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Ms. Cindy K. Bladey
Chief, Rules, Announcements, and Directives Branch (RADB)
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

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USNRC

Subject: Industry Comments on Draft Spent Fuel Storage and Transportation Interim Staff Guidance No. 26A (SFST-ISG-26A) *Shielding and Radiation Protection Review Effort and Licensing Conditions for 10 CFR Part 72 Applications* – Docket ID NRC-2013-0051

Project Number: 689

Dear Ms. Bladey:

On behalf of the nuclear energy industry, the Nuclear Energy Institute (NEI)¹ welcomes the opportunity to comment on the subject draft Interim Staff Guidance (ISG). The ISG is seeking to achieve two distinct and separate purposes: 1) facilitate the prioritization of the staff's review of dry storage license applications and amendments, and 2) establish staff expectations regarding the substantive content of ISFSI licenses and Technical Specifications (TS), dry storage cask Certificates of Compliance (CoCs) and TS, and ISFSI/dry storage cask Safety Analysis Reports (SARs). Both purposes are of significant interest to the industry because, as the dry cask storage industry continues to experience significant growth—with more than 150 new dry storage systems being loaded each year—effective review prioritization and standardization of license, CoC, TS and SAR content are both vital to assuring that dry storage systems can be licensed in a timely matter to facilitate the safe management of spent fuel.

However, we have significant concerns with the proposed criteria for CoC/license conditions and TS, as well as SAR analyses in this ISG, due to their potential impact on licensees and CoC holders. In addition, we do not believe that these criteria should be imposed upon licensees and CoC holders through staff review guidance rather than a more appropriate regulatory vehicle such as rulemaking. The industry has recently

¹ NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

proposed what we believe constitutes a more effective means of achieving the stated goals of this ISG in a recent Petition for Rulemaking (PRM-72-7), which was submitted on October 3, 2012 and formally noticed for public comment by the NRC on February 5, 2013. We are therefore recommending that the NRC defer moving forward with proposed SFST-ISG-26A until full and complete consideration can be given to PRM-72-7.

The rule changes called for in PRM-72-7 propose a broader set of criteria that would, by standardizing CoC/license and TS content at a more risk-appropriate level of detail, significantly reduce the number of license and CoC amendments needed to only those having a risk-informed nexus to nuclear safety, thereby achieving the level of safety focus being sought in the draft ISG. We note that the industry has proposed these criteria as a matter of rulemaking, instead of guidance, as we believe that the establishment of clear requirements is a more appropriate and effective means of achieving consistent, safety-focused licenses, CoCs and TS.

More importantly, we do not believe that the specific additional license/CoC conditions and TS being called for by SFST-ISG-26A have a clear nexus to risk and nuclear safety. The draft ISG has not demonstrated that license/CoC conditions and TS tied to dose rates of individual objects, such as transfer casks, provide any additional public health and safety protection. To the contrary, it is the industry's position that the criteria proposed in this draft ISG would not further the goal of assuring safety and, in fact, would be counter-productive to this purpose. Detailed comments explaining the basis for the industry's position are provided in the attachment to this letter.

We further point out that, while the specific license/CoC conditions and TS being called for in the draft ISG are based on dose rate limits, the NRC already has requirements for radiation protection in 10 CFR Part 20 that, as implemented by the industry, achieve the same purpose and have been effective, as demonstrated by the deployment of over 1,700 dry storage systems to date without a single over-exposure event. Adding conditions to ISFSI licenses, dry storage cask CoCs and TS that are redundant to existing NRC regulations would add unnecessary information to CoC holder and licensee submittals, complicating the NRC's review in a manner that is wholly inconsistent with the improvement in review effectiveness being sought with the aforementioned prioritization approach. In the attachment to this letter, we offer specific comments in this area and recommendations for how the goals of this proposal would be better served through the approach recommended in PRM-72-7.

Similarly, while we endorse the NRC's goal of establishing methods to prioritize its licensing reviews, we also believe that the NRC should defer implementation of the review prioritization approach outlined in this ISG until after the approach recommended in PRM-72-7 can be fully considered. We believe that review prioritization efforts would be improved if they were informed by the safety-focused criteria proposed in PRM-72-7.

