June 27, 2018


Comments uploaded to www.regulations.gov

On behalf of the Union of Concerned Scientists, we submitted the attached comments on the draft letter.

As explained in the comments, we believe the draft letter must not be finalized and issued. We agree with the reason for the draft letter—the need to clarify regulatory expectations for the insertion of Lead Test Assemblies in operating reactor cores. That objective should be achieved through appropriate means, not via a letter to the industry trade group.

The draft letter outlines two regulatory pathways: (1) the Standard Technical Specification (STS) path for licensees having technical specification provisions comparable to STS 4.2.1, and (2) the 50.59 and non-exemption path.

The STS path is more appropriately provided through revisions to the STS Bases documents and/or issuance/revision of Regulatory Guides and Regulatory Issue Summaries to explain this path and the conditions for its use.

The 50.59 and non-exemption path is not needed because the pending 50.46 rulemaking expressly addresses the exemption portion and the proper application of 50.59 already addresses the remainder.

Therefore, the draft letter must not be finalized and issued. It is an entirely inappropriate means for communicating regulatory expectations on safety regulations protecting workers and the public.

Sincerely,

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Director, Nuclear Safety Project

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Improper Communication Process

The draft letter from the Nuclear Regulatory Commission (NRC) to the Nuclear Energy Institute (NEI) published June 7, 2018, in the Federal Register is titled “Clarification of Regulatory Paths for Lead Test Assemblies.” The draft letter’s first paragraph stated:

The purpose of this letter is to finalize the staff’s views on the regulatory positions discussed in the U.S. Nuclear Regulatory Commission’s (NRC’s) letter from Dr. Mirela Gavrilas, “Response to Nuclear Energy Institute Letter Concerning the Regulatory Path for Lead Test Assemblies,” to Mr. Andrew Mauer, dated June 29, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17150A443). This letter supersedes the June 29, 2017, letter and is intended to clarify several issues in the June 29, 2017, letter, including those related to Section 4.2.1, “Fuel Assemblies,” of the Standard Technical Specifications (STS), Volume 11; the use of approved methods, Title 10 of the Code of Federal Regulations (10 CFR) 50.59, “Changes, tests, and experiments”; and 10 CFR 50.46, “Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors.” As it gains more experience with these regulatory approaches, the NRC staff will continue to engage with stakeholders to determine whether further guidance is necessary.

Clearly, a draft NRC letter to NEI that would supersede another NRC letter to the same entity on the same topic issued less than a year earlier demonstrates the compelling need for clarification. And the first paragraph ends with the concession that this latest clarification is unlikely to be the last in a lengthening series of clarifications.

Whether or not this “clarification” is the final stop or just another step in that sequence, a letter to NEI is an improper means of communicating any clarification about regulatory requirements and conformance. The NRC has three established processes for conveying clarifications that were developed for such purposes and are therefore more suitable for doing so: (1) the NUREG series of Standard Technical Specifications, (2) the series of Regulatory Guides, and (3) the Regulatory Issue Summaries within the agency’s generic correspondence program. Hence, the draft letter should not be finalized and issued. Instead, one or a combination of these three proven methods should be used.

Standard Technical Specifications

One of the two Regulatory Paths described in the draft letter to NEI covers times when licensees have Standard Technical Specifications (STS) or STS-like technical specifications. Rather than a letter to NEI, the NRC should revise the STS to include road signs for this regulatory path.

The June 7, 2018, Federal Register notice for the draft letter lists the most recent revisions of the Standard Technical Specifications for Babcock & Wilcox, Combustion Engineering, General Electric and Westinghouse reactors. But that list only points to Volume 1 of these Standard Technical Specifications. In fact, the Standard Technical Specifications comprise two volumes. The second STS volumes were also approved by the NRC and issued in conjunction with the first volumes. The second volumes are the STS Bases.

