



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
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ATLANTA, GEORGIA 30303-1200

February 7, 2019

Mr. Darin Myers
Vice President
Southern Nuclear Operating Company, Inc.
Vogtle Electric Generating Plant
7821 River Road
Waynesboro, GA 30830

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT – NUCLEAR REGULATORY
COMMISSION INTEGRATED INSPECTION REPORT 05000424/2018004 AND
05000425/2018004

Dear Mr. Myers:

On December 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Vogtle Electric Generating Plant, Units 1 and 2. On January 28, 2019, the NRC inspectors discussed the results of this inspection with Mr. Jessie Thomas and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented one non-cited violation (NCV) in this report that involved a violation of NRC requirements and was determined to be of very low safety significance.

If you contest the violation or significance of the finding, 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 II; and the NRC resident inspector at the Vogtle Electric Generating Plant, Units 1 and 2.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement 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 II; and the NRC resident inspector at the Vogtle Electric Generating Plant, Units 1 and 2.

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/

Alan Blamey, Chief
Reactor Projects Branch 2
Division of Reactor Projects

Docket Nos.: 50-424, 50-425
License Nos.: NPF-68 and NPF-81

Enclosure:
Inspection Report 5000424/2018004
and 05000425/2018004

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05000425/2018004 February 7, 2019

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers: 50-424, 50-425

License Numbers: NPF-68, NPF-81

Report Numbers: 05000424/2018004; and 05000425/2018004

Enterprise Identifier: I-2018-004-0041

Licensee: Southern Nuclear Operating Company, Inc.

Facility: Vogtle Electric Generating Plant, Units 1 and 2

Location: Waynesboro, GA 30830

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

Inspectors: M. Endress, Senior Resident Inspector
A. Alen, Resident Inspector
C. Safouri, Resident Inspector
B. Carrion, Senior Reactor Inspector
R. Kellner, Senior Health Physicist
J. Griffis, Senior Health Physicist
A. Nielsen, Senior Health Physicist
W. Pursley, Health Physicist
B. Caballero, Senior Operations Engineer

Approved By: A. Blamey, Chief
Reactor Projects Branch 2
Division of Reactor Projects

Enclosure

SUMMARY

The NRC continued monitoring the licensee's performance by conducting a quarterly inspection at Vogtle Electric Generating Plant Units 1 and 2 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 <http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/index.html> for more information. NRC and self-revealed findings, violations, and additional items are summarized in the table below.

List of Findings and Violations

Failure to follow work instructions for checking lube oil level in Nuclear Service Cooling Water Fan Gearbox			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000424/2018004-001 Opened/Closed	[H.5] – Work Management	71152
A Green self-revealing NCV of TS 5.4.1.a, "Procedures," was identified for the licensee's failure to check Nuclear Service Cooling Water (NSCW) fan gearbox lube oil level in accordance with work instructions. As a result, the licensee failed to identify a low lubricating oil condition on the unit 1 'A' train NSCW fan number (no.) 1 which ultimately led to failure of the fan on July 4, 2018.			

Additional Tracking Items

Type	Issue number	Title	Report Section	Status
URI	05000424/425/2018004-02	Calibration of Containment High-range Area Radiation Monitors	71124.05	Open
URI	05000424/425/2018004-03	Calibration Surveillance Extension of Post Accident Monitoring Instruments	71111.22	Open

PLANT STATUS

Unit 1 was shut down for planned refueling outage cycle 21 (1R21), at the beginning of the inspection period. The unit was restarted on October 4, 2018, but was manually tripped during low power physics testing due to a rod control failure. After troubleshooting and repair of the rod control failure, the unit was restarted on October 6, 2018, and attained full reactor thermal power (RTP) on October 9, 2018, where it operated for the remainder of the quarter.

Unit 2 operated at or near full RTP for the entire inspection period.

INSPECTION SCOPES

Inspections were conducted using the inspection procedure (IP) 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. The inspectors performed plant status activities described in Inspection Manual Chapter (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.

Impending Severe Weather (1 Sample)

The inspectors evaluated readiness for impending adverse weather conditions for Hurricane Michael on October 9-10, 2018.

71111.04 - Equipment Alignment

Partial Walkdown (4 Samples)

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

- (1) Unit 1 'B' train emergency diesel generator (EDG) with the 'A' train EDG out-of-service (OOS) for a jacket water leak repair on October 15, 2018.
- (2) Unit 2 'B' train safety injection (SI) pump with the 'A' train SI pump OOS for planned maintenance (PM) on October 23, 2018.
- (3) Unit 1 'B' train nuclear safety cooling water (NSCW) transfer pump with the 'A' train NSCW transfer pump OOS for PM on November 6, 2018.

- (4) Unit 2 'B' and 'C' auxiliary feedwater (AFW) trains due to the 'A' train being OOS for PM on November 15, 2018.

Complete Walkdown (1 Sample)

The inspectors evaluated system configurations during a complete walkdown of the Unit 'A' train of the high head SI system (i.e. centrifugal charging pump) on December 17 and 18, 2018.

71111.05 - Fire Protection Annual/Quarterly

Quarterly Inspection (5 Samples)

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

- (1) Unit 1, 'B' train EDG building and electrical tunnel to the control building, fire zones 144, 162 and 164 on November 9, 2018.
- (2) Unit 1, north and south main steam valve houses, fire zones 39A, 45, 99, and 104 on November 9, 2018.
- (3) Unit 2, control building electrical penetration rooms, fire zones 60, 61, 62, 63, 64, and 82 on November 11, 2018.
- (4) Unit 1, component cooling water (CCW) pump rooms, fire zones 36 and 37 on November 29, 2018.
- (5) Unit 2, CCW pump rooms, fire zones 36 and 37 on November 29, 2018.

71111.06 - Flood Protection Measures

Cables (1 Sample)

The inspectors evaluated cable submergence protection in the following bunkers:

- (1) 1NE9GHKEPB01 in the high voltage switchyard on October 31, 2018.
- (2) 1NE7ADKEM39 in the low voltage switchyard on October 31, 2018.
- (3) 1NE7ADKEM40 in the low voltage switchyard on October 31, 2018.

71111.07 - Heat Sink Performance

Heat Sink (2 Samples)

The inspectors evaluated the Unit 2 'A' and 'B' train residual heat removal (RHR) motor coolers performance on October 31, 2018, and November 1, 2018.

71111.08 - Inservice Inspection Activities (1 Sample)

The inspectors evaluated pressurized water reactor non-destructive testing by observing or reviewing the following examinations from September 24 – October 5, 2018:

- (1) Ultrasonic Testing (UT)
 - a) Report S18V1U002, Component ID 11201-046-3-RB, 2" Elbow to Pipe. ASME Code Class 1. This review involved a pressure boundary weld. (reviewed)

- b) Report S18V1U026, Component ID 11204-246-35-RB, 1.5" Pipe to Reducer. ASME Code Class 1. This review involved a pressure boundary weld. (reviewed)
 - c) Report S18V1U096, Component ID 11201-B6-001-W01, Upper Head to Upper Shell Barrel "D" Weld, ASME Code Class 1. This review involved a pressure boundary weld. (observed)
 - d) Report S18V1U097, Component ID 11201-V6-002-W06, Upper Shell Longitudinal Weld, ASME Code Class 1. This review involved a pressure boundary weld. (observed)
 - e) Report S18V1U112, Component ID 11201-V6-002-W01, Upper Head to Upper Shell Weld, ASME Code Class 1. This review involved a pressure boundary weld. (observed)
- (2) Visual Testing (VT)
- a) Report S18V1V065, Component ID.11201-V6-CRDM(VOL), CRDM Nozzle and Base Material, ASME Code Class 1. VT-2. This review involved pressure boundary welds. (reviewed)
- (3) Eddy Current Testing (ET)
- a) Steam Generator (SG) #2 (Tube R1C58), ASME Code Class 1. (reviewed)
 - b) SG #4 (Tubes R5C90 and R16C65), ASME Code Class 1. (reviewed)

The Inspectors evaluated the licensee's boric acid control program performance.

71111.11 - Licensed Operator Regualification Program and Licensed Operator Performance

Operator Regualification (1 Sample)

The inspectors observed and evaluated a simulator training scenario V-SE-18501 administered to an operating crew on October 29, 2018.