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We believe that additional dialogue with key stakeholders—those who would be affected by this ISG—is needed before proceeding any further with its implementation. We would, therefore, welcome the opportunity to meet with the NRC at your earliest convenience to further discuss this proposal. Thank you in advance for consideration of our comments. If you have any questions, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Rodney McCullum', with a stylized, cursive script.

Rodney McCullum

Attachment

c: Ms. Catherine Haney, NMSS, NRC
Mr. Mark D. Lombard, NMSS/DSFST, NRC
Mr. Anthony H. Hsia, NMSS/DSFST, NRC
Mr. Meraj Rahimi, NMSS/DSFST/CSDAB, NRC
Ms. Michele M. Sampson, NRC/NMSS/DSFST/TCB, NRC
Mr. Steve R. Ruffin, NRR/NMSS/DSFST/LB, NRC

Detailed Comments on the NRC Draft Spent Fuel Storage and Transportation Interim Staff Guidance No. 26A (SFST-ISG-26A)

The industry's comments on draft SFST-ISG-26A address and explain our concerns regarding the potential impact on licensees and CoC holders of the proposed criteria for CoC and TS licensing conditions and SAR analysis and the fact that these criteria are being imposed upon licensees and CoC holders through staff review guidance instead of a more appropriate regulatory vehicle. These concerns and specific comments are described in detail through the following comments.

Significant Overarching Concerns:

1. CoC/license conditions, TS, and SAR analysis expectations should not be established through interim staff review guidance. Expectations, such as those outlined in this draft ISG, often have the practical effect of becoming de-facto requirements for licensees and CoC holders. The licensing conditions and safety analyses called for in Tables 2 and 3 of this ISG are stated in a manner that it is impossible for licensees and CoC holders to view them as anything but requirements. The imposition of new requirements should be addressed as a matter of rulemaking supported by appropriate back-fit analysis.
2. NEI has already proposed an approach to establish criteria for CoC and TS content in a Petition for Rulemaking (PRM 72-7). This proposal can also be easily adapted to Part 72 specific licenses and TS. The rule changes called for in PRM-72-7 propose a broader set of criteria that would, by standardizing NRC-controlled content at a more risk-appropriate level of detail, significantly reduce the number of CoC amendments needed to only those having a risk-informed nexus to nuclear safety, thereby achieving the level of safety focus being sought in the draft ISG. The NRC should defer moving forward with the criteria proposed in this ISG until full consideration can be given to the petition because potential rule changes made in response to the petition would have a direct bearing on the need for and nature of any related guidance. We believe that such consideration would find that the CoC/licensing conditions and TS proposed in this ISG would be inconsistent with the overall risk-informed approach to NRC-controlled content being recommended in PRM-72-7.
3. Additional CoC/license conditions and TS should not be imposed without a basis strongly linked to the protection of public health and safety. The draft ISG has not demonstrated that CoC/license conditions and TS tied to transfer cask and storage cask/module dose rate provide any additional public health and safety protection above that which is already provided through licensee compliance with the requirements of 10 CFR Part 20. Therefore, including such CoC/license conditions and TS represents a redundancy in the regulatory process that will simply have the net effect of increasing the level of both licensee and NRC resources applied towards achieving a goal that is already being met. In fact, the imposition of these licensing conditions could have the effect of actually increasing worker radiation exposures by requiring additional dose rate measurements to be taken.
4. In stating (in Appendix A, page 7, last sentence on page) that "this ISG is appropriate to provide assurance of adequate radiation protection for workers and the public," the NRC appears to have

come to the conclusion that 10 CFR Part 20 is not sufficient to provide adequate radiation protection for dry storage operations. This conclusion is based on a number of preceding statements indicating that the NRC believes dry storage operations are uniquely hazardous. If this is indeed the case, the NRC should explain why it is addressing a situation where there is a gap in its regulations in interim staff guidance instead of through a rulemaking to close the gap in the regulations.

Other General Concerns

5. Regulating the dose *rate* on particular items is unnecessary for maintaining personnel *doses* ALARA and less than the limits in 10 CFR 20 during cask loading operations. It is also inconsistent with Part 50 practice, where no such item-specific dose rate limits are set down in the plant licensing basis. Part 50 licensees who load spent fuel casks use the same radiation protection practices for that activity as they use for any other activity involving movement of radioactive components (including other radioactive material packages, such those used to ship highly radioactive filters and resins).

