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General Comment

See attached file(s)

Attachments

LO-102799_NuScale Comments on draft RBD for Part 50 52 LL Rulemaking_FINAL

May 14, 2021

James O'Driscoll, Office of Nuclear Material Safety and Safeguards
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U.S. Nuclear Regulatory Commission
Washington, DC 20555–0001

SUBJECT: NuScale Power, LLC Comments on *Regulatory Basis* for *Alignment of Licensing Processes and Lessons Learned From New Reactor Licensing*, Docket ID NRC-2009-0196.

REFERENCE: *Alignment of Licensing Processes and Lessons Learned From New Reactor Licensing*, 86 Fed. Reg. 14,695, March 18, 2020.

The subject Federal Register Notice extended the public comment period on the draft Regulatory Basis to support the proposed rule *Alignment of Licensing Processes and Lessons Learned from New Reactor Licensing*. Please consider these comments of NuScale Power, LLC (NuScale) in response.

NuScale agrees with and endorses the comments separately submitted by the Nuclear Energy Institute (NEI). The attachment provides additional comments in support of NEI's comments and addressing additional issues.

If you have any questions, please contact me at 541-360-0549 or at gbecker@nuscalepower.com.

Sincerely,

Gary Becker
Regulatory Affairs Counsel
NuScale Power, LLC

Attachment

Comment 1: TMI Requirements

Appendix C of the Regulatory Basis evaluates extending the applicability of the TMI requirements (10 CFR 50.34(f)) to new power reactor applications under Part 50, and would delete one TMI requirement that is addressed elsewhere by NRC's regulations. As part of Alternative 2, which is the recommended alternative, it is stated that "NRC would also conduct a regulatory and safety assessment to determine which TMI requirements may be applicable to non-LWRs and apply those needed to address safety and risk issues not covered by other existing regulations and guidance."

The TMI requirements are a source of significant regulatory uncertainty and confusion in the licensing process for new power reactor applicants such as NuScale; the effect of and need for some of these requirements in light of other regulations and guidance is not limited to non-LWRs. In amending 10 CFR 50.34(f), NRC is considering deleting a single TMI requirement that is no longer needed, and thus NRC has indicated it is willing to make changes to the substance of the rule. NuScale requests NRC conduct a complete and holistic review of the TMI requirements and overhaul them to improve regulatory clarity and predictability for all future power reactor applicants. NEI's comments address some of the challenges with the current rule, summarized here:

- Portions of 10 CFR 50.34(f) are obsolete on their face, and the rule should be cleaned-up to increase regulatory clarity. For example, the applicability provisions of the introductory paragraph and specific provisions that are applicable to no applicants should be deleted.
- Portions of the rule that prescribe the type of information needed to satisfy the requirements or the timing of it were relevant only for the pending applications to which the rule originally applied. 50.34(f) paragraphs (1), (2), and (3) and some individual provisions are now obsolete and confusing for new applicants under Part 52. Applicability of the TMI requirements to Part 50 applications will also raise new questions about compliance at the construction permit versus operating license application stages. Thus, these provisions should be revisited to provide clear direction on the application content needed and timing thereof for the various application types.
- The TMI rules each contain a designation corresponding to the related action plan items in NUREG-0718 and NUREG-0660. Footnote 10 indicates those citations are provided "for information only." However, without the information contained in those NUREGs (and NUREG-0737), the TMI requirements and intent thereof are ambiguous and uncertain, rather than relying on a vague reference to obsolete NUREGs to discern the meaning of the requirements, the amendments to 50.34(f) should include either (1) clearer articulation of the rules and acceptance criteria directly in the regulation, avoiding the need to reference a guidance document, or (2) develop a new guidance document that clarifies the final, technology-neutral requirements and intent for each rule, and update Footnote 10 to cite to that document instead.
- Several of the requirements—as informed by their history, intent, and implementation described in NUREGs -0660, -0718, and -0737, are irrelevant to new designs or redundant to other NRC rules. These requirements should be deleted.

During pre-application and review of its Design Certification Application, NuScale encountered numerous challenges and disagreements with NRC staff on the technical relevance and compliance with TMI requirements. These questions can only be answered by relying on the NUREGs, which themselves raise questions because they were developed specifically based on the lessons learned for the operating fleet of reactors. Even for NuScale's light water reactor design, translating the TMI requirements to a new design was a difficult and uncertain undertaking.

