to:
  - 1. Solid radioactive waste management
  - 2. Radioactive material/waste transportation program

- D. Procedure index for the following areas and other related disciplines.
1. Solid radioactive waste management
  2. Radioactive material/waste transportation
- E. Please provide specific procedures related to the following areas noted below. Additional procedures may be requested by number after the inspector reviews the procedure indexes.
1. Process control program and any changes made since the last inspection
  2. Solid and liquid radioactive waste processing
  3. Waste stream sampling and analysis
  4. Waste characterization and classification
  5. Radioactive material/waste packaging & shipping
- F. Please provide a list of NRC Regulatory Guides and NUREGs that you are currently committed to relative to this program. Please include the revision and/or date for the commitment and where this may be located in your current licensing basis documents.
- G. Please provide a summary list of corrective action documents (including corporate and sub-tiered systems) written since the date of the last inspection, related to:
1. Solid radioactive waste
  2. Transportation of radioactive material/waste
- NOTE: These lists should include a description of the condition that provides sufficient detail that the inspectors can ascertain the regulatory impact, the significance level assigned to the condition, the status of the action (e.g., open, working, closed, etc.) and the search criteria used. Please provide in document formats which are "sortable" and "searchable" so that inspectors can quickly and efficiently determine appropriate sampling and perform word searches, as needed. (Excel spreadsheets are the preferred format.) If codes are used, please provide a legend for each column where a code is used.
- H. Copies of training lesson plans for 49 CFR 172, Subpart H, for radwaste processing, packaging, and shipping
- I. Provide a summary list or log of radioactive material and radioactive waste shipments for the two most recent calendar years, in addition to the current calendar year.
- J. Please provide at least two different radioactive waste stream sample analysis results and resulting scaling factors for the latest two calendar years.
- K. A listing of all onsite radwaste storage facilities. Please include a summary or list of the items stored in each facility with the most recent dose rates/surveys.
- L. A list of any significant (e.g., DAW, resins, Type B or greater) radioactive shipments that will be completed during our onsite inspection period. If available, please provide the applicable shipping manifests/waste characterizations and most recent surveys for each shipment.
- M. A list of significant changes made to the liquid or solid radwaste processing systems since the date of the last inspection. If applicable, please provide the corresponding UFSAR section in which this change was documented. Provide any supportive documentation for the changes made or have it readily available for review.
- N. List of radioactive waste processing systems or equipment abandoned in place since the last inspection.

- O. Please provide a schedule of radioactive material or waste processing or shipment activities during the inspection week. Please indicate the current storage location of the stored RAM or waste prepared for shipment, as well as any supportive surveys of its measured dose rates. If available, please indicate its current stated waste class.

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REPORT 05000416/2018004 – February 7, 2019

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