



The Secretary of Energy
Washington, DC 20585
December 20, 1999

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DNF SAFETY BOARD

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue N.W.
Suite 700
Washington, D.C. 20004

Dear Mr. Chairman:

In your letter of May 4, 1999, regarding the Implementation of Recommendation 94-2, *Conformance with Safety Standards at DOE Low-Level Nuclear Waste and Disposal Sites*, the Board requested that the Department of Energy (Department) work to bring the recommendation to closure by the end of calendar year 1999. Specifically, the Board noted the need to (1) update and issue acceptable versions of three guidance documents on performance assessments and composite analyses, and (2) provide evidence of an acceptable strategy for identifying outstanding low-level waste Research and Development needs, before closure of Recommendation 94-2 could be accomplished.

On November 17, 1999, the Department forwarded documentation demonstrating the implementation of the strategy for identifying and addressing outstanding low-level waste Research and Development needs. On November 24, 1999, the Department also forwarded the final update of the performance assessment and composite analysis guides, which incorporated comments from your staff. Therefore, the Department is proposing closure of Recommendation 94-2. The enclosed report provides the completion status of the commitments in the Implementation Plan for Recommendation 94-2 and the Department's rationale for closing the Recommendation.

The Department has made significant progress towards improving its radioactive waste management program since the Board issued Recommendation 94-2. While the enclosed report provides the justification for closing Recommendation 94-2, the Department recognizes the vital importance of continually improving its practice for managing radioactive waste. The Department also is fully committed to aggressive implementation of the new Radioactive Waste Management Order, DOE O 435.1, and continued use of the management tools and decision-making processes developed under the Implementation Plan for Recommendation 94-2. The Assistant Secretary for Environmental Management, Dr. Carolyn Huntoon, and the Deputy Assistant Secretary for Project Completion, Mr. Mark Frei, are available to answer questions from the Board concerning the report and closure of



the Recommendation. Ms. Huntoon can be reached on 202-586-7710. Mr. Frei can be reached on 202-586-0370. Please do not hesitate to call them if further assistance is needed.

Yours sincerely,

A handwritten signature in black ink that reads "Bill Richardson". The signature is fluid and cursive, with a long horizontal stroke at the end.

Bill Richardson

Enclosure

cc:

Ms. Carolyn Huntoon, Assistant Secretary for Environmental Management

Mr. Mark Frei, Deputy Assistant Secretary for Project Completion

Mr. Mark B. Whitaker, Jr., Departmental Representative

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DNF SAFETY BOARD

Final Report to the Defense Nuclear Facilities Safety Board on Recommendation 94-2

*Conformance with Safety Standards at
Department of Energy
Low-Level Nuclear Waste and Disposal Sites*

December 1999

*Office of Environmental Management
U.S. Department of Energy*



Final Report to the Defense Nuclear Facilities Safety Board on Recommendation 94-2

INTRODUCTION

Defense Nuclear Facilities Safety Board Recommendation 94-2, *Conformance with Safety Standards at Department of Energy Low-Level Nuclear Waste and Disposal Sites* was issued in September 1994. The Defense Nuclear Facilities Safety Board (Board) examined the low-level waste management program of the Department of Energy (Department) and found that:

“Low-level disposal as practiced by DOE contractors has not kept pace with the evolution of commercial practices. . . .”

“ . . . Although the Order (5820.2A) was issued six years ago, no defense nuclear facilities site has to date completed the performance assessment process.”

“ . . . , current DOE guidance for performance assessments required by DOE Order 5820.2A allows the evaluators to neglect waste disposed prior to 1988. . . .”

“Some effort is being made . . . to have generators of waste provide long-range forecasts of the amounts of wastes they will have to send for disposal, but the forecasts are beset with such uncertainty as to provide little confidence in the projections. . . .”

The Board issued its recommendation due to:

“ . . . the substantial volume of low-level waste buried prior to 1988 in old burial sites using practices which do not meet current standards, the lack of complete compliance with requirements of DOE Order 5820.2A [Radioactive Waste Management] at currently operating sites, and the likely dramatic increase in future waste volumes...”

Recommendation 94-2 identified three major points for Departmental attention and action:

1. The need to conduct a comprehensive complex-wide review of the low-level waste issue to establish the dimensions of the problem and identify necessary corrective actions to address safe disposition of past, present and future volumes.
2. Completion of the performance assessment process for all active low-level waste burial sites as required by DOE Order 5820.2A.
3. Development of an action plan with a schedule for bringing operations into compliance with reference dose criteria set forth in DOE Order 5820.2A or other acceptable compensating measures to be undertaken in the interim pending final closure.

