**UNITED STATES**
**NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

May 3, 2016

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

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT - NRC INTEGRATED INSPECTION REPORT 05000424/2016001 AND 05000425/2016001

Dear Mr. Taber:

On March 31, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Vogtle Electric Generating Plant, Units 1 and 2. On April 25, 2016, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

The inspections examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. No findings were identified.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

***/RA/***

Shane Sandal, Chief
Reactor Projects Branch 2
Division of Reactor Projects

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

Enclosures: IR 05000424/2016001; 05000425/2016001
w/Attachment: Supplemental Information

cc: Distribution via ListServ

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| NAME | Wesley Deschaine | Alejandro Alen | Robert Williams | Joel Rivera-Ortiz | Carmen Dykes | |
| DATE | 4/25/2016 | 4/21/2016 | 4/25/2016 | 4/21/2016 | 4/28/2016 | 5/ /2016 |
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Letter to B. Keith Taber from Shane Sandal dated May 3, 2016

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT - NRC INTEGRATED INSPECTION REPORT 05000424/2016001 AND 05000425/2016001

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**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

| | |
|---|---|
| Docket Nos.: | 50-424, 50-425 |
| License Nos.: | NPF-68, NPF-81 |
| Report Nos.: | 05000424/2016001 and 05000425/2016001 |
| Licensee: | Southern Nuclear Operating Company, Inc. (SNC) |
| Facility: | Vogtle Electric Generating Plant, Units 1 and 2 |
| Location: | Waynesboro, GA 30830 |
| Dates: | January 1, 2016 through March 31, 2016 |
| Inspectors: | W. Deschaine, Senior Resident Inspector<br>A. Alen, Resident Inspector<br>J. Rivera-Ortiz, Senior Reactor Inspector (1R08)<br>R. Williams, Senior Reactor Inspector (1R08)<br>C. Dykes, Health Physicist (2RS3, 2RS4)<br>R. Kellner, Senior Health Physicist (2RS1)<br>J. Panfel, Health Physicist (2RS2, 4OA1) |
| Approved by: | Shane Sandal, Chief<br>Reactor Projects Branch 2<br>Division of Reactor Projects |

Enclosure

## SUMMARY OF FINDINGS

IR 05000424/2016001; and 05000425/2016001; January 1, 2016, through March 31, 2016; Vogtle Electric Generating Plant, Units 1 and 2; Quarterly Integrated Inspection Report

The report covered a 3-month period of inspection by resident inspectors and regional inspectors. The NRC's program for overseeing the safe operations of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

## REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near full rated thermal power for the entire inspection period.

Unit 2 began the report period at full rated thermal power. The unit was shut down for planned refueling outage cycle 18 (2R18) on March 6, 2016. The unit was restarted on March 27, 2016, and attained full power on March 31, 2016.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

Impending Adverse Weather Conditions: The inspectors reviewed the licensee's preparations to protect risk-significant systems from predicted severe weather conditions of sub-freezing temperatures expected on the week of January 18, 2016. The inspectors evaluated the licensee's implementation of adverse weather preparation procedures and compensatory measures, including operator staffing, before the onset of and during the adverse weather conditions. The inspectors reviewed the licensee's plans to address the ramifications of potentially lasting effects that may result from the sub-freezing temperatures. The inspectors verified that operator actions specified in the licensee's adverse weather procedure maintain readiness of essential systems. The inspectors verified that required surveillances were current, or were scheduled and completed, if practical, before the onset of anticipated adverse weather conditions. The inspectors also verified that the licensee implemented periodic equipment walkdowns or other measures to ensure that the condition of plant equipment met operability requirements.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

Partial Walkdown: The inspectors verified that critical portions of the following systems were correctly aligned by performing partial walkdowns. The inspectors determined the correct system lineup by reviewing plant procedures and drawings listed in the Attachment.

- Unit 2, centrifugal charging pump 'B' train while the 'A' train was out of service (OOS) for planned maintenance.
- Unit 2, safety injection 'B' train while the 'A' train was OOS for planned maintenance.

- Unit 1, 1E 4160-volt electrical power bus alignment to the standby auxiliary transformer due to the qualified offsite circuit no. 2 being OOS for planned maintenance

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05AQ)

a. Inspection Scope

Quarterly Inspection: The inspectors evaluated the adequacy of fire plans by comparing the fire plans to the defined hazards and defense-in-depth features specified in the fire protection program for the following five fire areas.

- Unit 1, component cooling water heat exchanger rooms, fire zones 54, 55, 148, 23, 172 and 147
- Unit 1, component cooling water pump rooms, fire zones 36 and 37
- Unit 2, cable spreading rooms, fire zones 94, 95, 173, 174, 107, 108, 120, and 121
- Unit 2, containment building, fire zones 140A, 140B, 140C, and 140E
- Unit 2, north and south main steam valve house, fire zones 99, 45 and 104

The inspectors assessed each fire area for the following attributes:

- control of transient combustibles and ignition sources
- fire detection systems
- water-based fire suppression systems
- gaseous fire suppression systems
- manual firefighting equipment and capability
- passive fire protection features
- compensatory measures and fire watches
- issues related to fire protection contained in the licensee's corrective action program
- material condition and operational status of fire protection equipment

Fire Drill Observation: The inspectors observed the licensee's fire brigade performance for fire drill no. 2016-Q1-03, fire in the Unit 1 train 'A' diesel generator building, on February 10, 2016. The inspectors assessed the fire brigade's capability to meet fire protection licensing basis requirements and assessed the following performance attributes:

- capability of fire brigade members
- leadership ability of the brigade leader
- proper use of turnout gear and fire-fighting equipment
- team effectiveness
- compliance with site procedures

The inspectors also assessed the ability of control room operators to combat potential fires including identifying the location of the fire, dispatching the fire brigade, and sounding alarms. The inspectors evaluated the licensee's ability to declare the appropriate emergency action level and make required notifications in accordance with NUREG 0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants (FEMA-REP-1)" and 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

Annual Review: The inspectors verified the readiness and availability of the Unit 2 'A' train of component cooling water heat exchanger and 'A' train emergency diesel generator jacket water heat exchanger to perform their design functions by verifying the licensee followed periodic maintenance methods outlined in the plant's specific commitments to Generic Letter 89-13, reviewing performance test results, and observing inspection and state of cleanliness of the heat exchangers. Additionally, the inspectors verified that the licensee had entered any significant heat exchanger performance problems into the corrective action program and that the licensee's corrective actions were appropriate.

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08)

a. Inspection Scope

Non-Destructive Examination Activities and Welding Activities: The inspectors conducted an onsite review of the implementation of the licensee's in-service inspection (ISI) program for monitoring degradation of the reactor coolant system boundary, risk-significant piping and component boundaries, and containment boundaries in Unit 2. The inspectors either directly observed and/or reviewed documentation for the following non-destructive examinations (NDEs) mandated by the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code of Record: 2001 Edition with 2003 Addenda) or Vogtle's Risk-Informed ISI Program to evaluate compliance with the applicable ASME Code requirements, and verify that indications or defects were dispositioned in accordance with the ASME Code, or an NRC-approved alternative requirement. The inspectors also reviewed the qualifications of the NDE technicians performing the examinations, to determine whether they were current and in compliance with the ASME Code requirements.