Thus, it would be a missed opportunity to only partially revisit the TMI requirements as part of this rulemaking. Without the envisioned "regulatory and safety assessment" for non-LWRs, that class of applicants will struggle to implement these requirements or demonstrate their technical irrelevance.

That same challenge exists for all new designs that differ substantially from the large, active, light water reactors for which the requirements were specifically crafted.

Recommendation:

As part of further extending the applicability of the 50.34(f) to include Part 50 applicants, NRC should first undertake a complete and holistic review of the requirements to improve clarity and regulatory certainty for all new applications. NRC's planned "regulatory and safety assessment" should not be limited to non-LWRs; it should assess the need for and applicability of the TMI requirements for all new reactor designs. Obsolete portions of the rule should be removed; remaining requirements should provide new performance-based, technology-neutral acceptance criteria.

Comment 2: Part 52 approval durations

Appendix H.1 addresses the renewal and duration of design certifications (DCs). NuScale agrees with the Staff's recommendation and NEI's comments in favor of Alternative 4, which would remove the duration of DCs and renewal requirements through rulemaking. NuScale further agrees with NEI's comments that the removal of DC durations should also apply to existing, active DC rules.

There is no health or safety benefit to requiring DC renewal, and there is no detriment to public health and safety by eliminating DC durations. 10 CFR 52.63(a) provides the Commission the means to impose changes on a certified design that are either necessary or justified. This authority assures that any necessary or justified design changes that would have been addressed through renewal can likewise be addressed on an as-needed basis. The rulemakings of 10 CFR 50.150 and 50.155 demonstrate that the NRC is able to effectively consider the impacts of safety issues and new requirements on already-certified designs and determine an appropriate means for implementing those requirements. The same considerations apply to DCs that are already complete and active at the time of this rulemaking. There is no technical basis to treat current and future DCs differently with regard to duration and renewal, and the regulatory impacts on applicants for currently approved DCs are minor and manageable. NuScale expects to have a certified design with a 15-year duration when this rulemaking is completed; that duration can and should be removed as part of this rulemaking.

In the Federal Register Notice "Specific Requests for Comments," question 3 asks whether NRC should also consider eliminating or changing the duration requirements for SDAs. Yes, the same considerations for the DC duration proposal—addressed above and by NEI's comments—apply to SDA durations. There is no safety reason to limit the duration of SDAs arbitrarily. A design receiving an SDA has been determined by the NRC to provide reasonable assurance of adequate protection. That determination should not change over time. Should a new safety issue arise that calls that determination into question, or a cost justified safety enhancement is warranted, the NRC has the means and experience to ensure the SDA-approved design, or an applicant referencing it, addresses the issue. Specifically, an SDA does not affect the authority of the Commission, ASLBP, or presiding officer to impose new requirements. Changes can be imposed on the approved design, or on a license application referencing the design, if necessary. Therefore, a predetermined SDA duration is arbitrary and an undue regulatory burden.

Recommendation

Proceed with Appendix H.1, Alternative 4 to remove DC durations. Include existing DCs within that rule change. Eliminate SDA duration requirements.

Comment 3: SDA change, departure, and renewal processes

Appendix H.2 addresses Part 52 change processes, and H.4 addresses an issue of referencing multiple SDAs in a license application. Part 52 Subpart E currently provides no process for the design

applicant to change, update or renew their SDA, and no explicit process for a license applicant to depart from a referenced SDA. These gaps in the SDA process introduce regulatory uncertainty into the use of the SDA process by new design applicants.

As experience with the use of DCs by COL applicants demonstrates, it is very unlikely a license applicant will be able to reference an SDA without any changes to the approved design. Currently, it is uncertain what these “departures” (in DC nomenclature) would mean for the finality of the standard design. NuScale intends to address this issue on an application-specific basis as part of its forthcoming SDA application. However, NRC should in parallel address this gap generically as part of this rulemaking. As with a license applicant referencing a DC, an applicant referencing an SDA should be able to depart from the SDA using a 50.59-like process, while preserving finality on the remainder of the design unaffected by the departure. Because an SDA does not and should not include Tier 1 information (see next comment), the 50.59-like process used for DC Tier 2 information is the only change process needed for SDA departures.