The Department of Energy responded to the Safety Board with the Implementation Plan for Recommendation 94-2 on March 31, 1995. Among the actions in the Plan, the Department committed to:

- Conduct a complex-wide assessment of the Department's low-level waste management practices to determine potential worker or public health and safety related concerns.
- Develop a regular program for forecasting future disposal needs relative to existing capacity.
- Conduct studies and assessments directed at improving low-level waste management practices, including volume reduction, and safety merits/demerits of privatization of disposal operations.
- Implement more immediate steps to complete low-level waste performance assessments covering all disposed waste.

In May 1996, the Department proposed revisions to the Implementation Plan that reflected enhancements in the Department's approaches to systems engineering and the radiological assessments, and better integration and coordination of both the task initiatives and the involved organizations. In August 1996, the Department received a letter from the Board accepting the revised Implementation Plan with conditions. In a July 9, 1998 letter to the Board, the Secretary of Energy proposed revised dates for the Recommendation 94-2 commitments that had not yet been completed. In addition, the Department committed to reporting on a number of other activities closely related to the DNFSB 94-2 implementation tasks.

The Department has reported quarterly to the Defense Nuclear Facilities Safety Board on the progress of Recommendation 94-2 commitments including any unforeseen difficulties encountered and subsequent solutions. In a briefing to the Board on November 18, 1999, the Department described the significant improvements made in managing its radioactive waste, and reported the status of the remaining commitments. The Board requested that the Department submit a final report supporting closure of Recommendation 94-2 by the end of the 1999 calendar year. The Board also stated that they would evaluate a formal request by the Department to close Recommendation 94-2. This report serves as the final report on the progress and completion of the commitments made in the revised Implementation Plan for Recommendation 94-2.

STATUS OF COMPLETION OF RECOMMENDATION 94-2 COMMITMENTS

The status of completion of the commitments in the Department's revised Implementation Plan for Recommendation 94-2 is included in Attachment 1. In summary, all of the revised Implementation Plan commitments have been completed with the following exceptions:

- Issuance of Idaho National Engineering and Environmental Laboratory Radioactive Waste Management Complex Disposal Authorization Statement
- Nevada Operations Office submission of Nevada Test Site Area 5 Composite Analysis

- Review of Nevada Test Site Area 5 Composite Analysis
- Issuance of Nevada Test Site Area 5 Disposal Authorization Statement

The Idaho National Engineering and Environmental Laboratory Disposal Authorization Statement is on schedule to be issued by March 2000. Preparation of the Nevada Test Site Area 5 Composite Analysis is in progress and the Disposal Authorization Statement is scheduled to be issued by December 2000.

RATIONALE FOR CLOSURE OF RECOMMENDATION 94-2

The rationale for closing Recommendation 94-2 is threefold. First, with the exceptions noted above, the Department of Energy has satisfied its commitments to the Board provided in the revised Implementation Plan for Recommendation 94-2. Second, the Department has made significant improvements in how radioactive waste is managed since the Board issued Recommendation 94-2. Notable accomplishments that reflect the success of the implementation of Recommendation 94-2 and examples of further improvements implemented by the Department include the following:

- A complex-wide review was performed in 1996, shortly after issuance of the revised 94-2 Implementation Plan. The corrective actions identified have been tracked to closure. Future reviews will be conducted on a periodic basis. The next review is currently planned for 2001.
- Issuance of DOE Order 435.1, *Radioactive Waste Management* on July 9, 1999, which replaced DOE Order 5820.2A of the same title. Accompanying the Order were the DOE Manual and Guidance. Training courses on implementation of the Order are now in progress. It is expected that some implementation, such as having radioactive waste management basis statements approved and in place for all facilities may require up to FY 2001 to complete. By the end of FY 2001, all aspects of the Order are to be fully implemented and completed.
- The low-level waste research and development strategy has been integrated with the Office of Science and Technology, effectively linked to the budget process, and is being implemented.
- The contractor-led Peer Review Panel was replaced with a federally-chartered Low-Level Waste Disposal Facility Federal Review Group (LFRG) in December 1996. The LFRG consists of federal scientists and engineers from DOE Headquarters and Field Offices which conduct disposal activities. The Low-Level Waste Disposal Facility Federal Review Group was chartered to ensure that low-level waste facilities are designed, constructed, operated, and closed in a manner that protects the public and environment. The LFRG reviews performance assessments and composite analyses, identifies appropriate technical controls, conducts oversight, and makes recommendations to senior DOE managers regarding the issuance of disposal authorization statements. Under the leadership of the Low-Level Waste Disposal Facility Federal Review Group, the review

process has been institutionalized, and all performance assessments and all but two composite analyses have been reviewed.

