ITAAC Format and Organization Issues

The following points represent some areas and examples where the standard format and organization of the ITAAC could be improved:

- The ABWR ITAAC for "basic configuration" includes too many separate concepts (i.e., functional arrangement, ASME welds, seismic qualification, EQ, and MOVs) into a single ITAAC for each applicable system. The AP-1000 approach is clearer and more user friendly, making these five separate technical areas into five different ITAAC.

- The use of Tables to list SSC (as with the AP-1000) is preferred over the ABWR use of drawings. However, even with the use of Tables, one might consider a better organization of the applicable SSC. Instrumentation (e.g., sensors) could be listed separately from mechanical components, which themselves could be better sub-divided (e.g., pumps, valves). This would not only make it easier to identify a component, but also allow for the a more useful application of broader engineering concepts (e.g., seismic qualification).

- The use of single ITAAC (e.g., 3.3.2.a.i for the AP-1000 critical island structures) to cover massive areas of construction should be avoided. The SSC Tables associated with such large ITAAC are themselves also large and unwieldy. Breaking such big ITAAC into smaller, better defined areas of construction would assist in the details of the ITAAC application and making the Tables more user friendly.

- The individual ITAAC numbering system is inconsistent. While numbering and sub-lettering is generally used to differentiate separate ITAAC, there are cases where dashes or separate paragraphs with no labeling are used to specify different ITAAC requirements. An example of this in the AP-1000 is ITAAC 3.3.7.d where the ITAAC consists of five "dashed" inspection areas and five separate numbered points. We consider this one "numbered" ITAAC to represent five different ITAAC, but with each sub-ITAAC represented by the dashes and not the five numbered points. Such confusion could be eliminated with a standard numbering system.

- ITAAC language usage and terminology definitions could be improved and better standardized. Some examples follow:

  - The aforementioned difference between the ABWR "basic configuration" and the AP-1000 "functional arrangement" is one example.

  - the term "as-built" is defined to be the same for both the ABWR and AP-1000 designs. However, the ITAAC frequently also use the term "as-installed", which is not defined.

- Other ITAAC terms and phrases could be better defined or explained. For example, the phrase, "A report exists and concludes that", is frequently used in the AP-1000 acceptance criteria (e.g., several 2.2.x ITAAC). The precise meaning of this phrase should be addressed - what is the scope of the "report"; how the design is met, how the as-built and/or modified construction is reconciled with the design, how deficiencies were addressed, what corrective actions were necessary?

- It may be necessary to consider the role of "modular construction" in writing and defining the ITAAC. For example, the inspection of "as-built" SSC implies in the definition "the completion of construction at its final location at the plant site". What might this mean for a SSC installed within a module at a remote location, e.g., a shipyard? If a pipe support is built into the module, is it not in its final location, even though the module has not yet been moved to the site?

- A major improvement in ITAAC organization would be realized if construction timing and sequencing were considered in the ITAAC language and SSC applicability. For example, if the containment basemat were separated from the related, but subsequent structural construction, it could be assessed and processed earlier as a accepted ITAAC. Since construction proceeds by schedules that are more elevation oriented, than process defined, breaking up the ITAAC processes into pieces that can be completed in the early and mid-stages of construction would help alleviate the "end-loaded" nature of the ITAAC acceptance.

- Finally, as a general comment, the ITAAC could be improved if they were written with inspection and verification in the forethought of the language and acceptance criteria. While it is understood that the ITAAC acceptance criteria intend to establish defined "deliverables", it is not so clear what exactly is required to verify such products. For example, where ASME design reports exist for certain as-built piping, the focus should not be on the reports' existence, but rather that the piping was installed to ASME requirements and that the as-built piping was reconciled with the design. While these requirements are properly inferred from the existing criteria, the language could certainly be made clearer.

  One way to consider this is that the ITAAC acceptance criteria for most SSC operational tests give a clear statement of what the test results should be for passing the test and acceptance of the ITAAC. Similar questions should be asked for ITAAC inspections - what results are expected from the conduct of the inspection? The ITAAC acceptance criteria can then be worded to establish the fact that such inspection results are attained.