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October 23, 2018

Mr. Fred Brown
Director, Office of New Reactors
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: NEI White Paper: *Assessment of Licensing Impacts on Construction – Experience with Making Changes during Construction under Part 52*

Dear Mr. Brown:

The joint letter from NEI¹, NIC and NIA to NRC Chairman Svinicki dated January 23, 2018 identified four near term objectives to ensure that advanced reactors can be licensed and built in the U.S., thus helping preserve U.S. leadership in nuclear safety and technology. These objectives include:

- Reversing the trend of increasing regulatory costs and excessively long reviews for NRC license applications;
- Aligning the regulatory framework for advanced reactors with their inherent enhanced safety;
- Defining advanced reactor licensing options clearly, including options for staged applications and approval;
- Providing additional flexibility for changes during construction.

NEI activities to address these priorities include an assessment of licensing lessons learned based on experience with construction under 10 CFR Part 52. As you know, construction under Part 52 differs from construction under 10 CFR Part 50 in two key ways. First, under Part 52, ITAAC (inspections, tests, analyses and acceptance criteria) must be met or satisfied before the licensee is permitted to load fuel. In this regard, NEI is supporting Southern Nuclear Operating Company with first-ever implementation of the ITAAC process based on the NRC-endorsed industry guideline, NEI 08-01, *Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52*. We expect to update that NEI guidance to reflect lessons learned after the ITAAC process is completed for Vogtle Units 3 and 4.

Second, under Part 52 there is a license that must be maintained during construction. This means that in contrast to construction permit holders under Part 50, combined license (COL) holders under Part 52 are subject to NRC change control processes, and many changes are subject to NRC review and approval via license amendment requests (LAR). Making changes during construction even more challenging, the NRC

¹ The Nuclear Energy Institute (NEI) is responsible for establishing unified nuclear industry policy on behalf of its members on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations and entities involved in the nuclear energy industry.

staff has interpreted Part 52 to require that construction must be in accordance with the plant licensing basis *at all times*. Accordingly, Part 52 licensees may proceed with construction that departs from the licensing basis only after 1) the licensee determines that an LAR is not required; or 2) the licensee develops and submits an LAR and the NRC reviews and approves it; or 3) the licensee receives a Preliminary Amendment Request (PAR) "no objection" letter from the NRC. The PAR "no objection" letter is provided only after the associated LAR is developed, submitted and accepted for review by the NRC.

As described in the attached NEI white paper, "Assessment of Licensing Impacts on Construction – Experience with Making Changes during Construction under Part 52" (see Attachment 1 to this letter), substantial experience to date indicates that the agency's interpretation of the Part 52 change process has significantly impacted licensees during construction. While not a primary factor in the project delays at Vogtle 3/4 and Summer 2/3, the Part 52 change process has nevertheless disrupted work and increased licensing and engineering costs during construction without a corresponding safety benefit. Moreover, the current NRC interpretation that construction must be in accordance with the licensing basis at all times creates unnecessary ongoing risk during the entire construction period. It also creates the potential for costly construction delays due to emergent conditions that require prior NRC approval of LARs or PARs.

NRC licensees and prospective applicants understand the benefits of Part 52, as well as the obligations of a combined license holder to maintain the licensing basis and demonstrate via ITAAC that the facility is constructed and will be operated in accordance with the license and NRC rules and regulations. However, the NRC staff interpretation that requires continuous compliance with the licensing basis during construction is unnecessarily rigid, and has disrupted work and added cost to an already complex and tightly controlled project – without increasing safety. The attached NEI white paper concludes that to fully realize the Commission's intent to provide licensees the flexibility needed to construct the facility, the NRC staff should revise its interpretation and implementation of the change process during facility construction. An alternative to the current NRC staff interpretation would simplify the process of making changes during construction without any adverse impact on safety, quality, or the objectives of Part 52.

The need for a change in the NRC staff interpretation of compliance during construction was highlighted by the recent experience of Southern Nuclear and KHNP related to the level of structural design detail in Tier 2* and Tier 1, respectively. In particular, while the NRC staff demonstrated some recognition and willingness to moderate the level of detail in Tier 2*/Tier 1, at the end of the day, both Southern and KHNP had to accept excessive structural design detail in Tier 2*/Tier1 without an adequate safety or regulatory basis from the staff. The result is the potential for unnecessary LARs to address departures having no safety significance, and the associated risk of construction delay or disruption.

