

Industry Responses to NRC Request for Additional Information Concerning the Industry's September 15, 2010 Proposal on Changes during Construction

The following provides the additional information requested by the NRC in a letter dated October 18, 2010.

NRC Request 1.a

Please provide additional discussion (consistent with the applicable change processes in the 10 CFR Part 52 Appendix rule) regarding the industry's rationale and regulatory basis, consistent within the current regulatory framework, supporting the approach articulated in NEI's recent letter, viz., the proposed use of the Technical Specifications and the Inspections, Tests, Analysis and Acceptance Criteria (ITAAC) as "compliance" points to maintain configuration control of the plant design as described in the Final Safety Analysis Report (FSAR).

Response

As background, NEI has proposed a process designed to address the following NRC Problem Statement identified in several NRC public meetings earlier this year: "Determine the activities that can be performed by licensees during construction while the NRC is reviewing requested changes to the licensing basis (license amendments)." Changes are permitted in accordance with applicable change processes, but NRC regulations are silent on the extent of work that can be performed pending approval of a required license amendment request (LAR). NEI's proposal for new plants under construction is consistent with current NRC practice and regulatory guidance for operating nuclear plants. NEI 96-07, *Guidelines for 10 CFR 50.59 Implementation*, Revision 1 (endorsed by NRC Regulatory Guide 1.187) allows licensees to design, plan, install and test – but not implement – proposed modifications pending NRC approval of a required license amendment. Required license amendments must be approved before modifications may be "implemented," i.e., before modifications are placed in service such that technical specifications apply.

This existing guidance reflects that licensees may implement, i.e., place in service, a proposed modification only after the facility licensing basis is altered by NRC approval of an LAR (including any modified technical specifications). In this way, technical specification operability requirements provide a "compliance point" for operating plants, that is, the point by which license amendments must be approved before modifications may be placed in service or otherwise credited in the licensing basis. For operating plants, this approach ensures that the plant remains in compliance with applicable technical specifications throughout the change process and that operational safety is not adversely affected by the change.

By analogy, NEI's proposal for changes during construction uses the term "compliance points" to refer to the point in the change process by which a required license amendment must be approved by the NRC staff before a change may be "implemented" by a licensee.

ITAAC Closure as a "Compliance Point"

During construction, prior to the 10 CFR 52.103(g) finding, the plant technical specifications are not yet in force. As identified in our September 15 letter, ITAAC closure is the logical analogue to compliance with the technical specifications during plant operation and can serve as a key compliance point signifying implementation of changes during construction. Under 10 CFR 52.99, licensees are required to notify the NRC when an ITAAC is met, and the NRC staff is required to verify successful completion of ITAAC and publish ITAAC completion notices in the *Federal Register*. These existing requirements make ITAAC closure an effective compliance point during construction.

We expect that in order for the licensee to assert, and the NRC staff to verify, that an ITAAC has been satisfactorily completed, any associated changes requiring an LAR will need to have been approved by the NRC. NRC approval of an LAR updates the licensing basis of the facility. If an LAR is not approved, the licensee will need to either modify the relevant SSCs to conform to the approved design and licensing basis or obtain approval of an alternative design via the LAR process before closing the relevant ITAAC. Either way, the NRC is assured that the relevant SSCs have been constructed in accordance with the approved licensing basis before operation of the plant. In this way, the change control process will ensure that that construction is completed in accordance with the license and applicable NRC regulations.

With respect to compliance with the licensing basis during construction, licensees that design, procure, fabricate, install and test SSC designs that differ from those approved in the COL prior to approval of required LARs remain in compliance with their licenses. This is because licenses issued under 10 CFR Part 52 include a process for making changes. Provided licensees follow the change processes specified in the regulations, they remain in compliance with their license. In the case of a change that requires NRC approval prior to implementation, licensees performing work related to proposed changes remain in compliance with NRC regulations and their license, provided 1) they have submitted an LAR in accordance with 10 CFR 50.90 and 50.92, and 2) the LAR is approved before the change is "implemented" (see discussion below). This is because NRC approval of the LAR updates the facility licensing basis, and the change is not implemented until after the licensing basis is updated to reflect the change.