- Ultrasonic Examination (UT) of Weld 21208-012-4-RB, Reactor Coolant System, ASME Class 1, Risk-Informed ISI Program (directly observed)
- UT of Weld 21208-012-5-RB, Reactor Coolant System, ASME Class 1, Risk-Informed ISI Program (directly observed)
- UT of Weld 21201-031-7-RB, Reactor Coolant System, ASME Class 1, Risk-Informed ISI Program (document review)
- UT of Weld 21305-062-11-RB, Condensate and Feedwater System, ASME Class 2, Augmented/Technical Specification Exam (document review)
- UT of Weld 21201-058-WOL-1, Pressurizer Weld Overlay, ASME Class 1 (document review)
- Liquid Penetrant Examination of Component 21204-006-56, ASME Class 2 Support (document review)

The inspectors reviewed final records for the welding activities listed below to evaluate compliance with procedures and the ASME Code, Section XI and Section IX requirements. Specifically, the inspectors reviewed the work order (WO), repair and replacement plan, weld data sheets, welding procedures, procedure qualification records, welder performance qualification records, and NDE reports.

- Weld Traveler 11085, Replace 2-inch Piping, Component 2K3-1205-006-01, Residual Heat Removal System, ASME Class 2
- Weld Traveler 14104, Removal and Reinstallation of Elbow to Support Mechanical Stress Improvement Process, Component 2-1201-055-1, Reactor Coolant System, ASME Class 1

During non-destructive surface and volumetric examinations performed since the previous refueling outage, the licensee did not identify any relevant indications that were analytically evaluated and accepted for continued service; therefore, no NRC review was completed for this inspection procedure attribute.

Pressurized Water Reactor Vessel Upper Head Penetration Inspection Activities: The inspectors reviewed the licensee's calculation for Effective Degradation Years and Reinspection Years to verify that for the Unit 2 vessel head, a bare metal visual examination and a volumetric examination were not required during this outage, in accordance with the requirements of ASME Code Case N-729-1 and 10 CFR 50.55a(g)(6)(ii)(D). The licensee did not identify any relevant indications that were accepted for continued service. Additionally, the licensee did not perform any welding repairs to the vessel head penetrations since the beginning of the last Unit 2 refueling outage; therefore, no NRC review was completed for these inspection procedure attributes.

Boric Acid Corrosion Control Inspection Activities: The inspectors reviewed the licensee's boric acid corrosion control program (BACCP) activities to determine if the activities were implemented in accordance with the commitments made in response to NRC Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants," and applicable industry guidance documents. Specifically, the inspectors performed an onsite records review of procedures, and the

results of the licensee's containment walkdown inspections performed during the current refueling outage. The inspectors also interviewed the BACCP owner and conducted an independent walkdown of the reactor building containment areas listed below to evaluate compliance with licensee's BACCP requirements and verified that degraded or non-conforming conditions, such as boric acid leaks, were properly identified and corrected in accordance with the licensee's BACCP and the corrective action program.

- Top of Pressurizer (Elevation 252')
- Area Inside Bioshield, Loop 3, Reactor Coolant Pump Seal no. 3 Platform (Elevation 171')
- Area Inside Bioshield, Loop 3, Steam Generator no. 3 Secondary Side Platform, (Elevation 171')
- General Area Outside the Bioshield: C Level (Elevation 171'), B Level (Elevation 185'), Lower A Level (Elevation 195'), and Upper A Level (Elevation 210')

The inspectors reviewed the following engineering evaluations, completed for evidence of boric acid leakage, to determine if the licensee properly applied applicable corrosion rates to the affected components; and properly assessed the effects of corrosion induced wastage on structural or pressure boundary integrity in accordance with the licensee procedures.

- 1204-2008-015, Safety Injection System, Component 21204-241-3" Flange
- 1208-2008-021, Chemical and Volume Control System, Component 21208-F4005
- 1206-2015-001, Containment Spray System, Component 21206-U4110

The inspectors reviewed the following condition reports (CRs) and associated corrective actions related to evidence of boric acid leakage, to evaluate if the corrective actions completed were consistent with the requirements of the ASME Code and 10 CFR Part 50, Appendix B, Criterion XVI.

- CR 10018851 (WO SNC633093), Component 1206 21206U4110, Containment Spray Pump B Casing Vent
- CR 10192741 (WO SNC10192741) , Component 1205 2HV8701B, Residual Heat Removal Pump A Upstream Suction
- CR 864653 (WO SNC604980), Component 1208 21208X4036, Chemical and Volume Control System Charging Pump A Discharge FE-0138

Steam Generator Tube Inspection Activities: The inspectors reviewed the eddy current (EC) examination activities performed in Unit 2 steam generators (SGs) 1, 2, 3, and 4 during this current refueling outage to verify compliance with the licensee's Technical Specifications, ASME BPVC Section XI, and Nuclear Energy Institute 97-06, "Steam Generator Program Guidelines."

The inspectors reviewed the scope of the EC examinations, and the implementation of scope expansion criteria, to verify these were consistent with the Electric Power Research Institute (EPRI) Pressurized Water Reactor Steam Generator Examination Guidelines, Revision 7. The inspectors reviewed documentation for a sample of EC data

analysts, probes, and testers to verify that personnel and equipment were qualified to detect the applicable degradation mechanisms in accordance with the EPRI Examination Guidelines. This review included a sample of site-specific Examination Technique Specification Sheets (ETSSs) to verify that their qualification and site-specific implementation were consistent with Appendix H or I of the EPRI Examination Guidelines. The inspectors also reviewed a sample of EC data for steam SG tubes 1-R12C94, 1-R12C117, 2-R35C61, 2-R21C61, 4-R57C48, and 4-R52C33 with a qualified data analyst, to confirm that data analysis and equipment configuration were performed in accordance with the applicable ETSSs and site-specific analysis guidelines. The inspectors verified that recordable indications were detected and sized in accordance with vendor procedures.

The inspectors selected a sample of degradation mechanisms from the Unit 2 Degradation Assessment report (i.e., anti-vibration bar wear and outside diameter stress corrosion cracking at Hot Leg Extensions), and verified that their respective in-situ pressure testing criteria were determined in accordance with the EPRI Steam Generator Integrity Assessment Guidelines, Revision 3. Additionally, the inspectors reviewed EC indication reports to determine whether tubes with relevant indications were appropriately screened for in-situ pressure testing. The inspectors also compared the latest EC examination results with the last Condition Monitoring and Operational Assessment report for Unit 2, to assess the licensee's prediction capability for maximum tube degradation and number of tubes with indications. The inspectors verified that the licensee's evaluation was conservative and that current examination results were bounded by the Operational Assessment projections.

The inspectors assessed the latest EC examination results to verify that new degradation mechanisms, if any, were identified and evaluated before plant startup. The review of EC examination results included the disposition of potential loose part indications on the SG secondary side, to verify that corrective actions for evaluating and retrieving loose parts were consistent with the EPRI Guidelines. The inspectors also reviewed a sample of primary-to-secondary leakage data for Unit 2, to confirm that operational leakage in each SG remained below the detection or action level threshold during the previous operating cycle.

The inspectors' review included the implementation of tube repair criteria and repair methods, to verify they were consistent with plant Technical Specifications and industry guidelines. The inspectors were informed that no tubes were plugged based on the EC examination results. The inspectors interviewed plant personnel and reviewed final EC examination results to verify that none of the tubes left in-service met the tube repair criteria. Furthermore, the inspectors interviewed licensee staff and reviewed a sample of inspection results for the inspection conducted in the secondary side internals of SGs 1, 2, 3, and 4 to verify that potential areas of degradation based on site-specific operating experience were inspected, and appropriate corrective actions were taken to address degradation indications. This review included the results of Foreign Object Search and Retrieval activities in all SGs.

Identification and Resolution of Problems: The inspectors reviewed a sample of ISI-related issues entered into the corrective action program as CRs to determine if the

licensee had appropriately described the scope of the problem, and had initiated corrective actions. The review also included the licensee's consideration and assessment of operating experience events applicable to the plant. The inspectors performed this review to ensure compliance with 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" requirements.

b. Findings

No findings were identified.