Additionally, the SDA applicant needs a process to change the SDA on a generic basis, and to renew the SDA if NRC determines that SDA durations will remain (see previous comment). Currently, it is unclear how an SDA-holder would go about making generically-applicable changes to an SDA, which will become increasingly important if SDA durations are eliminated. It is also unclear how an SDA applicant can renew the approval, if SDA durations remain. While a new SDA application could be filed in either case, there is no finality provision that would preclude *de novo* review of the full application. Subpart E should be revised to include a new rule allowing for amendment of an SDA by an SDA holder, and if needed renewal of the SDA, while minimizing the regulatory burden of those processes.

Recommendation

Revise Appendix H.2 to include consideration of a new change process for license applications referencing a Standard Design Approval. This would allow a license applicant to depart from portions of an SDA due to design changes or site-specific needs, while maintaining finality for the remainder of the approved design that is unaffected by the departure. Revise the Regulatory Basis to include consideration of changes to Part 52 Subpart E that would allow for to an SDA by an SDA holder, and renewal of the SDA (if the SDA durations are not removed as part of this rulemaking).

Comment 4: Tiered information for Part 52 applications

In Appendix H.3, Section 1, in the context of a proposed change to add definitions of the DC information tiers to 10 CFR 52.1, the Regulatory Basis states that Alternative 2 “would also amend the requirements for the contents of applications for a DC, COL, SDA, and ML in Sections 52.47, 52.79, 52.137, and 52.157 to require each applicant to identify Tier 1, Tier 2, and Tier 2* information in their FSAR." This is a significant change to Part 52 that is not clearly identified or well considered by the Regulatory Basis. NuScale is opposed to such a change because it is an unwarranted and unjustified regulatory burden; NRC has not identified any regulatory issue this change seeks to resolve.

As NEI’s comments discuss, tiered information for DCs reflects the unique purpose and function of design certification within the Part 52 framework. Design certification affords maximum finality to a design review via issue resolution by rulemaking. In turn, design certification also limits the ability of license applicants and holders to make changes to the certified design that would diminish the degree of standardization intended by the NRC. Tier 1 information (and Tier 2*, which is functionally equivalent) serves this purpose and reflects the status of a DC as a regulation. It is a method of ensuring standardization, not safety. The review of changes performed by OL holders under 10 CFR 50.59, and similarly for COL holders referencing a DC for Tier 2 information, ensures that a license applicant or holder does not unacceptably impact nuclear safety.

NRC's proposal would impose a new requirement for custom-COLs, manufacturing licenses (MLs), and SDAs to include Tier 1 information. The result is that a holder or user of these approvals would need to amend their license when they depart from this information. There is no equivalent to this approach in Part 50; so long as 10 CFR 50.59 does not require a license amendment, an OL holder can make changes to their licensing basis without NRC approval. NRC has not identified a reason Part 52 should be different. Again, tiered information is unique and specific to a design certification.

NuScale is particularly concerned about the implications for SDAs. Part of the reason NuScale has decided to seek an SDA for the next version of the NuScale SMR design is because the burdens of Tier 1 information on a COL applicant. That burden is justifiable for a DC because it brings with it the benefit of issue resolution. Imposing the same requirement on an SDA would be an undue burden without any safety justification or the same benefit. While an SDA would not necessarily ensure the same degree of design standardization without Tier 1 information as does a DC, the current regulations indicate this choice was an intentional policy decision. Indeed, as the Statements of Consideration for the 2007 Part 52 rule (quoted on page J-13 of the draft Regulatory Basis) illustrate, the Commission's intent was that the degree of finality afforded by the Part 52 processes is related to the degree of standardization achieved. The Commission's intent should not be reversed without full consideration and justification of the purpose and results.

Recommendation

Delete from Appendix H.3 Section 1 Alternative 2 the proposal to require tiered information for COLs, MLs, and SDAs.

Comment 5: Clarification of "essentially complete design"

In Appendix H.3, Section 2, NRC addresses clarification of the term "essentially complete design" within Part 52. NuScale agrees that NRC should proceed with Alternative 2 to amend Part 52 to address this issue.

