



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001**

January 2, 2019

Mr. Rodney J. McCullum
Senior Director, Used Fuel
and Decommissioning Programs
Nuclear Energy Institute
1201 F Street NW, Suite 1100
Washington, DC 20004

**SUBJECT: RESPONSE TO DECEMBER 21, 2016, NUCLEAR ENERGY INSTITUTE
SUBMITTAL: NEI 14-03, "FORMAT, CONTENT AND IMPLEMENTATION
GUIDANCE FOR DRY CASK STORAGE OPERATIONS-BASED AGING
MANAGEMENT," REVISION 2**

Dear Mr. McCullum:

The U.S. Nuclear Regulatory Commission (NRC) staff completed its review of the industry guidance document submitted by the Nuclear Energy Institute (NEI), entitled NEI 14-03, "Format, Content and Implementation Guidance for Dry Cask Storage Operations-Based Aging Management," Revision 2, dated December 21, 2016 (Agencywide Document Access Management System (ADAMS) Accession No. ML16356A204).

The NRC staff issued comments on NEI 14-03, Revision 1, by letter dated August 18, 2016 (ADAMS Accession No. ML16180A018). The NRC staff finds that its previous comments on NEI 14-03, Revision 1, were mostly addressed in NEI 14-03, Revision 2. However, NRC's comment regarding the use of surrogate inspections remains unresolved and would need to be addressed before the guidance can be considered for a full endorsement. The NRC staff has also identified several needed clarifications to the guidance, some of which are a result of recent experience with reviews of renewal applications for specific licenses and certificates of compliance for spent fuel storage casks. A list of the NRC staff's remaining comments on NEI 14-03 is provided in Enclosure 1. The NRC staff has identified two options for proceeding and completing work on NEI 14-03:

- (1) NRC initiates the process of endorsing NEI 14-03, Revision 2 through a guidance document, which will be published in draft form for public comment. The draft guidance would note the exception on the use of surrogate inspections and several clarifications, per the enclosed comments.
- (2) NEI develops a Revision 3 to NEI 14-03 to address the enclosed comments, and NRC staff reviews NEI 14-03, Revision 3 to determine if it can be fully endorsed. NRC staff would proceed with initiating the process of endorsement when it determines that there is a revision of NEI 14-03 that can be fully endorsed. Under this option, the NRC staff would want to discuss with NEI before proceeding, as the NRC may wish to provide additional editorial comments for a future Revision 3.

Given schedule and resource constraints, and because of a shared desire to complete work on NEI 14-03, the NRC staff plans to pursue option 1, which is a partial endorsement of NEI 14-03, Revision 2. In addition, the NRC staff plans to work with the Institute of Nuclear Power Operations (INPO) to obtain access to the Aging Management INPO Database (AMID), similar to NRC's access to the INPO Consolidated Events System (ICES). The NRC staff's access to AMID is important for our understanding and analysis of operating experience related to dry storage aging management, to support NRC's independent licensing and oversight responsibilities.

If you have questions regarding this letter, or if you wish to arrange a meeting to discuss an alternate path forward for NEI 14-03, please contact Kristina Banovac at (301) 415-7116 or Kristina.Banovac@nrc.gov. We look forward to completing work on NEI 14-03.

Sincerely,

/RA/

Michael C. Layton, Director
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

Enclosure:
Comments on NEI 14-03, Revision 2

cc: Mark Richter, NEI

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Comments on NEI 14-03, Revision 2

Exception

The guidance in Section 3.6.2.2 of NEI 14-03, Revision 2, is not consistent with NRC's position on surrogate inspections, as delineated in NUREG-1927, Revision 1, "Standard Review Plan for Renewal of Specific Licenses and Certificates of Compliance for Dry Storage of Spent Nuclear Fuel" (Agencywide Document Access Management System (ADAMS) Accession No. ML16179A148). Section 3.6.2.2 of NEI 14-03, Revision 2, discusses the use of surrogate inspections for bounding components by multiple general licensees in lieu of conducting baseline inspections under an aging management program (AMP).

NUREG-1927, Revision 1, notes that the use of surrogate inspections may be acceptable only when substantial operating experience provides a basis for their use. Table B-1 of NUREG-1927, Revision 1, provides an example AMP for welded stainless steel canisters, as the American Society of Mechanical Engineers Boiler and Pressure Vessel Code Section XI Code Case for inservice inspection of dry storage canisters is still under development. Table B-1 notes that an approach of using surrogates would need to be justified on a case-by-case basis by an applicant, considering canister examination results for the susceptibility rankings.