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

a. Inspection Scope

Resident Inspector Quarterly Review of Licensed Operator Requalification: The inspectors observed one evaluated simulator scenario, V-RQ-SE-16102, and one training simulator scenario, V-RQ-SE-14302, administered to a licensed operating crew, on February 10, 2016, in accordance with the licensee's accredited requalification training program. The inspectors assessed the following attributes:

- licensed operator performance
- the ability of the licensee to administer the scenario and evaluate the operators
- the quality of the post-scenario critique
- simulator performance

Resident Inspector Quarterly Review of Licensed Operator Performance: The inspectors observed licensed operator performance in the main control room during the Unit 2 reactor shutdown at the beginning of the cycle 18 refueling outage. The inspectors assessed the following attributes:

- use of plant procedures
- control board manipulations
- communications between crew members
- use and interpretation of instruments, indications, and alarms
- use of human error prevention techniques
- documentation of activities
- management and supervision

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors assessed the licensee's treatment of the issue listed below to verify the licensee appropriately addressed equipment problems within the scope of the maintenance rule (10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants"). The inspectors reviewed procedures and records to evaluate the licensee's identification, assessment, and characterization of the problems as well as their corrective actions for returning the equipment to a satisfactory condition.

- Unit 1, auxiliary feedwater system, updated 10 CFR 50.65 (a)(1) plan

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed the four maintenance activities listed below to verify that the licensee assessed and managed plant risk as required by 10 CFR 50.65(a)(4) and licensee procedures. The inspectors assessed the adequacy of the licensee's risk assessments and implementation of risk management actions. The inspectors also verified that the licensee was identifying and resolving problems with assessing and managing maintenance-related risk using the corrective action program. Additionally, for maintenance resulting from unforeseen situations, the inspectors assessed the effectiveness of the licensee's planning and control of emergent work activities.

- Unit 2, week of January 25, 2016, projected 'YELLOW' equipment out of service (EOOS) risk profile due to scheduled maintenance on the "B" train of the auxiliary Feedwater system.
- Unit 2, week of February 1, 2016, projected 'YELLOW' EOOS risk profile due to scheduled maintenance on the "B" train emergency diesel generator.
- Unit 2, February 22, 2016, 'YELLOW' EOOS risk profile due to scheduled surveillance testing on the 'B' train control room isolation automatic actuation logic.
- Unit 2, March 8-9, 2016, 'YELLOW' Outage Risk Assessment Monitor (ORAM) risk condition due to core cooling and reactor coolant system inventory control.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

Operability Determinations and Functionality Assessments Review: The inspectors selected the four operability determinations or functionality evaluations listed below for review based on the risk-significance of the associated components and systems. The inspectors reviewed the technical adequacy of the determinations to ensure that technical specification operability was properly justified and the components or systems remained capable of performing their design functions. To verify whether components or systems were operable, the inspectors compared the operability and design criteria in the appropriate sections of the Technical Specification and updated final safety analysis report to the licensee's evaluations. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with operability evaluations.

- Unit 1, solid state protection system 'A' train logic test failure on reactor coolant pump under-frequency during operability test, condition report (CR) 10192480
- Unit 2, immediate determination of operability (IDO) for nuclear service water system pump no. 3 with respect to a 10 CFR Part 21 issue on radiation dose qualification of the motor (Ref. ML16012A502), CR10173354
- Unit 2, IDO for 'B' train centrifugal charging pump outboard pump seal is leakage, CR 10008234
- Units 1 and 2, prompt operability determination (PDO) to defend minimum required amount of trisodium phosphate for containment sump pH control due to a calculation error, PDO No. 1-16-001, CR10176879

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed licensing document change request (LDCR), i.e. Plant modification, No. 2016007, "1E Battery Service Test Interval," Version 1.0. The inspectors assessed the following:

- Verified that the modification did not affect the safety functions of important safety systems.
- Confirmed the modification did not degrade the design bases, licensing bases, and performance capability of risk significant structures, systems and components.

- Verified modification performed during plant configurations involving increased risk did not place the plant in an unsafe condition.
- Evaluated whether system operability and availability, configuration control, post-installation test activities, and changes to documents, such as drawings, procedures, and operator training materials, complied with licensee standards and NRC requirements.
- Reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with modifications.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors either observed post-maintenance testing or reviewed the test results for the eight maintenance activities listed below to verify the work performed was completed correctly and the test activities were adequate to verify system operability and functional capability.

- SNC536447, Unit 2 'A' train nuclear service cooling water system spray header bypass valve control temperature element, TE-1668, 36 month calibration, 3/11/16
- SNC687627, Unit 2 'B' train emergency diesel generator (EDG) operability test following corrective maintenance on the lube oil heat exchanger, 2/3/16
- SNC756038, Unit 1 containment pressure channel IV, 1P-934, replacement of failed loop power supply (NLP) card, 1/27/16
- SNC771837, Unit 1 'B' train EDG fuel oil storage tank transfer pump no. 4 functionally test of the 'lo-lo' level switch, 1-LSLL-9021, 3/21/16
- SNC676145, Unit 1, replacement of solenoid valve 1FY0111A for the chemical and volume control system reactor makeup water storage tank to boric acid blender flow control, 3/22/16
- SNC123830, Unit 1 'B' train EDG preventive maintenance to remove, inspect and reinstall cylinder liners, 3/13/16
- SNC543365, Unit 2 static test of motor operated valve, 2HV5125-MO, turbine-driven auxiliary feedwater discharge to no. 2 steam generator, 3/3/16
- SNC380674, Unit 2 mechanical and electrical inspections of motor operated valve, 2HV8716A-MO, residual heat removal hot leg isolation, 3/11/16

The inspectors evaluated these activities for the following attributes:

- Acceptance criteria were clear and demonstrated operational readiness.
- Effects of testing on the plant were adequately addressed.
- Test instrumentation was appropriate.

- Tests were performed in accordance with approved procedures.
- Equipment was returned to its operational status following testing.
- Test documentation was properly evaluated.

Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with post-maintenance testing.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

For the Unit 2 refueling outage of March 6 through March 27, 2016, the inspectors evaluated the following outage activities:

- outage planning
- fatigue management
- shutdown, cooldown, refueling, heatup, and startup
- reactor coolant system instrumentation and electrical power configuration
- reactivity and inventory control
- decay heat removal and spent fuel pool cooling system operation
- containment closure

The inspectors verified that the licensee:

- considered risk in developing the outage schedule
- controlled plant configuration in accordance with administrative risk reduction methodologies
- developed work schedules to manage fatigue
- developed mitigation strategies for loss of key safety functions
- adhered to operating license and technical specification requirements

Inspectors verified that safety-related and risk-significant structures, systems, and components not accessible during power operations were maintained in an operable condition. The inspectors also reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with outage activities.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the four surveillance tests listed below. The surveillance test was either observed directly or test results were reviewed to verify testing activities and results provide objective evidence that the affected equipment remain capable of performing their intended safety functions and maintain their operational readiness consistent with the facility's current licensing basis. The inspectors evaluated the test activities to assess for:

- preconditioning of equipment
- appropriate acceptance criteria
- calibration and appropriateness of measuring and test equipment
- procedure adherence
- equipment alignment following completion of the surveillance

Additionally, the inspectors reviewed a sample of significant surveillance testing problems documented in the licensee's corrective action program to verify the licensee was identifying and correcting any testing problems associated with surveillance testing.

