Southern Nuclear

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U.S. Nuclear Regulatory Commission
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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 2.3.06.09b.ii [Index Number 375]

Ladies and Gentlemen:

Pursuant to 10 CFR 52.99(c)(3), Southern Nuclear Operating Company hereby notifies the NRC that as of April 4, 2019, Vogtle Electric Generating Plant (VEGP) Unit 3 and Unit 4 Uncompleted Inspections Tests Analyses and Acceptance Criteria (ITAAC) Item 2.3.06.09b.ii [Index Number 375] has not been completed greater than 225-days prior to initial fuel load. The Enclosure describes the plan for completing ITAAC 2.3.06.09b.ii [Index Number 375]. 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)(3) 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,

Michael J. Yox
Regulatory Affairs Director Vogtle 3 & 4

Enclosure: Vogtle Electric Generating Plant (VEGP) Unit 3 and Unit 4
Completion Plan for Uncompleted ITAAC 2.3.06.09b.ii [Index Number 375]

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Southern Nuclear Operating Company
ND-19-0339
Enclosure

Vogtle Electric Generating Plant (VEGP) Unit 3 and Unit 4
Completion Plan for Uncompleted ITAAC 2.3.06.09b.ii [Index Number 375]

ITAAC Statement

Design Commitment

9.b) The RNS provides heat removal from the reactor coolant during shutdown operations.

9.c) The RNS provides low pressure makeup flow from the cask loading pit to the RCS for scenarios following actuation of the ADS.

9.d) The RNS provides heat removal from the in-containment refueling water storage tank (IRWST).

12.a) The motor-operated and check valves identified in Table 2.3.6-1 perform an active safety-related function to change position as indicated in the table.

Inspections/Tests/Analyses

ii) Testing will be performed to confirm that the RNS can provide flow through the RNS heat exchangers when the pump suction is aligned to the RCS hot leg and the discharge is aligned to both PXS DVI lines with the RCS at atmospheric pressure.

iii) Inspection will be performed of the reactor coolant loop piping.

iv) Inspection will be performed of the RNS pump suction piping.

v) Inspection will be performed of the RNS pump suction nozzle connection to the RCS hot leg.

Testing will be performed to confirm that the RNS can provide low pressure makeup flow from the cask loading pit to the RCS when the pump suction is aligned to the cask loading pit and the discharge is aligned to both PXS DVI lines with RCS at atmospheric pressure.

Testing will be performed to confirm that the RNS can provide flow through the RNS heat exchangers when the pump suction is aligned to the IRWST and the discharge is aligned to the IRWST.

iii) Tests of the motor-operated valves will be performed under preoperational flow, differential pressure and temperature conditions.

iv) Exercise testing of the check valves active safety functions identified in Table 2.3.6-1 will be performed under preoperational test pressure, temperature and fluid flow conditions.

Acceptance Criteria

ii) When tested individually, each RNS pump provides at least 1400 gpm net flow to the RCS when the hot leg water level is at an elevation 15.5 inches ± 2 inches above the bottom of the hot leg.

iii) The RCS cold legs piping centerline is 17.5 inches ± 2 inches above the hot legs piping centerline.

iv) The RNS pump suction piping from the hot leg to the pump suction piping low point does not form a local high point (defined as an upward slope with a vertical rise greater than 3 inches).

v) The RNS suction line connection to the RCS is constructed from 20-inch Schedule 140 pipe.

When tested individually, each RNS pump provides at least 1100 gpm net flow to the RCS with the water level maintained within the range of > 10 ft and < 15 ft from the bottom of the cask loading pit.

Two operating RNS pumps provide at least 2000 gpm to the IRWST.

iii) Each motor-operated valve changes position as indicated in Table 2.3.6-1 under preoperational test conditions.

iv) Each check valve changes position as indicated in Table 2.3.6-1.

ITAAC Completion Description

Multiple ITAAC are performed with inspections and tests to verify that the Normal Residual Heat Removal System (RNS) provides at least 1400 gpm net flow to the Reactor Coolant System (RCS) when the hot leg water level is at an elevation 15.5 inches ± 2 inches above the bottom of the hot leg, the RCS cold leg piping centerline is 17.5 inches ± 2 inches above the hot leg piping centerline, the RNS pump suction piping from the hot leg to the pump suction does not form a local high point, and the RNS suction line connection to the RCS is constructed from 20-inch schedule 140 pipe. This ITAAC also verifies that each RNS pump provides at least 1100 gpm net flow to the RCS when the water level is maintained within the range of > 10 ft and < 15 ft from the bottom of the cask loading pit and the two operating RNS pumps provide at least 2000 gpm to the In-containment Refueling Water Storage Tank (IRWST). This ITAAC also verifies each motor-operated valve (MOV) changes positions as indicated in Table 2.3.6-1 under preoperational test conditions and each check valve changes position as indicated in Table 2.3.6-1.

ii) When tested individually, each RNS pump provides at least 1400 gpm net flow to the RCS when the hot leg water level is at an elevation 15.5 inches ± 2 inches above the bottom of the hot leg.

