



May 8, 2017
NND-17-0253
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 2
Combined License No. NPF-93
Docket Number 52-027
ITAAC Closure Notification on Completion of ITAAC 2.5.02.07a [Index
No. 534]

Attachments: (1) References

The purpose of this letter is to notify the Nuclear Regulatory Commission (NRC) in accordance with 10 CFR 52.99(c)(1) of the completion of Virgil C. Summer Nuclear Station (VCSNS) Unit 2 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Item 2.5.02.07a for verifying a report exists and concludes that isolation devices prevent credible faults from propagating into the Protection and Safety Monitoring System (PMS) from the Plant Control System (PLS). 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:

7.a) The PMS provides process signals to the PLS through isolation devices.

Inspections, Tests, Analyses:

Type tests, analyses, or a combination of type tests and analyses of the isolation devices will be performed.

Acceptance Criteria:

A report exists and concludes that the isolation devices prevent credible faults from propagating into the PMS.

ITAAC Determination Basis

Type testing and analyses of the isolation devices, including the Protection and Safety Monitoring System (PMS) cabinets and reactor trip switchgear, were performed to verify that devices prevent credible faults from propagating into the PMS from the Plant Control System (PLS). The reactor trip switchgear is identified in COL Appendix C, Table 2.5.2-1 to be equipment that is considered part of the PMS system.

The isolation methods utilized to prevent credible faults from propagating into the PMS from the PLS are fiber-optic transmission, relay isolation, and inductive isolation. The PMS cabinets utilizes all three of these isolation methods. The reactor trip switchgear utilizes relay isolation devices within the switchgear cabinet to prevent credible faults from propagating from the PLS non-Class 1E side to PMS Class 1E side of the equipment. The type testing, governed by Institute of Electrical and Electronics Engineers (IEEE) Standard 384-1981(Reference 2), was performed on isolation barrier components (relay isolation and inductive isolation (transformer coupled)) to qualify the barrier components and the barrier component protection utilized in the isolation barrier assemblies.

The testing and analyses demonstrated that the most severe credible faults injected into the non-Class 1E side of the isolation barrier did not degrade the intended safety function of PMS. This was accomplished by completing the prescribed tests under conditions where the non-Class 1E side of the isolation barrier is exposed to calculated credible faults, while the Class 1E side of the isolation barrier was monitored for perturbations.

As electrical surges have been identified as credible faults, the isolation devices were subjected to ± 2 kVDC surge (combination wave), ± 2 kVDC surge (ring wave), and ± 2 kVDC surge (Electrical Fast Transient). Surge testing was performed in accordance with International Electrotechnical Commission (IEC) Standard IEC 61000-4 (Reference 3).

Analysis was performed of fiber-optic communication media, which provides a high level of electrical isolation. Electrical faults that occur on one end of the fiber-optic link cannot be transmitted into the equipment on the other end. This maintains the independence of the interconnected system components by preventing faults from propagating into multiple components and leading to a loss of safety function. Due to the inherent properties of fiber optic cable, fault testing is not necessary in accordance with IEEE 384-2008 (Reference 4).

The results of the tests and analyses are documented in APP-PMS-VBR-015, "AP1000 Protection and Safety Monitoring System Isolation Summary Report for Use in the AP1000 Plant" (Reference 5) and APP-JY50-T2R-001, "Reactor Trip Switchgear IEEE 384 Fault Test Report" (Reference 6) and conclude that the isolation devices prevent credible faults from propagating from the PLS into the PMS.

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 one (1) notice of nonconformance associated with this ITAAC:

1. 99900404/2015-204-01

The corrective actions for this finding have been completed. This review is documented in the completion package for ITAAC 2.5.02.07a (Reference 7), which is available for NRC inspection.

ITAAC Completion Statement

Based on the above information, SCE&G hereby notifies the NRC that ITAAC 2.5.02.07a was performed for VCSNS Unit 2 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,



April R. Rice
Manager
Nuclear Licensing
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Attachment 1

References (available for NRC inspection):

1. NEI 08-01, "Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52"
2. IEEE Std. 384-1981, "IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits"
3. IEC Std. 61000-4, "Electromagnetic Compatibility (EMC) – Part 4 Testing and Measurement Techniques"
4. IEEE Std. 384-2008, "IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits"
5. APP-PMS-VBR-015, "AP1000 Protection and Safety Monitoring System Isolation Summary Report for Use in the AP1000 Plant"
6. APP-JY50-T2R-001, "Reactor Trip Switchgear IEEE 384 Fault Test Report"
7. ITAAC 2.5.02.07a Completion Package