Routine Surveillance Tests

- 14666-2, Train A Diesel Generator and ESFAS Test, Version 37.1
- 14712C-2, Turbine-Driven Auxiliary Feedwater Remote Shutdown Panel Transfer Switch and Control Circuit 18 Month Surveillance Test, Revision 2.2

Containment Isolation Valve

- 14362-2, Containment Penetration No. 62 - PRT Sample Local Leak Rate Test, Version 9

In-Service Tests (IST)

- 28210-C, Main Steamline Code Safety Valve Setpoint Verification, Version 23.1

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed the emergency preparedness drill conducted on February 17, 2016. The inspectors observed licensee activities in the simulator and technical support center to evaluate implementation of the emergency plan, including event classification, notification, dose assessment, and protective action recommendations. The inspectors

evaluated the licensee's performance against criteria established in the licensee's procedures. Additionally, the inspectors attended the post-exercise critique to assess the licensee's effectiveness in identifying emergency preparedness weaknesses and verified the identified weaknesses were entered in the corrective action program.

b. Findings

No findings were identified.

2. RADIATION SAFETY (RS)

2RS1 Radiological Hazard Assessment and Exposure Controls

a. Inspection Scope

Hazard Assessment and Instructions to Workers: During facility tours the inspectors directly observed labeled radioactive material and postings for radiation areas and High Radiation Areas (HRAs) established within the Radiologically Controlled Area (RCA) of Unit 1 (U1) and Unit 2 (U2) Auxiliary Buildings, radioactive waste storage and processing areas, and the Independent Spent Fuel Storage Installation (ISFSI). The inspectors independently measured radiation dose rates or directly observed conduct of licensee radiation surveys for selected RCA areas. The inspectors reviewed and verified survey records for several plant areas including surveys for alpha emitters, airborne radioactivity, and gamma surveys with a range of dose rate gradients. The inspectors reviewed several radiation work permit (RWP) details to assess communication of radiological control requirements and current radiological conditions to workers. The inspectors reviewed selected Electronic Dosimeter (ED) dose and dose rate alarms, to verify workers properly responded to the alarms and that the licensee's review of the events was appropriate. The inspectors observed jobs in radiologically risk-significant areas including HRAs and areas with, or with the potential for airborne activity.

Contamination and Radioactive Material Control: The inspectors observed the release of potentially contaminated items from the RCA and from contaminated areas. The inspectors also reviewed the procedural requirements for, and equipment used to perform, the radiation surveys for release. During plant walk downs, the inspectors evaluated radioactive material storage areas and containers, including satellite RCAs and yard areas, assessing material condition, posting/labeling, and control of materials/areas. In addition, the inspectors reviewed the sealed source inventory and verified labeling, storage conditions, and leak testing of selected sources.

Radiological Hazards Control and Work Coverage: The inspectors evaluated licensee performance in controlling worker access to radiologically significant areas and monitoring jobs in-progress during the week of the onsite inspection. The inspectors also reviewed the procedural guidance for multi and extremity badging. For HRA tasks involving significant dose rate gradients, the inspectors evaluated the use and placement of whole body and extremity dosimetry to monitor worker exposure. The inspectors reviewed RWPs for use in airborne areas, ensuring the prescribed controls were appropriate for the conditions as identified in radiological surveys and air samples.

ED alarm set points and worker stay times were evaluated against area radiation survey results for containment and auxiliary building activities.

Risk Significant High Radiation Areas and Very High Radiation Area Controls: The inspectors evaluated access barrier effectiveness for selected Locked High Radiation Area (LHRA) and Very High Radiation Area (VHRA) locations. Changes to procedural guidance for LHRA and VHRA controls were discussed with Radiation Protection (RP) supervisors. During plant walk downs of the Reactor Building, the inspectors verified the posting/locking of LHRA/VHRA areas. Established radiological controls (including airborne controls) were evaluated for selected tasks including work in auxiliary building HRAs, and radwaste processing and storage. In addition, licensee controls for areas where dose rates could change significantly as a result of plant shutdown and refueling operations were reviewed and discussed.

Radiation Worker Performance and RP Technician Proficiency: The inspectors observed radiation worker performance through direct observation. Jobs observed included maintenance and refueling activities in the containment and auxiliary buildings in high radiation and contaminated areas. The inspectors also observed health physics technicians (HPTs) providing pre-job/RWP briefings, releasing material from the RCA, and providing field coverage of jobs. Occupational workers' adherence to selected RWPs and HPT proficiency in providing job coverage were evaluated through direct observations and interviews with licensee staff. ED alarm set points and worker stay times were evaluated against area radiation survey results for reviewed RWPs.

Problem Identification and Resolution: Condition Reports (CR) associated with radiological hazard assessment and control were reviewed and assessed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure NMP-GM-002, Corrective Action Program, Version 13.2 and NMP-GM-002-001, Corrective Action Program Instructions, Version 34.0. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results.

RP activities were evaluated against the requirements of Updated Final Safety Analysis Report (UFSAR) Section 12; Technical Specifications (TS) Sections 5.4 and 5.7; 10 CFR Parts 19 and 20; and approved licensee procedures. Licensee programs for monitoring materials and personnel released from the RCA were evaluated against 10 CFR Part 20 and IE Circular 81-07, Control of Radioactively Contaminated Material. The inspectors completed the required seven samples specified in IP 71124.01.

b. Findings

No findings were identified.

2RS2 As Low As Reasonably Achievable (ALARA)

a. Inspection Scope

Radiological Work Planning: The inspectors reviewed planned work activities and their collective exposure estimates for the previous Unit 1 Refueling Outage 19 (1R19) and current Unit 2 Refueling Outage 18 (R218). ALARA planning packages were reviewed for the following tasks: Scaffolding Activities, Foreign Object Search and Retrieval, Reactor Head Disassembly, Sludge Lancing and Eddy Current Testing. For the selected tasks, the inspectors reviewed established dose goals and discussed assumptions regarding the bases for the current estimates with responsible ALARA planners. The inspectors evaluated the incorporation of exposure reduction initiatives and operating experience, including historical post-job reviews, into RWP requirements.

Verification of Dose Estimates and Exposure Tracking Systems: The inspectors reviewed the collective exposure three-year rolling average from 2012 - 2014. The inspectors reviewed the historical dose data and contrasted it to the current and projected future dose values. The inspectors reviewed dose reduction activities that were being pursued in the current outage and those that are being contemplated that current plant conditions preclude implementation. Day-to-day collective dose data for the selected tasks were compared with established dose estimates and evaluated against procedural criteria (trigger points) for additional ALARA review. Where applicable, changes to established estimates were discussed with ALARA planners and evaluated against work scope changes or unanticipated elevated dose rates.

Implementation of ALARA and Radiological Work Controls: The inspectors verified that ALARA planning and work controls were effectively integrated into a sample of in-plant work activities. The inspectors observed pre-job briefs and several outage activities in order to evaluate the extent ALARA concepts are involved in radiological work. The radiological results achieved from those outage activities were compared with the intended radiological and dose outcomes.

Radiation Worker Performance Radiation: worker performance was observed and evaluated as part of IP 71124.01 and is documented in section 2RS1. While observing job tasks, the inspectors evaluated the use of remote technologies to reduce dose including teledosimetry and remote visual monitoring. The inspectors also interviewed individuals, as necessary, to assess knowledge and awareness of implemented ALARA work controls.

Problem Identification and Resolution: The inspectors reviewed and discussed selected Corrective Action Program (CAP) documents associated with ALARA program implementation. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with licensee procedure NMP-GM-002, "Corrective Action Program", Ver. 13.2. The inspectors also evaluated the scope and frequency of the licensee's self-assessment program and reviewed recent assessment results.