Testing is performed in accordance with Unit 3 and Unit 4 preoperational test procedures 3-RNS-ITPP-501 and 4-RNS-ITPP-501 (References 1 and 2) to verify that each RNS pump provides at least 1400 gpm net flow to the RCS when the hot leg water level is at an elevation 15.5 inches ± 2 inches above the bottom of the hot leg.

The test is initiated by verifying the hot leg level is between 13.5 inches and 17.5 inches, the RCS is at atmospheric pressure, and temporary flow instruments and pump suction gages are installed and connected to a Data Acquisition System (DAQ). The RNS is aligned to take suction from the RCS hot leg and discharge back to the RCS DVI lines and the A RNS pump is started. The RNS flow control valves are adjusted to provide maximum flow and flow is measured and verified to meet the acceptance criteria. This testing is repeated using the B RNS pump.

The Unit 3 RNS pump A provides XXXX gpm and Unit 3 RNS pump B provides YYYY gpm. The Unit 4 RNS pump A provides XXXX gpm and Unit 4 RNS pump B provides YYYY gpm. This demonstrates each RNS pump provides at least 1400 gpm net flow to the RCS when the hot leg water level is at an elevation 15.5 inches ± 2 inches above the bottom of the hot leg.

iii) The RCS cold legs piping centerline is 17.5 inches ± 2 inches above the hot legs piping centerline.

An inspection is performed to ensure the RCS cold leg piping centerline is 17.5 inches ± 2 inches above the hot legs piping centerline utilizing NCSP0324 "Request for Survey Support". The survey data is taken using the guidance in the request for survey support and delivered for evaluation. The evaluation results are tabulated in Unit 3 Inspection Report YYY and Unit 4 Inspection Report YYY (References 3 & 4) and demonstrate that Unit 3 cold leg 1A is XX.X inches above hot leg 1, cold leg 1B is XX.X inches above hot leg 1, cold leg 2A is XX.X inches above hot leg 2, and cold leg 2B is XX.X inches above hot leg 2. Unit 4 cold leg 1A is XX.X inches above hot leg 1, cold leg 1B is XX.X inches above hot leg 1, cold leg 2A is XX.X inches above hot leg 2, and cold leg 2B is XX.X inches above hot leg 2.

The results of the inspection confirm for Unit 3 and Unit 4 that the RCS cold legs piping centerline is 17.5 inches ± 2 inches above the hot legs piping centerline

iv) The RNS pump suction piping from the hot leg to the pump suction piping low point does not form a local high point (defined as an upward slope with a vertical rise greater than 3 inches).

An inspection is performed to ensure the RNS pump suction piping from the hot leg to the pump suction piping low point does not form a local high point. A walk down inspection of the as-built pipelines is performed for observable downward sloping sections and verifications with a digital level are taken at piping sections, where deemed necessary, to verify downward slope. The inspection found the RNS suction piping sloped downward from the RCS hot leg connection to the low point at the RNS pump suction.

The inspection results are documented in Unit 3 Inspection Report XXX and Unit 4 Inspection Report XXX (References 5 & 6) and confirm that Unit 3 and Unit 4 RNS pump suction piping from the hot leg to the pump suction piping low point does not form a local high point (defined as an upward slope with a vertical rise greater than 3 inches).

v) The RNS suction line connection to the RCS is constructed from 20-inch Schedule 140 pipe.

An inspection of the RNS pump suction nozzle connection to the RCS hot leg is performed to verify the pipe schedule and size connection is constructed from 20-inch Schedule 140 pipe.

The inspection is performed by a review of the Certified Material Test Report (CMTR) and the work package that installed this specific piping section. The results of the inspection are documented in Unit 3 Inspection Report XYZ and Unit 4 Inspection Report XYZ (References 7 & 8) and confirm that the RNS suction line connection to the RCS is constructed from 20-inch schedule 140 pipe for both Unit 3 and Unit 4.

When tested individually, each RNS pump provides at least 1100 gpm net flow to the RCS with the water level maintained within the range of > 10 ft and < 15 ft from the bottom of the cask loading pit.

Testing is performed in accordance with Unit 3 and Unit 4 preoperational test procedures 3-RNS-ITPP-501 and 4-RNS-ITPP-501 (References 1 and 2) to verify that when tested individually, each RNS pump provides at least 1100 gpm net flow to the RCS with the water level maintained within the range of > 10 ft. and < 15 ft. from the bottom of the cask loading pit (CLP).

