UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

May 9, 2024

Jamie M. Coleman
Regulatory Affairs Director
Southern Nuclear Operating Company, Inc.
3535 Colonnade Parkway, N 274 EC
Birmingham, AL 35243

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNIT 4 – INITIAL TEST PROGRAM AND OPERATIONAL PROGRAMS INSPECTION REPORT 05200026/2024010

Dear Jamie M. Coleman:

On March 31, 2024, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Vogtle Electric Generating Plant, Unit 4. The enclosed inspection report documents the inspection results, which the inspectors discussed on April 29, 2024, with Mr. Patrick Martino, Vogtle Electric Generating Plant (VEGP) Units 3 & 4 Site Vice President, and other members of your staff.

The inspection examined a sample of construction activities conducted under your Combined License (COL) as it relates to safety and compliance with the Commission's rules and regulations and with the conditions of these documents. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, no findings of significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any), will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system ADAMS. ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Should you have any questions concerning this letter, please contact us.

Sincerely,

Signed by Davis, Bradley
on 05/09/24

Bradley J. Davis, Chief
Division of Construction Oversight
Construction Inspection Branch 2

Docket Nos.: 5200026
License Nos: NPF-92

Enclosure:
As stated.

cc w/ encl: Distribution via LISTSERV

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNIT 4 – INITIAL TEST PROGRAM AND OPERATIONAL PROGRAMS INSPECTION REPORT 05200026/2024010 DATED MAY 9, 2024

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DATE	05/7/2024	05/9/2024	05/9/2024		

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers:	05200026
License Numbers:	NPF-92
Report Numbers:	05200026/2024010
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Vogtle Unit 4 Combined License
Location:	Waynesboro, GA
Inspection Dates:	January 1, 2024, through March 31, 2024
Inspectors:	J. Eargle, Senior Resident Inspector, Division of Construction Oversight (DCO) J. Parent, Resident Inspector, DCO B. Griman, Resident Inspector, DCO S. Egli, Senior Construction Inspector, DCO A. Nielsen, Senior Health Physicist, Division of Reactor Safety (DRS) J. Diaz, Senior Health Physicist, DRS J. Rivera, Health Physicist, DRS
Approved By:	Bradley J. Davis, Chief Construction Inspection Branch 2 Division of Construction Oversight

Enclosure

SUMMARY OF FINDINGS

Inspection Report (IR) 05200026/2024010; January 1 – March 31, 2024; Vogtle Unit 4 Combined License, initial test program and operational programs integrated inspection report.

This report covers a three-month period of announced inspections of startup testing and operational programs by resident and regional inspectors. The significance of most findings is indicated by their color (Green, White, Yellow, or Red), using Inspection Manual Chapter (IMC) 0609, “Significance Determination Process.” Cross-cutting aspects are determined using IMC 0310, “Aspects Within the Cross-Cutting Areas.” All violations of NRC requirements are dispositioned in accordance with the NRC’s Enforcement Policy. The NRC’s program for oversight of AP1000 startup activities is described in IMC 2514, “AP1000 Reactor Inspection Program – Startup Testing Phase.”

A. NRC-Identified and Self Revealed Findings

None

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Construction Status

During this report period for Unit 4, the licensee completed surveillance testing to meet mode specific Technical Specification requirements. The licensee completed precritical startup testing and achieved initial criticality. Startup and power ascension testing was completed at the 25%, 50%, 75%, and 90% power plateaus. This testing included low power physics testing, remote shutdown room testing, and rapid power reduction system testing.

3. OPERATIONAL READINESS

Cornerstones: Operational Programs

IMC 2504, Construction Inspection Program – Inspection of Construction and Operational Programs

3P01 Process and Effluent Monitoring

- 84527 – Part 52, Solid Waste Management Program

a. Inspection Scope

Minimum Inspection Requirement A: Operational Procedures

The inspectors evaluated a solid radwaste system (WSS) procedure to verify adequate protocols for safe system operation had been established. The inspectors also reviewed a preventative maintenance (PM) surveillance frequency spreadsheet to verify establishment of a PM program. The following procedure was reviewed against system design documents and the requirements of Updated Final Safety Analysis Report (UFSAR) chapter 11, Radioactive Waste Management.

- 4-WSS-SOP-001, Solid Radwaste System, version 1.0

Minimum Inspection Requirement B: Solid Radioactive Waste Walkdown

The inspectors performed walkdowns of selected portions of the Unit 4 WSS and discussed system operation with licensee staff to determine if WSS components were installed and configured as described in UFSAR chapter 11. Specifically, the inspectors traced spent resin transfer piping from demineralizer beds to system termination in the waste dewatering/packaging area. The inspectors directly observed the following WSS, liquid radwaste system (WLS), and spent fuel pit cooling system (SFS) components.