ALARA program activities were evaluated against the requirements of UFSAR Section 12, TS Section 5.4; 10 CFR Part 20; and approved licensee procedures. The inspectors

completed the required five samples specified in IP 71124.02.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation

a. Inspection Scope

Engineering Controls: The inspectors reviewed the use of temporary and permanent engineering controls to mitigate airborne radioactivity during the 2R18. The inspectors observed the use of portable air filtration units for work in contaminated areas of the RCB and reviewed filtration unit testing certificates. The inspectors evaluated the effectiveness of continuous air monitors and air samplers placed in work area "breathing zones" to provide indication of increasing airborne levels.

Respiratory Protection Equipment: The inspectors reviewed the use of respiratory protection devices to limit the intake of radioactive material. This included review of devices used for routine tasks and devices stored for use in emergency situations. As part of IP 71124.02, the inspectors reviewed ALARA evaluations for the use of respiratory protection devices during work in the steam generator. Selected Self-Contained Breathing Apparatus (SCBA) units and negative pressure respirators (NPR)s staged for routine and emergency use in the Main Control Room (MCR) and other locations were inspected for material condition, SCBA bottle air pressure, number of units, and number of spare masks and air bottles available. The inspectors discussed SCBA repair and maintenance with licensee staff and reviewed maintenance records for selected SCBA units for the past two years. The inspectors evaluated SCBA and NPR compliance with National Institute for Occupational Safety and Health certification requirements. The inspectors also reviewed records of air quality testing for supplied-air devices and SCBA bottles.

The inspectors discussed training for various types of respiratory protection devices with HP staff and interviewed radworkers and control room operators on use of the devices including SCBA bottle change-out and use of corrective lens inserts. Respirator qualification records (including medical qualifications) were reviewed for several MCR operators and emergency responder personnel in the Maintenance and HP departments.

Problem Identification and Resolution: NCRs associated with airborne radioactivity mitigation and respiratory protection were reviewed and assessed. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedures NMP-GM-002 & NMP-GM-002-001, "Corrective Action Program" & "Corrective Action Program Instructions." The inspectors also reviewed recent self-assessment results.

Licensee activities associated with the use of engineering controls and respiratory protection equipment were reviewed against FSAR Section 12; T.S. Section 5.4; 10 CFR

Part 20; RG 8.15, “Acceptable Programs for Respiratory Protection”; and applicable licensee procedures. The inspectors completed the required four samples specified in IP 71124.03.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment

a. Inspection Scope

External Dosimetry: The inspectors reviewed the licensee’s National Voluntary Accreditation Program (NVLAP) certification data for accreditation for the current year for Ionizing Radiation Dosimetry and discussed program guidance for storage, processing, and results for active and passive personnel dosimeters currently in use. The inspectors reviewed program procedures for processing EDs and onsite storage of Optically Stimulated Luminescent Dosimeters (OSLD)s. Comparisons between ED and OSLD results, including correction factors, were discussed in detail. Licensee procedures for shallow and deep dose assessments for workers with identified skin contaminations were reviewed and discussed. In addition, inspectors evaluated the use of extremity dosimetry, multi-badging, and re-positioning of whole body dosimetry during R18 activities. The inspectors also reviewed dosimetry occurrence reports regarding alarming dosimeters.

Internal Dosimetry: Program guidance (including Derived Air Concentration (DAC)-hr tracking), instrument detection capabilities, and assessment results for internally deposited radionuclides were reviewed in detail. There were no internal dose assessments for internal exposure greater than 10 millirem committed effective dose equivalent to review. The inspectors reviewed selected routine *in vivo* (Whole Body Count) analyses from April 2014 to February 2016. In addition, capabilities for collection and analysis of special bioassay samples were evaluated and discussed with licensee staff.

Special Dosimetric Situations: The inspectors reviewed records for declared pregnant workers (DPW)s from April 2014 through February 2016 and discussed guidance for monitoring and instructing DPWs. The inspectors evaluated the licensee’s use of multi-badging, extremity dosimetry, and dosimeter relocation within non-uniform dose rate fields and discussed worker monitoring in neutron areas with licensee staff. The inspectors also reviewed the licensee’s use of Effective Dose Equivalent from External Exposure (EDEX) to calculate total effective dose equivalent (TEDE) for individuals performing steam generator work for the past two refueling outages. In addition, the inspectors reviewed shallow dose assessments for selected Personnel Contamination Events (PCEs) occurring between April 2014 and February 2016 were reviewed and discussed.

Problem Identification and Resolution: The inspectors reviewed and discussed selected CAP documents associated with occupational dose assessment. The inspectors

evaluated the licensee's ability to identify and resolve the identified issues in accordance with procedures NMP-GM-002 & NMP-GM-002-001, "Corrective Action Program" & "Corrective Action Program Instructions." The inspectors also discussed the scope of the licensee's internal audit program and reviewed recent assessment results. Occupational dose assessment program activities were evaluated against the requirements of FSAR Section 12; TS Sections 5.4, Procedures; 10 CFR Parts 19 and 20; RG 8.40, Methods for Measuring Effective Dose Equivalent from External Exposure; and approved licensee procedures. The inspectors completed the required five samples specified in IP 71124.04.

b. Findings

No findings were identified.

## 4. OTHER ACTIVITIES

### 4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors reviewed a sample of the performance indicator (PI) data, submitted by the licensee, for the Unit 1 and Unit 2 PIs listed below. The inspectors reviewed plant records compiled between January 2015 and December 2015 to verify the accuracy and completeness of the data reported for the station. The inspectors verified that the PI data complied with guidance contained in Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," and licensee procedures. The inspectors verified the accuracy of reported data that were used to calculate the value of each PI. In addition, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with PI data.

Cornerstone: Initiating Events
- unplanned scrams per 7,000 critical hours
- unplanned power changes per 7,000 critical hours
- unplanned scrams with complications

Occupational Radiation Safety Cornerstone
- Occupational Exposure Control Effectiveness

The inspectors reviewed the PI results from February 2015 through February 2016. The inspectors reviewed ED alarm logs and selected CRs related to controls for exposure significant areas. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data.

Public Radiation Safety Cornerstone
- Radiological Control Effluent Release Occurrences

The inspectors reviewed the PI results from February 2015 through February 2016. The inspectors reviewed cumulative and projected doses to the public contained in liquid and gaseous release permits and CRs related to Radiological Effluent Technical Specifications/ODCM issues.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Routine Review

The inspectors screened items entered into the licensee's corrective action program in order to identify repetitive equipment failures or specific human performance issues for follow-up. The inspectors reviewed condition reports, attended screening meetings, or accessed the licensee's computerized corrective action database.

.2 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors conducted a detailed review of corrective action report (CAR) 262037, Oil Leak on Unit 1 Turbine-Driven Auxiliary Feedwater Pump Bearing sight glass. The inspectors evaluated the following attributes:

- complete and accurate identification of the problem in a timely manner
- evaluation and disposition of operability and reportability issues
- consideration of extent of condition, generic implications, common cause, and previous occurrences
- classification and prioritization of the problem
- identification of root and contributing causes of the problem
- identification of any additional condition reports
- completion of corrective actions in a timely manner

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On April 25, 2016, the resident inspectors presented the inspection results to Mr. Keith Taber and other members of the licensee's staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection period.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

## KEY POINTS OF CONTACT

Licensee personnel:
J. August Steam Generator Programs
T. Baker, Security Manager
C. Blackburn Engineering Programs
J. Carswell, SNC Corporate RP
J. Churchwell Engineering Programs
R. Collins, Chemistry Manager
J. Dixon, RPM
G. Gunn, Licensing Manager (interim)
M. Johnson, Health Physics Manager
K. Morrow Licensing Engineer
D. Myers, Plant Manager
C. Nesbitt, Training Manager
F. Pournia, Engineering Director
J. Robinson, Engineering Programs Manager
J. Santana Engineering Programs
G. Saxon, Plant Manager
T. Smith Engineering Programs
K. Taber, Site Vice-President
J. Thomas, Work Management Director
D. Thompson, RP Radwaste
T. Thompson, Systems Engineering Manager
K. Walden, Licensing Engineer