Licensees monitor activities and crew size, and measure actual dose rates on and around the casks during use in the field. They use this operating experience, and that from other users around the nation, to inform and improve the effectiveness of their radiation protection efforts. This actual field information is used to develop and refine Radiation Work Permits (RWPs) to establish dosimetry alarm setpoints, stay times, low dose rate areas, temporary shielding requirements, and personnel protective equipment for future cask loading campaigns, with due consideration of modified cask designs and potentially higher source term cask contents, as applicable. These RWP requirements, developed as part of standard plant radiation protection programs that have been used for decades, provide adequate protection for workers and keep doses both ALARA and well below the limits of 10 CFR Part 20. This high level of worker protection has been successfully demonstrated hundreds of times as borne out by the actual personnel doses recorded for over 1,700 casks safely loaded to date.

6. It is stated in the draft ISG that the proposed CoC/license conditions and TS will help detect fuel assembly misloads. However, dose rate limits in the CoC, license or TS would be an ineffective method by which to detect fuel assembly misloading. The calculated dose rates reported in the ISFSI/cask FSARs (which would presumably be the ones put into the CoC, license or TS) are very conservative estimates computed using maximum possible source terms for the cask contents.

It is highly unlikely a fuel assembly misloading would ever cause the measured cask dose rate to exceed the calculated value for two reasons. First, if a misloading occurred on an interior assembly, the peripheral assemblies would shield the interior assembly. Second, even if the misloaded assembly was a peripheral assembly, the dose rate measurement would have to be taken at the precise azimuthal location of the misloaded assembly to potentially detect the higher dose rate, which may or may not cause the dose rate limit in the license/CoC or TS to be exceeded. The only truly reliable way to detect a fuel assembly misloading is a rigorous review

of fuel assembly operational records, special nuclear material move sheets, and verification of the fuel assembly physical identification number after cask loading. All of these are performed routinely during cask loading and independently verified prior to the lid being placed on the canister or bare fuel cask.

7. The ISG and supporting information in Appendix A refer frequently to "recent" design changes and license applications for "high dose rate" transfer cask designs. It is our understanding that the impetus for this ISG is the 2006 attempt by one cask vendor to implement a low-weight transfer cask design under the provisions of 10 CFR 72.48, which resulted in an NRC violation being issued to that vendor. We are now close to seven years removed from that event. We are unaware of any other "recent" similar experience.

The entire industry is aware of the 2006 problem with the modification to the transfer cask in that instance, and has used the lessons learned to bolster our 10 CFR 72.48 guidance and training programs. Specifically, vendors and licensee both understand that dose rate limits for a "cask" apply to the as-fabricated cask, without supplemental shielding, unless that shielding is specifically recognized in the licensing basis as being acceptable for meeting the specified dose rate limits for the cask. We do not believe this ISG would have any additional beneficial effect with regard to cask vendor and licensee regulatory compliance.

Specific Comments:

8. Page 2, 2nd paragraph under "Discussion": The statement is made that "recently introduced" transfer cask (TC) designs are "raising significant, unanticipated radiation protection issues." It is unclear what is meant by "radiation protection issues." The industry is unaware of any operating experience to support this assertion. It is our understanding that all TCs, including the newer designs are being used in accordance with 10 CFR 20 and existing radiation protection program requirements in the license, CoCs and TS. In fact, operating experience shows that radiation exposures for cask loading operations are being maintained ALARA and continue to decrease with time and experience loading casks (doses on the order of 100-150 millirem for the entire cask loading crew per cask loaded are now achievable). Additional detail on the basis for this concern should be provided.
9. Page 3 "SAR analyses and CoC/TS conditions": Instructions are provided to use Tables 2 and 3 to determine what analysis "should" be included in the SAR and what requirements "should" be included in the license, CoC and TS. The analysis and license conditions described in these tables are highly specific and it is not clear that licensees/CoC holders have any alternative but to adopt what is being put forth in these tables, as opposed to more flexible information appropriate for a guidance document. This specificity in the ISG will have the practical effect of imposing additional, highly prescriptive, requirements on licensees and CoC holders. As discussed in our general comment 1, interim staff review guidance is not an appropriate regulatory vehicle for imposing detailed requirements. Further, such requirements should not be promulgated without a clear understanding of why they are needed to protect safety, something that has not been provided in the draft ISG (see comment 6).