The test is initiated by verifying the CLP water level is > 10 ft to < 15.0 ft above the bottom of the CLP, RCS is depressurized, lower internals installed in the reactor vessel, and temporary flow and pressure gauges are installed and connected to a DAQ. The RNS system is aligned to take suction from the CLP and discharge back to the Direct Vessel Injection (DVI) lines. The A RNS pump is started, RNS injection flow is increased to maximum, flow is measured and verified to meet acceptance criteria. This testing is repeated using the B RNS pump.

The Unit 3 RNS pump A provides XXXX gpm and Unit 3 RNS pump B provides YYYY gpm. The Unit 4 RNS pump A provides XXXX gpm and Unit 4 RNS pump B provides YYYY gpm. This verifies that for Unit 3 and Unit 4 when tested individually, each RNS pump provides at least 1100 gpm net flow to the RCS with the water level maintained within the range of > 10 ft and < 15 ft from the bottom of the cask loading pit.

<u>Two operating RNS pumps provide at least 2000 gpm to the IRWST.</u>

Testing is performed in accordance with Unit 3 and Unit 4 preoperational test procedures 3-RNS-ITPP-501 and 4-RNS-ITPP-501 (References 1 and 2) to verify that two RNS pumps provide at least 2000 gpm to the In-containment Refueling Water Storage Tank (IRWST) which demonstrates the RNS will provide heat removal from the IRWST.

The test is initiated by verifying the IRWST level, temporary flow, and pressure instruments are installed and connected to the DAQ. The RNS system is aligned to recirculate the IRWST. Both RNS pumps are started, flow is established to the IRWST through each RNS heat exchanger and flow is measured and recorded.

The Unit 3 RNS pumps provide XXXX gpm and Unit 4 RNS pumps provide YYYY gpm. This demonstrates two operating RNS pumps on Unit 3 and Unit 4 provide at least 2000 gpm to the IRWST.

<u>iii) Each motor-operated valve changes position as indicated in Table 2.3.6-1 under preoperational test conditions.</u>

Testing is performed in accordance with Unit 3 and Unit 4 preoperational test procedures 3-RNS-ITPP-501 and 4-RNS-ITPP-501 (References 1 and 2) and 3-RNS-ITPP-502 and 4-RNS-ITPP-502 (References 9 and 10) to confirm the motor-operated valves (MOVs) listed in COL Appendix C Table 2.3.6-1 (Attachment A) change position under pre-operational flow, differential pressure, and temperature conditions.

References 1 and 2 establish the preoperational test conditions by ensuring the RCS is in a mid-loop level condition and the IRWST is filled to greater than 25% level. These conditions establish the greatest differential pressure and flow conditions for RNS-PL-V023 (RNS Suction from IRWST Motor-operated Isolation Valve). The RNS suction is aligned to the RCS, RNS-PL-V023 is opened, RCS level is verified to increase, then RNS-PL-V023 is closed. This

demonstrates that this MOV changes position as indicated in Attachment A under preoperational test conditions.

References 9 and 10 establish the preoperational test conditions by ensuring the RCS temperature is > 275°F and RCS pressure between 370 psig and 400 psig, with a single train of RNS in service utilizing a single suction header. Power to one of the open suction header valves is removed and a manual actuation of RNS isolation is performed. RNS-PL-V011 (RNS Discharge MOV Containment Isolation), RNS-PL-V022 (RNS Suction Header MOV Containment Isolation), and the tested suction header MOV are verified to close. This testing is repeated and a different suction header MOV is tested each time until all 4 suction header MOVs (RNS-PL-V001A/V001B/V002A/V002B) have been tested.

The test results confirm that each motor-operated valve, on Unit 3 and Unit 4, change positions as indicated in Table 2.3.6-1 under preoperational test conditions.

<u>iv) Each check valve changes position as indicated in Table 2.3.6-1.</u>

Testing is performed in accordance with Unit 3 and Unit 4 preoperational test procedures 3-RNS-ITPP-501 and 4-RNS-ITPP-501 (References 1 and 2) to confirm that each check valve with an active safety function changes position as indicated in COL Table 2.3.6-1 (Attachment B) under pre-operational test pressure, temperature, and fluid flow conditions.

References 1 and 2 establish the preoperational test conditions by ensuring the RCS is in a mid-loop level condition and the IRWST is filled to greater than 25% level. These conditions establish the differential pressure and flow conditions for testing the RCS Pressure Boundary Thermal Relief Check Valves (RNS-PL-V003A/B). RNS is aligned to allow the IRWST to gravity drain to the RCS via RNS-PL-V003A and the check valve is verified to open by observing a level rise in the RCS. This alignment is secured and realigned to test the opening of RNS-PL-V003B.

