

NRC Public Meeting on First Principles – Nov. 16, 2017

NEI Handout

History Related to Tier 1/ITAAC First Principles

1. Inconsistent Tier 1/ITAAC scope and language in completed design certifications, even for analogous SSCs
2. Concerns about growth in Tier 1/ITAAC beyond that required by regulation and beyond top level design and performance characteristics pointed up need for improved guidance for Tier 1
3. NEI Standardized ITAAC Task Force formed in 2013 with initial focus on SMRs
 - a. leveraged NuScale design certification work
 - b. kickoff meeting w/NRC Nov. 19, 2013
 - c. 2014 transition to focus on LWR standard ITAAC
4. “First Principles” developed based largely on NRC guidance as regulatory basis for standard ITAAC and guidance for developing design specific ITAAC
5. Several public meetings in 2014-15 led to refinements and much agreement on standard ITAAC
6. NEI 15-02 submitted for NRC review May 2015, including
 - a. Tier 1 form and content guidance
 - b. First Principles
 - c. Standard ITAAC (scope & language)
 - d. Additional ITAAC discussion for Section 14.3
7. NRC sent standard ITAAC to NuScale in April 2016 and KHNP in August 2016 for use in their design certification applications, including differences both minor and significant vis-à-vis NEI 15-02
 - a. NuScale design certification submitted Jan. 2017, including Tier/ITAAC based on NEI 15-02
 - b. Also Jan. 2017, KHNP elected not to convert to the standard ITAAC
8. NEI carved out First Principles from NEI 15-02 and submitted as a white paper in June 2017 for NRC review and discussion. First Principles were intended to assist in determining
 - a. The proper scope of Tier 1/ITAAC
 - b. Potential need for Tier 2*
9. NRC announced in August 2017 that use of Tier 2* in future design certifications would be voluntary at the discretion of the applicant. SECY-17-0075 calls for improved descriptions of Tier 1 versus Tier 2 information that “would provide more detailed and objective criteria for external stakeholders and NRC staff in the development and review of a DCD.”
10. NEI responded to SECY-17-0075 with a letter to the Commission in Oct. 2017 concluding, “In the interest of clarity, the NRC staff should reconsider its conclusion [on continued use of Tier 2*] in a revision or supplement to SECY-17-0075, or at a minimum, provide a supplement to SECY-17-0075 that makes the new staff position clear and establishes a schedule for developing guidance to ensure consistent implementation.”

Tier 1/ITAAC First Principles

Objective

- Improved and consolidated guidance on Tier 1/ITAAC scope that is consistent with requirements and intent, and reflects experience to date
 - Based on First Principles
 - Considering other requirements and processes

Purpose/Importance

- Support for current and future design certifications
 - Basis for completing work on standardized ITAAC
-

Benefits

- Meet Tier 1/ITAAC requirements and intent while preserving flexibility to make changes intended by the Commission
 - Avoid unnecessary Tier 1/ITAAC that add burden w/o value
 - Provide better integration of ITAAC with other regulatory processes
 - Instill consistency across design certification reviews
 - Provide basis for standard ITAAC, which provide additional benefits:
 - ITAAC that are more amenable to implementation
 - Potential to reduce the number of ITAAC
 - Streamline DCA development and NRC review
-

Discussion Topics

- NRC staff feedback on First Principles white paper
- Opportunities to add more granularity in First Principles, e.g., examples in key design areas
- Next steps toward improved Tier 1/ITAAC guidance called for by SECY-17-0075
- Plans for completing work on standardized ITAAC

First Principles for Tier 1 Design Descriptions and ITAAC

(from June 2017 NEI white paper)

1. Tier 1 Design Descriptions describe the top-level design features and performance characteristics of the plant.
2. The amount of detail in Tier 1 Design Descriptions is proportional to the safety and risk significance of the top-level design feature or performance characteristic (i.e., a graded approach).
3. Tier 1 Design Descriptions are derived solely from the Tier 2 design information, and ITAAC Design Commitments are derived solely from Tier 1 Design Descriptions.
4. Tier 1 Design Descriptions describe SSC for which construction or installation in the final location will be completed prior to fuel loading, and are expected to be in place for the lifetime of the plant.
5. ITAAC provide reasonable assurance that the constructed facility conforms with NRC regulations related to design and performance of safety functions.
6. The scope of Tier 1 Design Descriptions reflects the Commission's intent to balance the goal of standardization with the need to provide flexibility to applicants and licensees to make certain changes without prior NRC approval.
7. ITAAC are a focused subset of construction verification activities.

10 CFR 52.47(b)(1)

The proposed inspections, tests, analyses, and acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a facility that incorporates the design certification has been constructed and will be operated in conformity with the design certification, the provisions of the Act, and the Commission's rules and regulations