10. Appendix A, page 2, 3rd paragraph on the page: Reference is made to stakeholder input received during the development of the ISG in support of the NRC's efforts to prioritize staff reviews. We note that the specific stakeholder input referenced in this paragraph—a November 21, 2008, meeting between the NRC and the industry and the follow-up correspondence that resulted from this meeting (ADAMS Accession No. ML090690784)—included a specific proposal from the industry that recommended the NRC not require transfer cask, storage cask, or horizontal storage module dose rate limits in the CoC. The industry's position then, as stated in Reference 10 of Appendix A to the ISG, remains unchanged today. At that time, the NRC, as stated in Reference 11 of Appendix A to the ISG, did not accept this proposal and committed to develop an ISG to "establish appropriate limits to be included in the technical specifications," which draft ISG-26A now proposes to do.

We note that, in rejecting the industry's proposal, the NRC cited an instance documented in NRC Inspection Report 72-20/00-03 (ADAMS Accession No. ML010160098) when a misload was discovered by the measurement of unexpected neutron dose rate values. A close examination of that inspection report indicates that the unexpectedly "high" dose rate that triggered identification of the misload was 96 mrem/hr—a value that is 1/20th of the lowest level at which the NRC is proposing a TS Limiting Condition for Operation (LCO) in this ISG. Hence, had the proposed TS LCO been in place at that time, it would have played no role in the discovery of the misload. This supports the industry's position that existing radiation protection and ALARA practices in accordance with 10 CFR Part 20 are sufficient to protect safety and TS conditions are unnecessary. TS conditions at such low dose rates would certainly not be warranted from a risk informed perspective, and—as the industry has consistently maintained—misloads are unlikely to challenge the conservatively high FSAR-calculated dose rates.

Given that the NRC has now developed specific CoC dose rate limits in this ISG, we believe that it would be instructive to evaluate these specific limits in comparison to the industry's 2009 proposal. This proposal and its basis were stated as follows in the aforementioned Reference 10:

"Proposed Resolution

"Do not require transfer cask, storage cask, or horizontal storage module dose rate limits to be included in the CoC or technical specifications. Estimated, representative dose rates from these components should be included in the storage system FSAR.

"Basis

"Dose rates will be reported in the storage system FSAR and will be significantly above those actually measured in the field. Licensees measure dose rates on the storage system components at appropriate times in the loading process, and have an expectation on the order of magnitude of the dose rates based on the FSAR information. They will take suitable corrective actions if unexpectedly high dose rates are measured, simply because the site radiation protection programs demand such prudence.

"Historically, NRC has believed that having a dose rate limit in the CoC may detect a cask misloading. It would be extremely unlikely for a dose rate measurement to detect a misloading event. Exceeding a CoC dose rate limit would only reveal the most serious of

misloading events (i.e., multiple over-burned assemblies in the peripheral fuel cell locations). Most misloading events, because they involve only a few fuel assemblies either cooled slightly too little or burned slightly too long would never be discovered by a dose rate reading exceeding a CoC limit. This is because the CoC dose rate limits (which are based on the FSAR shielding analysis) are conservatively high and represent the full spectrum of allowed contents for the storage system. A misloading event of any severity occurring anywhere other than in the peripheral fuel cells would not likely be detected by elevated dose rates due to the significant self-shielding provided by the outer fuel assemblies. No actual misloading events that have occurred, to our knowledge, have been discovered via dose rate measurement.

"As discussed at the November meeting, plants track the contents loaded into fuel casks very closely, including independent verification and, in many cases, video records. This attention to detail in cask loading is driven by the requirements to control special nuclear material in the Part 50, Part 72, and Part 74 regulations. Misloadings are taken very seriously and are addressed in the licensee's corrective action program to determine the cause and prevent recurrence. The cause and corrective action information is shared either formally (e.g., via event notification) or informally (e.g., via storage system users groups) to help reduce the likelihood of a similar event elsewhere."