- WLS Deep Bed Carbon Filter
- WLS Ion Exchangers
- SFS Ion Exchangers
- Valves and piping associated with Spent Resin Tanks A & B
- Resin Transfer Pump
- Resin Sampler Package

Minimum Inspection Requirement C: Pre-Operational Testing

The inspectors evaluated the following testing records against WSS system design documents and the requirements of UFSAR, chapters 11 and 14, to verify that testing protocols had been established and implemented.

- 4-WSS-ITPP-501, Solid Radwaste System Pre-OP Test, Ver. 1.0
- SV4-WSS-TOW-1206073, WSS Pre-OP Test
- SV4-WSS-TOW-1206101, Resin Transfer Pump Component Test

Minimum Inspection Requirement D: Waste Solidification

The inspectors observed multiple steel storage/shipping liners available for use. These containers were of the type required by the licensee's Process Control Program and UFSAR chapter 11.

Minimum Inspection Requirement E: Radioactive Material Storage and Security

The inspectors observed temporary storage locations for radioactive material in the Unit 4 radwaste building and verified that adequate space exists in a secure area, as described in UFSAR chapter 11.

b. Findings

No findings were identified.

3P02 Process and Effluent Monitoring

- 84529 – Part 52, Gaseous Waste Management Program

a. Inspection Scope

Minimum Inspection Requirement A: Operational Procedures

The inspectors reviewed a PM surveillance frequency spreadsheet to verify establishment of a PM program for the gaseous radwaste system (WGS).

Minimum Inspection Requirement B: Gaseous Radioactive Waste Walkdown

The inspectors performed walkdowns of selected portions of the Unit 4 WGS and discussed system operation with licensee staff to determine if WGS components were installed and configured as described in UFSAR chapter 11. This included observation of airborne effluent monitors and High Efficiency Particulate Air (HEPA) and charcoal filtration systems for plant vent exhaust air. The following WGS and containment air filtration system (VFS) components were observed in the field.

- VFS HEPA and Charcoal Filter Banks, Trains A & B
- WGS-JE-RE017 Gaseous Radwaste Discharge Radiation Monitor
- WGS V051 Automatic Isolation Valve
- WGS ME-01 Gas Cooler

- WGS MV-03 Moisture Separator
- VFS-JE-RE-101 Plant Vent Particulate Radiation Monitor
- VFS-JE-RE-102 Plant Vent Iodine Radiation Monitor
- VFS-JE-RE-103 Plant Vent Gas Radiation Monitor (Normal Range)
- VFS-JE-RE-104A Plant Vent Extended Range Gas Radiation Monitor (Accident Mid Range)
- VFS-JE-RE-104B Plant Vent Extended Range Gas Radiation Monitor (Accident High Range)
- VFS-JS-02B Accident Range Grab Sample Skid

Minimum Inspection Requirement C: Routine and Post-Accident Sampling

The inspectors evaluated the licensee's capability to monitor releases from the plant vent and collect and analyze representative samples of airborne particulate, iodine, and noble gas effluents released through the plant vent during routine operation and post-accident conditions, as required by UFSAR chapter 11. Sampling apparatus, including pumps, piping, and heat tracing for the effluent monitors reviewed in Minimum Inspection Requirement C was observed and evaluated.

Minimum Inspection Requirement D: Pre-Operational Testing

The inspectors reviewed a sample of pre-operational tests performed for the WGS and VFS systems as required by UFSAR chapter 14, including a test of the interlock between the WGS discharge monitor and isolation valve to terminate a release on a high radioactivity alarm. The sample included the following test records.

- Work order (WO) 1205905, Perform ITAAC 2.3.11.03b on the following Components: SV4-WGS-JE-RE017 and SV4-WGS-PL-V051
- HEPA In-Place Testing, VFS A, April 18, 2023
- HEPA In-Place Testing, VFS B, April 26, 2023
- Radioiodine Test Report, VFS A and B, April 11, 2023

Minimum Inspection Requirement E: Effluent Monitors

The inspectors evaluated primary and transfer calibration documents, calibration source certificates, site acceptance testing records, and a procedure for the establishment of alarm setpoints for gaseous effluent monitors to verify accurate detector alignment, calibration, and source traceability, as required by 10 CFR Part 20, the Offsite Dose Calculation Manual, and chapter 11 of the UFSAR. The inspectors observed that plant operators were able to obtain indications from the radiation monitoring system for installed plant radiation monitors. The following effluent monitors were selected for review.

