



SEP 16 2019

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Docket Nos.: 52-025  
52-026

ND-19-1033  
10 CFR 52.99(c)(3)

U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555-0001

Southern Nuclear Operating Company  
Vogtle Electric Generating Plant Unit 3 and Unit 4  
Notice of Uncompleted ITAAC 225-days Prior to Initial Fuel Load  
Item 2.5.01.02a [Index Number 506]

Ladies and Gentlemen:

Pursuant to 10 CFR 52.99(c)(3), Southern Nuclear Operating Company hereby notifies the NRC that as of September 6, 2019, Vogtle Electric Generating Plant (VEGP) Unit 3 and Unit 4 Uncompleted Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Item 2.5.01.02a [Index Number 506] has not been completed greater than 225-days prior to initial fuel load. The Enclosure describes the plan for completing this ITAAC. Southern Nuclear Operating Company will, at a later date, provide additional notifications for ITAAC that have not been completed 225-days prior to initial fuel load.

This notification is informed by the guidance described in NEI 08-01, *Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52*, which was endorsed by the NRC in Regulatory Guide 1.215. In accordance with NEI 08-01, this notification includes ITAAC for which required inspections, tests, or analyses have not been performed or have been only partially completed. All ITAAC will be fully completed and all Section 52.99(c)(1) ITAAC Closure Notifications will be submitted to NRC to support the Commission finding that all acceptance criteria are met prior to plant operation, as required by 10 CFR 52.103(g).

This letter contains no new NRC regulatory commitments.

If there are any questions, please contact Tom Petrak at 706-848-1575.

Respectfully submitted,

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Enclosure: Vogtle Electric Generating Plant (VEGP) Unit 3 and Unit 4  
Completion Plan for Uncompleted ITAAC 2.5.01.02a [Index Number 506]

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Document Services RTYPE: VND.LI.L06

File AR.01.02.06

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**Southern Nuclear Operating Company  
ND-19-1033  
Enclosure**

**Vogtle Electric Generating Plant (VEGP) Unit 3 and Unit 4  
Completion Plan for Uncompleted ITAAC 2.5.01.02a [Index Number 506]**

## **ITAAC Statement**

### **Design Commitment**

2.a) The DAS provides an automatic reactor trip on low wide-range steam generator water level, or on low pressurizer water level, or on high hot leg temperature, separate from the PMS.

2.b) The DAS provides automatic actuation of selected functions, as identified in Table 2.5.1-1, separate from the PMS.

2.c) The DAS provides manual initiation of reactor trip, and selected functions, as identified in Table 2.5.1-2, separate from the PMS. These manual initiation functions are implemented in a manner that bypasses the control room multiplexers, if any; the PMS cabinets; and the signal processing equipment of the DAS.

2.d) The DAS provides MCR displays of selected plant parameters, as identified in Table 2.5.1-3, separate from the PMS.

3.f) The DAS is powered by non-Class 1E uninterruptible power supplies that are independent and separate from the power supplies which power the PMS.

3.g) The DAS signal processing cabinets are provided with the capability for channel testing without actuating the controlled components.

### **Inspections/Tests/Analyses**

Electrical power to the PMS equipment will be disconnected and an operational test of the as-built DAS will be performed using real or simulated test signals.

Electrical power to the PMS equipment will be disconnected and an operational test of the as-built DAS will be performed using real or simulated test signals.

Electrical power to the control room multiplexers, if any, and PMS equipment will be disconnected and the outputs from the DAS signal processing equipment will be disabled. While in this configuration, an operational test of the as-built system will be performed using the DAS manual actuation controls.

Electrical power to the PMS equipment will be disconnected and inspection will be performed for retrievability of the selected plant parameters in the MCR.

Electrical power to the PMS equipment will be disconnected. While in this configuration, a test will be performed by providing simulated test signals in the non-Class 1E uninterruptible power supplies.

Channel tests will be performed on the as-built system.

### Acceptance Criteria

The generator field control relays (contained in the control cabinets for the rod drive motor-generator sets) open after the test signal reaches the specified limit.

Appropriate DAS output signals are generated after the test signal reaches the specified limit.

i) The generator field control relays (contained in the control cabinets for the rod drive motor-generator sets) open after reactor and turbine trip manual initiation controls are actuated.

ii) DAS output signals are generated for the selected functions, as identified in Table 2.5.1-2, after manual initiation controls are actuated.

The selected plant parameters can be retrieved in the MCR.

A simulated test signal exists at the DAS equipment when the assigned non-Class 1E uninterruptible power supply is provided the test signal.