- A policy was established and implemented for compliance with DOE's radioactive waste management requirements when conducting cleanup activities under CERCLA. The policy was incorporated into the revised Radioactive Waste Management Order, DOE O 435.1, and disposal facilities developed under CERCLA are reviewed by the Low-Level Waste Disposal Facility Federal Review Group.
- A Waste Projections Program was developed and is being implemented. The third iteration of the Projections Program is due in September 2000. The Waste Projection Program integrates planning and analysis of all Department programs.
- The Department conducted a thorough analysis and issued two Low-Level Waste/Mixed Low-Level Waste Disposal Capacity Reports. Through this analysis, the Department has improved estimates of how much low-level and mixed low-level waste will be generated in the future and has determined that there is sufficient capacity at existing and planned disposal facilities. The Department has realized the benefit of the capacity report as a management tool, and has committed to updating the report every two years.
- In addition to completing the commitment to develop a Low-Level Waste Minimization and Evaluation Strategy document, the Department has also developed an evaluation strategy for mixed low-level waste.

Third, and most important, the revised Radioactive Waste Management Order establishes a process for continuing improvement in how radioactive waste is managed. The Department will fully implement the new Radioactive Waste Management Order by July 9, 2000, and will develop and implement a Verification Assessment Program for DOE O 435.1 by June 30, 2000.

During Calendar Year 2000, the Department will:

- Complete the review of the two remaining Composite Analyses for Idaho National Engineering and Environmental Laboratory Radioactive Waste Management Complex and the Nevada Test Site Area 5, and will issue Disposal Authorization Statements for these two disposal facilities;
- Continue oversight of approved performance assessments and composite analyses through the Maintenance Program;
- Develop a methodology for and plan a follow-up complex-wide review of low-level waste management at DOE sites;
- Establish a process for review and approval of the Nevada Test Site transuranic waste disposal performance assessment; and
- Conduct assessments of four DOE sites to verify their compliance with DOE O 435.1.

Attachment 1 Commitment Status

The following is a summary status for each commitment in the Revised 94-2 Implementation Plan.

IP Task #	SIMS ID #	Commitment Title or Description	Status
III.C.1	R94-02 001	Update Project Management Plan (Revision 1).	Complete
III.C.2	R94-02 002	Provide Quarterly Reports.	Complete
IV.B.1	R94-02 003	Complete LLW System Engineering Evaluation.	Complete
IV.B.2	R94-02 004	Compile LLW Program System Requirements.	Complete
IV.B.3	R94-02 005	Identify Additional LLW Requirements and Functions.	Complete
IV.B.4	R94-02 006	Evaluate Privatization Option for LLW.	Complete
IV.B.5	R94-02 007	Prepare LLW Program Management Plan	Complete
IV.B.6.1	R94-02 008	Prepare Complex-Wide Corrective Action Plan.	Complete
IV.B.6.2	R94-02 009	Prepare Site-Specific Corrective Action Plans.	Complete
V.B.1	R94-02 010	Select Individuals for Assessment Working Group and Working Group Assessment Teams.	Complete
V.B.2	R94-02 011	Perform LLW Site Surveys.	Complete
V.B.3	R94-02 012	Issue Preliminary LLW Site Assessment Reports.	Complete
V.B.3	R94-02 013	Issue Final LLW Site Assessment Reports.	Complete
VI.B.1	R94-02 014	Issue Office of Waste Management Directive.	Complete
VI.B.2.b.1	R94-02 015	Issue Interim LLW Policy Statement..	Complete
VI.B.2.b.2	R94-02 016	Revise LLW Interim Policy Statement.	Complete
VI.B.3.b.1	R94-02 017	Develop Policy and Guidance for CERCLA sites.	Complete
VI.B.3.b.2	R94-02 018	Develop Policy and Guidance for RCRA sites.	Complete
VI.B.4.b.1	R94-02 019	Complete Requirement Comparison Report.	Complete
VI.B.4.b.2	R94-02 020	Complete Comparison to International Requirements	Complete
VI.B.5	R94-02 021	Identify Essential LLW Management Requirements.	Complete
VI.B.6	R94-02 022	Develop Implementation Guidance for LLW management requirements.	Complete
VI.B.7	R94-02 023	Formalize Process to Approve Radiological Assessment.	Complete
VII.B.1	R94-02 024	Issue Interim Direction on Performance Assessments.	Complete
VII.B.2	R94-02 025	Provide Guidance on Conducting Composite Analyses.	Complete
VII.B.3	R94-02 026	Define Process for HW Review of Composite Analyses.	Complete
VII.B.4.b.1	R94-02 027	Specify Guidance for Maintaining Performance Assessments.	Complete
VII.B.4.b.2	R94-02 028	Define Format and Content Requirements of Performance Assessments.	Complete
VII.B.5.b.1		<i>Prepare Performance Assessments for LLW Sites.</i>	
	R94-02 029-001	Submit PA - LANL TA-54, Area G- PA	Complete