A change to the NRC's interpretation of compliance during construction would have a transformational impact in at least two key respects. First, as a practical matter, licensees would avoid the disruption, added cost, and risk of construction delay stemming from the current NRC staff interpretation. Second, a new interpretation would recognize and counter the perception that Part 52 is unworkable and overly intrusive on the construction process. This concern is frequently cited by prospective advanced reactor applicants as a basis for favoring the 10 CFR Part 50 licensing framework, or considering licensing new designs in other countries, despite the advantages of Part 52 and the maturing infrastructure that has evolved around it.

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With these concerns in mind, a proposed alternative to requiring continuous compliance during construction is described in Attachment 2 to this letter.

We believe a new interpretation of compliance during construction can be adopted without rulemaking, and we encourage the earliest possible consideration of this issue so that current and prospective Part 52 licensees can quickly begin to benefit from the adoption of an alternative interpretation. If desired, the NRC staff and Commission could also choose to clarify the meaning of compliance during construction in connection with the upcoming (FY19) Part 50/52 rulemaking, e.g., in the Supplementary Information accompanying the final rule.

If you have any questions, please contact me or Mike Tschiltz (mdt@nei.org or 202-739-8083).

Sincerely,

A handwritten signature in black ink, appearing to read "Doug True", with a long horizontal flourish extending to the right.

Doug True

Attachments

c: Michael Johnson, Deputy EDO
Robert Taylor, NRO/DLSE
Anna Bradford, NRO/DEI

Assessment of Licensing Impacts on Construction:
*Experience with Making Changes during
Construction under Part 52*

October 2018

Introduction and Purpose

More than 25 years ago, the Nuclear Regulatory Commission added an alternative to the traditional 10 CFR Part 50 “build-and-then-license” approach to new nuclear plants. This alternative (promulgated in 10 CFR Part 52), enables companies to “license-then-build,” and reflects an NRC effort to add certainty and efficiency to new nuclear projects. A key difference is that under Part 52, there is a license that must be maintained during construction. This means that unlike the traditional Part 50 process, changes during construction under Part 52 are subject to NRC change control processes, and many changes must be reviewed and approved by the NRC before they can be implemented.

This paper provides an assessment of Part 52 construction experience to date and concludes that adjustments can and should be made to optimize the change process and provide the flexibility licensees need to construct new nuclear plants, including changes that are expected and inevitable in such large and complex projects.

Background on Part 52 Change Process

In its Staff Requirements Memo on SECY-90-377 “Requirements for Design Certification Under 10 CFR Part 52,” the Commission recognized that “a certain amount of flexibility will be needed to finalize procurement information and construct the facility.” To provide the requisite flexibility, the Commission approved a two-tier approach for design certification and the use of a process similar to 10 CFR 50.59 for making changes to Tier 2. The two-tier approach and the “50.59-like process” are codified in the design certification rules that have been incorporated by reference in combined licenses granted by the NRC under Part 52. Tier 1 presents a top-level description of design features and functions that are most important to safety and is derived from Tier 2. Tier 2 contains the additional design information and analyses needed to support the NRC’s safety evaluation of the design.

Part 52 licensees may make changes during construction in accordance with Section VIII of their referenced design certification rule. Section VIII defines the change control processes for Tier 1 and Tier 2 information, as well as a third tier of information known as Tier 2*. Tier 1 and Tier 2 (including Tier 2*) information comprise the design control document (DCD). Similar to Tier 1 information, departures from Tier 2* information require prior NRC approval via license amendment regardless of the safety significance of the change. Tier 1 departures also require an exemption from Tier 1 requirements as part of the license amendment. Tier 1 and Tier 2* change controls are distinctly different from controls for Tier 2 information, which may be changed without prior NRC approval using a process similar to that in 10 CFR 50.59. The 50.59-like process in Part 52 allows licensees to depart from a standard design certification without prior NRC approval provided several safety-focused criteria are met.

