




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

April 2, 2025

MEMORANDUM TO: Shaun M. Anderson, Branch Chief  
Reactor Decommissioning Branch  
Division of Decommissioning, Uranium Recovery  
and Waste Programs  
Office of Nuclear Material Safety  
and Safeguards

FROM: Tanya E. Hood, Project Manager  
Reactor Decommissioning Branch  
Division of Decommissioning, Uranium Recovery  
and Waste Programs  
Office of Nuclear Material Safety  
and Safeguards

 Signed by Hood, Tanya  
on 04/02/25

SUBJECT: SUMMARY OF MARCH 6, 2025, PUBLIC MEETING TO  
DISCUSS THE OVERVIEW OF NUCLEAR ENERGY  
INSTITUTE'S NEI 22-01, LICENSE TERMINATION PROCESS,  
REVISION 1 (EPID – L-2025-NFO-0004)

On March 6, 2025, a hybrid public meeting was held at the U.S. Nuclear Regulatory Commission (NRC) with Nuclear Energy Institute (NEI) to discuss NEI 22-01, "License Termination Process," Revision 1. NEI 22-01 provides industry guidance on preparing license termination plans (LTP) and final status survey (FSS) reports based on existing NRC guidance. NEI stated that NEI 22-01 is informed by case studies from previous industry experience and provides advice on interactions with other Federal and State organizations during decommissioning. In this overview meeting, NEI described its changes and improvements made to the document as reflected in Revision 1, which included the industry responses to the NRC suggestions and recommendations on NEI 22-01, Revision 0, provided by NRC letter dated April 30, 2024 (Agencywide Documents Access and Management System (ADAMS) Accession No. [ML24039A183](#)). NEI requested review and endorsement by the NRC. To date, NRC is still reviewing NEI-22-01 and has not endorsed NEI 22-01.

The meeting notice and agenda, posted February 18, 2025, are available in the ADAMS at Accession No. [ML25049A233](#) and are posted on the NRC's public Web page at [Public Meeting Schedule: Meeting Details](#). The presentation materials provided by the licensee are available in ADAMS ([ML25063A074](#)). Persons who do not have access to ADAMS or who encounter problems in accessing the meeting materials located in ADAMS should contact the NRC Public Document Room reference staff by telephone at 1-800-397-4209 or by email to [PDR.Resource@nrc.gov](mailto:PDR.Resource@nrc.gov).

CONTACT: Tanya Hood, NMSS/DUWP  
301-415-1387

During the meeting, NEI shared its appreciation of the NRC's insight and significant contribution to the quality and comprehensiveness of Revision 0 of the guidance in NEI 22-01. NEI stated that the revised document enhanced the information previously provided while expanding on communication among the licensee and the NRC regarding site characterization and remediation.

NEI explained that it added to NEI 22-01, Revision 1, new appendices to provide guidance on the following topics: evaluation of discrete radioactive particles in the environment at decommissioning sites, examples of work performed at risk before the LTP is approved, and the Multi-Agency Radiological Survey and Site Investigation Manual (MARSSIM) cheat sheet.

NEI elaborated on 7 areas in Revision 1, to get clarity of the NRC staff's feedback in its letter dated April 30, 2024, and expand on the information the NRC provided. These areas are as follows:

- Appendix H -Future Discrete Radioactive Particles Guidance
- In-Situ Gamma Spectroscopy
- Scan Coverage Requirements
- Use of Soil or Concrete as Backfill
- Zion Subsurface Soil FSS
- Parameter Sensitivity Analysis
- Determining Insignificant Radionuclides

**Appendix H:** The NRC staff suggested references for use in preparing guidance for Appendix H. NEI indicated that it agreed with the suggestions made in Section 2.8 of the NRC letter dated April 30, 2024, but noted that it did not agree with the dose modeling and compliance approach presented in Draft DUWP-ISG-03, "Contamination Control, Radiological Survey, and Dose Modeling Considerations to Support License Termination at Sites with Environmental Discrete Radioactive Particle Contamination," dated September 18, 2024 ([ML24219A032](#)). NEI stated that use of certain assumptions in the DRP dose modeling example may be problematic for sites because its use could result in high dose estimates that were not realistically conservative. NRC staff responded that it appreciates the NEI comments on the dose assessment stated in NEI letter dated October 28, 2024 ([ML24303A083](#)) and it is being evaluated.

