

August 5, 2014

MEMORANDUM TO: Brian Anderson, Chief
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Division of Construction Inspection
and Operational Programs
Office of New Reactors

FROM: Ian Cozens, Reactor Operations Engineer **/RA/**
ITAAC and Generic Communication Branch
Division of Construction Inspection
and Operational Programs
Office of New Reactors

SUBJECT: JULY 24, 2014; SMALL MODULAR REACTORS TIER 1 TOPICS
PUBLIC MEETING SUMMARY

The 5th of several planned category 3 public meetings between NRC staff and stakeholders was held on July 24, 2014 to continue the discussion on improvements for the preparation, review, execution and closure of the inspections, tests, analyses, and acceptance criteria Inspections, Tests, Analysis, and Acceptance Criteria (ITAAC) for Small Modular Reactors (SMRs).

The NEI White Paper discussed can be found in ADAMS under Accession No. [ML14077A377](#).

The package of documents and presentations from the meeting can be seen in ADAMS under Accession No. [ML14211A472](#).

The "Functional Capability of Piping Systems", NUREG-1367 can be seen in ADAMS under Accession No. [ML083510056](#)

The meeting opened with a discussion of staff responses to Nuclear Energy Institute's (NEI's) proposed actions based on their White Paper dated March 14, 2014. NRC staff informed NEI and industry that the proposed first principles are still under review. NEI recommended the removal of the Initial Test Program (ITP) from Tier 1; staff supports this removal from the scope of Tier 1 as it is captured elsewhere. NEI recommended the creation of an administrative change process for Tier 1 and the ITAAC; the staff believes this is beyond the scope of this effort and will not pursue it at this time. NEI also proposed the removal of the first plant and first three plant tests from Tier 1 and the ITAAC; this proposal is still being evaluated by staff. NEI

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proposed the removal of D-RAP from Tier 1 and the ITAAC, but staff believes this is an important process that identifies safety and risk significant functions and should remain. NEI requested that NRC staff use certified ASME reports as a basis for the acceptance criteria of **ITAAC related to ASME Code Section III, and since this is the current practice, the staff agrees.** Also discussed was the proposed removal of component numbers from Tier 1, the proposed deletion of functional arrangement ITAAC, and the proposed deletion of electrical grounding ITAAC, however, no decisions have been made regarding these items.

A presentation was then made by NEI on the "Application of First Principles", which focused on the first principles proposed in the NEI White Paper dated March 14, 2014. This presentation provided examples of applying the first principles to ITAAC. A White Paper based summary of the scope of Tier 1, the level of detail needed in Tier 1, and the scope of ITAAC was also presented. A discussion occurred over whether ITAAC should cover the regulations within the proposed scope of Tier 1, or whether regulations should drive items to become ITAAC. There is a general consensus between NRC staff and industry that ITAAC verify the function of the top level design and performance characteristics, and that ITAAC do not need to verify every attribute as a one-to-one check. However, the proposed First Principles and associated Tier 1 and ITAAC scopes remain under evaluation by NRC staff. Industry proposed that a number of safety-related components without significant safety function do not need to be covered by Tier 1; this also remains under NRC staff review. NRC staff added that Tier 1 information must address the complete scope of the certified design. Further, Tier 1 information must include the important design information that is relied upon as the fundamental bases for the staff's safety review, and the most significant interface requirements should also be incorporated into the scope of Tier 1.

Next, the proposed ASME Code ITAAC listed in SMR ITAAC Set #1 were discussed. These were previously discussed at the public meeting on May 7, 2014. It was agreed that, in general, ITAAC with an acceptance criteria stating an ASME report "exists and concludes" could be satisfied by utilizing an inspections, tests, or analyses criteria of inspection alone. A new ITAAC was proposed by NRC staff for the ASME Piping Systems Functional Capability Report, and a NUREG was provided to industry representatives as the basis for this ITAAC. The ASME Section III Code Class 1, 2, and 3 Component Data Report ITAAC was initially updated to disambiguate components to explicitly include piping, however it was agreed that this change was unnecessary. An ITAAC was also added by NRC staff to reflect the requirement of 10 CFR 50 Appendix G, Reactor Pressure Vessel Fracture Toughness Requirements. A discussion occurred relating to leak before break and high-energy line break ITAAC, and a basic understanding was reached between industry and NRC staff. These ITAAC will continue to be evaluated accordingly.