Beyond the Part 52 change process requirements themselves, the NRC staff interprets Part 52 to require that construction must be in accordance with the licensing basis at all times. This means that licensees may depart from the approved design, or continue construction that departs from the licensing basis, only after 1) the licensee determines that a License Amendment Request (LAR) is

not required; 2) after the LAR is developed, submitted, reviewed and approved by the NRC; or 3) the licensee receives a Preliminary Amendment Request (PAR) “no objection” letter from the NRC. Because it can take weeks or longer to develop an LAR and obtain NRC acceptance of the LAR for review, this NRC interpretation of the Part 52 change process can have a significant impact on construction.

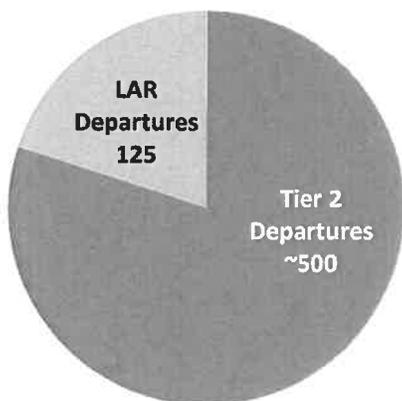
Preliminary Amendment Request Process

The interpretation that construction must be in accordance with the licensing basis at all times required NRC to establish the Preliminary Amendment Request (PAR) process to allow work to proceed – at licensee risk – in advance of LAR approval. Instead of waiting several months to one year for an LAR to be approved before constructing the change, the licensee may submit a PAR along with an LAR. Upon NRC acceptance of the LAR, the NRC sends a “no objection” letter to the licensee, who may then proceed to construct the change in parallel with NRC formal technical review in progress and prior to NRC approval of the LAR. Once an LAR is submitted, the PAR process can be completed in days to weeks depending on the complexity and urgency of the change. Work under a PAR is considered “at-risk” because if the NRC ultimately rejects the associated LAR, the licensee must undo the change and restore the facility to the approved licensing basis. The PAR process is codified via a license condition in each COL.

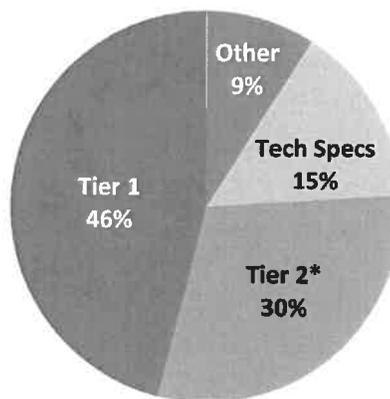
Changes during Construction – Southern Nuclear Company Experience

As of December 2017, Southern Nuclear Company (SNC) had implemented or proposed approximately 625 departures at Vogtle 3/4 in accordance with the AP1000 design certification change process. This number of changes is not unexpected given the nature of this complex, first-of-kind project and affirms the decision of the Commission to establish the two-tier approach for design certification.

Vogtle 3/4 Departures



Breakdown of Vogtle 3/4 LARs

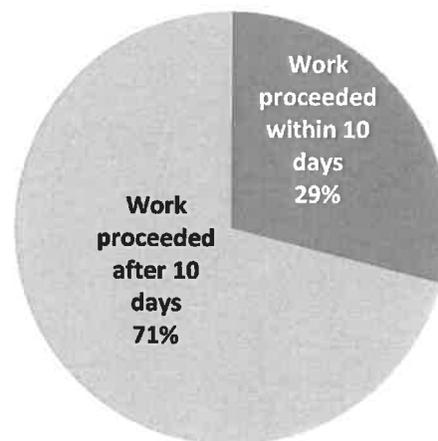


Under the Section VIII design certification change process, LARs are required for departures from Tier 1, Tier 2*, technical specifications, and certain other requirements of the license. At the time this report was developed, SNC had identified the need for roughly 625 Vogtle 3/4 departures and had submitted 125 LARs for departures that were determined to require prior NRC approval; 90 had been approved by the NRC. None were denied.

Approximately 30% of license amendment requests for the Vogtle 3/4 project were required solely because of changes to Tier 2* information. An assessment by SNC determined that of those changes, the vast majority were not safety significant and would not have required an amendment if a "50.59-like" change process could be applied. The remainder would have required a license amendment request under the Tier 2 "50.59-like" process, meaning the Tier 2* designation requiring prior NRC approval was duplicative and unnecessary.