NRC personnel:
Shane Sandal, Chief, Region II Reactor Projects Branch 2

## LIST OF DOCUMENTS REVIEWED

### Section 1R01: Adverse Weather Protection

Completed Procedures
11877-1, Cold Weather Checklist, Completed on 1/22/2016 and 1/23/2016
11877-2, Cold Weather Checklist, Completed on 1/22/2016 and 1/23/2016

### Section 1R04: Equipment Alignment

Other
Tagout: 2-DT-15-1208-00365
Tagout: 2-DT-15-1204-00369(001)

Drawings
2X4DB116-2 Ver. 32.0, P&I Diagram – Chemical & Volume Control System No. 1208
2X4DB134 Ver. 31.0, P&I Diagram – Nuclear Service Cooling Water System No. 1202
2X4DB121 Ver. 50.0, P&I Diagram – Safety Injection System No. 1204

**Section 1R05: Fire Protection Annual/Quarterly**

Procedures

92723-1 Rev. 4.0, Zone 23 - Auxiliary Building Electrical Chase Rooms Fire Fighting Preplan
92736-1 Rev. 5.0, Zone 36 – Auxiliary Building – Level A Fire Fighting Preplan
92737-1 Rev. 5.0, Zone 37 – Auxiliary Building – Level A Fire Fighting Preplan
92745-2, Rev. 1.2, Zone 45 – Auxiliary Building – Level 1 &2 Fire Fighting Preplan
92754-1 Rev. 3.1, Zone 54 – Auxiliary Building Level 2 Fire Fighting Preplan
92755-1 Rev. 3.1, Zone 55 – Auxiliary Building Level 2 Fire Fighting Preplan
92794-2 Rev. 4.0, Zone 94 – Control Building – Level A Fire Fighting Preplan
92795-2 Rev. 5.0, Zone 95 – Control Building – Level A, Train "A" Spreading Room Fire Fighting Preplan
92799-2, Rev. 4.1, Zone 99 – Control Building – Level A Fire Fighting Preplan
92804-2, Rev. 4.1, Zone 104 – MSIV Room North - Level 1 Fire Fighting Preplan
92807-2 Rev. 3.1, Zone 107 – Control Building – Levels 1 and 2 Fire Fighting Preplan
92808-2 Rev. 3.1, Zone 108 – Control Building – Levels 1 and 2 Fire Fighting Preplan
92820-2 Rev. 6.0, Zone 120 – Control Building – Level 2 Fire Fighting Preplan
92821-2 Rev. 6.0, Zone 121 – Control Building – Level 2 Fire Fighting Preplan
92840A-2 Rev. 3.0, Zone 140A – Cntmt Bldg. – Levels A, B, 1, 2, and 3 Fire Fighting Preplan
92840B-2 Rev. 4.0, Zone 140B – Cntmt Bldg. – Levels A, B, 1, 2, and 3 Fire Fighting Preplan
92840C-2 Rev. 2.0, Zone 140C – Cntmt Bldg. – Levels A, B, 1, 2, and 3 Fire Fighting Preplan
92840E-2 Rev. 1.0, Zone 140E – Cntmt Bldg. – Levels A, B, 1, 2, and 3 Fire Fighting Preplan
92847-2 Rev. 3.1, Zone 147 - Auxiliary Building Level 2 Fire Fighting Preplan
92848-2 Rev. 1.2, Zone 148 - Auxiliary Building Level 2 Fire Fighting Preplan
92872-2 Rev. 3.1, Zone 172 - Auxiliary Building Level 2 Fire Fighting Preplan
92873-2 Rev. 1.2, Zone 173 – Control Building – Level A Fire Fighting Preplan
92874-2 Rev. 1.2, Zone 174 – Control Building – Level A Fire Fighting Preplan

**Section 1R07: Heat Sink Performance**

Procedures

83309-C Ver. 9, Safety-Related Heat Exchanger Inspection
83305-C Ver. 7.8, Heat Exchanger Testing/Maintenance Program

Work Orders

SNC662437, 1203-21203E4001, CCW Heat Exchanger Inspection, 3/23/16
SNC397667, 2403-22403G4001E03, D/G 2A JW Heat Exchanger Insp/Clean, 3/17/16

Drawings

2X4AE01-00004, Component Cooling Water Heat Exchangers, Rev. 13
2X4DB135-1, P&I Diagram Nuclear Service Water System No. 1202, Ver. 28.0

Other

PMCR76618
PMCR76607
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 ton 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
Historical Fouling Factor Performance Test Data for the 2A EDG JW/NSCW HX, 10/11/90 thru 10/27/14
Historical Fouling Factor Performance Test Data for the 2A CCW/NSCW HX, 9/9/1996 thru 3/30/2013

**Section 1R08: Inservice Inspection Activities**

Procedures

NMP-ES-024-509, PDI Generic Procedure for the Ultrasonic Examination of Weld Overlays (Appendix VIII), Version 3.1
NMP-ES-024-501, PDI Generic Procedure for the Ultrasonic Examination of Austenitic Pipe Welds (Appendix VIII), Version 6.0
NMP-ES-024-502, PDI Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds (Appendix VIII), Version 5.0
NMP-ES-024-301, Liquid Penetrant Examination Color Contrast and Fluorescent, Version 11.1
NMP-ES-024-602, Radiography Using Phosphor Imaging Plates, Version 2.0
NMP-ES-019, Boric Acid Corrosion Control Program, Version 11.0
NMP-ES-019-001, Boric Acid Corrosion Control Program Implementation, Version 11.0
NMP-ES-019-004, Boric Acid Corrosion Control Program - Corrosion Assessment, Version 5.0
NMP-ES-019-003, Boric Acid Deposit Sampling, Analysis and Data Evaluation, Version 2.0

Work Orders

Work Order # SNC136269, RHR Pump B Suction Line to Floor Drain Iso, 10/12/2014
Work Order # SNC545578, RCS Rx Head Vent to Letdown Line Vent, 11/12/2014
Work Order # SNC604980 CVCS Chg CCP A Disch FE-0138 Root Hi Side, 3/11/2016
Work Order # SNC633093, CNMT Spray Pump B Casing Vent, 3/21/2016
Work Order # SNC771465 RHR PMP A Upstrm Suct from Hot Leg Loop 1, 3/14/2016

Other Documents

CRs 10134424, 10136314, 10136614, 10192741, 864653, 869242, 872176, 876200
Certificate of Calibration Certificate Nos: 0010892938, 0010892945, 0010892943, 0010892832, 0010892930, 0010892926, 0010892924, 0010892925, 0010892920, 0010892921, 0010892922, and 0010892864
Certificate of Calibration for Test Instruments: 220452, 221037, 221050, 221053, 221054, 221059, 221061, 224313, 224316, 224317, 224320, 224321, 224327, 224328, 224330, 224332, 224334, 224336, 224338, and 224349
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Certification Records for Calibration Blocks Ax 8-03, Circ 8-03, ISI-D-346A, and PDI-CB-1
Certification Records for NDE Consumables, Batches 12M020, 04A06K, 14L01K, and 13M24K
Certification Records for NDE Instrument Serial Numbers 01H1LC and 01H1LJ
Certification Records for Thermometer Serial Number 050106669
Certification Records for UT Transducer Serial Numbers 01ML89, 01MDY5, 01MDY0, 01ML8M, 00MPXT, 00MXCD, 00X0TP, 009R33, 00MKCF, 00KTKV, and 009R24
Computed Radiography Report for Work Order SNC545578, 10/4/2014
Corrosion Assessments 1204-2008-015 (1/20/2016), 1208-2015-006 (12/2/2015), 1208-2008-021 (1/20/2016), and 1206-2015-001 (12/3/2015)