IP Task #	SIMS ID #	Commitment Title or Description	Status
	R94-02 029-002	Complete HQ Review - LANL TA-54, Area G PA	Complete
	R94-02 029-003	Complete HQ Review INEEL RWMC PA	Complete
	R94-02-029-004	Complete HQ Review of NTS Area 5 PA	Complete
	R94-02 029-005	Submit NTS Area 3 PA	Complete
	R94-02 029-006	Complete HQ Review of NTS Area 3 PA	Complete
	R94-02 029-007	Submit ORNL SWSA Area-6 PA	Complete
	R94-02 029-008	Complete HQ Review ORNL SWSA Area-6 PA	Complete
	R94-02 029-009	Complete HQ Review of Hanford 200-West PA	Complete
	R94-02 029-010	Submit Hanford 200-East PA	Complete
	R94-02 029-011	Complete HQ Review Hanford 200-East PA	Complete
	R94-02 029-012	Submit SRS Saltstone & E-Area PA	Complete
VII.B.5.b.2	<i>Prepare and Review LLW Composite Analyses</i>		
	R94-02 030-001	Complete HQ Review LANL TA-54, Area G CA	Complete
	R94-02 030-002	Submit LANL TA-54, Area G CA	Complete
	R94-02 030-003	Submit INEEL RWMC CA	Complete
	R94-02 030-004	Complete HQ Review INEEL RWMC CA	Complete
	R94-02 030-005	Submit NTS Area 5 CA	Open - See Note 1 below.
	R94-02 030-006	Complete HQ Review NTS Area 5 CA	Open -See Note 1 below.
	R94-02 030-007	Submit NTS Area 3 CA	Complete
	R94-02 030-008	Submit ORNL SWSA Area-6 CA	Complete
	R94-02 030-009	Submit Hanford ERDF	Complete
	R94-02 030-010	Complete HQ Review Hanford 200- East & West CA	Complete
	R94-02 030-011	Submit SRS E-Area Vaults CA	Complete
	R94-02 030-012	Complete HQ Review SRS E-Area Vaults CA	Complete
VII.B.5.b.3	<i>Issue Disposal Authorizations for LLW Sites.</i>		
	R94-02 031-001	Issue Disposal Authorization - LANL TA-54, Area G	Complete
	R94-02 031-002	Issue Disposal Authorization - INEEL RWMC	Open - See Note 2 below.
	R94-02 031-003	Issue Disposal Authorization - NTS Area 5	Open - See Note 1 below.
	R94-02 031-004	Issue Disposal Authorization - NTS Area 3	Complete
	R94-02 031-005	Issue Disposal Authorization - ORNL SWSA Area-6	Complete
	R94-02 031-006	Issue Disposal Authorization - Hanford 200-West	Complete
	R94-02 031-007	Issue Disposal Authorization - Hanford 200-East	Complete
	R94-02 031-008	Issue Disposal Authorization - SRS E-Area Vaults	Complete
	R94-02 031-009	Issue Disposal Authorization - SRS Saltstone	Complete
VIII.B.1.b.1	R94-02 032	Issue Low-Level Waste Disposal Capacity Report, (Rev 0)	Complete
VIII.B.1.b.2	R94-02 033	Issue Low-Level Waste Disposal Capacity Report, (Revision 1)	Complete
VIII.B.2	R94-02 034	Prepare DOE LLW Projections	Complete

IP Task #	SIMS ID #	Commitment Title or Description	Status
VIII.B.3	R94-02 035	Develop Strategy to Minimize LLW	Complete
IX.B.1	R94-02 036	Identify R&D Activities Applicable to LLW	Complete
IX.B.2	R94-02 037	Identify LLW R&D needs	Complete
IX.B.3	R94-02 038	Identify Outstanding R&D needs <i>Complex-wide Strategy for Maintenance of DOE LLW Disposal Facility Performance Assessments & Composite Analyses</i>	Complete
IX.B.4	R94-02 039	Develop Strategy to Meet LLW R&D needs	Complete
Total: 69 Commitments			

Note 1: The Nevada Test Site Area 5 Composite Analysis is in preparation. Nevada Operations Office waited until the completion of the Area 3 PA/CA Review Report before finalizing the Area 5 Composite Analysis. Review of the Composite Analysis will start upon receipt of the Composite Analysis. The Disposal Authorization Statement is expected to be issued by December 2000.

Note 2: The LFRG completed its review of the Idaho National Engineering and Environmental Laboratory Radioactive Waste Management Complex Composite Analysis in November 1999. The Disposal Authorization Statement is expected to be issued by March 2000.