As such, we believe the industry proposal is consistent with 10 CFR §§ 52.97, 52.98, 50.90, 50.92 and other applicable NRC requirements, and also consistent with historical practice related to the change process and maintaining the licensing basis for operating plants. The industry proposes to clearly establish that LAR approval is a prerequisite for closure of associated ITAAC in regulatory guidance currently under development. NEI submitted a first draft of this proposed guidance on October 5 for NRC consideration.

"Implementation"

NEI 96-07 provides that a change or other activity is considered "implemented" when it provides its intended function, that is, when it is placed in service and declared operable in accordance with plant technical specifications. More broadly, a change is considered "implemented" when it is credited as part of the licensing/design basis of the plant. During construction, the industry proposes that an ITAAC-related change be considered "implemented" once it is credited in an ITAAC closure letter submitted under Section 52.99. Following ITAAC closure, licensees must maintain the implemented design such that ITAAC acceptance criteria continue to be met. As discussed above, licensees would submit an ITAAC closure letter to the NRC only after LARs associated with the ITAAC are approved.

Technical Specifications as a "Compliance Point"

NEI's September 15 proposal identifies initial applicability of technical specifications as a second important compliance point during construction. Technical specifications take effect upon the Section 52.103(g) finding that all ITAAC are met. By definition, all ITAAC must be closed and thus all ITAAC related LARs must be approved prior to the Section 52.103(g) finding. With the "sunsetting" of ITAAC (per Section 52.103(h)) and the authorization to operate, the Section 52.103(g) finding marks the transition to use of the current guidance in NEI 96-07, Rev. 1, and Regulatory Guide 1.187 concerning approval of LARs prior to implementation of proposed changes. Thus use of technical specifications as a compliance point in the change process after issuance of the section 52.103(g) finding is consistent with the existing NRC regulatory framework and practice.

Because of the breadth of ITAAC, we expect that most changes requiring an LAR will involve an ITAAC or SSCs verified by ITAAC, such that ITAAC closure would be the principal compliance point during construction. Nonetheless, changes to operational programs and certain other changes that do not involve ITAAC may also require prior NRC approval. NRC approval of LARs is required before such changes are implemented, as discussed above. That is, the LAR should be approved before affected SSCs perform their intended functions and/or associated technical specifications (if any) become applicable; or, in the case of a program change, before the licensee implements the program change proposed in the LAR.

NRC Request 1.b

The industry discussion should also provide the rationale for NEI's view that "the Section 50.10 definitions of 'construction' and 'not construction' do not inform and/or do not apply to the process for making changes after a COL is issued...."

Response

NEI's view is that the definition of "construction" in 10 CFR 50.10(a) does not inform or constrain industry's proposal for implementing the change control provisions of 10 CFR Part 52. Specifically, the definition of construction contained in section 50.10 was originally created in 1960 to identify activities that may not be undertaken without prior approval from the NRC in the form of a construction permit (CP). *See* 72 Fed. Reg. 57,425 (Oct. 9, 2007). The subsequent regulatory history of Section 50.10 contains no indication that NRC intended the definition of construction to govern implementation of change control processes *once the requisite NRC license or permit has been issued*.

For example, as described above, in the context of operating plants it is the license (i.e., the technical specifications), not the definition of construction, that informs implementation of the change control requirements. Part 50 licensees are not required to obtain additional authorization prior to performing construction activities associated with an LAR. To the contrary, as described above, Part 50 licensees may design, plan, *install and test* modifications to SSCs while an LAR is pending – despite the fact that such activities may very well meet the definition of construction provided in 10 CFR 50.10. This approach is entirely appropriate because the relevant issue when a LAR is pending is compliance with the current license, *not whether a license is required in the first instance*.

Similarly for Part 52 licensees, it is compliance with the facility licensing basis, not the definition of construction in Section 50.10, that is relevant and controlling. For changes during construction that require NRC approval, the relevant focus is on update of, and compliance with, the licensing basis via the license amendment process for the purpose of ensuring that the facility is constructed in accordance with the approved design.