Volume 2 of NUREG-1431 Revision 4 (ML12100A228) is the STS Bases for Westinghouse reactors. It is 1,162 pages long, considerably lengthier than the 570 pages in Volume 1 of NUREG-1431 Revision 4 (ML12100A222). The length differential implies the relationship of Volume 2 to Volume 1—the Bases provide the context for the requirements in the STS. In other words, the Bases put flesh on the bone of the requirements in the STS. The Abstracts for NUREG-1431 Revision 4 Volumes 1 and 2 contain this same sentence: “Licensees adopting portions of the improved STS to existing technical specifications should
adopt all related requirements, as applicable, to achieve a high degree of standardization and consistency.”

Consistent with this stated purpose of achieving consistency, it is entirely inappropriate for clarification of STS Section 4.2.1 to be provided via a letter to NEI. The appropriate means of providing this context would be to revise the STS Bases volumes to include the clarifying language.

Putting the clarified Regulatory Path in a letter to NEI instead of within the STS puts an undue burden on licensees, NRC staff, and the public in the future to pull the assorted pieces together to see the true picture or increases the risk of wandering off the path should the letter to NEI somehow not be found within the maze-like confines of ADAMS.


Regulatory Guides provide another means for communicating clarification on this matter. Quoting from the NRC’s cited webpage:

> The Regulatory Guide series provides guidance to licensees and applicants on implementing specific parts of the NRC's regulations, techniques used by the NRC staff in evaluating specific problems or postulated accidents, and data needed by the staff in its review of applications for permits or licenses.

Revision to an existing Regulatory Guide or development of a new one seems specifically tailor-made to the need for conveying clarification of NRC’s regulatory requirements than a letter to NEI. Additionally, Regulatory Guides are subject to formal periodic review by the NRC staff to ensure their currency. Letters to NEI, while superseded from time to time, have no such formal review structure.


Regulatory Issue Summaries within the NRC’s generic communications program also constitute a more appropriate means of communication regulatory clarifications. Quoting from the NRC’s cited webpage:

> Regulatory issue summaries are used to (1) communicate and clarify NRC technical or policy positions on regulatory matters that have not been communicated to or are not broadly understood by the nuclear industry, (2) inform the nuclear industry of opportunities for regulatory relief, (3) communicate previous NRC endorsement of industry guidance on technical or regulatory matters, (4) provide guidance to applicants and licensees on the scope and detail of information that should be provided in licensing applications to facilitate NRC review, and (5) request the voluntary participation of the nuclear industry in NRC-sponsored pilot programs or the voluntary submittal of information which will assist the NRC in the performance of its functions.

Item (1) could not be more closely aligned with the purpose of the draft letter unless Lead Test Assembly was explicitly mentioned. Items (3) and (4) seem equally aligned. Thus, a Regulatory Issue Summary seems a more appropriate communication method than a letter to NEI.

On page 9 of the response to the non-concurrence, the NRC stated:

> The CRA [Congressional Review Act] does not apply to this draft letter because the CRA only applies to agencies’ final rules. I agree that once finalized, this letter will be considered a rule for CRA purposes and will be submitted to the Office of Management and Budget (OMB) to determine whether it constitutes a major rule.
How will this “rule” be integrated with NRC’s other rules such that persons need not review every NRC letter in ADAMS to ensure they are conforming with all applicable rules? If that is the NRC’s expectation, it places undue burden on licensees, NRC reviewers, and members of the public to search through ADAMS looking for bits and pieces of the NRC’s scattered regulatory framework. That would have to violate one of more of the agency’s Principles of Good Regulation.

The Standard Technical Specifications, Reg Guides, and/or Regulatory Issue Summaries are more appropriate ways to clarify the NRC’s regulatory expectations. Sky-writing and Etch-a-Sketch scribbling may be the only communications means less suitable than a letter to NEI for conveying the NRC’s expectations in this area.