AP1000 experience indicates that Tier 2* designations were applied to design details that were not significant to NRC safety findings. Because of Tier 2* designations, LARs were required even for changes that were not safety significant. In most cases, excessive detail in figures and text designated as Tier 2* information triggered the need for an LAR. In many cases, changes permitted by referenced codes/standards could not be made without a LAR because they were in conflict with specific details that were designated Tier 2*. NEI continues to pursue elimination of Tier 2* for future design certifications, and SNC is seeking relief¹ from Tier 2* in the wake of SECY-17-0075 and NEI's October 11, 2017 follow-up letter to the Commission.

Action After PAR "No Objection" Letters



As of December 2017, 31 PARs had been submitted and approved, indicating the need to expedite NRC permission to proceed with construction with those changes. In 29% of these cases, work proceeded within 10 days of receipt of the "no objection" letter from NRC indicating that construction may have been affected, or nearly affected, by the need for permission from NRC. It is SNC's assessment that the PAR process has worked as intended and that NRC has generally turned around PARs in sufficient time to support Vogtle 3/4 construction needs.

Change Process Impacts on Construction

With a few exceptions (discussed below), the Part 52 change process, including PAR/LAR, has not caused frequent or significant delays in construction at Vogtle 3/4 (and likewise did not at SCANA's V.C. Summer 2/3). The causes of the extensive delays at Vogtle 3/4 and Summer 2/3 were largely

¹ On September 20, 2018, the NRC approved SNC LAR 17-037 on changes to the Tier 2* departure evaluation process.

related to other issues, not regulatory/licensing issues. The relatively mild impact on construction can largely be attributed to significant licensee resources dedicated to managing the Vogtle 3/4 licensing basis and the responsiveness of NRC when expedited action on PAR/LARs was necessary.

While direct impacts on construction schedules were limited, the need for unnecessary (e.g., non-safety-significant Tier 2* changes) LARs and the need for PARs has had an adverse cost impact on the project. The process has required additional time and resources on the part of both the SNC and NRC. On average SNC estimates the cost for preparation and NRC review of a typical LAR to be \$200-\$300K. And beyond the direct cost of the licensing action, the interpretation that construction must be in accordance with the licensing basis at all times creates the ongoing risk and potential for the change process to delay construction and requires the licensee and design authority to maintain licensing and engineering staffs that are larger than would otherwise be necessary to be ready to address emergent conditions and minimize that risk.

In addition to the resource burden on licensees, the current NRC interpretation that construction cannot at any time deviate from the licensing basis creates unnecessary ongoing risk during the entire construction period and the potential for costly construction delays due to emergent conditions that require prior NRC approval of LARs or PARs. That risk is not justifiable from a public health and safety perspective and is exacerbated by unnecessary use of the Tier 2* designation.

Vogtle 3/4 Construction Impacts

The following examples were among the most impactful on Vogtle 3/4 construction, in large part because compliance issues were identified while the NRC was inspecting work underway on site. These examples illustrate the impact of the Part 52 change process on construction and how those impacts are exacerbated by excessive detail in the licensing basis in general, and by Tier 2* in particular. Except for the backfill example (which involved information in the site safety analysis report for the Vogtle ESP – not the DCD), each of the other examples involved Tier 2* information. It is worth noting that in each of these cases, the 50.59-like change process would have assured that potentially safety significant changes were considered by the NRC as part of a license amendment request, without designating certain information as Tier 2*, while allowing the licensee to proceed with others without an LAR.

Engineered Backfill [No LAR # -- ML101120089]

During the site preparations under the early site permit (ESP) and the limited work authorization (LWA) for Vogtle 3/4, SNC planned to conduct significant excavations to replace the existing soil with "Engineered Backfill." The ESP contained specific criteria that the Engineered Backfill needed to meet to be suitable for use. However, due to the manner in which the NRC's Standard Review Plan was written, the NRC staff believed it was necessary for SNC to identify in the ESP the specific locations on the site from which SNC would take the Engineered Backfill. As SNC began the excavations, it was clear that soil would need to be taken from additional locations on the site because the five specified locations did not contain adequate amounts. SNC did not recognize the NRC limitation due to its lack of safety significance and the wording in the SER. SNC began using backfill from these alternate

locations. However, the NRC staff stopped the work at Unit 3 on the basis that according to the ESP, SNC could only use Engineered Backfill from those five specific locations in the ESP.