**In-Situ Gamma Spectroscopy:** The NRC staff noted that where in-situ gamma spectroscopy is to be used for FSS, the analysis, conversion, and interpretation of the results should be verified through the collection and analysis of actual soil samples of varying concentrations. Based on this suggestion, NEI added text to NEI 22-01, Revision 1, expanding on the limitations of the detector. NEI stated that based on area characterization, the interpretation of in-situ gamma spectroscopy data is expected to provide conservative results. As a result, NEI concludes that sampling to support the use of in-situ gamma spectroscopy is not needed. The NRC staff said it appreciates the clarification and changes and is still evaluating Revision 1.

**Scan Coverage Requirements:** the NRC staff suggested that the next revision of NEI 22-01, include the scan coverage requirement in the draft for public comment, MARSSIM, Revision 2 ([ML21008A573](#)), document. NEI indicated that NEI 22-01, Table 5.4, "Scanning Coverage Requirements (per draft for public comment, MARSSIM Revision 2)," has been revised to use the most conservative recommendations from the MARSSIM, Table 5.5. NEI stated that the change to the area limits could be a recommendation to the MARSSIM working group. NRC

staff thanked NEI for the comment, which was shared with the MARSSIM interagency working group. The MARSSIM working group is currently working on making corrections to Table 5.5 of the final MARSSIM, Revision 2.

**Use of Soil or Concrete as Backfill:** In its letter dated April 30, 2024, the NRC staff suggested that the next revision of NEI 22-01, include additional details on its methods for determining the dose contributions from the reuse of materials. NEI indicated that additional information was added to Revision 1 -to support assessment of the risk associated with reuse of impacted materials. However, NEI disagreed with the concept of assigning dose based on the MDCs for radionuclides of concern (ROCs) that are below detection limits impacted materials, as described in the NRC response to comments on DUWP-ISG-02, "Radiological Survey and Dose Modeling of the Subsurface to Support License Termination," ([ML24197A219](#)). The NRC staff indicated that if actual results were reported (rather than reporting as "less than" the minimum detectable concentration), then other methods could be used to assign dose to impacted materials.

The NRC staff reiterated that there are other means of evaluating the dose contributions for the reuse of materials, such as the use of the indistinguishable from background method. Another example would be the alternative Scenario B methods discussed in DUWP-ISG-02. This could be used to assign no additional dose due to the reuse of materials that were thought to contain no residual radioactivity. On the topic of interpreting laboratory results, NRC indicated appreciation of the addition of Section 2.2 in NEI 22-01, Revision 1, on the terminology of laboratory results and consistency with guidance in NUREG-1576. The NEI and the NRC staff agreed that a separate meeting may be needed to further discuss reporting of laboratory results and additionally the interpretation of results that fall between the critical level (based on blanks) and minimum detectable concentration.

**Zion Subsurface Soil FSS:** The NRC staff suggested that the next revision of NEI 22-01, take into consideration the presence of subsurface residual radioactivity in designing the FSS. Based on this suggestion, NEI added text to Revision 1 indicating that these areas should be characterized when they become accessible, or justification should be provided as to why they do not need to be surveyed.

**Parameter Sensitivity Analysis:** The NRC staff suggested that the next revision of NEI 22-01, provide additional support for deterministic values used in the compliance demonstration to ensure that the dose is not underestimated. NEI indicated that it added a section on parameter sensitivity analysis to Revision 1. NEI stated that while industry understands the guidance in NUREG 1757, "Consolidated NMSS Decommissioning Guidance – Characterization, Survey, and Determination of Radiological Criteria, Volume 2," Revision 2 ([ML22194A859](#)), the need to perform a site-specific determination of distribution coefficient,  $K_d$  factors, should be the exception and not the rule. NEI indicated that it believes that there are multiple, compounding sources of conservatism in the assumptions underlying the dose models, ultimately leading to very conservative calculated doses for demonstrating compliance with the regulations in Title 10 of the Code of Federal Regulations Part 20, "Standards for Protection Against Radiation," Subpart E, "Radiological Criteria for License Termination."