Finally, the use of an NRC letter to NEI to convey regulatory positions would seem to leave the door wide open for petitions submitted under 10 CFR 2.206 to seek enforcement actions when a reactor has loaded LTAs without a license amendment or approved exemption. The 2.206 process quite properly does not allow petitions to re-litigate regulatory decisions. For example, if UCS does not like aspects of the NRC’s final decommissioning rule (assuming it’s ever issued), we could not submit a 2.206 petition seeking to address perceived shortcomings at a reactor conforming to the rule. But a mere letter to NEI does not have the same stature and cache as regulations and rulings. The NRC periodically publishes “Nuclear Regulatory Commission Issuances” (example: ML18103A253) describing opinions, decisions, and orders issued by the agency since the last publications. Letters to NEI was not captured in this series of publications, presumably because they simply do not have the same regulatory status. Consequently, 23.206 petitions could seek enforcement remedies when LTAs were placed in operating reactor cores per the NEI letter contents and contrary to the real requirements in legally promulgated regulations and within legally issued reactor operating licenses.

Unclear Clarifications
The draft NRC letter to NEI cites Section 4.2.1 of the Westinghouse Standard Technical Specifications, NUREG-1431 Revision 4:

The reactor shall contain [###] fuel assemblies. Each assembly shall consist of a matrix of [Zircaloy or ZIRLO] fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO2) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

This section contains several ambiguities: “slightly enriched uranium dioxide,” “Limited substitutions of zirconium alloy or stainless steel filler rods,” “A limited number of lead test assemblies” and “placed in nonlimiting core regions.” The draft letter seeks to provide clarification for these ambiguities but fails to do so. For example, the middle paragraph on page 3 of the draft letter states:

Licenses can demonstrate compliance with the STS LTA provision that LTAs are of “limited number” and “in nonlimiting core regions” through an evaluation that finds that the quantity and placement of LTAs will not invalidate either the final safety analysis report (as updated) (UFSAR) Chapter 15 transient and accident analyses or the core operating limits report (COLR) limits.
This alleged “clarification” is actually no clarification at all. Evaluations are performed showing that entire cores of fuel remain bound by the Chapter 15 analyses and COLR limit. Theoretically, evaluations for a proposed reload core consisting of four non-LTAs and the remainder LTAs would pass this “clarification” if the fuel assemblies showing the least margin to the fuel thermal limits throughout the cycle were the four non-LTAs. The LTAs would theoretically be in non-limiting core regions. Yet the very reason LTAs are necessary is to confirm their performance or detect shortcomings such that the evaluations would be fraught with considerable uncertainties. While a reload core containing but four non-LTAs represents a theoretical extreme rather than a likely core design, it illustrates the fundamental flaw in the “clarifying” guidance.

Later on page 3, the draft letter stated:

> Historically, LTA campaigns have ranged from a few rods to 2 percent of the core, depending on the nature of the design and the degree of prior characterization of the LTAs’ performance.

UCS challenges the relevance of this observation rather than its validity. Historically, LTA campaigns have been pursued via license amendments and approved exemptions. Yet the draft letter speaks to the fact that past is not prologue in this matter. Absent clear clarifications on how many LTAs can be inserted into the core under what specific conditions, the “up to 2 percent of the core” past could easily not reflect future LTA campaigns.

The middle paragraph on page 3 concludes with this sentence: These evaluations are subject to verification through the Reactor Oversight Process (ROP). Absent clarifications to the ambiguities in STS Section 4.2.1, the evaluations will be overly subjective and the verifications will be significantly impaired. How could an NRC inspector the proposed loading of significantly more than two percent LTAs into the core? Clearly, the NRC could issue a violation afterward if excessive LTA loading led to cladding breaches and caused considerable radiation exposure to workers.