Operator Performance (1 Sample)

The inspectors observed and evaluated Unit 1 operator performance during unit start-up for low power physics testing following refueling outage cycle 21 on October 4, 2018.

Operator Exams (1 Sample)

The inspectors reviewed and evaluated requalification examination results on December 13, 2018.

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) NSCW system fan gearbox maintenance practices as a result Unit 1 NSCW train 'A' fan number (no.) 1 failure on July 4, 2018.
- (2) Maintenance of General Electric SBM transfer switches due to open-contact failures

preventing operation of unit 2 pressurizer heaters and unit 1 'A' train NSCW fan no. 1 on January 29, 2018, and March 3, 2018, respectively.

- (3) Maintenance Rule a(3) assessment of the Vogtle Maintenance Rule program.

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) Unit 2, GREEN risk profile during the NSCW pump no. 2 PM outage on October 9, 2018.
- (2) Unit 1, GREEN risk profile due to the station auxiliary transfer and NSCW pump no. 6 being OOS for PM on November 2, 2018.
- (3) Unit 1, NSCW transfer pump no. 8 PM outage on November 5, 2018.
- (4) Unit 1, GREEN risk profile with NSCW pump no. 8, 'B' train motor-driven AFW pump, and site auxiliary transformer being OOS on November 8, 2018.
- (5) Unit 2, 'A' train motor-driven AFW pump system outage on November 11, 2018.

71111.15 - Operability Determinations and Functionality Assessments (5 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Units 1 and 2, NSCW motors' operability due to lack of air filters as required by the motor specification document, on October 23, 2018, CR10547687.
- (2) Unit 2, loop 4 main steam isolation valve, 2HV3036A, operability with its actuator non-pumpsided dump manifold isolated due to a ground on the dump solenoid valve, on 11/30/2018, 1-DT-18-1301-00238(2).
- (3) Unit 2, control building auxiliary relay room emergency safety feature HVAC unit fan belt degraded, on October 18, 2018, CR10546824.
- (4) Unit 2, 'A' EDG trip during hot restart test, on November 19, 2018, CR10555923.
- (5) Unit 1, 'A' train AFW pump maintenance and test equipment gauges found over-ranged when removed after test, on December 20, 2018, CR10564797.

71111.18 - Plant Modifications (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Unit 1, manual isolation of accumulator vent valve 1HV-0943B, 1-CA-17-1204-00118.

71111.19 - Post Maintenance Testing (5 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) 14825-2, Unit 2 atmospheric relief valve 2-PV-3010 in-service valve test (procedure sections 5.1, 5.2, and 5.2.13) on November 29, 2018, following valve PM outage.
- (2) 14825-1, Unit 1 'B' train motor-driven AFW pump discharge motor-operated valves (MOV), 1-HV-5132 and 1-HV-5134, in-service test on November 9, 2018, following cleaning, inspection, and lubrication PM outage.
- (3) 14640-2, Unit 2 'A' train motor-driven AFW pump discharge MOV, 2-HV-5137, SSPS slave relay K-640 test on November 16, 2018, following replacement of control circuit 1E D26 AX relay.

- (4) SNC937425, Unit 2 'A' train SI pump following PM outage on October 23, 2018.
- (5) SNC944806, Unit 1 'A' train NSCW transfer pump following PM outage on December 14, 2018.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Frequency Extension (1 Sample)

- (1) Units 1 and 2 containment hi-range radiation monitors, RE-0005 and RE-0006, calibration surveillance extension (TE999226), during week of November 5, 2018.

Routine (1 Sample)

- (1) 24989-1/2, Isotopic calibration of RE-0005 and RE-0006 on November 27-28, 2018.

71114.06 - Drill Evaluation

Drill/Training Evolution (2 Samples)

The inspectors evaluated a licensed operators' continuing training evolution contributing to the Drill and Exercise Performance (DEP) performance indicator on November 5, 2018. Additionally, the inspectors evaluated a facility activation emergency preparedness drill on December 12, 2018.

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (1 Sample)

The inspectors evaluated radiological hazards assessments and controls.

Instructions to Workers (1 Sample)

The inspectors evaluated worker instructions.

Contamination and Radioactive Material Control (1 Sample)

The inspectors evaluated contamination and radioactive material controls.

Radiological Hazards Control and Work Coverage (1 Sample)

The inspectors evaluated radiological hazards control and work coverage.

High Radiation Area and Very High Radiation Area Controls (1 Sample)

The inspectors evaluated risk-significant high radiation area and very high radiation area controls.

Radiation Worker Performance and Radiation Protection Technician Proficiency (1 Sample)
The inspectors evaluated radiation worker performance and radiation protection technician proficiency.

71124.02 - Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls

Radiological Work Planning (RWP) (1 Sample)

The inspectors evaluated the licensee's radiological work planning by reviewing the following activities:

- (1) SG eddy current testing and all associated work, RWP: 18-1302, High risk radiological, eddy current testing on SGs no. 1,2,3,4 to include equipment set-up and removal.
- (2) Installation and removal of scaffolding in 1R21, RWP: 18-1004, Installation and removal of scaffolding in unit 1 containment.
- (3) Emergent ISI expanded scope, RWP: 18-1010, crack indication on the loop 3 intermediate reactor coolant system drain line.

Verification of Dose Estimates and Exposure Tracking Systems (1 Sample)

The inspectors evaluated dose estimates and exposure tracking.

Implementation of ALARA and Radiological Work Controls (1 Sample)

The inspectors reviewed ALARA practices and radiological work controls by reviewing the following activities:

- (1) SG primary side preparation activities, RWP: 18-1302, Primary SGs eddy current test, SGs no. 1,2,3,4.
- (2) Reactor head removal, RWP: 18-1400, Reactor head disassembly/assembly.
- (3) Under vessel entry, RWP: 18-1505, Under vessel PMs, DMMs and bare metal inspection.
- (4) Fuel handling activities, RWP: 1401, Containment fuel offload and reload.

Radiation Worker Performance (1 Sample)

The inspectors evaluated radiation worker and radiation protection technician performance.

71124.03 - In-Plant Airborne Radioactivity Control and Mitigation

Engineering Controls (1 Sample)

The inspectors evaluated airborne controls and monitoring.

Use of Respiratory Protection Devices (1 Sample)

The inspectors evaluated respiratory protection.

Self-Contained Breathing Apparatus for Emergency Use (1 Sample)

The inspectors evaluated the licensee's self-contained breathing apparatus program.

71124.04 - Occupational Dose Assessment
Source Term Characterization (1 Sample)

The inspectors evaluated the licensee's source term characterization.

External Dosimetry (1 Sample)

The inspectors evaluated the licensee's external dosimetry program.

Internal Dosimetry (1 Sample)

The inspectors evaluated the licensee's internal dosimetry program.

Special Dosimetric Situations (1 Sample)

The inspectors evaluated the licensee's performance for special dosimetric situations.

71124.05 - Radiation Monitoring Instrumentation

Walkdowns 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.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification (8 Samples)

The inspectors verified licensee performance indicators submittals listed below for the period from October 1, 2017, through September 30, 2018, for both Units 1 and 2.
(6 samples)

- (1) MS05: Safety System Functional Failures.
- (2) MS06: Emergency AC Power System.
- (3) MS10: Cooling Water System.

The inspectors verified licensee performance indicators submittals listed below for the period from November 1, 2017 through July 31, 2018. (2 samples)

- (1) OR01: Occupational Exposure Control Effectiveness.
- (2) PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual (RETS/ODCM).

71152 - Problem Identification and Resolution

Semiannual Trend Review (1 Sample)

The inspectors reviewed the licensee's corrective action program for trends 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 issue:

- (1) Unit 1 NSCW 'A' train tower fan no. 1 tripped due to gearbox bearing failure caused by lack of lubrication, corrective action report (CAR) 274394.

OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

60855.1 - Operation of an Independent Spent Fuel Storage Installation

The inspectors conducted a walkdown of the licensee's independent spent fuel storage area and conducted a related log and record review on December 27, 2018.