The capability exists for testing individual DAS channels without propagating an actuation signal to a DAS controlled component.

### ITAAC Completion Description

Multiple inspections and tests are performed to verify the Diverse Actuation System (DAS) initiates reactor trip, actuates selected functions, and provides plant information to the operator. The inspections and tests for DAS verify that:

- The DAS provides an automatic reactor trip separate from the Protection and Safety Monitoring System (PMS) on each of the following signals:
  - low wide-range steam generator water level
  - low pressurizer water level
  - high hot leg temperature
- The DAS provides automatic actuation of selected functions, as identified in Combined License (COL) Appendix C Table 2.5.1-1 (Attachment A), separate from the PMS.
- The DAS provides manual initiation of reactor trip (the generator field control relays open after a reactor and turbine trip manual initiation). The manual initiation function bypasses the PMS cabinets and the signal processing equipment of the DAS.
- The DAS provides manual initiation of selected functions, as identified in Table 2.5.1-2, (Attachment B) other than manual reactor and turbine trip. The manual initiation function bypasses the PMS cabinets and the signal processing equipment of the DAS.
- The DAS provides MCR displays of selected plant parameters, as identified in Table 2.5.1-3, (Attachment C) separate from the PMS.
- The DAS is powered by non-Class 1E uninterruptible power supplies that are independent and separate from the power supplies which power the PMS.
- The as-built DAS signal processing cabinets are provided with the capability for channel testing without actuating the controlled components.

The generator field control relays (contained in the control cabinets for the rod drive motor-generator sets) open after the test signal reaches the specified limit.

Testing is performed in accordance with the Unit 3 and Unit 4 preoperational test procedures 3-DAS-ITPP-501 and 4-DAS-ITPP-501 (References 1 and 2, respectively) to confirm that with electrical power to the Protection and Safety Monitoring System (PMS) equipment removed, an operational test of the as-built DAS using simulated test signals, provides an automatic reactor trip separate from the PMS for each of the following signals:

- low wide-range steam generator water level
- low pressurizer water level
- high hot leg temperature

Initially, PMS is de-energized and the generator field control relays for the control rod motor-generator (MG) sets are verified to be closed through local verification. The DAS instruments have simulated signals generated for each of the following parameters:

- wide-range steam generator level
- pressurizer level
- hot leg temperature

When the required setpoints and logic for instrumentation actuation have been met, the generator field control relays of the control rod MG sets are locally verified to trip open. This testing verifies that exceeding the actuation setpoint will generate a reactor trip for each of these distinct parameters. The DAS Processor Cabinet 1 is utilized to confirm reactor trip status.

The completed test results (References 1 and 2) confirm that the generator field control relays (contained in the control cabinets for the rod drive MG sets) open after the test signal reaches the specified limit.

Appropriate DAS output signals are generated after the test signal reaches the specified limit.

Testing is performed in accordance with References 1 and 2 to confirm that with electrical power to the PMS equipment removed, the DAS provides automatic actuation of selected functions, as identified in Combined License (COL) Appendix C Table 2.5.1-1 (Attachment A), separate from the PMS.

Initially, PMS is de-energized and test instruments are connected to the DAS instruments to provide simulated signals. Initial conditions of components involved for the following selected functions are verified prior to test initiation.

- Initially, the Reactor Trip relay and Turbine Trip relay are verified in the non-actuated condition. Reactor and Turbine Trip are simulated on each of:
  - Low Wide-range Steam Generator Water Level
  - Low Pressurizer Water Level
  - High Hot Leg Temperature

Once the simulated test signal reaches the specified limit, actuation of the automatic Reactor Trip relay and Turbine Trip relay are verified locally.

- Initially, solenoid actuation valves for the Passive Residual Heat Removal (PRHR) Heat Exchanger (HX) Outlet valves and the In-containment Refueling Water Storage Tank (IRWST) Gutter Isolation valves are verified in the non-actuated condition. PRHR Actuation and IRWST Gutter Isolation are simulated on each of:
  - Low Wide-range Steam Generator Water Level
  - High Hot Leg Temperature

Once the simulated test signal reaches the specified limit, actuation of the solenoid actuation valves for the PRHR HX Outlet valves and the IRWST Gutter Isolation valves are verified locally.

- Initially, the solenoid actuation valve for the Core Makeup Tank (CMT) outlet valves and the Reactor Coolant Pumps (RCP) Non-1E breakers are verified in the non-actuated condition. CMT outlet valves actuation and Trip of RCP breakers are simulated on each of:
  - Low Wide-Range Steam Generator Water Level
  - Low Pressurizer Water Level

Once the simulated test signal reaches the specified limit, actuation of the solenoid actuation valve for the CMT outlet valves and trip of the RCP switchgear Non-1E circuit breakers are verified locally.