Instead of relying on the criteria specified in the ESP to ensure the additional soil was appropriate for Engineered Backfill, the NRC staff required that SNC submit a license amendment request to modify the ESP in order to add these additional locations. This NRC action disrupted the planned work at the site; the NRC ultimately approved SNC's proposed changes without modification. Since the PAR process was not in place at that time, SNC made a case for exigency to expedite the NRC review.

Construction Tolerances of Rebar at Vogtle 3

The NRC staff required detailed information pertaining to structural design of critical sections² and designated that information as Tier 2*. In one example, instead of referencing a particular code or standard, the NRC staff required that the Westinghouse AP1000 design control document (DCD) include the thickness of the rebar and its spacing in a portion of the basemat (foundation) of the AP1000. The DCD indicated that the rebar be spaced one foot apart with a tolerance of plus or minus ¼ inch. When performing an inspection of the basemat as it was being constructed, the NRC staff noted that the spacing of some rebar sections was not exactly one foot plus or minus ¼ inch. The deviations could have been reconciled in accordance with the applicable code³, but because the tolerance was specified in the DCD, the NRC staff required SNC to either perform a revised structural analysis or remove the concrete and reposition the rebar. Due to timing and schedule considerations, SNC chose to remove the concrete and reposition the rebar.

Nuclear Island Walls Reinforcement (T-heads) LAR-13-009

Following differing professional opinions between Westinghouse and NRC staff regarding application of relevant code² provisions, UFSAR (plant-specific DCD) Section 3.8 and Appendix 3H were revised to provide alternative requirements in the licensing basis from the applicable codes⁴ for development of headed reinforcement. This change clarified the design and licensing basis for the headed reinforcement bars in locations including auxiliary building walls and walls within containment. The associated UFSAR (plant-specific DCD) figures for the auxiliary building wall reinforcement were also revised. The UFSAR specification of headed shear reinforcing tie bar size and spacing of the shear reinforcement in these walls was replaced in the DCD with a reference to the applicable ACI Code requirements and the minimum provided square inches of shear reinforcement per length of wall. The use of

² Critical sections are those portions of Seismic Category I structures approved in the design certification that are representative of the complete structural design. Such sections may include areas of high stress ratios (e.g., stress concentrations), require unique methods of evaluation, or use novel design techniques.

³ Code Requirements for Nuclear Safety Related Concrete Structures (ACI 349-01)

⁴ ACI 349-01 Appendix B to include the Building Code Requirements for Structural Concrete and Commentary (ACI 318-11), Section 12.6

conventional shear ties (with alternating 90 degree and 135 degree hooks) was also included in the UFSAR as an allowable alternative to headed reinforcement for providing shear reinforcement in exterior walls below grade.

Due to the impact on Tier 2*, a LAR and PAR were submitted to update the licensing basis and the affected scope of work was disrupted pending NRC approval of the PAR. The LAR was ultimately approved by the NRC. No repair or rework was required as a result of this departure.

Basemat rebar design (sheer ties) LAR-13-003

The proposed amendment was necessitated by the need to depart from plant-specific Design Control Document Tier 2* information incorporated into the Updated Final Safety Analysis Report to clarify the requirements for shear reinforcement spacing in the nuclear island basemat below the auxiliary building. The proposed change was to modify the provisions for maximum spacing of the shear reinforcement in the basemat below the auxiliary building.

This LAR was needed in order to revise Tier 2* information in UFSAR (plant-specific DCD) Subsection 3.8.5.5 to remove the direct reference to ACI 349-01 Subsection 11.8.3 and replace it with supplemental provisions based on criteria from ACI 349-01. The proposed changes were in accordance with the NRC-reviewed AP1000 design and mirrored provisions included in the parallel portion of the NRC-certified AP600 design.

A LAR and PAR were submitted to update the licensing basis and the affected scope of work was disrupted pending NRC approval of the PAR. The LAR was ultimately approved by the NRC.