INSPECTION RESULTS

Failure to Follow Work Instructions for Checking Lube Oil Level in Nuclear Service Cooling Water Fan Gearbox			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000424/2018004-001 Opened/Closed	[H.5] – Work Management	71152
Introduction: A Green self-revealing NCV of TS 5.4.1.a, "Procedures," was identified for the licensee's failure to check NSCW fan gearbox lube oil level in accordance with work instructions. As a result, the licensee failed to identify a low lubricating oil condition on the unit 1 'A' train NSCW fan no. 1 which ultimately led to failure of the fan on July 4, 2018.			
Description: The NSCW cooling towers are mechanical induced draft towers that function as the ultimate heat sink for Vogtle Electric Generating Plant (VEGP). Each reactor unit has two 100-percent capacity towers, each consisting of four draft fans that provide heat removal from safety related components during a transient or accident, as well as during normal operations. Each NSCW fan is driven by a 100-horse power motor via a right-angle gearbox. The fans cycle on/off based on NSCW return header water temperature. On July 4, 2018 the Unit 1 'A' train NSCW tower fan no. 1 motor breaker tripped due to a failure of the fan's gearbox. During removal and inspection, the licensee noted the gearbox was low on lube oil with only half of the required oil volume (19.5 gallons.) Oil residue was noted on the gearbox mounting pedestal, but no apparent source of the leak was identified. Heavy burnt oil residue was also noted on top of the gearbox at the vent breather and input shaft seal. The gearbox was determined to have failed due to a failed bearing caused by lack of lubrication. The licensee determined the oil loss was most likely attributed to leakage from the gearbox inspection port cover gasket. Following enough oil loss, the oil's heat removal capacity was reduced (i.e. less oil volume), causing it to become hotter and resulting in the burnt oil residue observed at the top of the gearbox vent and input shaft seal. The hotter oil temperature resulted in (1) additional oil loss and (2) lower oil viscosity until gearbox failure on July 4, 2018.			

The inspectors reviewed the licensee's quarterly lube oil check maintenance history of the failed fan. The inspectors noted that maintenance technicians had just checked the oil level 11 days prior to the failure, on June 23, 2018, with satisfactory results (work order no. SNC936531). The work order provided a one-step instruction to verify acceptable oil levels and made reference to the vendor technical manual AX4AD02-00147. The inspectors reviewed the gearbox vendor manual instructions for checking oil level and noted that the vendor called for stopping the gearbox to allow the oil to stabilize before checking the oil. The inspectors reviewed operational fan data from the plant computer for June 23, 2018 and noted that none of the running fans (fans no.1 and no. 2) on the 1A NSCW tower were stopped in support of checking the oil. On September 13, 2018 the inspectors observed maintenance technicians check gearbox oil levels for both Unit 1 NSCW towers via a remote oil gauge tube with a dipstick. The inspectors noted each remote oil tube had a metal placard with instructions, consistent with the vendor manual, on how to check oil level. When attempting to measure oil level of the running fans the inspectors noted the dipstick wasn't long enough to reach the top of the oil in the tube. Checking level with the fan running resulted in a level drop in the remote oil gauge tube due to the oil being picked up by rotating component inside the gearbox. This was a known behavior and technicians expected a lower oil level on running fans; however, because the dipstick wasn't long enough, determination of adequate oil level was a qualitative judgment based on the technicians' visual assessment (i.e. looking down a narrow oil tube) of the oil level. The inspectors independently assessed oil levels for a sample of the running fans and determined that the practice was subjective, imprecise, and inconsistent with the work instructions. An accurate measurement was required because the difference between an acceptable and an 'out-of-specification' oil level condition was just one (1) inch. In addition, the inspectors noted there was no evaluated criteria for acceptable and/or low oil levels on a 'running' fan.

Based on an assessment of the 'as-found' outside housing conditions of the failed gearbox, the amount of lost oil, no indication of a sudden oil leak source, and the significant buildup of burnt oil on top of the gearbox the inspectors determined that the gearbox had operated under low oil conditions for some time and was most likely low when it was checked on June 23, 2018. Because the oil level wasn't properly checked per the work order instructions, technicians failed to identify the low oil condition and the fan subsequently failed.

The inspectors expanded their review to other fans and noted that since the licensee began measuring oil levels, in May 2018, running fans were not being stopped in support of checking oil level. Maintenance technicians indicated that shutting down the fans required operations support, which was normally not available when requested.

Corrective Action(s): The licensee entered this issue into their corrective action program under condition report (CR) 10545066. The licensee verified that all (Units 1 and 2) NSCW fan gearboxes had adequate oil levels by stopping the fans. Additionally, the licensee revised the preventative maintenance instructions to include more detailed steps and operations support requirements to stop fans in support of the lube oil checks.

Performance Assessment:

Performance Deficiency: The failure to check NSCW tower fan gearbox oil level in accordance with written documented instructions 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 cornerstone objective to ensure the availability,

reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the performance deficiency resulted in the licensee's failure to restore proper oil levels of Unit 1 NSCW fan no.1 and contributed to the subsequent lack of lubrication failure on July 4, 2018.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012. The inspectors determined that the finding required a detailed risk evaluation because it involved an actual loss of function of at least a single train for greater than its technical specification allowed outage time. A detailed risk evaluation was performed using the NRC Vogtle SPAR model which considered the PD as a non-recoverable common-cause fail to run of the NSCW tower fan for an exposure of 12 days. The dominant sequence was a small loss of coolant accident initiator, successful reactor trip, success of auxiliary feedwater, success of high pressure injection, failure of secondary side cooling, and failure of high pressure recirculation leading to a loss of core heat removal and core damage. The risk assessment determined that the PD represented a risk increase of less than 1.0E-6 per year in core damage frequency. Therefore, this violation was of very low safety significance (Green).

Cross-cutting Aspect: The inspectors determined the finding had a cross-cutting aspect of "Work Management" in the Human Performance area because, for this maintenance activity, the organization did not implement a process of planning, controlling, and executing such that nuclear safety was the overriding priority. Specifically, the work process did not identify the need for operations support (i.e. stopping and starting fans) in order to adequately accomplish the work. [H.5]

Enforcement:

Violation: Technical Specification 5.4.1.a, "Procedures," required, in part, that written procedures covering the applicable procedures recommended in Appendix A to Regulatory Guide 1.33, "Quality Assurance Program Requirements," of February 1978, shall be implemented. Regulatory Guide 1.33, Appendix A, Item 9 required, in part, that maintenance activities that can affect the performance of safety-related equipment should be performed in accordance with written documented instructions.

Contrary to the above, since May 2018, the licensee failed to perform maintenance activities to check the oil level for the NSCW tower fan gearboxes in accordance with written documented instructions. Specifically, the licensee failed to stop NSCW fans and allow the lube oil to stabilize before checking oil level as documented in the work order and field installed instructions.

Disposition: This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy.

Unresolved Item (Open)	Calibration of Containment High-range Area Radiation Monitors URI 05000424/425/2018004-02	71124.05
<u>Description:</u> During a review of recent isotopic calibration records for the U1 containment high-range area radiation monitors 1RE-0005 and 1RE-0006, the inspectors noticed that both detectors were found out of tolerance (26.5 R/hr and 25.1 R/hr versus an acceptance criteria of 17 R/hr +/-		

20%), and as a result, the gains were adjusted down. Discussions with the licensee revealed that a new tripod mount had been used for the first time to hold the cesium (Cs-137) calibration source in place and that this may have contributed to the as-found conditions. From further discussions and a review of records, the inspectors determined that this particular calibration source was not designed for use with the licensee's long, narrow, high-range ion chamber tubes. To resolve this, the licensee had removed the fixed-geometry metal hanger from the calibration source housing several years ago. Therefore, a fixed, reproducible, source-to-detector geometry was never established and there was no transfer data available from the manufacturer that would describe the detector's response characteristics to this particular source. To compensate for this, the licensee periodically performed a "re-dedication" of the calibration source in the count room laboratory. This consisted of irradiating a calibrated, small-volume ion chamber on a benchtop in order to estimate the distance from the exposed calibration source that would result in 17 R/hr. This distance was then estimated in the field by attempting to accurately measure the distance between the shielded housing cylinder of the calibration source and the cylindrical ion chamber detection tubes. Since small changes in source-to-detector geometry for a point source can significantly impact detector response, the licensee's source re-dedication methodology and in-field measurements process may have introduced unintended error during each calibration surveillance. Therefore, it is possible that 1RE-0005, 1RE-0006, 2RE-0005, and 2RE-0006 were not being maintained so that they met the $\pm 20\%$ accuracy requirement described in FSAR Chapter 12. The inspectors noted these monitors are used to provide indication that an Emergency Action Level threshold has been reached and that the regulations in 10 CFR 20.1501 require them to be calibrated for the radiation measured.

