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MAR 2 1 2011

Project No.: 0783

ND-11- 0493

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

Southern Nuclear Operating Company
Vogtle Electric Generating Plant Unit 3
Completion of ITAAC 2.2 03.08c.i

The purpose of this letter is to notify the Nuclear Regulatory Commission (NRC) of the *Simulated* completion of Vogtle Electric Generating Plant (VEGP) Unit 3, Inspection, Test, Analysis and Acceptance Criteria (ITAAC) Item 2.2 03.08c.i for verifying the flow resistance in the Passive Core Cooling System (PXS) for each Core Makeup Tank (CMT), Accumulator, In-Containment Refueling Water Storage Tank (IRWST) injection line, and each containment recirculation line in accordance with 10 CFR 52.99(c)(1). The closure process for this ITAAC is based on the guidance described in NEI 08-01 (Reference 1).

ITAAC Statement

Design Commitment:

The PXS provides RCS makeup, boration, and safety injection during design basis events.

Inspections, Tests, Analysis:

A low-pressure injection test and analysis for each CMT, each accumulator, each IRWST injection line, and each containment recirculation line will be conducted. Each test is initiated by opening isolation valve(s) in the line being tested. Test fixtures may be used to simulate squib valves.

CMTs:
Each CMT will be initially filled with water. All valves in these lines will be open during the test.

Accumulators:
Each accumulator will be partially filled with water and pressurized with nitrogen. All valves in these lines will be open during the test. Sufficient flow will be provided to fully open the check valves.

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IRWST Injection:
The IRWST will be partially filled with water. All valves in these lines will be open during the test. Sufficient flow will be provided to fully open the check valves.

Containment Recirculation:
A temporary water supply will be connected to the recirculation lines. All valves in these lines will be open during the test. Sufficient flow will be provided to fully open the check valves.

Acceptance Criteria:

The injection line flow resistance from each source is as follows:

CMTs:

The calculated flow resistance between each CMT and the reactor vessel is
≥ 1.81 x 10^{-5} ft/gpm^2 and
≤ 2.25 x 10^{-5} ft/gpm^2.

Accumulators:

The calculated flow resistance between each accumulator and the reactor vessel is
≥1.47 x 10^{-5} ft/gpm^2 and
≤1.83 x 10^{-5} ft/gpm^2.

IRWST Injection:

The calculated flow resistance for each IRWST injection line between the IRWST and the reactor vessel is:
Line A: ≥ 5.53 x 10^{-6} ft/gpm^2 and ≤ 9.20 x 10^{-6} ft/gpm^2 and
Line B: ≥ 6.21 x 10^{-6} ft/gpm^2 and ≤ 1.03 x 10^{-5} ft/gpm^2.

Containment Recirculation:

The calculated flow resistance for each containment recirculation line between the containment and the reactor vessel is:
Line A: ≤ 1.11 x 10^{-5} ft/gpm^2 and
Line B:≤ 1.04 x 10^{-5} ft/gpm^2.

ITAAC Determination Basis

CMTs:
A performance test was conducted to determine that the flow path from each Core Makeup Tank (CMT) (PXS-MT-02A/B) to the reactor vessel has a flow resistance ≥ 1.81 x 10^{-5} ft/gpm^2 and ≤ 2.25 x 10^{-5} ft/gpm^2. This was accomplished by opening both of the associated CMT discharge isolation valves and gravity draining each tank through the direct vessel injection flow path with all valves in these lines open, while measuring CMT level, pressure and discharge flow.

The constant value for flow resistance was calculated, adjusted for measurement uncertainty, and compared to the acceptance criteria. The flow resistance was calculated to be 2.00 $x10^{-5}$ ft/gpm^2 which falls within the required calculated flow resistance as required by the ITAAC acceptance criteria. The test procedure and results are provided in Reference 3.

Accumulators:
A performance test was conducted to determine that the flow path from each Accumulator (PXS-MT-01A/B) to the reactor vessel has a flow resistance ≥1.47 x 10^{-5} ft/gpm^2 and ≤1.83 x 10^{-5} ft/gpm^2. This was accomplished by partially filling each accumulator with water and pressurizing with nitrogen, opening the associated Accumulator discharge isolation valve, and blowing down each tank through the direct vessel injection flow path with all valves in these lines open, while measuring Accumulator Tank level, pressure and discharge flow. Sufficient flow was provided to fully open the check valves.