Welded couplers LAR-15-010

The design requirements for welding of mechanical couplers to structural steel needed to be changed to allow the use of American Institute of Steel Construction (AISC) N690-1994 Stress Limit Coefficient (SLC) of 1.6, for rebar sizes #4, #5, and #6 couplers and to demonstrate the required weld capacity through analysis. For rebar sizes #7 through #11 couplers, the requirements were changed to allow physical destructive testing to demonstrate the weld capacity.

This change affected Tier 2* UFSAR material. A LAR and PAR were submitted to update the licensing basis and installation of welded couplers and associated work was disrupted pending NRC approval of the PAR and completion of the required analysis and testing. The LAR was ultimately approved by the NRC.

Location of headed studs for Containment Internal Structures LAR-13-006R

The NRC staff required that the Westinghouse AP1000 design certification document (DCD) include a figure showing the size and spacing of headed studs that were to be attached to

steel face plates. The DCD indicated the design spacing of headed stud, trusses, and channels in the wall modules in locations away from openings and penetrations in the walls.

When performing an inspection of the CIS modules during construction, the NRC staff noted that in some limited areas near obstructions (e.g., near leak chases and embedments), the spacing of some headed studs exceeded the spacing specified in the DCD. Although the deviations were structurally acceptable and could have been reconciled in accordance with applicable codes, the NRC staff required SNC to halt construction and submit an LAR to address in the UFSAR stud spacing adjacent to the obstructions. To address this, SNC submitted an LAR, later approved by the NRC, to further describe the headed stud design.

This change affected Tier 2* UFSAR material. An LAR and PAR were submitted and the affected scope of work was disrupted pending NRC approval of the PAR. The LAR was ultimately approved by the NRC.

The examples above illustrate how the need for regulatory approval of departures from the DCD caused disruptions to construction and higher costs. In each case where a licensing change was made, proposed changes were approved by the NRC. The disruptions to construction took various forms, including work resequencing, shifting of resources, adjustment of priorities and delays to planned work.

Part 52 Licensing Impacts on Construction – Conclusions

Successful completion of commercial nuclear projects demands excellence in technology, construction and regulation. Achieving that excellence means learning from experience and fine-tuning as we go. In the regulatory area, we draw the following conclusions from licensee experience making changes during construction under Part 52, including process improvements that should be considered going forward.

1. The two-tiered Part 52 change process is fundamentally sound and, with some changes in implementation, can provide the flexibility needed by licensees to procure SSCs and construct the facility.
2. The need for prior NRC approval of changes has disrupted work and increased licensing and engineering costs during construction, and created an ongoing risk of delay. Changes to the interpretation and implementation of the change process should be considered going forward.
3. For time-sensitive LAR/PARs, NRC should establish criteria (e.g., use of sensitivity analyses) that would enable the NRC to accept LARs without the need to develop completed calculations and other details that are unnecessary to begin the safety review.

4. Use of Tier 2* is unnecessary, does not add value, and should be eliminated for future design certifications. For Vogtle 3/4, the scope of Tier 2* should be significantly reduced and specified more precisely.⁵
5. Because of the need for LARs for any circumstance that requires departing from Tier 1 information, greater care and discipline is needed in defining the scope and level of detail of Tier 1 information based on improved guidance (e.g., First Principles). Minor clerical corrections to Tier 1 should not require a LAR.
6. The NRC staff interpretation that construction must conform to the licensing basis *at all times* makes construction under Part 52 inflexible and as a result more costly than it has to be – without a corresponding safety benefit. The added complexity and burden on licensees to obtain LAR/PAR approvals before construction of changes may proceed is not justified from a safety benefit perspective. Other interpretations are possible, such as ongoing reconciliation of the licensing basis during construction, that would be more workable and have no adverse impact on safety, quality or the objectives of Part 52.

⁵ On September 20, 2018, the NRC approved SNC LAR 17-037 on changes to the Tier 2* departure evaluation process.

Attachment 2

Reducing Burden and Risk Associated with Changes During Construction under Part 52

Problem Statement

At the outset of AP1000 construction under Part 52 in 2011-12, the NRC staff adopted the position to exercise a level of control over the current licensing basis (CLB) during the construction phase that is beyond that needed to assure safety. The staff position reflects the view that the plant must be in compliance with the CLB at all times during construction, despite the practical challenges of a facility moving through myriad interim states while construction is in progress, and despite the absence of any radiological risk. This has reduced the flexibility intended by the Commission, created the potential for undue construction delays pending update of the CLB, and unnecessarily increased the burden on both licensees and the NRC.