The proper way to remedy vagueness in STS Section 4.2.1 is to provide clarity in the accompanying STS Bases through quantitative definitions of terms like “limited number” and “nonlimiting core regions.” Absent such explicit definitions of vague, subjective terms, the NRC could describe a qualitative process licensees could follow when placing a “limited number” LTAs in “nonlimiting core regions.” Doing so would eliminate the need for the first pathway described in the draft letter to NEI. In other words, language like that on page 3 of the draft letter should be in the STS Bases, not outside of the STS in some obscure letter hidden in ADAMS.

**Regulatory Path 2: Crossroads**

The draft NRC letter to NEI described a regulatory path for licensees that do not have STS or STS-like provisions. The draft letter stated:

> LTA campaigns that are not described in the UFSAR meet the definition of a change, test, or experiment under 10 CFR 50.59(a), and the licensee must perform a 10 CFR 50.59 evaluation to determine if it may proceed with its campaign without prior NRC approval.

The NRC revised 10 CFR 50.59 in September 1999 to “clarify” the regulatory requirements for this regulation. The Statements of Consideration issued by the NRC with the revised 10 CFR 50.59 regulation (ML99286039) was quite explicit in explaining that the final rule combined comments from NEI with a NRC staff proposal to require license amendments when a proposed change involves a design basis limit related to the integrity of the fission product barrier (i.e., fuel rod cladding) being exceeded or altered: : 
Therefore, the approach contained in the final rule is a combination of the NEI proposal contained in its comment letter and the staff proposal contained in SECY-99-054. In the final rule, the Commission is eliminating the existing criterion on reduction of margin of safety. In its place, the Commission is adding a new criterion (vii) that requires prior NRC review of changes that result in a design basis limit related to the integrity of the fission product barriers being exceeded or altered.

The NRC issued Regulatory Guide 1.187 in November 2000 to communicate the agency’s expectations about this revised regulation. This regulatory guidance was equally clear on this point:

(2) A licensee shall obtain a license amendment pursuant to § 50.90 prior to implementing a proposed change, test, or experiment if the change, test, or experiment would:

(vii) Result in a design basis limit for a fission product barrier as described in the FSAR (as updated) being exceeded or altered;

It would be very hard if not impossible to conform to the 10 CFR 50.59 regulation when placing LTAs in the reactor core without a license amendment. For example, STS Section 4.2.1 mentions that a limited number of LTAs can be loaded in non-limiting core regions. Section 15.4.7, “Inadvertent Loading and Operation of a Fuel Assembly in an Improper Position,” in the NRC’s Standard Review Plan (NUREG-0800) (ML070550013) explains why federal safety regulations require fuel loading errors to be analyzed:

The spectrum of misloading events analyzed. A sufficient number of fuel-loading errors must be studied by the applicant and presented to show that the worst situation undetectable by incore instrumentation has been identified. The kinds of errors considered should include loading of one or more fuel assemblies into improper locations and, where physically possible, with incorrect orientation.

Misloading one or more LTAs into improper locations could result in a limited number of LTAs being in limiting rather than non-limiting core regions. An adequate 50.59 evaluation could not faithfully justify not submitting a license amendment unless analyses of postulated LTA loading errors outlined in SRP 15.4.7 concluded the applicable safety regulations would be met.

The proposed Regulatory Path 2 in the draft NRC letter to NEI cannot contradict, undermine, or relax the requirements promulgated through the open rulemaking process embodied in 10 CFR 50.59. In other words, a letter to NEI—or even 100 letters to NEI—must not replace legally promulgated regulations.