- Initially, the PCS outlet motor-operated valve is verified closed and the solenoid actuation valves for the Passive Containment Cooling System (PCS) outlet valves and selected Containment Isolation valves identified in Combined License (COL) Appendix C Table 3.7-1 (Attachment D) are verified in the non-actuated condition. Isolation of selected Containment Penetrations and Initiation of PCS are simulated on High Containment Temperature. Once the simulated test signal reaches the specified limit, the PCS outlet motor-operated valve is verified open and actuation of the solenoid actuation valves for PCS outlet valves and selected Containment Isolation valves identified in Attachment D are verified locally.

The completed test results (References 1 and 2) confirm that the appropriate DAS output signals are generated after the test signal reaches the specified limit.

i) The generator field control relays (contained in the control cabinets for the rod drive motor-generator sets) open after reactor and turbine trip manual initiation controls are actuated.

Testing is performed in accordance with References 1 and 2 to confirm that the DAS provides manual initiation of reactor trip while the PMS cabinets and the signal processing equipment of the DAS are bypassed.

The preoperational test de-energizes the PMS cabinet power supplies (no multiplexer exists) and prevents DAS automatic output actuation by placing DAS in Master Test. These conditions ensure that the actuations tested are caused by the DAS manual functions. Testing is performed by initially verifying the generator field control relays are closed locally and then manually actuating the DAS manual functions to trip the reactor and turbine. During the manual reactor and turbine trip, the generator field control relays are verified to open locally by inspection at the motor-generator set control cabinets.



The completed test results (References 1 and 2) confirm that the generator field control relays (contained in the control cabinets for the rod drive motor-generator sets) open after reactor and turbine trip manual initiation controls are actuated.

ii) DAS output signals are generated for the selected functions, as identified in Table 2.5.1-2, after manual initiation controls are actuated.

Testing is performed in accordance with References 1 and 2 to confirm that the DAS provides manual initiation of selected DAS manual functions identified in Combined License (COL) Appendix C Table 2.5.1-2 (Attachment B) while the PMS cabinets and the signal processing equipment of the DAS are bypassed.

The preoperational test de-energizes the PMS cabinet power supplies (no multiplexer exists) and prevents DAS automatic output actuation by placing DAS in Master Test. These conditions ensure that the actuations tested are caused by the DAS manual functions. Testing is performed by manually actuating selected DAS manual functions identified in Attachment B. During the testing of the manual functions, the DAS output signal is verified for each selected function by relay contact inspection in the DAS cabinets.

The completed test results (References 1 and 2) confirm that the DAS output signals are generated for the selected functions, as identified in Table 2.5.1-2 after manual initiation controls are actuated.

The selected plant parameters can be retrieved in the MCR.

Testing is performed in accordance with References 1 and 2 to confirm that the DAS provides MCR displays of selected plant parameters, as identified in Combined License (COL) Appendix C Table 2.5.1-3 (Attachment C), separate from the PMS.

The preoperational test includes inspections (checks) that with electrical power to the PMS equipment disconnected, analog signals provide an indication at the DAS panel in the MCR for the Sensors and Displays as identified in Attachment C. Testing is performed by simulating an analog signal and then inspection is performed to check that appropriate indication is retrieved in the MCR.

The completed test results (References 1 and 2) confirm that the selected plant parameters can be retrieved in the MCR.

A simulated test signal exists at the DAS equipment when the assigned non-Class 1E uninterruptible power supply is provided the test signal.

Testing is performed in accordance with the Unit 3 and Unit 4 component test packages SNCXXXXXX and SNCYYYYYY (References 3 and 4, respectively) to verify that the non-Class 1E power supply to DAS is independent from the Class 1E power supplied to the PMS.

The PMS cabinet power supplies are de-energized and testing is performed by injecting a signal to the non-Class 1E DAS power supply and then checking that the test signal is present at the DAS equipment.

The completed test results (References 3 and 4) confirm that a simulated test signal exists at the DAS equipment when the assigned non-Class 1E uninterruptible power supply is provided the test signal.

The capability exists for testing individual DAS channels without propagating an actuation signal to a DAS controlled component.

Testing is performed in accordance with References 1 and 2 to confirm that the DAS signal processing cabinets are provided with the capability for channel testing without actuating the controlled components.