The proposed structural ITAAC were then discussed including ITAAC from SMR ITAAC Set #1, discussed at the public meeting on May 7, 2014. Several items from the containment ITAAC from SMR ITAAC Set # 3 were also discussed. Industry representatives requested that the ITAAC not reference "the approved design," as this leads to a broad scope. They also requested that the ITAAC not use terms such as "e.g." or "etc." as these can also lead to ambiguous ITAAC. It was suggested that if these terms are desired, a complete list should be provided. Another item that was brought up is that aside from ASME ITAAC, ITAAC should not typically state a report exists and concludes for its acceptance criteria. Industry requested that ITAAC not have direct references to any regulatory guides (RGs). RG references may be included in the Tier 2 Section 14.3 discussion, but should not be placed directly in the ITAAC. An ITAAC was provided for physical separation of Seismic Category I structures, but it was

agreed that this ITAAC is redundant and unnecessary. The ITAAC was returned to its original version for physical separation of Seismic Category I structures and Non-Seismic Category I structures. The structural ITAAC in the containment section of SMR ITAAC Set #3 were also discussed, and staff recommended that ITAAC be provided for both metal and concrete containment systems.

The final area discussed covered proposed mechanical ITAAC in SMR ITAAC Set #3. NRC staff provided comments regarding the ITAAC for safety-related remotely operated valve functional test during preoperational test conditions. The existing requirements of the ITAAC only check the active safety-related function of a remotely operated valve, but additional safety-related functions should be tested as well requiring revisions to this ITAAC. The RCS Pressure Boundary Leakage Detection Test ITAAC need to be revised to allow for system specific values to be input in the acceptance criteria. Lastly, although industry requested RG references to not be included in the ITAAC, the RG reference in the RCS Pressure Boundary Leakage Detection Test-Alternative Method ITAAC should refer to RG 1.45 instead of RG 1.48.

The next public meeting will be a two day meeting scheduled for September 18-19, 2014. A public meeting notice will be released with the details for that meeting.

Please direct any inquiries to Ian Cozens at 301-415-6203, or via e-mail to ian.Cozens@nrc.gov.

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agreed that this ITAAC is redundant and unnecessary. The ITAAC was returned to its original version for physical separation of Seismic Category I structures and Non-Seismic Category I structures. The structural ITAAC in the containment section of SMR ITAAC Set #3 were also discussed, and staff recommended that ITAAC be provided for both metal and concrete containment systems.

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List of Attendees

Category 3 Public Meeting on Tier 1 ITAAC Related SMR Topics

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Budzinski, John	NRC
Chang, Harry	KHNP
Cozens, Ian	NRC
Davis, Robert	NRC
DeGange, Jonathan	NRC
Dumsday, Carl	NuScale Power
Eckholt, Jennie*	Xcel Energy
Fay, Thomas*	Fluor Enterprises
Frantz, Steve	Morgan Lewis
Gaillard, Pete	TVA
Hansing, Nicholas	NRC
Istar, Ata	NRC
Jain, B.P.	NRC
Jaworsky, Mari*	Duke Energy
Khan, Nadim	NRC
Kline, Steven	Bechtel
Lentz, Tony	NuScale Power
Li, Huan	NRC
Li, Y.C. (Renee)	NRC
Libby, Earl	NRC
Lukes, Bob*	NRC
Nichol, Marc	NEI
Nolan, Ryan	NRC
Park, Sunwoo*	NRC
Patterson, Malcolm	NRC
Pope, Steve	B&W
Ray, Sheila	NRC
Robillard, Dave*	PSEG
Spencer, Michael	NRC
Swain, Patti	NRC
Takacs, Mike	NRC
Tseng, Ian	NRC
Valentin, Andrea	NRC
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Indicates remote participation via teleconference or Webinar.

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