NEI explained that in its opinion that these conservatisms should adequately bound any uncertainties associated with the selection of  $K_d$  values. The NRC staff discussed that the final DUWP-ISG-02 contains additional information on how to determine if additional support is needed for  $K_d$  and methods to obtain that additional support, if needed. DUWP-ISG-02, Table 3.6, "Key Factors Influencing Selection of  $K_d$  for Radionuclides of Importance to Reactor

Decommissioning,” in DUWP-ISG-02 provides information on factors influencing the  $K_d$  to assist licensees with providing information to support their selection of  $K_d$  without the need for site-specific experiments, as well as information on the level of uncertainty in specific  $K_d$  factors for radionuclides important to reactor decommissioning. For example, DUWP-ISG-02 provides information about some radionuclides that are known to be very mobile or mobile where it would be relatively easy to select a reasonably conservative  $K_d$  value. NRC staff is unaware of any recent case for a nuclear power reactor where it asked a licensee to perform laboratory experiments to determine  $K_d$ .

NEI also discussed an analysis that showed the impact of  $K_d$  on travel time suggesting that  $K_d$  values above around 100 L/kg would not have a significant impact on dose. The NRC staff agreed that above a certain  $K_d$  that the dose is less sensitive to  $K_d$ . The NRC staff also indicated that, if site-specific measurements of  $K_d$  values are performed, the experiments should be performed on samples of sediments representative of the zones to which the  $K_d$  factors are applied (contaminated zone or flow zones) when they are performed. It was reiterated there are several other approaches for justifying the selected estimates of  $K_d$  values, as described in DUWP-ISG-02. NRC staff explained that sites can justify use of information from the literature and site-specific knowledge about geochemical factors influencing the  $K_d$  to justify the conservatism of their assumptions without the need for laboratory experiments. Licensees should choose appropriate values for their soil and site-specific conditions at their sites. The NEI and the NRC staff agreed that a separate meeting may be needed to continue the discussion of the selection of  $K_d$  values.

**Determining Insignificant Radionuclides:** The NRC staff suggested that the next revision of NEI 22-01, analyze the initial suite of potential ROCs during FSS in a typical quality assurance and quality control frequency as described in MARSSIM. NEI stated that relevant information from NUREG 1757, Volume 2, Revision 2 has been added to Section 2.5.3 of NEI 22-01, Revision 1. NEI indicated that this change and other mentions in NEI 22-01 address this NRC comment.

NEI continued the dialogue from the [Decommissioning Lessons Learned Meeting](#) that was held on January 15, 2025, regarding how to achieve efficiencies in the license termination process. NEI indicated that allowing a phased approach to site radiological characterization via “partial” LTP submittals that is synchronized with the physical decommissioning process would improve LTP efficiency. NEI stated that this would enable the NRC to accept reviews/approvals for LTPs earlier in the process. NEI also believes this would allow the NRC to establish formal expectations for refinements to site characterization data throughout the project, via LTP revisions. The NRC staff reiterated that current regulations and guidance do not consider partial site characterization or LTPs. NEI said that it would not want unintended consequences and would think about how phased reviews could be conducted. The NRC staff stated that it would like to understand NEI’s thoughts on phase LTP reviews and would be open to continue the dialogue to see what alignments can be made. The NRC staff shared that a phased LTP approach would open up hearing opportunities for each phase and the iterative process could mean more resources are applied to a review to ensure the methodology is properly applied. The NRC staff shared that the topical report process may be considered as one means to potentially receive feedback on portions of a site characterization or LTP.