"Construction" is not defined in the Atomic Energy Act of 1954, as amended, or in the legislative history of that statute. NRC regulations include several provisions defining "construction" (e.g., 10 CFR §§ 26.5, 50.2 and 50.10). These definitions, by their own terms, are limited to certain activities under certain situations; none of these definitions clearly applies to the scenario in question. Thus, we do not agree that the Section 50.10 definition should be used to limit the construction activities that COL holders may perform in parallel with NRC's review of a related LAR.

The definition of construction was revised several times, including a 1974 revision when the LWA process was created. The current definition in 10 CFR 50.10(a)(1) was promulgated as part of the 2007 final rule amending NRC regulations relating to LWAs. *See* 72 Fed. Reg. 57,416, 57,441-42 (Oct. 9, 2007). That definition is intended to apply only in certain contexts: "*As used in this section, construction means the activities in paragraph (a)(1) of this section . . .*" (emphasis added). *See* also 72 Fed. Reg. at 57,432 (Supplementary Information for LWA final rule) ("Paragraph (a), which is derived from former §50.10(b), sets forth a new definition of 'construction' for purposes of this section (the same definition is also used in part 51, *see* 10 CFR 51.4.").

The activities that are allowed under an LWA are a subset of construction activities. The definition of construction in Section 50.10 is meant to define those activities that *require prior NRC approval* in the form of an LWA, CP, or COL. There is no question that the activities COL holders will wish to perform include “construction” – that is why the applicant obtained the COL. The extent of construction-related activities permissible under a COL should be broader than the pre-construction activities permissible without any NRC license.

Significantly, a licensee that faces the need to initiate changes during construction will have already obtained the necessary NRC authority to permit construction and to make changes in accordance with applicable changes processes. That licensee has already met the intent of the requirement in 10 CFR 50.10(c). Thus, the licensing status of the COL holder is not analogous to that of the applicant in Section 50.10. By extension, the definition of “construction” should not and does not govern the scope of activities that Part 52 reactor licensees may undertake in parallel with NRC review of related LARs.

In addition to the fact that the text of Section 50.10 limits the applicability of this definition (“As used in this section, construction means...”), a review of the 2007 LWA rulemaking further supports industry’s position that this definition was not intended to apply in the context in which the Staff now seeks to apply it. Neither the language nor the regulatory history of Section 50.10 suggests that the definition of construction should govern the process by which a COL holder (a licensee under 10 CFR Part 52) may make changes during facility construction. The most that can be said for the NRC’s interpretation is that the regulations are silent on this point.

For example, the Supplementary Information in the final LWA rule states: “This final rule modifies the scope of activities that are considered construction for which a construction permit, combined license, or LWA is necessary, specifies the scope of construction activities that may be performed under an LWA, and changes the review and approval process for LWA requests.” 72 Fed. Reg. 57,416. See also discussion at 72 Fed. Reg. at 57,417 and 57,421. See also SECY-07-0030, *Final Rulemaking on Limited Work Authorizations* (Feb. 7, 2007), which provides (p. 8):

“In this final LWA rule, a definition of ‘construction’ is included in sections 50.10 and 51.4, *for purposes of determining when NRC authority (either in the form of LWA, construction permit, or combined license), is needed to undertake certain activities for certain SSCs (see 50.10(d)).* Under an LWA, an entity may perform subsurface preparation up through installation of foundations of SSCs that fall within the definition of construction. Further erection of SSCs at their final ‘in-place’ location would require a construction permit or a combined license.” (emphasis added).

See also SECY-07-0030, p. 9; NRC *Interim Staff Guidance on the Definition of Construction and on Limited Work Authorizations* (2009), p. 1.

NRC Request 2

Please provide illustrative descriptions/examples of anticipated plant changes and modifications to the plant that would likely require the licensee to seek approval from the NRC (consistent with the applicable change processes), for which implementation activities in advance of that approval would be desired. A description of the nature and extent of such activities would also be helpful.

Response

Given the first-of-kind nature of the lead new plant projects, the industry expects a significant number of changes to the standard and plant-specific designs described in the FSAR will be identified as a result of detailed design, procurement and first-time fabrication/construction. Even though some of these changes may be known before the license is issued, COL applications are generally past the licensing basis "freeze point" such that changes requiring NRC approval are being deferred, consistent with NRC DC/COL Interim Staff Guide 11, until after the COL is issued. As discussed in DC/COL ISG-11, licensees will at that time submit LARs for such changes.