Nuclear Energy Institute submitted a letter entitled *Part 50/52 Lessons Learned Rulemaking – Addressing the term "Essentially Complete"* on September 24, 2020 (ML20268C271), wherein NEI provided early comments on a potential rulemaking to clarify "essentially complete." Amongst the discussion, NEI recommended:

- That "can affect safe operation" needs to be further defined and clarified in order to make the new definition of "essentially complete" meaningful.
- That NRC separately and clearly define the level of detail needed for a DCA, which should be graded and considered distinct from the scope of design that must be described to satisfy "essentially complete."
- That 10 CFR 52.47 be revised to expressly acknowledge, "design and programmatic controls can substitute for design information where those controls provide reasonable assurance that the as-built design will meet NRC requirements."
- That conforming changes are needed for SDA applications under Part 52 Subpart E.

NuScale concurs with and endorses that NEI letter. With respect to SDAs, NuScale believes additional changes are needed beyond what NEI proposed. 10 CFR 52.135(a) should be amended to replace "the entire facility" with "an essentially complete facility," defined by this rulemaking, to ensure that an SDA application is not expected to go beyond the scope of design required for a DCA. In other words, an "essentially complete design" would be a full-scope SDA, while a "major portion" SDA also remains an available option for an applicant. The clarifications pertaining to a graded level of detail and the reliance on design and programmatic controls should also be made applicable to an SDA application.

In Section 2.6.2.2, the Regulatory Basis states that this clarification "could save a DC applicant 200 hours of work between the reduced level of effort required when initially developing the application and when responding to any level of detail-related requests for additional information (RAIs). It is reasonable to estimate that a question about whether a design is "essentially complete" will arise at least once during the review of each DC." Based on NuScale's experience, the change NRC has proposed in Alternative 2 will have a much larger impact than NRC has accounted for. The entire DCA is developed under the notion that it needs to reflect an essentially complete design, which excludes only site-specific SSCs or those that, by implication, cannot "affect safe operation of the plant." This expansive, undefined standard and the absence of a graded approach to design information means that the application contains design information on SSCs that have a remote and tenuous relationship to nuclear safety. Implementing NEI's recommendations and the changes to SDA applications will provide even greater benefit, to more applicants, and will greatly increase regulatory clarity and certainty.

Recommendation

Proceed with Appendix H.3, Section 2, Alternative 2. Consider additional changes to Part 52 to further clarify the scope and level of detail necessary for DC applications, and extend those changes to SDA applications. Revise the impacts of Alternative 2 to reflect greater benefits to applicants.

Comment 6: Backfitting and issue finality clarifications

Appendix J Section 3 addresses potential clarifications to 10 CFR 50.109 to resolve apparent inconsistencies with the issue finality provisions of Part 52.

With respect to the consistency issues for SDAs, NuScale agrees with the issue and resolution. However, the discussion in Section 3.2.1 is not clear as to the nature and effect of the identified inconsistency. The result of the current rules is that the portions of a COL derived from an SDA would have *less* finality than the remainder of the COL. Those portions would only have the finality afforded by 10 CFR 52.145, which is limited to Staff's review of the application (as the Regulatory Basis correctly notes, the terms of 52.145 do not seem to support this construct). Thus, a custom COL that does not reference an SDA would have backfit protection for the full scope covered by 10 CFR 50.109, while one referencing an SDA would lose backfit protection for the scope of design derived from the SDA. That outcome is not justified by safety or regulatory considerations. Thus, NuScale agrees that Alternative 2 should be pursued and that it should delete the sentence in paragraph 50.109(a)(vii) regarding how Section 52.145 applies to a combined license referencing an SDA.

With respect to the consistency issues for MLs, NuScale agrees in part with the issue and resolution. Paragraph 50.109(a)(1)(v) for MLs appears to unintentionally conflict with 10 CFR 52.171 in a way that would decrease the degree of finality afforded by an ML; that paragraph should be deleted. However, Alternative 2 also proposes to delete the sentence in paragraph 50.109(a)(vii) regarding how Section 52.171 applies to a COL using a reactor manufactured under an ML. This change, while NuScale agrees with the intent, would create new uncertainty and unintended results. The finality provisions of 10 CFR 52.171(a)(1) constrain the Commission's ability "during the term" of the ML to "modify, rescind, or impose new requirements on the design of the nuclear power reactor *being manufactured*, or the requirements *for the manufacture* of the nuclear power reactor." It is not obvious that the same constraint would apply once the reactor has been manufactured and provided to a facility licensee. The manufactured reactor, and the ML that allowed its fabrication, would be subsumed within a facility operating license issued under Part 50 or 52. At that point, 10 CFR 52.171(a)(1) could be read to not apply to the portion of the licensee's facility that was licensed and manufactured under the ML.