Indication Notification Form I14V2001, Loose Jam Nut on Mechanical Snubber 21301-107-H002, 9/17/2014
Indication Notification Form I14V2002, Missing Jam Nut on Mechanical Snubber 21301-107-H004, 9/17/2014
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Indication Notification Form I14V2004, Visual Examination of Liner Plate, 9/27/2014
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Liquid Penetrant Examination Report 561 for Work Order SNC545578, 9/26/2014
MRS-TRC-2302, Use of Appendix H and Appendix I Qualified Techniques at Vogtle Unit 2 18th Refueling Steam Generator Inspection
NDE Examiner Qualification Records for J. Serth, V. Tomaz, C. Vidrih, P. Mahoney, and P. Divaleiro
NDE Report S16V2P001, PT Examination of Support H006, 2/29/2016
NDE Report S16V2U028, UT Examination of N-1 Pressurizer Nozzle Overlay (Safety), 3/10/2016
NDE Report S16V2U034, UT Examination of 2" Tee to Pipe, 3/10/2016
NDE Report S16V2U045, UT Examination of 16" Tee to Penetration (TS 5.5.16), 3/9/2016
NDE Report S16V2U062, UT Examination of 2" Pipe to Elbow, 3/15/2016
NDE Report S16V2U063, UT Examination of 2" Pipe to Elbow, 3/15/2016
NIS-2 Form for ASME Section XI Repair and Replacement Traveler 11085, Repair of Piping, 11/20/2014
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NMP-ES-004-GL01, Steam Generator Program Strategic Plan, Revision 14
Personnel Certification Summary Record for Examiners: M3442, A3502, E4313, B6193, W1758, C9055, and F6623
Procedure Qualification Records 515 (2/20/1984), 516 (3/29/1984), and 517 (2/8/1984)
SG-SGMP-14-25, Vogtle 2R17 Steam Generator Condition Monitoring and Operational Assessment, Revision 0
SG-SGMP-16-1, Vogtle 2R18 Steam Generator Degradation Assessment, Revision 1
Visual Leakage Examination Report (VT-2) 1039, 10/8/2014
Vogtle Electric Generating Plant Containment Inspection Plan, Version 7.0
Vogtle Unit 1 & 2 Third Interval ISI Plan, Augmented Examinations, Examination of Inconel Welds and Material, Version 8.0
WCAP-16543-P, Regulatory Guide 1.121 Analysis and Structural Integrity Performance Criterion Application for the Vogtle Units 1 & 2 Model F Steam Generators, Revision 0
WDI-PJF-1303510-EPP-001, Examination Program Plan for the Preservice Inspection of Pressurizer Nozzle Structural Weld Overlays at Vogtle Unit 2, Revision 1
Weld Process Control Sheets 110367 (11/20/2014) and 2R170025 (9/26/2014)
Welder Qualification Records for J. Clemmons, W. Gifford, and A.R. Lepak
Welding Procedure Specification GTSM-88-O-1, Revision 5

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

Procedures

NMP-EP-110 Ver. 8.1, Emergency Classification Determination and Initial Action
NMP-EP-110-GL03 Ver. 5.2, VEGP EALs – ICs, Thresholds Values and Basis

NMP-EP-111 Ver. 11.0, Emergency Notifications

Other
V-RQ-SE-16102, Ver. 1.0, Simulator Exercise Guide
V-RQ-SE-14302, Ver. 1.2, Simulator Exercise Guide

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**
Procedures
10032-C, Rev. 11, Outage Risk Assessment Monitoring

Other
Unit 2 EOOS risk profile for the week of January, 25 2016
Unit 2 EOOS risk profile for the week of February 1, 2016
SNC VNP Integrated Risk Report, January 23 – 30, 2016
2R18 Refueling Outage Defense-in-Depth Assessment Notes, 3/8/16
2R18 Refueling Outage Defense-in-Depth Assessment Notes, 3/9/16
2R18 Refueling Outage Defense-in-Depth Assessment Notes, 3/10/16

**Section 1R15: Operability Determinations and Functionality Assessments**
Procedures
NMP-AD-012, Operability Determinations and Functionality Assessments, Version 12.7
14420-1, Solid State Protection System Train A Operability Test, Version 62.1
Drawings
2X6AH02-10011, John Crane 48LB-RS Mechanical Seal Sheet 1 of 2
2X6AH02-10012, John Crane 48LB-RS Mechanical Seal Sheet 2 of 2

Other
PDO #1-16-001
RER PS-05-1204
Part 21 Report Log No. 2014-83-03, Part 21 Issue on Irradiations performed by Steris Isomedix Services, 1/8/16
X6CHH.27, Verification of Trisodium Phosphate for Containment Sump pH Control, Ver. 2
NUREG-0800, Section 6.5.2, Containment Spray as a Fission Product Cleanup System, Rev. 2
ML012350027, Issuance of Amendments – Vogtle Electric Generating Plant, Units 1 and 2 – Elimination of Containment Spray Additive System, January 5, 1995
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**Section 1R18: Plant Modifications**
Modification Documents
LDCR 2016007, 1E Battery Service Test Interval Extension, Ver. 1.0

Other
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American National Standard/Institute of Electrical and Electronics Engineers, ANSI/IEEE

Standard 450-1975, “IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substation,” New York, NY.

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

Procedures

24229A-2, Rev. 6, NSCW Cooling Tower Train A Spray Header Bypass Valve Control 2T-1668 Channel Calibration

NMP-MA-014-001 Ver. 3.0, Post Maintenance Testing Guidance

Work Orders

SNC536447, Unit 2 ‘A’ train NSCW cooling tower spray header bypass valve control TE-1668 – 36 month calibration, 3/11/16

SNC687627, Unit 2 B train emergency diesel generator operability test following corrective maintenance on the lube oil heat exchanger, on 2/3/16

SNC756038, Replace failed NLP card for Unit 1 containment pressure channel 4, 1P-934, 1/27/16

SNC771837, Operational testing of Unit 1 ‘B’ train EDG fuel oil storage tank transfer pump no. 4 to functionally test lo-lo level switch 1-LSLL-9021, 3/21/16

SNC676145, Unit 1: Replace solenoid valve (1FY0111A) at Chemical & Volume Control System Reactor Makeup Water Storage Tank to Boric Acid Blender Flow Control, 9/2/15

SNC123830, Unit 1: ‘B’ train emergency diesel generator preventive maintenance to remove, inspect & reinstall cylinder liners, 6/22/15

SNC543365, Unit 2: Perform motor operated valve static test on the Turbine Driven Auxiliary Feedwater discharge valve to Steam Generator # 2(2HV5125-MO), 3/8/16

SNC380674, Unit 2: Perform motor operated valve mechanical and electrical inspections on RHR #1 Hot Leg isolation valve (2HV8716A-MO), 3/12/16

CR 10173823

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**Section 1R20: Refueling and Other Outage Activities**

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NMP-RE-007, Core Verification, Version 2.0

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**Section 1R22: Surveillance Testing**

Completed Procedures

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14666-2 Ver. 37.1, Train A Diesel Generator and ESFAS Test, Completed on 3/24/16
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28210-C Version 23.1, Main Steamline Code Safety Valve Setpoint Verification

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**Section 1EP6: Drill Evaluation**
Records and Data
Facility Activation Drill Documents for November 5, 2014 Drill