The majority of changes are expected to be implemented in accordance with the 10 CFR 52.98 change process without NRC approval. Within the subset of plant changes during construction that require NRC approval prior to implementation, NEI's September 15 letter envisioned two broad categories of changes: first, changes involving ITAAC or SSCs subject to ITAAC; and second, changes that do not involve ITAAC or SSCs subject to ITAAC. The first category is expected to be the larger, and is typified by the example of a licensee that wishes to enlarge a safety related structure, and/or spaces within it, to accommodate larger pumps that recent operating experience shows is more reliable. The following paragraphs describe how this change would be processed in accordance with Section 52.98.

The decision to go with larger pumps affects the detailed design of SSCs, component procurement, and the structural design of the building. Because the major system components, building dimensions and wall thicknesses are described in Tier 1 of the Design Control Document, an LAR is required in accordance with the design certification change control process, and the applicant plans to submit the LAR after the COL is issued. Work on the building foundation and walls is scheduled to commence immediately upon receipt of the COL such that the project schedule would be delayed if this work could not be performed until the LAR was approved.

The licensee judges that the change, while significant, is nonetheless straightforward enough from a technical and licensing perspective (i.e., uses the same design codes and analysis methodologies) that ultimate approval of the required LAR by the NRC staff is likely. The licensee communicates its plans and schedule for the change to NRC as appropriate. In preparation for commencing safety-related foundation work upon receipt of the COL, the applicant proceeds to modify the detailed design, update affected safety analyses, prepare procurement specifications, and order the larger equipment. The pumps are received at the site and fabricated into a module that will be lifted into

its final installed location in the plant after the COL is issued. Also before the COL is issued, the applicant excavates the building site to the dimensions reflected in the LAR necessary to accommodate the larger pumps. Immediately after the COL is issued, the licensee submits the required LAR and begins to install rebar, pour concrete and perform other safety related construction activities according to the project schedule. The pumps are installed and tested in accordance with plant procedures, including testing required by ITAAC.

Through required update of construction and ITAAC completion schedules and regular interactions with NRC inspectors concerning design changes, pending LARs, and similar inspection coordination issues, NRC inspectors are fully informed of the proposed change and have adjusted their inspection plans accordingly. The licensee completes the ITAAC, including the ITAAC completion package documentation, and prepares the associated ITAAC closure letter. Until the LAR is approved, the licensing basis does not yet reflect the as-built, as-tested design, and therefore the licensee holds off submitting the ITAAC closure letter. After the NRC approves the LAR thus updating the licensing basis, the licensee submits the ITAAC closure letter reflecting the approved design change. Upon submittal of the ITAAC closure letter, the change is considered implemented and the licensee maintains the validity of ITAAC conclusions pending the Section 52.103(g) finding. NRC performs its verification of the ITAAC closure based on the design approved in the license, as amended by the approved LAR, and publishes an ITAAC closure notice in the *Federal Register*.

If the LAR in this example involved a change to the ITAAC, the process would have been the same. Following approval of the LAR, including any amended ITAAC, the licensee would submit the ITAAC closure letter identifying that the amended ITAAC was completed.

Changes to Resolve Emergent Issues during Construction

Lead project applicants are expected to identify a number of changes like the one above during the detailed design phase where the update of the licensing basis is deferred until after the COL is issued. Additional changes are likely to be identified during construction and testing, and these may present a particular challenge because they are unforeseen. For example, changes may become necessary due to emergent construction interferences, design or procurement issues, testing problems, construction experience or similar reason; these changes may require a change to the design or ITAAC (or both) that requires NRC approval. Licensees would be expected to promptly inform NRC inspection staff of such situations and comply with applicable reporting and notification requirements. To maintain project schedule, licensees are expected to re-design/re-work and perform other corrective actions in parallel with a request for any required license amendment. Approval of the LAR is necessary before the applicable compliance point, as discussed above (e.g., ITAAC closure or technical specification applicability).