Discussion

Challenges associated with making changes during construction under Part 52 are consistently identified as an obstacle to use of Part 52 for a new generation of advanced design nuclear plants. With increasing pressure on the economics of new nuclear construction, there is a need to minimize burden and risk of unnecessary construction delays associated with the change process.

Efforts to eliminate Tier 2* and to better define the proper scope of Tier 1 and ITAAC will improve the safety focus and efficiency of NRC oversight during construction, and should continue. However, these steps do not address the fundamental issue creating undue burden in the Part 52 change process. Specifically, the NRC staff interprets the regulations to require that the facility under construction must *at all times* be in compliance with its licensing basis.¹ As a practical matter, this means that either prior NRC approval of a change is required before the change may be constructed or before construction may continue that departs from the CLB, or the licensee must document its determination that prior NRC approval is not required for the change.

This position gave rise to the PAR (Preliminary Amendment Request) process which allows a licensee to proceed to construct a change – at-risk – pending approval of a required LAR (which can take months) after the LAR is accepted by NRC for review and the licensee receives a “no objection” letter from the NRC. While this process has been largely effective in allowing construction to continue, it is nonetheless a half-measure and a workaround that has disrupted work, added cost, and leaves in place the risk of costly construction delays under emergent conditions.

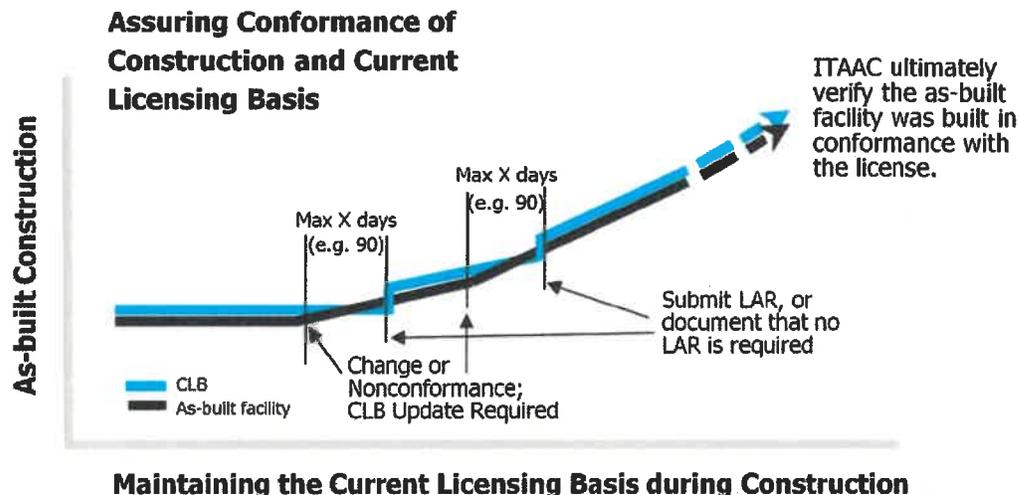
The need for fundamental change to the Part 52 change process is increasingly viewed as essential to address the concern of prospective future applicants that marginal improvements will not be sufficient to minimize burden and the risk of construction delay.

Alternative Approach

¹ COL-ISG-25, Interim Staff Guidance on Changes During Construction under 10 CFR Part 52.

Other interpretations of compliance during construction are possible. For example, one alternative would be ongoing reconciliation of the licensing basis during construction. Under this approach, licensees, as they do today, will submit updates to their FSARs annually, and reports on departures from the standard design certification every six months. The difference with ongoing reconciliation is that for emergent conditions, the licensee may, for a limited period (e.g., 90 days), proceed at-risk with construction that departs from the licensing basis, while a required LAR is developed for review by the NRC. If needed, the LAR would be submitted within a limited period following identification of the nonconformance. If the LAR is ultimately denied, the licensee must return the facility to compliance with the licensing basis or propose another alternative. For this reason, licensees would be expected to proceed with a change only if there is high confidence that NRC will ultimately approve it.