11. Appendix A, 1st sentence in the 2nd full paragraph on page 9: The sentence beginning with "For any particular licensee..." is confusing as worded. The NRC should clarify.
12. Appendix A, 1st sentence in the 3rd full paragraph on page 9: It is unclear what is meant by "designs that have increasing dose rates" and why this characteristic makes it difficult to determine the "adequacy of implementation of ALARA." The NRC should clarify and explain. Refer also to comment 5 above.
13. Appendix A, last sentence in the 2nd paragraph in Section 3.3 on page 10: We strongly disagree with the statement that "reviewer judgment may dictate that in some cases additional CoC or TS conditions may be necessary." The NRC's Principles of Good Regulation require *Clarity* – "Agency positions should be readily understood and easily applied," and *Reliability* – "Regulatory actions should always be fully consistent with written regulations and should be promptly, fairly, and decisively administered so as to lend stability to the nuclear operational and planning processes." Consistent with these principles and the 1993 Commission Policy Statement on Technical Specifications for Nuclear Power Reactors, licensees and CoC holders should not be left to anticipate the judgment of individual reviewers when developing licensing submittals and expectations should not vary from one submittal to the next because different reviewers may make different judgments. The NRC's requirements for CoC/license conditions and TS content must be clear and consistent. We note that this is precisely the situation that the industry's Petition for Rulemaking (PRM-72-7) seeks to address by establishing, through rulemaking, criteria to standardize CoC and TS content at a risk appropriate level of detail.
14. Appendix A, Section 4.2, pp. 12-18: Much of what is in this section appears to go beyond the stated purpose of the ISG. Rather than informing review prioritization or license conditions, this appears to be broad guidance for the written content of dry cask storage system licensing documentation.

15. Appendix A, 1st sentence in the 1st full paragraph on page 13: In making the statement “Dose rate limits and their associated measurements, as part of a TS LCO, provide an immediate and direct indication that a loaded TC fulfills several aspects of its intended function,” the ISG appears to be taking the position that operational surety falls under the purview of the NRC. Licensing parameters, such as TS limits, should be focused on providing assurance that a system is safe, with the NRC change control limited to loading conditions and requirements that have a direct nexus to public health and safety (e.g. initial conditions assumed for accident analyses) that licensee could alter via procedure changes. This focus should not be blurred by also including items needed to assure that the system works the way it was designed to.
16. Appendix A, 1st sentence in the 2nd full paragraph on page 13: By stating “TS *must* include a provision for the licensee to take measurements” (emphasis added), the ISG is clearly imposing a requirement upon licensees and CoC holders. As discussed in comment 2.a, we do not believe that it is appropriate to promulgate regulatory requirements in interim staff guidance.
17. Appendix A, 5th sentence in the 3rd full paragraph on page 13: The statement on what “justification” should be in the TS bases implies a level of detail that goes well beyond what is needed to assure safety.
18. Appendix A, 2nd full paragraph on page 1: The level of detail specified in this paragraph for Level 3 TCs would add significant complexity to the licensing documentation and leave very little operational flexibility in the loading process while, at the same time, being unnecessary to assure safety. The expectations conveyed in this paragraph are also inappropriately stated in a manner (“needs to”) that will have the practical effect of imposing a new requirement that is not appropriate for interim staff guidance. If imposed as requirements, these expectations could actually work counter to the purposes of safety by restricting licensee’s ability to make timely adjustments needed to assure a smooth loading campaign due to the complex and time consuming nature of the licensing process that would be needed to permit the adjustments to be made.
19. Appendix A, Section 4.2.1.3: This section sets expectations for the relationship between a dry cask storage specific TS Radiation Protection Program (RPP) and a licensee’s 10 CFR Part 20 RPP that are unnecessary, confusing, complex, impractical and mutually inconsistent. Implementing two separate programs, and coordinating them in the manner called for in this section, will consume significant licensee resources with no additional benefit to safety. We reiterate our position, stated in comment 3 above, that compliance with 10 CFR Part 20 requirements is sufficient to assure safety and a separate TS RPP should not be required.
20. Appendix A, Section 4.2.2: The attempt to distinguish between major and minor modifications is vague and has no meaning with respect to the effect that a given modification may have and whether or not NRC review and approval of the modification is required. It is not the scope of the modification, but the potential effect that the modification has, that matters. This section should be deleted as it adds no additional value beyond what is already provided by effective 10 CFR 72.48 implementation.