

# POLICY ISSUE NOTATION VOTE

March 1, 2004

SECY-04-0035

FOR: The Commissioners

FROM: William D. Travers  
Executive Director for Operations

SUBJECT: RESULTS OF THE LICENSE TERMINATION RULE ANALYSIS OF THE  
USE OF INTENTIONAL MIXING OF CONTAMINATED SOIL

PURPOSE:

To provide the Commission with the results of the staff's analysis of the final issue, "Use of Intentional Mixing of Contaminated Soil," associated with the U. S. Nuclear Regulatory Commission's (NRC's) License Termination Rule (LTR). The results include evaluations of relevant information, recommended options to resolve the issue, recommended regulatory actions, and a schedule and resource estimate for completing the actions.

SUMMARY:

This paper provides the results of the final issue, "Use of Intentional Mixing of Contaminated Soil," of the Commission-directed analysis of LTR issues provided to the Commission in SECY-03-0069. The staff has analyzed various scenarios that could be used for intentional mixing of contaminated soils and for allowing the use of intentional mixing, and recommends a preferred option. The staff also analyzed options for implementing the preferred option. The staff plans to include the issue in the following two actions proposed in the results of the LTR analysis provided in SECY-03-0069: 1) a Regulatory Issue Summary (RIS) to inform a wide range of stakeholders about the LTR analysis of all of the issues, the Commission direction on each issue, and the actions planned to resolve each issue; and 2) revised guidance to clarify existing policies and requirements in the current rule that, for this issue, would address the consideration of intentional mixing of contaminated soil to meet the LTR release criteria under limited circumstances.

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### BACKGROUND:

The Commission directed the staff in Staff Requirements Memorandum (SRM), SECY-01-0194, June 18, 2002, to conduct an analysis of LTR issues, with particular emphasis on making the LTR provisions for restricted release and alternate criteria more available for licensee use. The staff also evaluated other issues dealing with the relationship of the LTR release limits to other release limits, realistic exposure scenarios, and measures to prevent future legacy sites.

On October 1, 2002, the staff provided the Commission with an initial analysis that described the scope of each LTR issue and the staff's plans for evaluation (SECY-02-0177). At that time, staff had not identified the intentional mixing of contaminated soil issue.

On May 2, 2003, SECY-03-0069 provided the results of the staff's analysis of the LTR, including the results of evaluations of the eight issues identified in SECY-02-0177. The paper also identified a ninth issue on intentional mixing of contaminated soil. Because the issue was identified late in the staff analysis of other LTR issues, only an initial analysis that described the scope of the issue and the staff's plans for evaluating it was provided.

On November 14, 2003, the SRM on SECY-03-0069 approved the recommendations of the staff on the eight issues and the planned evaluation of the intentional mixing issue. The staff has completed the planned evaluations of the intentional mixing issue and has provided the results in this Commission Paper.

### DISCUSSION:

#### 1. Summary of Evaluation Process

The staff identified options to address the issue, evaluated the advantages and disadvantages, and used the results to recommend a specific option. The staff also identified and evaluated options for implementation and recommends specific implementation actions. Attachment 1 provides the detailed results of the staff's options analysis.

The options analysis considered a wide range of relevant information and experience from NRC programs and regulations, and from external sources, such as: the International Commission on Radiation Protection, the International Atomic Energy Agency, the U.S. Environmental Protection Agency, the U.S. Department of Energy, the Army Corps of Engineers' Formerly Utilized Site Remedial Action Program, and other domestic sources. The staff also considered the interrelationships among the intentional mixing issue and the other issues evaluated in SECY-03-0069, and other considerations relevant to the issue of intentional mixing. Attachment 2 provides the detailed experience, information, relevant issues, and other considerations on which the staff based its options analysis.

