

## Example D52 – Human Factors Engineering Verification and Validation ITAAC Closure Notification

XX/YY/ZZZZ (Date)

To: NRC

From: {Name of Licensee}  
{Site Name and Unit #}  
{Docket #}

Subject: Completion of ITAAC 3.2.00.01a01c(ii)

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 {Site Name and Unit #} Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Item 3.2.00.01a-01c(ii) to verify that a report exists and concludes that ~~task support verification~~ integrated system validation (ISV) was conducted in conformance with the implementation plan and includes ~~verification that the information and controls provided by the Human-System Interface (HSI) match the display and control requirements generated by the function-based task analyses and the operational sequence analyses.~~ an evaluation using performance-based tests to determine whether an integrated system design (i.e., hardware, software, and personnel elements) meets performance requirements and acceptably supports safe operation of the plant. The closure process for this ITAAC is based on the guidance described in NEI 08-01 (Reference 1).

### ITAAC Statement

#### Design Commitment:

1. The HFE verification and validation program is performed in accordance with the HFE verification and validation implementation plan and includes the following activities:

~~ac) HSI Task support verification~~ Integrated system validation.

#### Inspections, Tests, Analyses:

~~An evaluation of the implementation of the HSI task support verification will be performed.~~

c)(ii) Tests and analyses of the following plant evolutions and transients, using a facility that physically represents the MCR configuration and dynamically represents the MCR HSI and the operating characteristics and responses of the AP1000 design, will be performed:

- Normal plant heatup and startup to 100% power
- Normal plant shutdown and cooldown to cold shutdown
- Transients: reactor trip and turbine trip
- Accidents:
  - Small-break LOCA
  - Large-break LOCA
  - Steam line break
  - Feedwater line break
  - Steam generator tube rupture

#### Acceptance Criteria:

A report exists and concludes that: *The test and analysis results demonstrate that the MCR operators can perform the following:*

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- Heat up and start up the plant to 100% power
- Shut down and cool down the plant to cold shutdown
- Bring the plant to safe shutdown following the specified transients
- Bring the plant to a safe, stable state following the specified accident ~~task support verification was conducted in conformance with the implementation plan and includes verification that the information and controls provided by the HSI match the display and control requirements generated by the function-based task analyses and the operational sequence analyses.~~

## **ITAAC Determination Basis**

Multiple ITAAC are performed to confirm that the HFE verification and validation program, as described in Chapter 18 of the AP1000 DCD, is performed in accordance with the HFE verification and validation implementation plan. ~~The subject ITAAC performs an evaluation of the implementation of the HSI task support verification, which is performed as part of the Integrated System Validation (ISV). Following the execution of the ISV, an analysis of the methodology, the scope of the ISV (including the ISV operating scenarios), and the data results and an analysis of the ISV were performed and documented. These evaluations concluded that the ISV was conducted in conformance with the Human Factors Engineering (HFE) Integrated System Validation (ISV) Plan (Reference 5) and concluded~~

~~that the Main Control Room (MCR), HSI Resources, procedures, MCR staffing and operator training are adequate to support safe operation. Significant Human Engineering Deficiencies (HEDs) were resolved, and limitations of the ISV implementation and execution were recorded and addressed in accordance with the implementation plan.~~

~~Following the execution of the ISV, the test data was analyzed. The analysis results and supporting data of the ISV are documented in the AP1000 Human Factors Engineering Integrated System Validation Report (Reference 3) and the AP1000 Human Factors Engineering Integrated System Validation Results Data Report, (Reference 4). The ISV results demonstrate, via the successful management of complex operational and accident scenarios, that the Main Control Room (MCR) design, HSI resources, procedures, MCR staffing, and operator training are adequate to support safe operation. and conclude that the operating scenarios described in the implementation plan for integrated system validation were executed in conformance with the plan, and verify that the information and controls provided by the HSI match the display and control requirement generated by the function-based task analyses and the operational sequence analyses. In addition, crew performance was assessed, and HEDs were identified and addressed in accordance with the implementation plan.~~ The overall results are discussed in terms of the safety and operability of the AP1000 Main Control Room.

## **ITAAC Finding Review**

In accordance with XXX-XXX-XXX (project specific procedure for ITAAC completion), {Licensee} performed a review of all ITAAC 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 review is documented in the ITAAC Completion Package for ITAAC 3.2.00.01a 01c(ii) (Reference 2) and available for NRC inspection.

## **ITAAC Completion Statement**

Based on the above information, [Licensee] hereby notifies the NRC that ITAAC 3.2.00.01a-01c(ii) was performed for Plant/Unit XYZ, and that the prescribed acceptance criteria are met.

Systems, structures and components verified as part 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 XXX at xxx-xxx-xxxx.

Sincerely,

{Signature of Licensee Representative}  
{Typed Name of Licensee Representative}  
{Title of Licensee Representative}

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

1. NEI 08-01, Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52.
2. ITAAC 3.2.00.01a-01c(ii) Completion Package
3. APP-OCS-GER-320, "AP1000 Human Factors Engineering Integrated System Validation Report"
4. APP-OCS-GER-321, "AP1000 Human Factors Engineering Integrated System Validation Results Data Report"
5. APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan"

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