NEI stated that the NRC should maintain an appropriate scope for environmental reviews that is consistent with the relatively limited impacts associated with decommissioning while maintaining conformance with NRC’s Decommissioning Generic Environmental Impact Statement (GEIS). The NRC staff noted that the GEIS is beneficial but the GEIS does not cover site-specific

impacts. As explained in the GEIS, site-specific impacts must be addressed outside of the GEIS. The NRC staff emphasized that actions cannot be segmented under the National Environmental Policy Act. Both NEI and NRC staff agreed that during the LTP development process, site visits and engagement between the licensees and the reviewers are beneficial. NEI stated that in some cases the industrial scenario is the most likely scenario and the resident farmer scenario should not have to be considered. The NRC staff stated that this could only be determined on a case-by-case assessment, but that "less likely but plausible" scenarios should be considered to risk inform the decision. NEI reiterated its appreciation of the NRC staff's efforts to improve the development of guidance specific to reactor licensees noting that NRC's decommissioning guidance is broad to cover both materials and reactor licensees.

Approximately 40 representatives from industry, state government, and NRC participated in the meeting. A list of the meeting attendees is enclosed. Members of the public were invited to attend. No public meeting feedback forms were received. No regulatory decisions were made during the meeting. Please direct any inquiries to me at (301) 415-1387 or [Tanya.Hood@nrc.gov](mailto:Tanya.Hood@nrc.gov).

Enclosure:  
List of Attendees

SUBJECT: SUMMARY OF MARCH 6, 2025, PUBLIC MEETING TO DISCUSS THE  
OVERVIEW OF NUCLEAR ENERGY INSTITUTE'S NEI 22-01, LICENSE  
TERMINATION PROCESS, REVISION 1 (EPID – L-2025-NFO-0004)  
DATED:

DISTRIBUTION:

Public

RidsOpaMail Resource

CBarr, NMSS

CHendrickson, NMSS

ETabakov, NMSS

GChapman, NMSS

KPinkston, NMSS

NFuguet, NMSS

RFedors, NMSS

SImboden, NMSS

HAnagnostopoulos, RG1

SVeunephachan, RG1

ETorres, OEDO

**ADAMS Accession No. ML25087A009 (Package); Memo ML25087A010**

OFFICE	NMSS/DUWP/RDB/PM	NMSS/DUWP/RTAB/BC	NMSS/DUWP/RDB/BC	NMSS/DUWP/RDB/PM
NAME	THood	CRidge (Acting)	SAnderson	THood
DATE	03/28/2025	03/31/2025	04/02/2025	04/02/2025

**OFFICIAL RECORD COPY**

LIST OF ATTENDEES

MARCH 6, 2025 OVERVIEW MEETING

WITH NUCLEAR ENERGY INSTITUTE

RE: NEI 22-01, LICENSE TERMINATION PROCESS, REVISION 1

<b>Name</b>	<b>Organization</b>
Adam Schwartzman	U.S. Nuclear Regulatory Commission (NRC)
Amy Snyder	NRC
Chris Allen	NRC
Christianne Ridge	NRC
Craig Hendrickson	NRC
Cynthia Barr	NRC
Emil Tabakov	NRC
Fred Miller	NRC
Grace Pennington	NRC
Gregory Chapman	NRC
Jack Parrott	NRC
Karen Pinkston	NRC
Kathryn Robertson-DeMers	NRC
Nathan Fuguet	NRC
Randall Fedors	NRC
Shaun Anderson	NRC
Storm Veunephachan	NRC
Tanya Hood	NRC
Bruce Montgomery	Nuclear Energy Institute (NEI)
Rich McGrath	Contractor NEI
Gerard P. Van Noordennen	Energy Solutions
Bill Noval	Holtec
Mark Lawson	Holtec
Tom Williamson	Holtec
Willie Harris	Holtec
Christopher Messier	RadSafety
Eric Darois	RadSafety
Fred Erskine	RadSafety
Gordon Madison	RadSafety
Krista Torda	RadSafety
Claude Wiblin	Public
Edward Sanchez	Public
Emery J. Grohregin	Public
Eric Goldin	Public
Hannah E. Pell (Constellation Nuclear)	Public
Jana Bergman	Public
Lisa Matis	Public
Stewart Bland	Public
William H. Barley	Public

Enclosure