- WGS-JE-RE017, Gaseous Radwaste Discharge Radiation Monitor
- VFS-JE-RE101, Plant Vent Particulate Radiation Monitor
- VFS-JE-RE102, Plant Vent Iodine Radiation Monitor
- VFS-JE-RE103, Plant Vent Gas Radiation Monitor (Normal Range)
- VFS-JE-RE104A, Plant Vent Extended Range Gas Radiation Monitor (Accident Mid Range)

- VFS-JE-RE104B, Plant Vent Extended Range Gas Radiation Monitor (Accident High Range)

b. Findings

No findings were identified.

IMC 2514, AP1000 Reactor Inspection Program – Startup Testing Phase

3T01 Initial Test Program (Startup)

The inspectors used the following NRC inspection procedure (IP)/section to perform this inspection:

- IP 72304 Attachment 15 – Rapid Power Reduction System (RPRS)

a. Inspection Scope

The inspectors used appropriate portions of the inspection procedure (IP) to observe the licensee's performance of the following procedure for demonstrating the performance of the rapid power reduction system. The inspectors observed the conduct of this procedure to verify if they satisfied the applicable quality and technical requirements of the UFSAR and the Technical Specifications.

- 4-PLS-ITPS-605, Rapid Power Reduction Startup Test Procedure, Ver. 1.0

The inspectors used appropriate portions of the IP to review the results of the following procedure and supporting documents used to confirm proper operation of the Rapid Power Reduction System (RPR). The results were reviewed to verify whether the test satisfied the applicable technical and quality requirements of the UFSAR.

- 4-PLS-ITPS-605, Rapid Power Reduction Startup Test Procedure, Ver. 1.0

b. Findings

No findings were identified.

3T02 Initial Test Program (Startup)

The inspectors used the following NRC IP/section to perform this inspection:

- Inspection Procedure (IP) 72304 Attachment 18 – Remote Shutdown Work Station (RWS)

a. Inspection Scope

The inspectors used appropriate portions of the IP to observe the licensee's performance of the following procedures used to verify if the operators were capable of transferring controls from the main control room to the remote shutdown workstation in order to bring the plant to hot standby conditions from normal operating pressure and

temperature, and place normal residual heat removal system in service to cool the plant an additional 50 degrees Fahrenheit without exceeding cooldown limits. The inspectors observed the conduct of these procedures to verify if they satisfied the applicable quality and technical requirements of the UFSAR and the Technical Specifications.

- 4-GEN-ITPS-640, Remote Shutdown Workstation Startup Test Procedure, Section 4.2, Ver. 1.0
- 4-GOP-205, Plant Cooldown Mode 3 to Mode 5, Ver. 1.0
- 4-AOP-601, Evacuation of Control Room, Ver. 1.0

The inspectors used appropriate portions of the IP to review the results of the following procedure and supporting documents used to confirm that the operators were capable of transferring controls from the main control room to the remote shutdown workstation (RSW) in order to trip the reactor, bring the plant to hot standby conditions from normal operating pressure and temperature, and then place normal residual heat removal system in service to cool the plant an additional 50 degrees Fahrenheit without exceeding cooldown limits. The results were reviewed to verify whether the test satisfied the applicable technical and quality requirements of the UFSAR.

- 4-GEN-ITPS-640, Remote Shutdown Workstation Startup Test Procedure, Section 4.2, Ver. 1.0

b. Findings

No findings were identified.

3T03 Initial Test Program (Startup)

The inspectors used the following NRC IP/section to perform this inspection:

- Inspection Procedure (IP) 72304 Attachment 07 – Initial Criticality

a. Inspection Scope

The inspectors used appropriate portions of IP to observe the licensee's performance of the following procedures for entering Mode 2, achieving initial criticality, and testing to determine moderator temperature coefficient. The inspectors observed the conduct of these procedures to verify if they satisfied the applicable quality and technical requirements of the UFSAR and the Technical Specifications.

- B-GEN-RES-004, Low Power Physics Testing, Ver. 8.0
- 4-GEN-ITPS-611, Initial Criticality and Low Power Physics Test Startup Test Procedure, Ver. 1.0
- 4-GOP-302, Reactor Startup Mode 3 to Mode 2, Ver. 1.0 – V4TPC1
- NMP-RE-009, Beacon 7 Estimated Critical Condition Calculations, Ver. 4.2

- NMP-RE-008-F01, Detailed Reactivity Management Plan, Power Ascension Testing – Initial Criticality, Ver. 2.1

The inspectors used appropriate portions of the IP to review the results of the following procedures and supporting documents for entering Mode 2, achieving initial criticality, and testing to determine moderator temperature coefficient. The results were reviewed to verify whether the test satisfied the applicable technical and quality requirements of the UFSAR.

- 4-GEN-ITPS-611, Initial Criticality and Low Power Physics Test Startup Test Procedure, Ver. 1.0
- 4-GOP-302, Reactor Startup Mode 3 to Mode 2, Ver. 1.0 – V4TPC1
- B-GEN-RES-004, Low Power Physics Testing, Ver. 8.0
- B-GEN-REP-0001, Physics Testing Equipment Checkout, Ver. 1.0

b. Findings

No findings were identified.