The NRC has not approved the use of surrogates for AMPs to date. There is not yet substantial operating experience for canister examinations for the various susceptibility rankings to understand how the susceptibility assessments may be applied, and surrogates used, across the Independent Spent Fuel Storage Installation fleet. There is not yet a technical basis for the use of surrogate inspections for canisters until the Code Case is developed and operating experience exists for canister examination results for the various susceptibility rankings. For other structures, systems, and components (SSCs) within the scope of renewal, there are limited AMP inspection results and no industry guidance for determining which SSCs may be appropriate for the use of surrogate inspections. Both a guidance document that considers the effects of environmental and operational parameters on aging effects and operational experience gained from conducting AMP inspections are necessary for identifying potential surrogates for SSCs other than storage canisters.

Clarifications

Foreword: Note that the NEI Petition for Rulemaking (PRM) 72-7 was closed and accepted for consideration in NRC's rulemaking process, but the rulemaking has not yet been completed.

Section 1.1: Clarify that there is a considerable amount of technical information on materials degradation and aging mechanisms for similar materials-environment combinations currently employed in dry storage, but a limited amount of operating experience that has been obtained from dry storage system (DSS) inspections to date.

Section 2.2.1: Reference the 10 CFR 72.16 requirement for applications to be submitted under oath or affirmation.

Section 2.2.2: Clarify that all non-readily available references do not need to be provided with the license renewal application (LRA). References would be provided upon NRC request.

Section 2.2.2: Note that if fabrication drawings are used in the LRA because they contain specific information on materials needed for the aging management review (AMR), this

materials information should be captured in the licensing or design bases (e.g., the applicant may include the AMR tables, with subcomponents and materials information, in the proposed updated final safety analysis report (UFSAR) supplement in the LRA).

Section 2.2.2.2: Note that the LRA should be clear on what is the basis for the safety classification of SSCs reported in the scoping results (e.g., include a cross check to the UFSAR information, such as a table, drawing or calculation, that confirms the reported safety classification). If the SSC is not considered important to safety per the design bases, the basis for scoping into the renewal review should be clearly defined (e.g., the reliance of an SSC's performance in the assumptions of a design-bases calculation or analysis).

Section 2.2.2.3.a: Clarify that active or short-lived components can be excluded from AMR, provided that they do not meet either of the scoping criteria in NUREG-1927, Revision 1, Section 2.4.2.

Section 2.2.2.3.b, and Section 4.2: Clarify the discussion of "flexible AMPs" for certificates of compliance (CoCs). Such AMPs should include specific conditions for a general licensee to determine whether certain AMP elements are not applicable to it, and if so, what inspection frequency (or other AMP details) are appropriate instead. The discussion should distinguish this from a "learning AMP," where an AMP may be adjusted (by a CoC holder or general licensee) in the period of extended operation to respond to operating experience to ensure the AMP remains adequate. Consider the discussion in Appendix E of NUREG-1927, Revision 1.

Section 2.2.2.7 and "tollgate" definition: Clarify that a tollgate assessment may be included in the UFSAR or may be a license or CoC condition.

Section 2.2.2.8: Clarify that the specific UFSAR proposed changes (not just a summary of the proposed changes) need to be provided in the LRA. A condition is typically added to a renewed license or CoC to update the UFSAR with the proposed changes within a certain amount of time following the renewal, and this condition references the submittal of the specific UFSAR proposed changes.

Section 2.2.3.1: Clarify that the applicant can (1) discuss the 10 CFR 72.48 changes (made since the last UFSAR biennial submittal to the NRC) that impact the LRA and AMR, or (2) submit the current version of UFSAR (even if outside of biennial submittal window) to reflect the current design bases (including all 10 CFR 72.48 changes) to support the LRA.

Section 3.6.2.1 and 3.6.2.2: Clarify that selection of SSCs for inspection should be based on parameters that may contribute to the potential aging mechanisms and effects and should not only be based on considerations of accessibility and maintaining personnel doses as low as reasonably achievable (ALARA). The ALARA consideration should guide the methods, equipment and procedures to perform the inspection.

Section 3.6.3: Clarify that consensus codes and standards are not a substitute for the AMR, AMPs or time-limited aging analyses. An AMP may use methods and acceptance criteria defined in a consensus code or standard.

Section 4.4.2: Reference Appendix D of NUREG-1927, Revision 1, regarding the criteria for determining if a demonstration program can be used by an applicant to confirm the integrity of high burnup fuel during the period of extended operation.