ITAAC Quality & Inspectability Lessons Learned

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Introduction

- NRC Goal: ITAAC should be developed to promote a common and shared understanding

- ITAAC should be clear, concise, and understandable, thus facilitating agreement on what is required to perform and close the ITAAC

DCIP Construction ITAAC Team

- Reviews ITAAC for quality and inspectability
- Develops HQ ITAAC Closure Verification process
- Leads ITAAC prioritization
- Interfaces with industry/NEI, developed RG 1.215/NEI 08-01 on ITAAC closure
- Develops an ITAAC Maintenance protocol and associated Rulemaking

10 CFR Part 52 - ITAAC

- 52.54(a)(5): … ITAAC that are necessary and sufficient to show the facility was constructed, and will be operated IAW the design certification, the Act, and Commission's regulations

- 52.99(c)(1&2): Notifications of ITAAC closure

- 52.99(e): NRC verifies ITAAC are performed

- 52.103(g): The licensee shall not operate the facility until the Commission makes a finding that the acceptance criteria in the combined license are met...

Regulatory Issue Summary RIS 2008-05, Revision 1

- Issued Revision 1 on September 23, 2010 (ML102500244) due to continued problems identified by staff.
- Communicates good practices & lessons learned in ITAAC development
- Five main categories
  - ITAAC Format and Content
  - ITAAC Nomenclature and Language
  - ITAAC Inspection Focus, Logic and Practicality
  - ITAAC Standardization
  - ITAAC Scope

ITAAC Format and Content

- Use of a standard alphanumeric ID system is recommended
- ITAAC references to Tables & Drawings, should be precise to ensure completeness, consistency, and applicability
- Avoid integration of several different engineering or construction areas into a single ITAAC
- COL Applicants should aggregate into one complete ITAAC list all of the ITAAC contained in both the certified design and the COL

- Avoid use of undefined/subjective descriptive terminology

  - fast-closing valve; rapid depressurization; inclined sufficiently
  - system pressure: design and internal pressure have been inappropriately used interchangeably

- Industry accepted definitions are important and need to be followed such as "as-built"

ITAAC Inspection Focus, Logic, and Practicality

- There must be consistency and parallelism between the DC, ITA, and AC

- Consideration should be given to construction sequencing

  - Account for timing and sequence of construction activities allowing for early and mid-stage completion of ITAAC

  - Modular construction - NEI 08-01

- "Inspection" of records

Definitions - ITA

- **Inspect** or **Inspection** means visual observations, physical examinations, or reviews of records based on visual observation or physical examination that compare the structure, system, or component condition to one or more design commitments. Examples include walkdowns, configuration checks, measurements of dimensions, or nondestructive examinations.

- **Test** means the actuation, operation, or establishment of specified conditions to evaluate the performance or integrity of as-built structures, systems, or components, unless explicitly stated otherwise.

- **Analysis** means a calculation, mathematical computation, or engineering or technical evaluation. Engineering or technical evaluations could include, but are not limited to, comparisons with operating experience or design of similar structures, systems, or components.

Example 1

Inspection alone is not adequate

Design Commitment	Inspection, Tests, Analyses	Acceptance Criteria
The XYZ system has an available volume…sized to contain approximately 400% of the full-core debris.	Inspections of the as-built system will be conducted.	The as-built XYZ system is sized to contain 350%-450% of the full-core debris.

- While an inspection is appropriate for determining the volume of the XYZ System, an inspection alone is not capable of determining whether the measured volume can contain 350%-450% of full-core debris.

- The ITAAC includes sufficient specificity, however the ITA is inappropriate for determining that the AC has been satisfied.

Example 2

Inspect the construction, not the records

Design Commitment	Inspection, Tests, Analyses	Acceptance Criteria
The A and B buildings are constructed of reinforced concrete and the B building is pre-stressed.	Inspection of the A building and the B building construction records will be performed.	The A and B buildings are constructed of reinforced concrete and the B building is pre-stressed.

• The ITAAC is written to allow post-construction review of records in lieu of requiring direct inspection of construction as it occurs.

• ITAAC "Inspections" are intended to physically confirm the attribute being checked. Therefore, they are logically conducted at the appropriate time, either during or after the work is being performed.

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ITAAC Standardization

- Consistent ITAAC designations are important for accurate counts of ITA designations versus AC designations

- Proper references should be provided

- Agreement between the ITAAC and DCD information

- DCD Revisions and Site-Specific ITAAC should be consistent with the original format

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ITAAC Scope

- Multiple clear and objective ITAAC versus one "catch-all" ITAAC

- Different definition than SRP, thus expanding the scope of the term

- Thorough review of revisions to ITAAC and assessment of applicability to related areas

Summary

- ITAAC are conditions to the license (COL) and require similar clarity and importance as the technical specifications. When problems are identified, a full extent-of-problem review should be done.

- A common, shared understanding of the ITAAC meaning is critical to proper closure and NRC verification of acceptability. "Inspectability" implies that what the ITAAC purports to establish with respect to plant design and/or construction is, in fact, that which is understood as "necessary & sufficient" to meet regulatory requirements

- ITAAC verify that the as-built SSCs satisfy the top level design and performance standards specified in the license. The staff identified instances of missing ITAAC on some cases.

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