Planned Closure Action(s): In order to close this URI, the licensee will need to evaluate whether the containment high-range area radiation monitors are reliably accurate to within $\pm 20\%$ of the actual radiation field, and if they are not, determine the degree of error. The NRC acknowledges that such an evaluation might be difficult or even impossible using purely analytical methods, so it is expected that new empirical data will be obtained. The evaluation should address the following items:

- 1) *The effect of error propagation due to: acceptance criteria tolerances during source re-dedication, and distance measurement errors both on the benchtop and in the field.*
- 2) *Given that the high-range ion chamber detector tubes are 9 inches long and 1.25 inches wide and that the calibration point source is currently held 1.9375 inches from the detector, what are the effects of uneven irradiation of the active detection volume on monitor response?*
- 3) *There were multiple instances over the past 10 years where it was determined that the source-to-detector distance could remain unchanged from one 18-month surveillance to the next (i.e. acceptance criteria for benchtop re-dedication was met) and the target dose rate of 17 R/hr was still acceptable. In effect then, the Cs-137 source was not decay-corrected from one surveillance to the next during those time periods. What additional error was introduced by failing to account for radioactive decay?*

Licensee Action(s): Licensee is currently analyzing the condition and no action has been taken to date. Actions will be taken based on licensee evaluation results.

Corrective Action Reference(s): CR 10569547

Unresolved Item (Open)	Calibration Surveillance Extension of Post Accident Monitoring Instruments URI 05000424/425/2018004-03	71111.22
<p><u>Description:</u></p> <p>The inspectors reviewed surveillance test interval (STI) evaluation number TE 999226. The STI evaluation approved (March 2018) the extension of the CHANNEL CALIBRATION surveillance interval associated with Technical Specification (TS) Limiting Condition of Operation (LCO) 3.3.3, "Post Accident Monitoring System (PAMS) Instrumentation" from 18 months to 18 months Staggered (i.e. 36 months per instrument channel). The scope of the evaluation included the following PAMS instruments: (1) containment normal sumps level (narrow range,) (2) containment water level (wide range,) (3) containment radiation level monitors (high range,) and (4) steam line radiation monitor. Section D.1 of the evaluation documented the results of the surveillance test history review for the associated instruments, as required by the surveillance test interval evaluation instructions procedure NMP-ES-072-002. The inspectors noted that the review identified 12 'Out-of-Tolerance' (OOT) conditions that required instrument adjustments to within acceptable limits before placing it back in service. The licensee characterized these OOT instances as being associated with electrical equipment drift caused by environmental conditions (e.g., changes in temperature and humidity) and other factors dependent upon application. Furthermore, the licensee noted that OOT conditions were normal and to be expected. The inspectors were concerned that no additional evaluation (i.e. drift analysis, As-found/As-Left) was performed to demonstrate and provide confidence that doubling the calibration interval would not result in an increased number of OOT conditions for the associated instruments. The licensee indicated that drift analyses were not performed for this STI evaluation because their instrument setpoint monitoring program did not require these instruments to be monitored for drift. The inspectors determined that because the licensee attributed the identified OOT conditions to drift (i.e. these instruments were susceptible to drift), Section D.1 of the STI should have evaluated the instruments' historical drift performance (or equivalent evaluation) in order to demonstrate that there will not be an adverse impact on the instruments' required range and accuracy over the proposed STI change.</p> <p>Additionally, the inspectors noted that the STI evaluation extended the calibration interval for the electronics portion of the containment and steam line radiation monitors. In order to meet the CHANNEL CALIBRATION surveillance requirements for these radiation monitors, both the electronic and isotopic calibration must be conducted to demonstrate operability of the detector. The inspectors were concerned with the acceptability of satisfying the calibration surveillance requirement while having different calibration intervals for individual instrument sub-components.</p> <p>Planned Closure Action(s): To close this URI, the licensee will need to evaluate the historical drift performance or equivalent, such as a review of as-found/as-left data, of the affected instruments over the proposed STI change in order demonstrate that the instruments will be expected to perform at the required accuracy and range.</p> <p>In addition to the historical analysis described above, further evaluation is needed for the containment high-range area radiation monitors and steam line radiation monitors. Since multiple surveillance procedures are used to perform the calibrations on these devices, each with different surveillance frequencies, the licensee must determine at which point in the process an acceptable calibration has been completed (and TS requirements have been met). In addition, the licensee must evaluate the effects of multiple potential calibration</p>		

adjustments over a 36-month period (potentially two gain adjustments due to isotopic calibrations for every high-range electronic calibration) on overall detector performance.

Licensee Action(s): Licensee has entered the issue into their CAP program and are performing an analysis to meet the URI closure actions listed.

Corrective Action Reference(s): CR 10569546

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On January 28, 2019, the inspectors presented the quarterly resident inspector inspection results to Mr. Jessie Thomas, and other members of the licensee staff.

DOCUMENTS REVIEWED

Section 71111.01: Adverse Weather Protection

Procedures

11889-C, Severe Weather Checklist, Ver. 26
NMP-OS-017, Severe Weather, Ver. 1.1
NMP-GM-021, Switchyard Access and Maintenance Controls
NMP-GM-025, Seasonal Readiness Process, Ver. 5.0

Miscellaneous

Site Certification for Winter Readiness Letter, Signed on November 15, 2018

Section 71111.04: Equipment Alignment

Procedures

13610, Checklist 2 - Auxiliary Feedwater System Alignment for Standby Readiness (Trains 'A' and 'C')
14460-2, ECCS Flow Path Verification, Ver. 43

Drawings

2X4DB161-2, Ver. 26.0, Unit 2 P&I Diagram – Auxiliary Feedwater System - System No. 1302
2X4DB161-3, Ver. 38.0, Unit 2 P&I Diagram – Auxiliary Feedwater Pump System (Auxiliary Feedwater Pump Turbine Driver) - System No. 1302
2X4DB116-1, Ver. 49.0, Unit 2 P&I Diagram – Chemical and Volume Control System – System No. 1208
2X4DB116-2, Ver. 32.0, Unit 2 P&I Diagram – Chemical and Volume Control System – System No. 1208
2X4DB119, Ver. 28.0, Unit 2 P&I Diagram – Safety Injection System – System No. 1204
2X4DB121, Ver. 50.0, Unit 2 P&I Diagram – Safety Injection System – System No. 1204
2X4DB122, Ver. 54.0, Unit 2 P&I Diagram – Residual Heat Removal – System No. 1205
2X3D—BD-C03K, Rev. 7, Elementary Diagram – Chemical and Volume Control System – 2HV-8111A

Section 71111.05: Fire Protection Annual/Quarterly

Procedures

29100-C, Portable Fire Extinguishers and Fire Hose Stations Visual Inspection, Version 62.11
92040-C, Fire Protection Operability and LCO Requirements, Rev. 46.0
92739A-1, Zone 39A – Auxiliary Building – Level A Fire Fighting Preplan, Rev. 4.0
92745-1, Zone 45 – Auxiliary Building – Level 1 Fire Fighting Preplan, Rev 2.2
92799-1, Zone 99 – Control Building Level A Fire Fighting Preplan, Rev 3.2
92804-1, Zone 104 – MSIV Room North Level 1 Fire Fighting Preplan, Rev 4.2
92844-1, Zone 144 – Diesel Generator Building – Electrical Tunnel – Train B – Fire Fighting Preplan, Ver. 4.0
92862-1, Zone 162 – Diesel Generator Building Fire Fighting Preplan, Rev 3.0
92864-1, Zone 164 – Diesel Generator Building – Train B DFO Tank Fire Fighting Plan, Rev 2.2
92737-2, Zone 37 – Auxiliary Building – Level A, CCW Pumps, Train B Fire Fighting Preplan, Rev 3.0
92736-1, Zone 36 – Auxiliary Building – Level A Fire Fighting Preplan, Rev 5.0
92736-2, Zone 36 – Auxiliary Building – Level A, CCW Pumps, Train A Fire Fighting Preplan, Rev 5.0
92737-1, Zone 37 – Auxiliary Building – Level A Fire Fighting Preplan, Rev 5.0
92760-1, Zone 60 – Control Building Level B Fire Fighting Preplan, Rev 1.2
92761-1, Zone 61 – Control Building Level B Fire Fighting Preplan, Rev 2.1