The figure below illustrates the concept of ongoing reconciliation of the licensing basis during construction.



Basis

No safety basis exists during construction to require LARs be approved prior to implementation, and the NRC has not provided a regulatory basis for their position.

The PAR process, established by license conditions in each COL, already allows at-risk construction pending NRC review and approval of required LARs.

Allowing ongoing reconciliation during new construction would be consistent with current practice for operating plants, which may install and test modifications (e.g., during an outage) in parallel with NRC review and approval of required LARs.

Because the licensing basis includes the Part 52 change process, licensees can be considered to be in compliance with the license during construction provided changes are implemented in accordance with the applicable change process.

Licensee configuration management programs will ensure that changes are properly controlled, and various inspections (QA, Vendor, ITAAC and Program), and most especially the ITAAC process itself, assure that the plant is constructed in accordance with the license.

Reconsideration of the staff position would not alter the 10 CFR 52.97(b) requirement that successful completion of ITAAC is the key demonstration that the facility has been constructed and will operate in accordance with the license and NRC regulations. In this regard, the industry has agreed with the NRC that LARs that affect the ability to conclude an ITAAC is met must be approved before the ITAAC may be closed. Because ITAAC closure provides the definitive demonstration that the completed facility was constructed IAW the license, the NRC staff position that construction must comply at all times with the CLB is unnecessary.

Moreover, the concept of construction-at-risk is acknowledged in 10 CFR 52.99(b), which states:

With respect to activities subject to an ITAAC, an applicant for a combined license may proceed at its own risk with design and procurement activities, and a licensee may proceed at its own risk with design, procurement, construction, and preoperational activities, even though the NRC may not have found that any one of the prescribed acceptance criteria are met.

Reconsideration of the current staff position on continuous compliance would have the following positive effects:

- Eliminate need for PAR process and associated costs
- Eliminate the additional burden for licensees to maintain a larger than otherwise necessary licensing and engineering staff to manage and expedite PAR/LARs needed to address emergent issues and maintain construction schedules and sequencing
- Eliminate need for development of exigent submittals and NRC staff reviews to avoid construction impacts
- Eliminate potential for construction delay due to emergent conditions that involve changes requiring prior NRC approval.

McCloskey, Bridin

Attachments: 10-23-18_NRC_NEI White Paper - Assessment of Licensing Impacts on Constr....pdf; NEI White Paper -- Assessment of Licensing Impacts on Construction.pdf; 10-23-18_NRC_NEI White Paper - Assessment of Licensing Impacts on Constr....pdf

From: TRUE, Doug [<mailto:det@nei.org>]

Sent: Tuesday, October 23, 2018 8:30 AM

To: Brown, Frederick <Frederick.Brown@nrc.gov>

Cc: Johnson, Michael <Michael.Johnson@nrc.gov>; Taylor, Robert <Robert.Taylor@nrc.gov>; Bradford, Anna <Anna.Bradford@nrc.gov>

Subject: [External_Sender] NEI White Paper: Assessment of Licensing Impacts on Construction – Experience with Making Changes during Construction under Part 52

THE ATTACHMENT CONTAINS THE COMPLETE CONTENTS OF THE LETTER

October 23, 2018

Mr. Fred Brown
Director, Office of New Reactors
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: NEI White Paper: *Assessment of Licensing Impacts on Construction – Experience with Making Changes during Construction under Part 52*

Dear Mr. Brown:

The joint letter from NEI, NIC and NIA to NRC Chairman Svinicki dated January 23, 2018 identified four near term objectives to ensure that advanced reactors can be licensed and built in the U.S., thus helping preserve U.S. leadership in nuclear safety and technology.

We believe a new interpretation of compliance during construction can be adopted without rulemaking, and we encourage the earliest possible consideration of this issue so that current and prospective Part 52 licensees can quickly begin to benefit from the adoption of an alternative interpretation. If desired, the NRC staff and Commission could also choose to clarify the meaning of compliance during construction in connection with the upcoming (FY19) Part 50/52 rulemaking, e.g., in the Supplementary Information accompanying the final rule.

If you have any questions, please contact me or Mike Tschiltz (mdt@nei.org or 202-739-8083).

Sincerely,

Doug True
Senior Vice President and
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