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## 2. Summary of Options Analysis

### Options Evaluated for Intentional Mixing

The following options for addressing intentional mixing of soil to meet the LTR release criteria were evaluated:

- Option 1) Do not allow intentional mixing for any purpose (Prohibit).
- Option 2) Maintain the current practice of allowing intentional mixing to meet waste acceptance criteria (WAC) so that contaminated soil can be removed offsite, and for other limited waste disposal situations (e.g., dispose under 20.2002), on a case-by-case.
- Option 3) Allow intentional mixing to meet LTR release criteria in limited circumstances, in addition to the Option 2 current practice.
- Option 4) Allow intentional mixing to meet LTR release criteria with restrictions on use, in all cases, in addition to the Option 2 current practice.
- Option 5) Allow intentional mixing to meet LTR unrestricted and restricted release criteria, in all cases, in addition to the Option 2 current practice.

### Recommended Option for Intentional Mixing

The staff concludes that the use of intentional mixing of contaminated soil to meet the WAC of offsite disposal facilities to facilitate meeting the LTR release criteria on a case-by-case basis is consistent with current Commission practice. Existing Commission policy and practices are also consistent with consideration of intentional mixing of contaminated soil in limited circumstances on a case-by-case basis to meet the release criteria of the LTR (See Section 2.1 of Attachment 2). Therefore, the staff recommends implementing the following option for allowing intentional mixing of contaminated soil to meet the LTR release criteria:

- Option 3) Allow intentional mixing to meet LTR release criteria in limited circumstances, on a case-by-case basis, in addition to the Option 2 current practice.

At a minimum, the limited circumstances under which staff would consider allowing intentional mixing of contaminated soil to meet LTR criteria include:

Any proposed mixing should be part of an overall approach to the site cleanup, which includes application of the as low as is reasonably achievable (ALARA) principle and considers only cases where it can be demonstrated that removal of the soil would not be reasonably achievable.

Also, conditions under which staff would approve a case-by-case use of intentional mixing include, at a minimum:

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- 1) The resultant footprint of the area containing the contaminated soil following license termination should be equal to or smaller than the footprint of the zones of contamination before decommissioning work begins; and
- 2) Clean soil, from outside the footprint of the area containing the contaminated soil, should not be mixed with contaminated soil to lower concentrations. In the rare case where the only viable alternative to achieving the dose levels of the LTR appears to be using clean soil from outside the footprint of the area containing contaminated soil, the staff will consult with the Commission before approving such an approach.

In development of guidance for this option, the staff would develop additional conditions under which intentional mixing of contaminated soil would be considered for sites to meet the release criteria of the LTR; the process for reviewing any cases under consideration; and the bases and criteria for the staff determinations of acceptability and approval. A decommissioning plan (DP) that proposes intentional mixing would be approved through the license amendment process, as is the case for any DP. Consequently, the review process would ensure that stakeholders are given an opportunity to provide comments on the DP and to request a hearing on whether NRC should approve the use of intentional mixing for license termination actions at a specific site.

### Options for Implementation Actions

As in SECY-03-0069, the full range of regulatory tools was considered to implement the preferred options for addressing the issue, including: rulemaking, guidance, inspection procedures, enforcement policy, and informational tools such as a RIS.

### Recommended Actions for Implementation

The staff concludes that the existing release criteria and requirements of the LTR in 10 CFR Part 20 are suitable for considering the licensees' use of intentional mixing of contaminated soil, on a case-by-case basis. The staff further concludes that guidance is needed to implement the preferred option. The guidance should address the circumstances for which the staff would consider allowing intentional mixing of contaminated soil for sites or portions of sites. Guidance also should address the blending of contaminated soil to meet the waste acceptance criteria for offsite disposal facilities to facilitate meeting the LTR release criteria.

Therefore, the staff recommends the consideration of allowing intentional mixing on a case-by-case basis be implemented by the following actions:

RIS: Include intentional mixing of contaminated soil, on a case-by-case basis, in the RIS recommended in SECY-03-0069. The RIS is being issued to inform a wide range of stakeholders early in the process about the LTR analysis of each issue, the Commission direction on each issue, and future planned actions for implementing the Commission direction.