92764-1, Zone 64 – Control Building – Level B Fire Fighting Preplan, Rev 4.1
92762-1, Zone 62 – Control Building Level B Fire Fighting Preplan, Rev 4.0
92763-1, Zone 63 – Control Building – Level B Fire Fighting Preplan, Rev 1.2
92782-1, Zone 82 – Control Building – Level B Fire Fighting Preplan, Rev 1.2

Section 71111.07: Heat Sink Performance

Procedures

83305-C Ver. 7.8, Heat Exchanger Testing/Maintenance Program
83308-C Ver. 33, Testing of Safety-Related NSCW Coolers
NMP-ES-012, Heat Exchanger Program, Ver. 11.0

Work Orders

SNC630495, U2 'A' RHR pump motor: clean/inspect motor, heater, cooler, mounting hardware, wiring and conduit, 8/21/17
SNC639283, U2 'A' RHR pump motor: clean/inspect motor, heater, cooler, mounting hardware, wiring and conduit, 11/30/17
SNC398684, Unit 2 'A' RHR motor cooler temperature monitoring test, 3/21/16
2102468801, Unit 2 'A' RHR motor cooler temperature monitoring test, 9/19/11
2061344101, Unit 2 'A' RHR motor cooler temperature monitoring test, 4/9/07
SNC398685, Unit 2 'B' RHR motor cooler temperature monitoring test, 3/9/16
2102468901, Unit 2 'B' RHR motor cooler temperature monitoring test, 9/19/11
2061344201, Unit 2 'B' RHR motor cooler temperature monitoring test, 4/9/07
SNC888637, Unit 2 'B' RHR motor cooler flow test, 2/20/18
SNC918018, Unit 2 'A' RHR motor cooler flow test, 7/21/18
SNC890571, Unit 2 'A' RHR motor cooler flow test, 3/5/18

Other

ELV-01212, Letter from W.G. Hairston, III, to USNRC, "Vogtle Electric Generating Plant Response to Generic Letter 89-13 Service Water System Problems Affecting Safety-Related Equipment," January 25, 1990
ELV-03258, Letter from C.K. McCoy to USNRC, "Vogtle Electric Generating Plant Response to Generic Letter 89-13 Service Water System Problems Affecting Safety-Related Equipment," December 5, 1991
EPRI NP-7552, "Heat Exchanger Performance Monitoring Guidelines
REA 97-VAA126, "ESF Motor Cooler Test Methods," Nov. 14, 1997

Condition Report (CRs) generated as a result of inspection

10564204

Section 71111.08: Inservice Inspection Activities

Procedures

NMP-AP-001-F02, Mechanical Ribbed Plugging of Steam Generator Tubes, Version 5.0
NMP-ES-004, Steam Generator Program, Version 15.0
NMP-ES-004-GL01, Steam Generator Program Strategic Plan, Version 16.0
NMP-ES-019, Boric Acid Corrosion Control Program, Version 11.1
NMP-ES-019-001, Boric Acid Corrosion Control Program Implementation, Version 11.1
NMP-ES-019-003, Boric Acid Deposit Sampling, Analysis and Data Evaluation, Version 2.1
NMP-ES-019-004, Boric Acid Corrosion Control Program - Corrosion Assessment, Version 5.1
NMP-ES-024-501, PDI Generic Procedure for the Ultrasonic Examination of Austenitic Pipe Welds (Appendix VIII), Version 7.0
NMP-ES-024-503, PDI Generic Procedure for the Ultrasonic Examination of Manual Vessel Welds (Appendix VIII), Version 6.0

Corrective Action Documents

Condition Report (CR) 10537420, Rejectable Flaw in ISI Weld 11201-046-3 (2" Elbow to Pipe)
CR 10538037, ISI Is Analyzing an Ultrasonic Indication on HHSI 11204-246-35
CR 10538539, Axial Indications Observed in SG No. 4 ECT Exam
CR 10539564, Axial PWSCC Crack Was Found on SG #2
NMP-GM-003-F18, Check-In Self-Assessment (CISA) Plan and Report, ISI Assessment for
NRC Routine Baseline Inspections in the 1R21 and 2R20 Refueling Outages, Dates of
Assessment: June 5 to June 24, 2018
NMP-GM-003-F19, Focused Area Self-Assessment (FASA) Plan and Report, Engineering
Programs (Materials), Dates of Assessment: 4/11/16 – 4/15/16
NMP-GM-003-F19, Focused Area Self-Assessment (FASA) Plan and Report, Steam Generator
Program, Dates of Assessment: July 25 – 28, 2016

Non-Destructive Examination (NDE) Documents

NDE Personnel Certifications: M. Brown, M. Grell, R. Linden, and S. Overly
NDE Report S18V1U002, Component ID 11201-046-3-RB, 2" Elbow to Pipe
NDE Report S18V1U026, Component ID 11204-246-35-RB, 1.5" Pipe to Reducer
NDE Report S18V1U096, Component ID 11201-B6-001-W01, Upper Head to Upper Shell
Barrel "D" Weld
NDE Report S18V1U097, Component ID 11201-V6-002-W06, Upper Shell Longitudinal Weld
NDE Report S18V1U112, Component ID 11201-V6-002-W01, Upper Head to Upper Shell Weld
NDE Report S18V1V065, Component ID.11201-V6-CRDM(VOL), CRDM Nozzle and Base
Material

Boric Acid Corrosion Control Program (BACCP) Documents

BACCP Corrosion Assessment Number 1204-2018-001
BACCP Corrosion Assessment Number 1204-2018-003
BACCP Corrosion Assessment Number 1208-2018-001
BACCP Corrosion Assessment Number 1212-2017-002
BACCP Corrosion Assessment Number 1213-2018-001

Other Documents Reviewed

Certificate of Compliance for Angle Beam Test Block, Curtis Industries, Inc., SAP 105333, dated
August 31, 2006
LTR-SGMP-18-30, Transmittal of Vogtle 1R21 Fall 2018 Steam Generator Secondary Side
Visual Inspection Plan, Revision 0
MIS-17-011, Vogtle Electric Generating Plant, Units 1 and 2, Volume 1, Fourth Ten-Year
Interval Inservice Inspection (ISI) Plan and Containment Inservice Inspection (CISI) Plan,
Effective Date: May 31, 2017
MIS-17-012, Version 2.0, Vogtle Electric Generating Plant, Units 1 and 2, Volume 5, Fourth
Ten-Year ISI Interval, Third Interval Containment Inspection Plan, Effective Date: May 31,
2017
MIS-17-021, Vogtle Electric Generating Plant, Units 1 and 2, Volume 3, Fourth Ten-Year
Interval Exam Tables, Effective Date: May 31, 2017
NRC response to Southern Nuclear Letter NL-17-0909, authorizing the use of alternative
request VEGP-ISI-ALT-04-01, for Vogtle for the fourth 10-year inservice inspection interval,
dated April 24, 2018
MRS 2.4.2 GPC-37, Steam Generator Eddy Current Data Analysis Techniques for Vogtle
Units 1 & 2, Revision 18
MRS-TRC-2348, Use of Qualified Techniques for V1R21 Outage, September 2018
Probe Authorization, Revision 0

Site-Approved Inspection Techniques, Revised 9/22/2018
SG-SGMP-18-10, Vogtle 1R21 Steam Generator Degradation Assessment September 2018, Revision 1
SNC851200-04, Vogtle 1R20 Steam Generator Condition Monitoring and Operational Assessment
SNC970007, Modification of 11201L4046-2" to Address Flaw Identified through ISI Inspection, Revision 2.0
Southern Nuclear Letter NL-17-0909 to the NRC, Vogtle Electric Generating Plant- Units 1 and 2, Proposed Alternative VEGP-ISI-ALT-04-01 Implementation of Code Case N-729-4, dated December 18, 2017
WDI-PJF-1320388-EPP-001, Examination Program Plan for the Vogtle Unit 1 1R21 Reactor Vessel Head Inspection – GAE, Revision 0
Westinghouse Letter LTR-AMER-MKG-17-2034 V-RVHI-1R21-FA18 to Southern Nuclear Operating Company, Inc., Westinghouse Contractor Scope of Work for Vogtle 1R21 for Reactor Vessel Head Penetration Inspection Services, dated January 25, 2018
Work Order SNC969639, 1201-11201 Pipe (Cut/Plug), Potential Flaws Discovered during ISI Exams on RCS Piping Weld