Applicability and the Need for Exemptions
The non-concurrence filed by an NRC staffer on the draft letter to NEI challenged, among other things, the provision that the proposed pathways departed from past policies and practices that required license amendments for Lead Test Assemblies (LTAs). UCS finds the logic and evidence provided by the non-concurring staffer to be sound and convincing. On page 8 of the response to the non-concurring staffer, the NRC wrote:

There have been varied approaches used by licensees who have inserted LTAs. Some licensees have requested an exemption “from 10 CFR 50.46” such that the acceptance criteria in 10 CFR 50.46 and 10 CFR Part 50, Appendix K could be applied to fuel assembly designs that used cladding material other than zircaloy and ZIRLO.

and
The LTA exemptions that have been issued for 10 CFR 50.46 are unusual in that they provide an exemption to the applicability statement in the rule, rather than an exemption from the rule itself. For example, a plant using M5 cladding would typically request an exemption to the 10 CFR 50.46 applicability statement, allowing the application of the acceptance criteria in 10 CFR 50.46(b) to a cladding other than zircaloy or ZIRLO. The exemption request in that circumstance would be expected to document that the clad-specific criteria in 10 CFR 50.46(b) (i.e., peak cladding temperature, maximum cladding oxidation, and maximum hydrogen generation) are applicable or bounding for M5. Meeting these criteria would demonstrate compliance with GDC 35, “Emergency Core Cooling.”

In the case where a limited number of LTAs are inserted into a core for which 10 CFR 50.46 applies, either intrinsically or by exemption (true for all currently operating LWRs), the acceptance criteria of 10 CFR 50.46(b) still apply to the core. An exemption is not required to insert the LTAs because a limited number of LTAs inserted in non-limiting core regions will not impact the acceptability of the ECCS [emergency core cooling systems] for that plant. If a licensee were to determine that the LTAs may impact the ECCS acceptability, then the LTAs would not be considered to fit the limited number and non-limiting core regions provisions of the TS [technical specifications].

The response suggests that an exemption would be little more than semantics because the requirements within the rules would apply even to fuel designs other than those explicitly stated in the rules. That notion is contrary to standard industry practice and therefore is false logic, at best.

The draft letter to NEI cites Section 4.2.1 from NUREG-1431, the STS for Westinghouse reactors. Here is Section 3.1.2 from NUREG-1431. It is representative of the majority of STS sections and is also typical of the format and content of non-standard or custom technical specifications. Note the APPLICABILITY provision. The APPLICABILITY defines when the STS requirements must be met. In this case, the requirement is only applicable in MODES 1 and 2. CONDITION B directs the reactor be placed in MODE 3 if conformance with the requirements cannot be met within the specified time period. In other words, if the applicable requirement cannot be met, the reactor must be placed into a configuration where the requirement is no longer applicable.
The response to the non-concurrence advanced the notion that APPLICABILITY had no direct bearing on whether the associated requirements must be met. That notion is contrary to decades of application.

Rather than condoning the pretending that applicable requirements in federal regulations are actually not applicable, the NRC must revise the regulations to clearly state how and under what conditions fuel designs that differ from the parameters explicitly stated in the regulations can be used in operating reactors.

Alternatively, the NRC could continue the practice most commonly employed over the past decades. When a Lead Test Assembly deviates from the explicit applicability of regulations such as 10 CFR 50.46 and App. K to 10 CFR 50, licensees seek and obtain exemptions from the NRC. This process has been successfully used for decades. The exemption process to address LTAs not conforming to the express configurations of federal regulations or a revision to the federal regulations to cover non-conforming LTAs are the proper means of ensuing safety.
Final Rule, if ever issued, Pre-empts Need for Guidance

Page 7 of the draft NRC letter to NEI has a section titled “Exemptions from Applicability Statement in 10 CFR 50.46(a)(1)(i) for LTA Campaigns.” The discussion in the draft letter makes no mention of and seems oblivious to the draft final rule covering the matter described in SECY-16-0033 (ML15238A933). The Excel spreadsheet on the NRC’s rulemaking webpage (see https://www.nrc.gov/about-nrc/regulatory/rulemaking/rules-petitions.html#cprlist) specifies that the final rule is scheduled for publication on July 18, 2018. This final rule would add 50.46c to the Code of Federal Regulations. According to this table from SECY-16-0033, the new section would more than address the discussion in the draft letter:

<table>
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<th>§ 50.46c</th>
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<td>Performance-Based</td>
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<td>Applicability</td>
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If the final rule, developed after literally years of effort, is not ready for prime time, then the draft “clarifying guidance,” developed after literally days of some effort, is also not ready for prime time.