With the removal of the sentence in paragraph 50.109(a)(vii) regarding how Section 52.171 applies to a COL using a reactor manufactured under an ML, the backfit provisions of 10 CFR 50.109 could be construed to be the only provisions applicable to the COL using a reactor manufactured under an ML. I.e., the stronger backfit protections of 10 CFR 52.171 would cease to apply. Therefore, instead of deleting this sentence, NuScale believes Alternative 2 should leave that sentence, and instead make a conforming change to 10 CFR 52.171 to address the identified inconsistency. This amendment would clarify that 52.171(a)(1) is not limited to the term of the ML or the reactor while being manufactured. The same constraint on backfitting would extend to the scope of the operating reactor that was originally licensed and manufactured under an ML, for the term of the operating license.

Recommendation

Proceed with Appendix J Section 3 Alternative 2. Clarify the regulatory issue being addressed by the SDA resolution. Revise the ML-related resolution to address changes to 10 CFR 52.171 needed to ensure that the degree of finality intended by the Commission for an ML extends to a license applicant and holder that uses a manufactured reactor.

Comment 7: Requirement for safety parameter display system console in 10 CFR 50.34(f)(2)(iv)

As addressed by Appendix K Section 3, NuScale agrees that the requirement for a “console” is ambiguous and supports the resolution via Alternative 2. NuScale notes that this issue and change could be addressed as part of the complete and holistic review the TMI requirements recommended by Comment 1.

Recommendation

Proceed with Appendix K Section 3 Alternative 2; consider including this change within the regulatory basis and outcome of a complete overhaul of the TMI requirements recommended in Comment 1.

Comment 8: Discontinue priority ranking model for generic issues and allow a risk-informed approach

Appendix K Section 8 considers an update to the Part 52 requirements for addressing unresolved safety issues (USIs) and generic safety issues (GSIs). Section 8.3.2.2 states that Alternative 2 “would allow applicants to address the resolution of GSIs consistent with the agency’s risk-informed process described in NUREG-0933.” Section 8.5.1 states “The NRC issued revision 3 of RG 1.174 in January 2018, which provides one acceptable approach for implementing risk-informed applications,” and that new guidance is not anticipated for this rule change.

While in general NuScale agrees with Alternative 2, NRC’s expectations for and impacts of the change need to be reconsidered. Regulatory Guide 1.174 addresses the use of PRA for risk-informed *changes* to a facility’s licensing basis. It expects that such an application of risk-information will be based on a peer-reviewed PRA, reflecting an as-built and as-operated facility, and reflecting operating experience at the plant. It is infeasible for a Part 52 applicant to use RG 1.174 to risk-inform the resolution of GSIs. Such an applicant would be found to not have a technically adequate PRA for this risk-informed application, or at the least would have to justify significant departures from RG 1.174.

Therefore, in implementing Alternative 2, new guidance is needed. A Part 52 applicant cannot satisfy the expectations of RG 1.174. Nor should it need to—a new Part 52 applicant is not using risk information to make changes to a design and a licensing basis that was previously approved under a deterministic framework. The use of risk-information in a Part 52 application informs NRC’s initial conclusion of reasonable assurance of adequate protection. Just as NRC does not need a RG 1.174-compliant PRA to make its assessments of whether a Generic Issue is risk significant for new designs under MD 6.4, neither should a Part 52 applicant need that level of PRA to inform their determination.

The expectations for PRA technical adequacy impose an undue burden on the use of PRA in all aspects of risk-informing a new design or license application. NuScale struggled with this issue repeatedly during review of the NuScale DCA. If NRC proceeds with Alternative 2, new guidance is needed to match the technical adequacy of a new applicant's PRA with the manner in which it is used; the applicability and benefits of such guidance would go beyond the narrow issue addressed in Appendix K Section 8.

Recommendation

Proceed with Appendix K Section 8 Alternative 2; new guidance is necessary to allow Part 52 applicants to implement the resulting requirement because existing RG 1.174 is not appropriate or feasible for a Part 52 application.