Section 71111.11: Licensed Operator Regualification Program and Licensed Operator Performance

Procedures

18004-C, Reactor Coolant System Leakage, Ver. 30.2
18031-1, Loss of Class 1E Electrical Systems, Ver. 1.2
NMP-EP-141-003, Vogtle Unit 1 and Unit 2 Emergency Action Levels and Basis, Ver. 3.0
NMP-EP-142-F01, Emergency Notification Form (ENF), Ver. 1.0
112004-C, Power Operation, Ver. 119.3
19000-1 E-0 Reactor Trip or Safety Injection, Ver. 2.1
12002-2, Unit Heatup to Normal Operating Temperature and Pressure, Ver. 1.0
12003-2, Reactor Startup (Mode 3 to Mode 2), Ver. 2.0
14005-2, Shutdown Margin and Keff Calculations, Ver. 22.0

Section 71111.12: Maintenance Effectiveness

Procedures:

NMP-ES-027, Maintenance Rule Program, Ver. 8
NMP-AD-028-GL01, Guidelines for Determination of Functional Failures and their Related Safety Significance, Ver. 2.0
27445-C, Marley (NSCW) Cooling Tower Fan and Gear Reducer Maintenance, Ver. 17.1

Work Orders

SNC936561, 11202W4002R01 – Oil Level Check on Fan Gearboxes, 6/9/18
SNC936552, 21202W4002R01 – Oil Level Check on Fan Gearboxes, 8/7/18
SNC936551, 21202W4002R01 – Oil Level Check on Fan Gearboxes, 5/12/18
SNC936531, 11202W4001R01 – Oil Level Check on Fan Gearboxes, 6/23/18
SNC590343, 11202W4002R01 – Torque Fan Blades, Change Oil, and Inspect, 1/24/17
SNC408032, 11202W4002R01 – Torque Fan Blades, Change Oil, and Inspect, 5/14/14

Condition Reports

10455611, Control power lost for 2NB10 breaker 5
10468372, 1A NSCW fan no. 1 initially would not operate from the control room
10554363, 2A Fan no. 1 oil level at 'Add' mark
10526775, 2A Fan no. 1 low oil level

Technical Evaluations

1003039, MRule Eval. for control power loss for 2NB10 breaker 5
1006001, MRule Eval. for 1A NSCW fan no. 1 initially would not operate from the control room
987294, CA from CAR273035: SBM LAM documentation and tracking

Corrective Action Report

209741, Apparent Cause Determination for open contacts on Unit 1 pressurizer heater A
273035, ERC for failure of unit 2 pressurizer heaters and unit 1 'A' NSCW fan no. 1 to start from the control room

Other

LTAM V-16-0008, Safe-shutdown GE SBM transfer switch replacement, 1/15/16
Incident Response Team Report Out for 10455611: Control power lost for 2NB10 breaker 5
Vendor Technical Manual, GEH-2038E, Control and Transfer Switch Type SBM
NRC Information Notice No. 88-98: Electrical Relay Degradation Caused by Oxidation of Contact Surfaces
SCL00070, Marley Gear Reducer Oil Sampling/Change, Rev. 3.2
SCL00073, Inspect Marley Geared reducer, Rev. 9.0
AX4AD02-00147, Instruction Manual for Fans Gear reducers and Motors, Ver. 11
AX4AD02-00131-3, Series 36 & 38 Gear reducers Service Manual, Rev. 20tors, Ver. 11

Section 71111.13: Maintenance Risk Assessments and Emergent Work Control

Procedures

NMP-GM-031-001, Online Maintenance Rule (a)(4) Risk Calculations, Ver. 5.0

Other

Unit 1 Phoenix Integrated Risk Reports for October 9, 2018
Unit 1 Narrative Control Room Logs for October 9, 2018
Unit 1 Phoenix Integrated Risk Reports for November 2, 2018
Unit 1 Narrative Control Room Logs for November 2, 2018
Unit 1 Phoenix Integrated Risk Reports for November 5, 2018
Unit 1 Narrative Control Room Logs for November 5, 2018
Unit 1 Phoenix Integrated Risk Reports for November 8, 2018
Unit 1 Narrative Control Room Logs for November 8, 2018
Unit 1 Phoenix Integrated Risk Reports for November 14, 2018
Unit 1 Narrative Control Room Logs for November 14, 2018
1-DT-18-1202-00318, Unit 1 NSCW pump no. 6 tagout

Section 71111.15: Operability Determinations and Functionality Assessments

Procedures

NMP-AD-012, Operability Determinations and Functionality Assessments, Ver. 13.1

Work Orders

SNC535841, Cold Shutdown Valve IST for 2HV3026A (surveillance procedure 14850-2),
10/10/17

Other

X4AF02, Large Induction Motors, 201 HP and Larger (Class 1E) for the Alvin W. Vogtle Nuclear Plant – Appendix BB, Rev. 2
IEEE Paper No. PCIC-2004-23, An Evaluation of TEFC Vs. WPII Motors in Harsh Petrochemical Applications

Drawings

AX4AF02-00006-1, Ver. 1.0 Nuclear Service Cooling Water Pump Motor (Sheet 1)

Condition Reports

10547687, 10558794

Other

1-DT-18-1301-00238(2), Hydraulically isolate 2HV3026A non-pump side dump manifold

Section 71111.18: Plant Modifications

10CFR50.59 Evaluations

10 CFR 50.59 Evaluation for Tagout 1-CA-17-1204-00118 - Manual isolation of Unit 1 safety injection system accumulator vent path 'B', Ver. 2.0

10CFR50.59 Screenings

10 CFR 50.59 Screening for Tagout 1-CA-17-1204-00118 - Manual isolation of Unit 1 safety injection system accumulator vent path 'B', Versions 1.0 and 2.0

Procedures

18038-1, Operation from Remote Shutdown Panels

13105-1, Safety Injection System

19010-C-BD, E-1 Loss of Reactor or Secondary Coolant, Background Document, Ver. 1.0

19010-1, E-1 Loss of Reactor or Secondary Coolant, Ver. 1.1

19002-1, ES-0.2 Natural Circulation Cool Down, Ver. 1.0

19012-C-BD, Post LOCA Cooldown and Depressurization, Background Document, Ver. 1.0

Drawings

1X4DB120, P&I Diagram – Safety Injection System – System No. 1204, Ver. 28.0

Corrective Action Program Records

Technical Evaluation (TEs)

TE1012299

Tag outs

1-CA-17-1204-00118, Manual isolation of Unit 1 safety injection system accumulator vent path 'B'

Section 71111.19: Post Maintenance Testing

Procedures

NMP-MA-014-001, Post Maintenance Testing Guidance, Ver. 5.1

Completed Procedures

14825-2, Quarterly In-service Valve Test (procedure sections 5.1, 5.2, and 5.2.13) for 2-PV-3010, completed 11/29/18

14825-1, Quarterly In-service Test (procedure sections 5.1, 5.2, and 5.3.11.3.2) for MOV 1-HV-5132 and 1-HV-5134 in-service test, completed on 11/9/18

13610, Checklist 2 - Auxiliary Feedwater System Alignment for Standby Readiness ('B' Train), completed on 11/9/18

14640-2, SSPS Slave Relay K-640 Train A Test Auxiliary Feedwater, completed on 11/16/18

Work Orders

SNC457349, 2-PV-3010 ARV A/B solenoid replacement

SNC457967, 2-PV-3010 ARV LOOP channel calibration
SNC792120, 2-PV-3010 ARV 24-month pressure switch calibration
SNC792120, 2-PV-3010 ARV hydraulic oil and filter replacement
SNC777131, 1-HV-5132 clean/inspect/lubricate/stroke
SNC777132, 1-HV-5134 clean/inspect/lubricate/stroke
SNC777147, 1-HV-5132 VOTES static test
SNC777148, 1-HV-5134 VOTES static test
SNC654976, Replacement of the 1E D-26 Relay