Guidance: Develop guidance on considering intentional mixing of contaminated soil, on a case-by-case basis, for meeting the LTR, and include it in revised guidance to address

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options for restricted release, on site disposal, and realistic land use scenarios to be developed as recommended in SECY-03-0069.

The staff's normal guidance development process would be used, which includes providing a draft for public comment. Thus, stakeholder involvement would be an important part of developing the guidance.

### 3. Overall Outcomes Expected from Recommendations

The outcomes of the staff's recommendations on intentional mixing of contaminated soil, together with outcomes of the recommendations in SECY-03-0069, provide options to facilitate decommissioning of complex decommissioning sites with long-lived radionuclides (e.g., uranium and thorium), that have difficulty decommissioning for a variety of technical, programmatic, or financial reasons (i.e., "legacy" sites).

### 4. General Schedule for Recommended Implementation Actions

The general schedule for the recommended actions for all of the LTR issues was provided in SECY-03-0069, and included preparing the RIS by March 2004. The staff is preparing the RIS, and it is on schedule to be issued on 3/30/04, but it does not include the intentional mixing issue. The staff believes it would be preferable to include the Commission-approved actions on all LTR issues in the RIS being prepared now. The staff proposes to include the intentional mixing issue into the same schedule for the RIS and the Revised Guidance (draft scheduled for issuance on 9/30/05). However, to include the intentional mixing issue in the RIS may require a delay to the issuance of the RIS. If the Commission directs us to include this issue in the RIS, we will request an extension to the due date for the RIS, if required.

#### RECOMMENDATIONS:

The staff recommends that the Commission approve the option for consideration of intentional mixing of contaminated soil to meet the release criteria in the LTR, on a case-by-case basis, in limited circumstances, while continuing the current practice of allowing intentional mixing for meeting WAC at offsite disposal facilities and for limited waste disposals.

#### RESOURCES:

Total resource estimates were included in SECY-03-0069 for the recommended actions proposed to address all of the LTR evaluations, except for intentional mixing. The following resource estimates, below, for staff, in full-time equivalents (FTEs) and contractor support, in thousands of dollars (\$K), reflect effort required to implement the actions recommended for intentional mixing. Since these are in addition to those proposed in SECY-03-0069, the total effort required to implement all of the recommended actions in SECY-03-0069, plus those recommended for intentional mixing of soil is also provided. The recommended actions currently are unbudgeted, but resources for fiscal year (FY) 2005 will be addressed using the Planning, Budgeting, and Performance Management (PBPM) process during the development of the FY 2005 budget. For FY 2004, NMSS will re-prioritize work using the PBPM process to provide the resources needed.

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Resources for Intentional Mixing

FY 04: 0.3 FTE \$0K  
FY 05: 0.5 FTE \$0K

Total Resources for All LTR Analysis

FY 04: 1.3 FTE \$0K  
FY 05: 3.5 FTE \$200K  
FY 06: 2.0 FTE \$100K  
FY 07: 1.0 FTE \$0K

Consistent with the Commission direction on certain issues in the November 17, 2003, SRM on SECY-03-0069, the staff will share the results of public comments received with the Commission before issuing final guidance.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objections. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections. The staff plans to brief the Advisory Committee on Nuclear Waste on this topic during its June 2004 meeting.

*/RA/*

William D. Travers  
Executive Director  
for Operations

Attachments:

1. "NRC Staff Options Analysis for Appropriateness of Allowing Intentional Mixing of Contaminated Soil under the License Termination Rule."
2. "Experience and Information, Relevant Issues, and Other Considerations Supporting the Staff Options Analysis for Appropriateness of Allowing Intentional Mixing of Contaminated Soil under the License Termination Rule."

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