The preoperational test places channels in bypass and then simulates process variables exceeding setpoint and verifies no end device operation. The end device verification is performed locally by measuring contact resistance or voltage on the actuating components. The channels are returned to normal and the next process variable is tested in a similar manner. This testing is repeated until the RCS High Hot Leg Temperature, Low Wide-range Steam Generator Water Level, Low Pressurizer Water Level, and High Containment Temperature variables in all DAS channels have been tested.

The completed test results (References 1 and 2) confirm that the capability exists for testing individual DAS channels without propagating an actuation signal to a DAS controlled component.

References 1,2, 3 and 4 are available for NRC inspection as part of Unit 3 and Unit 4 ITAAC 2.5.01.02a Completion Package (References 5 and 6).

### **List of ITAAC Findings**

In accordance with plant procedures for ITAAC completion, Southern Nuclear Operating Company (SNC) performed a review of all findings pertaining to the subject ITAAC and associated corrective actions. This finding review found there are no relevant ITAAC findings associated with this ITAAC.

### **References (available for NRC inspection)**

1. 3-DAS-ITPP-501, "Diverse Actuation System Preoperational Test Procedure"
2. 4-DAS-ITPP-501, "Diverse Actuation System Preoperational Test Procedure"
3. SNCXXXXXX, "DAS Component Power Verification Test – ITAAC: SV3-2.5.01.02a Item 3.f"
4. SNCYYYYYY, "DAS Component Power Verification Test – ITAAC: SV4-2.5.01.02a Item 3.f"
5. 2.5.01.02a-U3-CP-Rev0, ITAAC Completion Package
6. 2.5.01.02a-U4-CP-Rev0, ITAAC Completion Package
7. NEI 08-01, "Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52"

**Attachment A**  
**COL Appendix C Table 2.5.1-1**

<b>Table 2.5.1-1</b> <b>Functions Automatically Actuated by the DAS</b>	
1.	Reactor and Turbine Trip on Low Wide-range Steam Generator Water Level or Low Pressurizer Water Level or High Hot Leg Temperature
2.	Passive Residual Heat Removal (PRHR) Actuation and In-containment Refueling Water Storage Tank (IRWST) Gutter Isolation on Low Wide-range Steam Generator Water Level or on High Hot Leg Temperature
3.	Core Makeup Tank (CMT) Actuation and Trip All Reactor Coolant Pumps on Low Wide-range Steam Generator Water Level or Low Pressurizer Water Level
4.	Isolation of Selected Containment Penetrations and Initiation of Passive Containment Cooling System (PCS) on High Containment Temperature

**Attachment B**  
**COL Appendix C Table 2.5.1-2**

<b>Table 2.5.1-2</b> <b>Functions Manually Actuated by the DAS</b>	
1.	Reactor and Turbine Trip
2.	PRHR Actuation and IRWST Gutter Isolation
3.	CMT Actuation and Trip All Reactor Coolant Pumps
4.	First-stage Automatic Depressurization System (ADS) Valve Actuation
5.	Second-stage ADS Valve Actuation
6.	Third-stage ADS Valve Actuation
7.	Fourth-stage ADS Valve Actuation
8.	PCS Actuation
9.	Isolation of Selected Containment Penetrations
10.	Containment Hydrogen Igniter Actuation
11.	IRWST Injection Actuation
12.	Containment Recirculation Actuation
13.	Actuate IRWST Drain to Containment

**Attachment C**

**COL Appendix C Table 2.5.1-3**

<b>Table 2.5.1-3 DAS Sensors and Displays</b>	
<b>Equipment Name</b>	<b>Tag Number</b>
Reactor Coolant System (RCS) Hot Leg Temperature	RCS-300A
RCS Hot Leg Temperature	RCS-300B
Steam Generator 1 Wide-range Level	SGS-044
Steam Generator 1 Wide-range Level	SGS-045
Steam Generator 2 Wide-range Level	SGS-046
Steam Generator 2 Wide-range Level	SGS-047
Pressurizer Water Level	RCS-305A
Pressurizer Water Level	RCS-305B
Containment Temperature	VCS-053A
Containment Temperature	VCS-053B
Core Exit Temperature	IIS-009
Core Exit Temperature	IIS-013
Core Exit Temperature	IIS-030
Core Exit Temperature	IIS-034
Rod Control Motor Generator Voltage	PLS-001
Rod Control Motor Generator Voltage	PLS-002

Attachment D

\*Excerpted from COL Appendix C Table 3.7-1

Table 3.7-1 Risk-Significant Components	
*Equipment Name	*Tag Number
Containment Isolation Valves Controlled by DAS	CVS-PL-V045, -V047 VFS-PL-V003, -V004, -V009, -V010 WLS-PL-V055, -V057