Drawings

2X3D-BC-F08C, Rev. 5, Elementary Diagram – Aux Feedwater System – 2HV-5137
1X4DB161-2, Ver. 29.0, Unit 2 P&I Diagram – Auxiliary Feedwater System - System No. 1302
2X4DB161-2, Ver. 26.0, Unit 2 P&I Diagram – Auxiliary Feedwater System - System No. 1302

Other

LCO/TR Number 2-2018-110i, TS 3.7.4 Atmospheric Relief Valves (ARV) 2-PV-3010 Fragment, 11/29/18
Tagout 2-DT-18-1301-00205, Unit 2 ARV 2-PV-3010 tagout
2-OP-18-1302-00095, Operating permit for train A MDAFW pump discharge MOV to S/G #4

Section 71111.22: Surveillance Testing

Procedures

24989-1, Isotopic Channel Calibration of the Containment High Range Area Monitors 1RE0005 and 1RE0006, Ver. 7.1
24624-1, Containment High Range (1RE0005) Area Monitor 1RX-0005 Channel Calibration, Ver. 32.2

Condition Reports

10125920, 1RE006 found out of tolerance
732365, 1RE006 Top of scale setpoint out of calibration
10536455, 1RE005 found out of tolerance
10536454, 1RE006 found out of tolerance

Completed Calibration Surveillance Work Orders

1RE0005

SNC326487, Isotopic Calibration, October 2012
SNC615497, Isotopic Calibration, September 2018

1RE0006

SNC326801, Isotopic Calibration, October 2012
SNC443791, Instrument Loop Calibration, November 2013
SNC394410, Isotopic Calibration, March 2014
SNC394411, Isotopic Calibration, September 2015
SNC619411, Isotopic Calibration, September 2018

2RE0005

SNC523595, Isotopic Calibration, September 2017

2RE0006

SNC358384, Instrument Loop Calibration, January 2013
SNC503031, Instrument Loop Calibration, July 2014
SNC625211, Instrument Loop Calibration, December 2015

SNC798511, Instrument Loop Calibration, July 2017
SNC358731, Isotopic Calibration, March 2013
SNC395481, Isotopic Calibration, September 2014
SNC395482, Isotopic Calibration, March 2016
SNC523596, Isotopic Calibration, September 2017

Section 71124.01: Radiological Hazard Assessment and Exposure Controls

Procedures, Guidance Documents, and Manuals

43014-C, Special Radiological Controls, Version 58
NMP-HP-001, Radiation Protection Standard Practices, Version 6.2
NMP-HP-300, Radiation and Contamination Surveys, Version 5.2
NMP-HP-302, Restricted Area Classification, Postings, and Access Control, Version 10.4
NMP-HP-302-001, Radiological Key Control, Version 3.2
NMP-HP-302-002, Radioactive Material Labeling Instruction, Version 1.1
NMP-HP-302-004, Control of Discrete Radioactive Particles, Version 1.1
NMP-HP-303, Personnel Decontamination, Version 4.0
NMP-HP-304, Decontamination of Areas, Tools, and Equipment, Version 2.2
NMP-HP-305, Alpha Radiation Monitoring, Version 5.8
NMP-HP-403, Control and Monitoring of Materials in Radiation Controlled Areas, Version 3.5
NMP-HP-404, Release of Materials from the RCA and Protected Areas, Version 4.2
NMP-HP-701, Daily Instrumentation Source Checks, Version 2.2

Records and Data

Air Sample Analysis Results:

Air sample # 18-0358, U-1 Containment Initial Entry, 09/16/2018
Air sample # 18-0362, U-1 X-fer Canal, Blind Flange, 09/16/2018
Air sample # 18-0370, U-1 Pressurizer, Remove Code Safety, 09/17/2018
Air sample # 18-0374, U-1 220' Upper Cavity N, 09/18/2018
Air sample # 18-0375, U-1 220' Upper Cavity N, 09/18/2018
Electronic Dosimeter Dose / Dose Rate Alarm Logs, 08/30/2017 - 08/30/2018
National Source Tracking System Annual Inventory Reconciliation Report, Vogtle, 01/17/2018
NMP-HP-400 Form 4, Radioactive Source Inventory, Surveillance Activity Number SNC
873156, January 2018; Surveillance Activity Number SNC929122 and SNC929123, July
2018
Part 61 Dry Active Waste Radionuclide Characterization Results; Scaling Factor Determination,
2017 DAW, 06/27/2018
Plant Vogtle Alpha Levels [YORI Report], Results from 09/20/2013 thru 09/20/2018
Radiation Work Permits (RWP):
RWP# 18-0100, U1/U2 AB, FHB, CB, TB & OUTSIDE AREAS [Medium Risk], Rev. 0
RWP# 18-0201, MEDIUM RISK DRY CASK STORAGE ACTIVITIES INVOLVING WORK IN
HIGH RADIATION AREAS, Rev. 0
RWP# 18-1303, MEDIUM RISK RADIOLOGICAL WORK ACTIVITIES ASSOCIATED WITH
STEAM GENERATORS 1, 2, 3, & 4, Rev. 0
RWP# 18-1302, HIGH RISK RADIOLOGICAL EDDY CURRENT TESTING ON S/G's # 1, 2, 3,
4, Rev. 0
Plant Vogtle Radiological Information: Survey# 213109, RHR Pump Room Train B, 03/07/2018;
Survey # 215312, RHR Pump Room Train B, 06/07/2018; Survey # 215180, ISFSI Pad,
06/02/2018; Survey # 216118, ISFSI Pad, 07/04/2018; Survey # 216232, U2 Pipe
Penetration Room, 07/10/2018; Survey # 216949, U2 Pipe Penetration Room, 08/06/2018;
Survey # 216700, U1 Pipe Penetration Room, 07/26/2018; Survey # 217447, U1 Pipe
Penetration Room, 08/23/2018; Survey # 218226, U1 Lower Rx Cavity, 09/16/2018;
Plant Vogtle Radiological Information: (Multiple elevations) Unit 1 Containment for Initial Entry

After Shutdown; Survey # 218218, Survey # 218219, Survey # 218220, Survey # 218224, Survey # 218227, Survey # 218228, Survey # 218231, Survey # 218232, Survey # 218255, 09/16/2018

SNC Prospective Determination for Occupational Exposure, Revision 1.0, 09/28/2018

Unit 1 Spent Fuel Pool Inventory Log, Non-Fuel Radioactive Material Stored in Spent Fuel Pool, 09/10/2018

Unit 2 Spent Fuel Pool Inventory Log, Non-Fuel Radioactive Material Stored in Spent Fuel Pool, 09/10/2018

CAP Documents

CR Numbers: 10410168, 10411111, 10411112, 10453747, 10467309, 10469938, 10470301, 10485247, 10485539, 10512840, 10515116, 10514817, 10517607, 10518347, and 10528643

CAR Numbers: 272980, and CAR 273015

Section 71124.02: Occupational As Low As Reasonably Achievable (ALARA) Planning and Control

Procedures, Guidance Documents, and Manuals

NMP-HP-204-001, ALARA Planning, Version 1.0

43031-C, Steam Generator Job Coverage, Version 5.4

NMP-HP-204, ALARA Planning and Job Review, Version 6.2

NMP-AD-041, Cobalt Reduction Program, Version 2.0

NMP-AD-035, ALARA Program, Version 1.9

Records and Data

Vogtle Electric Generating Plant 2017 ALARA Report, 04/30/17

Plant ALARA Review Committee Meeting Minutes, 09/28/2018

Special Outage Plant Review Committee for 1R21 Overall Dose, 09/22/2018

ALARA Plan, 1R21 S/G Manway Removal, Inspection, and Re-Installation

ALARA Plan, 1R21 Eddy Current Testing and All Associated Work

ALARA Plan, 1R21 Installation and removal of scaffolding

2R18 Refueling Outage Report, 06/30/2016

CAP Documents

CR Numbers: 10346530, 10373816 and 10411111

Section 71124.03: In-Plant Airborne Radioactivity Control and Mitigation

Procedures, Guidance Documents, and Manuals

43635-C, Operation and Calibration of the AMS-4 Continuous Air Monitor, Version 18.2

43639-C, Operation and Calibration of the F&J Econoair Plus L15P Air Sampler, Version 2.0

47006-C, Control, Issuance and Return of Respiratory Protection Equipment

47008-C, Operation and Use of the Self-Contained Breathing Apparatus Charging System, Version 14.1