References 1 and 2 establish the preoperational test conditions by ensuring the RCS is between 73.5% and 86.5% hot leg level, installs temporary flow instruments on each DVI line and aligns the RNS system for dual RNS pump recirculation of the RCS. Both RNS pumps are placed in service recirculating the RCS and flow readings are taken on the DVI line flow instruments. The remaining check valves in Attachment B (RNS-PL-V013/V015A/V015B/V017A/V017B) are verified to open based on the flow verification.

Testing is performed in accordance with Unit 3 and Unit 4 surveillance test procedures SV3-RNS-OTS-17-005 and SV4-RNS-OTS-17-005 (References 11 and 12) to confirm that each check valve listed in Attachment B closes. This testing is performed with the RNS system removed from service and utilizes the Passive Core Cooling System (PXS) test header. Each check valve, except RNS-PL-V013, is tested utilizing system pressure and fluid to seat the check valve and verify acceptable leakage. Check valve RNS-PL-V013 (RNS Discharge Header Containment Isolation Check Valve) is tested by isolating the valve, draining the fluid from both sides and utilizing test connections to pressurize the upstream side with air and verifying no leakage past the check valve.

This testing ensures each check valve on Unit 3 and Unit 4 changes position as indicated in Table 2.3.6-1.

References 1 through 12 are available for NRC inspection as part of Unit 3 and Unit 4 ITAAC Completion Packages (Reference 13 and 14).

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 review found there are no relevant ITAAC findings associated with this ITAAC.

References (available for NRC inspection)

1. 3-RNS-ITPP-501, "Normal Residual Heat Removal System Preoperational Test Procedure"
2. 4-RNS-ITPP-501, "Normal Residual Heat Removal System Preoperational Test Procedure"
3. Unit 3 Inspection Report YYY, "RCS hot and cold leg centerline determination"
4. Unit 4 Inspection Report YYY, "RCS hot and cold leg centerline determination"
5. Unit 3 Inspection Report XXX, "RNS suction piping slope"
6. Unit 4 Inspection Report XXX, "RNS suction piping slope"
7. Unit 3 Inspection Report XYZ, "RNS suction piping connection to the RCS"
8. Unit 4 Inspection Report XYZ, "RNS suction piping connection to the RCS"
9. 3-RNS-ITPP-502, "Normal Residual Heat Removal System Precore Hot Functional Test Procedure"
10. 4-RNS-ITPP-502, "Normal Residual Heat Removal System Precore Hot Functional Test Procedure"
11. 3-RNS-OTS-17-005, "Normal Residual Heat Removal System Check Valve Exercise Test"
12. 4-RNS-OTS-17-005, "Normal Residual Heat Removal System Check Valve Exercise Test"
13. 2.3.06.09b.ii-U3-CP-Rev 0, ITAAC Completion Package
14. 2.3.06.09b.ii-U4-CP-Rev 0, ITAAC Completion Package
15. NEI 08-01, "Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52"

Attachment A

Excerpt from COL Appendix C Table 2.3.6-1

Equipment Name	Tag No.	Active Function
RCS Inner Hot Leg Suction Motor-operated Isolation Valve	RNS-PL-V001A	Transfer Closed
RCS Inner Hot Leg Suction Motor-operated Isolation Valve	RNS-PL-V001B	Transfer Closed
RCS Outer Hot Leg Suction Motor-operated Isolation Valve	RNS-PL-V002A	Transfer Closed
RCS Outer Hot Leg Suction Motor-operated Isolation Valve	RNS-PL-V002B	Transfer Closed
RNS Discharge Motor-operated Containment Isolation Valve	RNS-PL-V011	Transfer Closed
RNS Suction Header Motor-operated Containment Isolation Valve	RNS-PL-V022	Transfer Closed
RNS Suction from IRWST Motor-operated Isolation Valve	RNS-PL-V023	Transfer Closed

Attachment B

Excerpt from COL Appendix C Table 2.3.6-1

Equipment Name	Tag No.	Active Function
RCS Pressure Boundary Thermal Relief Check Valve	RNS-PL-V003A	Transfer Open/ Transfer Closed
RCS Pressure Boundary Thermal Relief Check Valve	RNS-PL-V003B	Transfer Open/ Transfer Closed
RNS Discharge Header Containment Isolation Check Valve	RNS-PL-V0013	Transfer Open/ Transfer Closed
RNS Discharge RCS Pressure Boundary Check Valve	RNS-PL-V015A	Transfer Open/ Transfer Closed
RNS Discharge RCS Pressure Boundary Check Valve	RNS-PL-V0115B	Transfer Open/ Transfer Closed
RNS Discharge RCS Pressure Boundary Check Valve	RNS-PL-V017A	Transfer Open/ Transfer Closed
RNS Discharge RCS Pressure Boundary Check Valve	RNS-PL-V017B	Transfer Open/ Transfer Closed