3T04 Initial Test Program (Startup)

The inspectors used the following NRC IP/section to perform this inspection:

- Inspection Procedure (IP) 72304 Attachment 18 – Remote Shutdown Work Station (RWS)

a. Inspection Scope

The inspectors used appropriate portions of the IP to observe the licensee's performance of the following procedures to verify if Unit 4 reactor could be tripped from the remote shutdown workstation and be maintained stable in Hot Standby conditions for at least 30 minutes. The inspectors observed the conduct of these procedures to verify if they satisfied the applicable quality and technical requirements of the UFSAR and the Technical Specifications.

- 4-GEN-ITPS-640, Remote Shutdown Workstation Startup Test Procedure, Section 4.2, Ver. 1.0
- 4-EOP-E-0, Reactor trip or Safeguards Actuation, Ver. 1.0
- 4-EOP-ES-0.1, Reactor Trip Response, Ver. 1.0
- 4-EOP-ES-0.3, Steam dump to Condenser, Ver. 0.0
- 4-GOP-202, Plant Shutdown, Ver. 1.0
- 4-AOP-207, Loss of turbine Load, Ver. 2.0
- 4-AOP-601, Evacuation of Control Room, Ver. 1.0

The inspectors used appropriate portions of the IP to review the results of the following procedure and supporting documents used to confirming that the operators were capable of transferring controls from the main control room to the remote shutdown workstation (RSW) in order to trip the reactor, bring the plant to hot standby conditions from normal operating pressure and temperature. The results were reviewed to verify

whether the test satisfied the applicable technical and quality requirements of the UFSAR.

- 4-GEN-ITPS-640, Remote Shutdown Workstation Startup Test Procedure, Section 4.2, Ver. 1.0
- WO# 1465844
- CR # 11046634, 10997163, 11012443, 11046681

b. Findings

No findings were identified.

4. OTHER INSPECTION RESULTS

4OA6 Meetings, Including Exit

.1 Exit Meeting.

On April 29, 2024, the inspectors presented the inspection results to Mr. Patrick Martino, Vogtle Electric Generating Plant (VEGP) Units 3 & 4 Site Vice President, and other licensee and contractor staff members. Proprietary information was reviewed during the inspection period but was not included in the inspection report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensees and Contractor Personnel

A. Nix, ITP Director
E. Loehlein, Operations Director
J. Coleman, Regulatory Affairs Director
J. Hartman, Shift Operations Manager
D. Trafford, Operations Support Manager
C. Parkes, Operations Services Manager
S. Leighty, Regulatory Affairs Manager
W. Garrett, Licensing Manager
C. Houseal, Startup Manager
J. Dixon, Radiation Protection Manager
S. Trickett, Radiation Protection Support Superintendent

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Type	Status	Description

None

LIST OF DOCUMENTS REVIEWED

3. OPERATIONAL READINESS

Section 3P01
CR 11011118
WO SNC 1594248
WO SNC 1594264

Section 3P02
CR 11041366
B-WGS-NTS-16-001, Gaseous Radwaste Discharge Radiation Monitor, WGS-JS-17 Channel Functional Test and Channel Calibration, Version 1.0
WO 1205831 – Component Testing on Gaseous Radwaste Discharge Radiation Monitor SV4-WGS-JS-17
WO #1203065 – Component Testing on VFS System Radiation Monitor SV4-VFS-JS-01
WO #1203067 – Component Testing on VFS System Radiation Monitor SV4-VFS-JS-02
APP-RMS-T2R-003, AP1000 Radiation Monitoring System Primary Calibration Reports, Rev. 0.

Section 3T01
WO # 1465863
CR # 11046020, 11046078, 11046105. 11046228, 11046406

Section 3T02
WO# 1465844
CR # 11046634, 10997163, 11012443, 11046681

Section 3T03
WO# 1466789
CR# 11050286, 11003376, 11049687, 11012443

Section 3T04
WO# 1465844
CR # 11046634, 10997163, 11012443, 11046681

LIST OF ACRONYMS

COL	Combine License
DCO	Division of Construction Oversight
DRS	Division of Reactor Safety
HEPA	High Efficiency Particulate Air
IMC	inspection manual chapter
IP	inspection procedure
IR	inspection report
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PLS	Plant Control System
PM	Preventative maintenance
RCS	Reactor coolant system
RPR	Rapid Power Reduction
RSW	Remote shutdown workstation
SFS	Spent fuel pit cooling system
UFSAR	Updated Final Safety Analysis Report
VFS	containment air filtration system
WGS	gaseous radwaste system
WLS	liquid radwaste system
WSS	solid radwaste system