47024-C, Operation of the NFS/RPF Respirator Washer and Dryer, Version 6.4

NMP-HP-301, Airborne Radioactivity Sampling and Evaluation, Version 4.1

NMP-HP-513, Operation and Use of the Delta Air Supplied Suit, Version 3.1

NMP-HP-501, Radiological Respiratory Protection Program, Version 1.1

NMP-HP-501-001, Instruction for Selection and Use of Respiratory Protection Equipment for Radiological Protection, Version 1.4

NMP-HP-501-002, Control, Issuance, and Return of Radiological Respiratory Protection Equipment, Version 2.1

NMP-HP-501-003, Inspection, Repair, and Storage of Non-SCBA Respiratory Protection

Equipment, Version 1.1
NMP-HP-504, Quantitative Fit Testing of Individuals for Respirator Use, Version 2.4
Training Lesson Plan GE-LP-09901, SCBA (Self Contained Breathing Apparatus) Training, Rev.
02, 05/07/03

Records and Data

Breathing Air Analysis Results:

FTB Hypress Compressor: 08/04/16, 11/10/16, 02/02/17, 05/04/17, 08/02/17, 11/06/17,
02/01/18 and 05/08/18
Scott Revolve 5016 Compressor: 08/04/16, 11/10/16, 02/02/17, 05/04/17, 08/03/17,
11/02/17, 01/29/18, 05/03/18 and 08/03/18
Unit 1 Containment: 09/20/18
Unit 1 Service Air Compressor 1&3: 02/02/17 and 01/29/18
Unit 1 Service Air Compressor 1&4: 08/03/17
Unit 1 Service Air Compressor 3&4: 8/03/18
Unit 2 Service Air Compressor #3: 11/10/16, 05/04/17 and 05/03/18
Unit 2 Service Air Compressor 3&4: 11/02/18
SCBA Test Results:
SCBA No. HP-0058, 08/18/17 and 08/17/18
SCBA No. HP-0061, 12/21/16 and 12/19/17
SCBA No. HP-0086, 11/17/16 and 11/17/17
Surveillance A-1563-N7-001/002, Technical Support Center HVAC System Test, 4/30/2012,
01/27/2014, 3/16/16 and 6/20/17

CAP Documents

CR Numbers: 10296010, 10449499 and 10471500

Section 71124.04: Occupational Dose Assessment

Procedures, Guidance Documents, and Manuals

NMP-HP-101, In-Vivo Bioassay and Internal Dose Assessment, Version 3.1
NMP-HP-12, In-Vitro Bioassay, Version 1.2
NMP-HP-103, Skin Dose Assessment, Version 1.2
NMP-HP-104, Use and Calibration of Whole Body Counters, Version 3.2
NMP-HP-104-002, Performance of Daily QC Checks, Daily Background Checks, and
Environmental Background Checks, Version 1.0
NMP-HP-104-003, Performing Whole Body Counts, Version 1.2
NMP-HP-104-004, Reanalysis of Whole Body Count Results, Version 1.1
NMP-HP-104-005, Performance of Energy and Efficiency Calibrations of the Whole Body Count,
Version 1.0
NMP-HP-104-006, Whole Body Counter Quality Controls, Version 1.0
NMP-HP-104-008, Resolving Unidentified Peaks and Assignment of Dose, Version 1.0
NMP-HP-107, Individual Radiation Exposure Records and Reports, Version 3.6
NMP-HP-108, Issuance, Use, and Collection of Personnel Dosimetry, Version 2.7
NMP-HP-108-002, Use of EDE (Effective Dose Equivalent) Methodologies, Version 3.1
NMP-HP-201, Personnel Dosimetry Program, Version 2.2
NMP-HP-305, Alpha Radiation Monitoring, Version 5.8

Records and Data

Air Sample Analysis Results:

Air sample # 18-0462, Cut out loop drain line, 09/23/2018
Air sample # 18-0476, Valve Breach, 09/24/18
Air sample # 18-0490, Breach 1HV8811A, 09/24/18

Air sample # 18-0608, Cav Decon, 09/28/18
Air sample # 18-0609, Cav Decon, 09/28/18
EDEX Calculations and Multiple Dosimetry Packages for 1R21 Steam Generator Nozzle Dam Installation and Removal
Part 61 Analysis, Resin Isotope Abundance Report, 08/16/18
Plant Vogtle Radiological Information: Survey# 218836, Loop 3, 09/23/18; Survey# 218907, RHR and CTMT SPR Encapsulated VSL RM, 09/24/18; Survey# 219157, Upper Cavity, 09/28/18
Vogtle OSLD Boundary Reports for 2017 and 1st Half 2018
Vogtle Plant Alpha Characterization Study - 2017 Update
Whole Body Count Results for In-Vivo Analyses Performed 03/12/17, 03/13/17 – 03/23/17, 01/16/18 and 03/09/18

CAP Documents

CR Numbers: 10418829, 10429066, 10446195, 10459763, 10469327, 10470428, 10534570, 10536566

Section 71124.05: Radiation Monitoring Instrumentation

Procedures

NMP-HP-703, RO-2, RO-2A and RO-20 Operation and Calibration, Ver. 2.1
24625-1, Containment High range (1RE-0006) Area Monitor 1RX-0006 Channel Calibration, Ver. 36
24989-1, Isotopic Channel Calibration of the Containment High Range Area Monitors 1 RE-0005 and 1RE-0006, Ver. 7.1

Data

AMS-4 Calibration Report, Serial No. 1356, 3/1/18
ARGOS 5AB/5PAB Calibration Certificate, Serial No. VEGP-HP-1489, 11/7/17
Calibration of the Canberra "Fastscan-1" WBC System, 6/12/18
Calibration of the SAM Small Article Monitor, VEGP No. 1152, 5/16/18
Calibration Sheet, RO-2 No. VEGP-HP-0004, 9/12/18
Gamma Detector No. 1, QA Trend Charts, 8/30/18 – 10/4/18
GEM-5 Calibration Data Sheet, Serial No. VEGP-HP-1488, 11/1/17
Model No. 878-10 Calibrator, VEGP Source No. 0159, Certificate of Calibration, 3/12/86
Telepole Gamma Calibration, Instrument No. I608, 7/30/18
Work Order SNC722680, 1RE0006 Channel Calibration, 10/31/16
Work Order SNC860293, 1RE0006 Channel Calibration, 7/8/18
Work Order SNC494298, 1RE0006 Isotopic Calibration, 3/16/17
Work Order SNC619411, 1RE0006 Isotopic Calibration, 9/18/18

CAP Documents

CR 10536456

Section 71151: Performance Indicator (PI) Verification

Procedures, Guidance Documents, and Manuals

00163-C, NRC Performance Indicator & Monthly Operating Report Preparation & Submittal, Rev. 14.6
NMP-GM-002, Corrective Action Program, Version 15.0
NMP-AD-029, Preparation and Reporting of Regulatory Assessment Performance Indicator Data and the Monthly Operating Report, Version 1.1

Data

Monthly Performance Indicator Documentation for Occupational Exposure Control

Effectiveness, November 2017 to July 2018

Electronic Dosimeter Dose / Dose Rate Alarm Logs, 08/30/2017 - 08/30/2018

Worker's Statement for Dose Alarm, Unanticipated dose Rate Alarm, or Malfunctioning

Electronic Dosimeter; EXPID #: 73961; EXPID #: 73911; EXPID #: 50174; and EXPID #: 75719, 08/21/2018

Plant Vogtle Radiological Information Survey# 213675, 03/29/2018

Plant Vogtle Radiological Information Survey# 213662, 03/29/2018

Plant Vogtle Radiological Information Survey# 213657, 03/29/2018

CAP Documents

CR Numbers: 10446859, 10526104, 10527690, and 10531098

Section 71152: Problem Identification and Resolution

Corrective Action Reports

274394

268449

10548131

10334052

10448261

Other

PO# SNG10177293, Marley 36 Reducer Failure Analysis, 9/20/18NMP-EP-141-003, Vogtle Unit 1 and Unit 2 Emergency Action Levels and Basis, Ver. 3.0

60855.1: Operation of an Independent Spent Fuel Storage Installation

Procedures

11882-1, Outside Area Rounds Sheets, Ver. 98.2