The constant value for flow resistance was calculated based on measured tank level, pressure and discharge flow, adjusted for measurement uncertainty, and compared to the acceptance criteria. The flow resistance was determined to be 1.65 $x10^{-5}$ ft/gpm^2 which falls within the required calculated flow resistance as required by the ITAAC acceptance criteria. The test procedure and results are provided in Reference 4.

IRWST Injection:
A performance test was conducted to determine that the flow path from IRWST Injection Line A to the reactor vessel has a flow resistance ≥ 5.53 x 10^{-6} ft/gpm^2 and ≤ 9.20 x 10^{-6} ft/gpm^2, and the flow path from IRWST Injection Line B to the reactor vessel has a flow resistance ≥ 6.21 x 10^{-6} ft/gpm^2 and ≤ 1.03 x 10^{-5} ft/gpm^2. This was accomplished by partially filling the IRWST with demineralized water, isolating the containment sump injection recirculation lines, and opening the IRWST isolation valves and gravity draining the IRWST through the direct vessel injection flow path to injection line "A" with all valves in these lines open, while measuring IRWST level, pressure and discharge flow. Sufficient flow was provided to fully open the check valves. The process is then repeated for the flow path to injection line "B".

The constant value for flow resistance was calculated based on tank level, pressure and discharge flow, adjusted for measurement uncertainty, and compared to the acceptance criteria. The flow resistance was determined to be 7.80 $x10^{-6}$ ft/gpm^2 for Line A and 8.80 $x10^{-6}$ ft/gpm^2 for Line B which falls within the required calculated flow resistance required by the ITAAC acceptance criteria. The test procedure and results are provided in Reference 5.

Containment Recirculation:
A performance test was conducted to determine that the flow resistance in each containment recirculation line between the containment and the reactor vessel for line A is ≤ 1.11 x 10^{-5} ft/gpm^2 and line B is ≤ 1.04 x 10^{-5} ft/gpm^2. This was accomplished by opening all valves and installing flow test fixtures for the squib valves in the containment recirculation sump lines, filling the In-containment Refueling Water Storage Tank (IRWST) with demineralized water to act as a temporary water supply, and initiating flow from the "A" screen in the IRWST into the containment recirculation sump to recirculation injection line "B" to the reactor vessel. The process is then repeated with screen "B" to injection line "A" while measuring flow rate and differential pressure. All valves in these lines were open during the test and sufficient flow was provided to fully open the check valves.

The constant value for flow resistance was calculated based on measured flow rate and differential pressure, adjusted for measurement uncertainty, and compared to the acceptance criteria. The flow resistance was determined to be 1.05 $x10^{-5}$ ft/gpm^2 for Line A and 9.80 x 10^{-6} ft/gpm^2 for Line B which falls within the required calculated flow resistance required by the ITAAC acceptance criteria. The test procedure and results are provided in Reference 6.

The flow resistance values determined in the CMTs, Accumulators, IRWST Injection, and Containment Recirculation tests described above meet the acceptance criteria of the ITAAC and verify the design commitment that the PXS provides Reactor Coolant System (RCS) makeup, boration, and safety injection during design basis events.

ITAAC-Related Construction Finding Review

In accordance with procedures for ITAAC closure, Southern Nuclear performed a review of all ITAAC-related construction findings pertaining to the subject ITAAC. This review found that there were no relevant ITAAC-related construction findings associated with this ITAAC. The ITAAC Completion Package (Reference 2) documents the closure for ITAAC 2.2 03.08c.i and is available for NRC inspection.

ITAAC Completion Statement

Based on the above information for VEGP Unit 3, Southern Nuclear hereby notifies the NRC that ITAAC 2.2 03.08c.i was performed and the prescribed acceptance criteria are met.

Systems, structures and components verified as part of this ITAAC are being maintained in their as-designed, ITAAC compliant condition in accordance with approved plant programs and procedures.

We request NRC staff confirmation of this determination and publication of the required notice in the Federal Register per 10 CFR 52.99.

If there are any questions, please contact Jim T. Davis at 706-826-5544.

Sincerely,

J. T. Davis
Vogtle 3 & 4 Licensing Supervisor
SNC Nuclear Development

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References (available for NRC inspection)

1. NEI 08-01, Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52.
2. SV3 ITAAC 2.2 03.08c.i Completion Package
3. SV3-PXS-T2-XX1, CMT Injection Line Flow Resistance Test
4. SV3-PXS-T2-XX2, Accumulator Injection Line Flow Resistance Test
5. SV3-PXS-T2-XX3, IRWST Injection Line Flow Resistance Test
6. SV3-PXS-T2-XX4, Containment Recirculation Line Flow Resistance Test

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