April R. Rice
Manager
New Nuclear Licensing

October 30, 2014
NND-14-0631
10 CFR 52.99(c)(1)

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

Subject: Virgil C. Summer Nuclear Station (VCSNS) Unit 3
Combined License No. NPF-94
Docket Number 52-028
ITAAC Closure Notification for ITAAC 2.4.02.03.iii

Attachments: References

The purpose of this letter is to notify the Nuclear Regulatory Commission (NRC) of the completion of Virgil C. Summer Nuclear Station (VCSNS) Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Item 2.4.02.03.iii for verifying that a report exists and concludes that the two electrical overspeed protection systems have diverse hardware and software/firmware. The closure process for this ITAAC is based on the guidance described in NEI 08-01 (Reference 1), which was endorsed by the NRC in Regulatory Guide 1.215.

ITAAC Statement

Design Commitment:

3. The trip signals from the two turbine electrical overspeed protection trip systems are isolated from, and independent of, each other.

Inspections, Tests, Analyses:

iii) Inspection will be performed for the existence of a report verifying that the two turbine electrical overspeed protection systems have diverse hardware and software/firmware.

Acceptance Criteria:

iii) A report exists and concludes that the two electrical overspeed protection systems have diverse hardware and software/firmware.

ITAAC Determination Basis

Multiple ITAAC are performed to confirm that the trip signals from the two turbine electrical overspeed protection trip systems are isolated from, and independent of, each other. This ITAAC performed an inspection of the overspeed protection systems' design to verify the existence of diverse hardware and software/firmware.

The designs for the two turbine electrical overspeed protection systems have been reviewed and verified to have diverse hardware and software/firmware. The basis of diversity used for prevention of common mode failure is established by Method for Performing Diversity and Defense-in-Depth Analyses of Reactor Protection Systems, NUREG/CR-6303 (Reference 2). The two turbine electrical overspeed protection systems were assessed on the elements of diversity established with NUREG/CR-6303.

Using guidelines set forth within NUREG/CR-6303, the diversity that exists between the two turbine electrical overspeed protection systems is documented in the AP1000 Turbine Control & Protection System Overspeed Diversity Analysis (Reference 3). The elements of diversity implemented within the design of the two electrical overspeed protection systems are as follows:

- Equipment Diversity
  - Use of different hardware manufacturers
- Functional Diversity
  - Different response-time scale (different setpoints)
- Human Diversity
  - Use of different design organizations/companies
  - Different design/development teams (designers, engineers, programmers)
  - Different implementation/validation teams (testers, installers, or certification personnel)
- Signal Diversity
  - Different parameters sensed by different physical effects
  - Same parameter sensed by a different redundant set of similar sensors
- Software Diversity
  - Different algorithms, logic, and program architecture
  - Different timing or order of execution
  - Different operating systems

The AP1000 Turbine Control & Protection System Overspeed Diversity Analysis Report exists and concludes that the two electrical overspeed protection systems have diverse hardware and software/firmware.

ITAAC Finding Review

In accordance with plant procedures for ITAAC completion, SCE&G performed a review of all findings pertaining to the subject ITAAC and associated corrective actions. This review found that there are no relevant ITAAC findings associated with this ITAAC. The

ITAAC Completion Statement

Based on the above information, SCE&G hereby notifies the NRC that ITAAC 2.4.02.03.iii was performed for VCSNS Unit 3 and that 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(e)(1).

If there are any questions, please contact Ryder Thompson at (803) 941-9812.

Sincerely,

Justin Bouknight

for April R. Rice
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New Nuclear Deployment

RCT/AR/jl

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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. NUREG/CR-6303, Method for Performing Diversity and Defense-in-Depth Analyses of Reactor Protection Systems

3. APP-PLS-J0R-009, AP1000 Turbine Control & Protection System Overspeed Diversity Analysis

4. V.C. Summer Unit 3 ITAAC 2.4.02.03.iii Completion Package