**Section 2RS1: Radiological Hazard Assessment and Exposure Controls**
Procedures, Guidance Documents, and Manuals
NMP-HP-202, Radiological Controls for Highly Radioactive Objects, Ver. 2.1
NMP-HP-300, Radiation and Contamination Surveys, Ver. 3.1
NMP-HP-302, Restricted Area Classification, Postings, and Access Control, Ver. 8.1
NMP-HP-302-001, Restricted Area Classification, Postings, and Access Control, Ver. 8.1
NMP-HP-303, Personnel Decontamination, Ver. 2.5
NMP-HP-304, Decontamination of Areas, Tools, and Equipment, Ver. 2.0
NMP-HP-400, Control and Accountability of Radioactive Sources, Ver. 3.2
NMP-HP-401, Receipt of Radioactive Materials, Ver. 3.2
NMP-HP-403, Control and Monitoring of Materials in Radiation Controlled Areas, Ver. 3.0
NMP-HP-404, Release of Materials from the RCA and Protected Areas, Ver. 2.1
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File, Spent Fuel Pool Inventory Log, Non Fuel Radioactive Material Stored in Unit 1 Spent Fuel Pool, 2/17/2016
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NSTS Annual Inventory Reconciliation Report, 1/25/2016
Plant Vogtle NRC Source Category Report, 03/08/2016
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Vogtle Boundary Report 1H15 [ISFSI], 1st Half 2015
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188054, ISFSI Pad
189710, RHR Pump Room Train A
190124, Control Building Level 2 Quarterly
190359, Source Leak Test Results
190373, Radioactive Source Leak Test Certification
191072, ISFSI Pad
191573, Solid Building Outside Area
191698, Outside HR and LHR Area Walkdown
191769, U2 HR and LHR Area Walkdown
191785, Alternate Radwaste Building
191947, Lower Cavity
191984, S/G #1 Hand Hole
192004, Lower Cavity
192065, Fuel Upender
192191, CVCS Centrifugal Charging Pump A
192218, EPRI Survey Map Loop 3
192265, Top of Pressurizer – 252 ft. el.
192294, U-2 NSCW Yard
192315, Outside HR and LHR Area Walkdown
192333, Upper Cavity
192375, Filter Monitoring
192412, Radwaste Processing Facility
192463, Reactor Cavity Area
192519, U1 HR and LHR Area Walkdown
192550, Level 1 Rx Head Stand Area

RWP No. 16-2301, Install Nozzle Dams on S/Gs # 1, 2, 3, 4 and All Associated Work
RWP No. 16-2406, Reactor Head and Upper Internals Lift and Set
RWP No. 16-2409, Upender Pit Drain and Transfer Tube Flange Work in Unit 2 Containment and All Associated Work
SAM-11/SAM-12 Calibration Data Sheets: VEGP #1152, 5/22/2015; VEGP #1158, 5/22/2015; VEGP# 1345, 2/3/2015 and 3/10/2016
GEM-5 Calibration Data Sheets: VEGP-HP-1472, 9/8/2015; VEGP-HP-1490, 11/12/2015
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**Section 2RS2: As Low As Reasonably Achievable**

Procedures and Guidance Documents

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NMP-HP-202, Radiological Controls for Highly Radioactive Objects, Ver. 2.1
NMP-HP-204, ALARA Planning and Job Review, Ver. 4.5
NMP-HP-206, Issuance, Use and Control of Radiation Work Permits, Ver. 3.0
NMP-HP-207, Selection and Use of Protective Clothing, Ver. 1.1
NMP-HP-218, Radiation Protection Stop Work Authority and Guidance on Response, Ver. 2.0

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2R18 Outage Level 2 Summary, 01/26/16
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ALARA Briefing Records, RWP 16-2403, Decon of the Upper and Lower Rx Cavity and the Upender Pit Area; RWP 16-2400, Installation and Removal of Scaffolding in Unit 2 Containment; RWP 16-2302, Eddy Current Testing on S/Gs # 1,2,3,4; RWP 16-2303, Perform Sludge Lance on Unit 2 S/Gs #1,2,3,4; RWP 16-2304, Perform FOSAR on Unit 2 S/Gs #1,2,3,4; RWP 16-2400, Reactor Head Disassembly and Assembly
Plant ALARA Review Committee, Outage Agenda Minutes, Dates: 09/24/2015, 09/30/2015, 10/07/2016, 03/09/2016, and 03/23/16
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RWP 16-2004, Installation of Containment Scaffolding (inside Bioshield), Rev. 0
RWP 16-2006, Pressurizer Manway Cover Insulation Activity, Rev. 0
RWP 16-2200, Reactor Coolant Pumps #1, 2, 3, 4 Motor Oil Testing Sample, Rev. 0
RWP 16-2608, Removal of Code Safeties, Rev. 0
Temporary Shielding Worksheets Data Sheets #1-7, 06/19/2015
U2 Containment 2R18 Outage Turnover, 03/21/2016
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Vogtle ALARA Strategic Plan, 2013-2018
Work in Progress Reviews, RWP 16-2502, ISI/NDT in Unit 2 CTMT (80%), 03/14/2016; RWP 16-2302, Eddy Current Test SG#1, 2, 3, 4 (50%), 03/16/2016; RWP 16-2004, I/R of Scaffolding in Unit 2 Containment (80%), 03/15/2016
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**Section 2RS3: In-Plant Airborne Radioactivity Control and Mitigation**

Procedures and Guidance Documents
13125-2, Containment Purge System, Version 49
43635-C, Operation and Calibration of the AMS-4 Continuous Air Monitor, Version 18.2
NMP-HP-001, Radiation Protection Standard Practice, Version 5.4
NMP-HP-301, Airborne Radioactivity Sampling and Evaluation, Version 3.5
NMP-HP-305, Alpha Radiation Monitoring, Version 5.1
47008-C, Operation and Use of the Self-Contained Apparatus Charging System, Version 14.1
47001-C, Selection and Use of Respiratory Equipment Used for Radiological Purposes, Version 9.3
47006-C, Control, Issuance and Return of Respiratory Protection Equipment, Version 13.2
47013-C, Inspection, Repair and Storage of Self-Contained Breathing Apparatus, Version 37.2
43032-C, Reactor Head and Upper Internals Movement, Version 3.2

Records and Data
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Survey 190958 Quarterly Air Sample Analysis, 02/05/16
47004-C, Breathing Air Analysis Data Sheet 1: Scott Revolve 5016, 02/19/16
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**Section 2RS4: Occupational Dose Assessment**

Procedures and Guidance Documents
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NMP-HP-101, Bioassay and Internal Dose Assessment, Version 3.1
NMP-HP-102, In-Vitro Bioassay, Version 1.1
NMP-HP-103, Skin Dose Assessment, Version 1.2
NMP-HP-105, Comparison of OSLD and ED Dosimetry Results, Version 1.2
NMP-HP-107, Individual Radiation Exposure Records and Reports, Version 3.2
NMP-HP-201, Personnel Dosimetry Program, Version 1.2
NMP-CH-021-002, Guidelines of Radiochemistry Data Review, Version 3.0

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NVLAP Certification 2015 & 2016
ABACOS -2000 Whole Body Counts for 2014 & 2015
EDE & NRC Form 5 Calculations 2014 & 2015
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PCE #499, 10/18/15
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**4OA1: Performance Indicator (PI) Verification**

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NEI 99-02, Regulatory Assessment Indicator Guideline
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Data and Records
List of Dose and Dose Rate Alarms April 1st, 2014 to February 19, 2016
2014 Annual Radioactive Effluent Release Report

Liquid Effluent Release Permit #L-20150720-108-C
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**Section 4OA1: Performance Indicator Verification**

Bases Documents:

NRC Mitigating System Performance Index (MSPI) Basis Document – Vogtle Electric Generating Plant Units 1 and 2, Ver. 5

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