Furthermore, the reality of the final rule in SECY-16-0033 is solid, irrefutable evidence of the need for either continued exemptions from the existing 50.46 language or conformance to the properly revised 50.56c language. If licensees could simply opt out of exemptions using 50.59 or other means, the whole effort leading to the proposed regulatory changes to 50.46 would not have been necessary. Short-cutting appropriate processes to authorize licensees to install LTAs of fuel other than uranium dioxide or cladding of other than zircaloy or ZIRLO without exemptions to the current language would essentially be aiding and abetting rule-breaking. If existing safety regulations are deficient and/or ineffective, the only appropriate and legal recourse for NRC is to revise the regulations, not conspire with industry on the most convenient ways to scoff at them.
Underestimated Value of License Amendment and Exemption Requests

The non-concurrence for the draft NRC letter to NEI outlines positions that would unfairly deprive the public its legal right to review license amendment requests for LTAs and contest measures considered inadequate. UCS agrees with and echoes those valid arguments. In addition, UCS points out the underestimated value of license amendment and exemption requests.

All license amendment and exemption requests are reviewed by the NRC. The NRC review adds value whether it finds fault with the request or approves the request as-is. NRC reviews have identified wrongs that were corrected and also identified seams that were strengthened before they could be exploited. It’s hard to quantify the tangible value from these NRC reviews, but it’s clearly a positive one. Similarly, public intervention has challenged requests and resulted in safety gains.

But the greater value, and the one being underestimated by the NRC, is in the additional rigor and robustness applied to license amendment and exemption requests. Nuclear plant workers are dedicated, capable individuals who discharge their assigned tasks to the best of their abilities. It’s not that workers provide 80% effort when preparing or reviewing a 50.59 evaluation and up that effort level to 100% when developing a licensing submittal. It’s that the licensing submittal process involves more steps and more workers than the 50.59 evaluation process. The additional rigor and robustness resulting from more qualified workers doing their best renders licensing submittals superior to 50.59 evaluations. Evidence supporting that assertion can be found in the compilation of 50.59 violations (ML13094A257). That compilation chronicled about 11 violations per year dating back several years—an average of nearly one 50.59 violation per month. On the other hand, violations involving deficient licensing submittals are rare.

To be sure, the NRC does routinely inspect 50.59 evaluations. But that inspection effort involves an audit of a small subset of 50.59 evaluations. Hence, 50.59 evaluations supporting LTAs may, or may not, get inspected. One hundred percent of LTA license amendment and exemption requests get reviewed by the NRC compared to a small percentage—if any—of the 50.59 evaluations for LTAs. It’s the difference between a regulatory spotlight and a strobe light.

Thus, the license amendment and exemption requests reflect superior quality by owners backed by value added from NRC reviews and public intervention. Contrast that value with the value from 50.59 evaluations of lower quality, less NRC oversight, and no public engagement.

UCS agrees with the concerns expressed in the non-concurrence about the proposed NRC positions unfairly depriving the public of legal rights. UCS is additionally concerned that the proposed NRC position would diminish safety by condoning safety efforts of demonstrably lower quality.

Both Regulatory Paths are Dead Ends: Inviting a PRM Path

For reasons outlined above and in the non-concurrence, the two Regulatory Paths described in the draft NRC letter to NEI are untenable. If the NRC ignores and/or dismisses all the legitimate concerns about these paths and mails the letter over to NEI, it will be inviting a petition for rulemaking seeking “clarification” to 10 CFR 50.59, 10 CFR 50.46, App. K to 10 CFR 50, and so on. It is very likely that UCS would accept such an invitation rather than accept such a poor regulatory position.