

Quarterly Report
for
Implementation Plan
Defense Nuclear Facilities Safety Board
Recommendation 94-2

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

July 1 through September 30, 1996

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Implementation Plan
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1.0 INTRODUCTION

The Department of Energy (DOE) issued the "Implementation Plan (IP), Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 94-2" in March 1995. In May 1996 DOE issued a revision to the IP that reflected enhancements to DOE's approaches to the systems engineering and the radiological assessments, and better integration and coordination of both the task initiatives and the involved organizations. During the current reporting period DOE received a letter from the DNFSB accepting the revised IP, with conditions.

The revised IP follows the same general approach as the original IP, identifying initiatives in six task areas:

- Systems Engineering
- Complex-Wide Review
- Regulatory Structure and Process
- Radiological Assessments
- Low-Level Waste Projections
- Research and Development

This is the fourth report on the status of task initiatives as described in the IP that DOE is undertaking to improve its management of low-level waste (LLW). This report covers the period from July 1, 1996, to

September 30, 1996.

2.0 OVERVIEW

2.1 General Progress

During this reporting period DOE continued to make very good progress on implementing the activities committed to in the revised DNFSB 94-2 IP. DOE received the August 20, 1996, letter from the DNFSB accepting the revised IP with conditions. In response, the Department is accelerating the preparation of guidance documentation for the preparation and review of performance assessments. Additionally, a task deleted from the original IP, to evaluate ways of diversifying the Performance Assessment Peer Review Panel, will be reinstated. As of the date of this report, a letter has been sent to the DNFSB advising them of these actions (letter dated October 7, 1996).

In the Systems Engineering task area a tremendous amount of effort was expended by DOE Headquarters and field staff to develop a basic building block of the LLW program documentation, the System Description Document. In addition, DOE completed preparation of Complex-Wide Review corrective action plans (complex-wide and site-specific) and a report on privatization of LLW management.

The Department made organizational changes to more fully integrate the 94-2 effort to develop essential requirements for LLW management with the balance of the DOE Order 5820.2A revision process. Both efforts are now being conducted by the same organization within the Office of Waste Management. Staff in the Regulatory Structure task area are producing a methodology that will aid in the development of LLW requirements. The methodology will also be applied to requirements development for the other waste types being addressed in the Order revision. Pending completion of the Order revision, a revised interim policy on the approval of performance assessments and composite analyses was issued.

In the Radiological Assessment task area, one performance assessment was completed by a site, and DOE Headquarters completed its review of two performance assessments. DOE Headquarters also conducted a significant portion of its review of a third performance assessment, but requested additional information from the site in order to complete the evaluation.

The Department conducted a composite analysis workshop to promote the development of this new type of assessment that is to complement facility performance assessments. The workshop included presentations from sites on their approaches plus discussions by subject area technical experts to assist in the development of the type of data and analyses that should be included in the composite analyses.

In the Waste Projections task area, two documents were prepared. The initial version of the capacity report was prepared. The report shows that based on waste volume, DOE should have enough disposal capacity for currently projected waste projected to be generated over a 70 year period . This report will be routinely updated to account for radiological limits on disposal and changes in projections. The other report addresses the minimization of LLW generation.

2.2 Meetings with the DNFSB and Staff

2.2.1 Meetings During this Reporting Period

On August 2, 1996, the Assistant Secretary for Environmental Management met with the DNFSB. The meeting involved general discussions about a number of DNFSB recommendations including DNFSB 94-2.

In this reporting period DOE staff had the following interactions with staff from the DNFSB to discuss implementation activities:

- DOE staff met with DNFSB staff on July 9 to discuss the Regulatory Structure and Process task area and how the tasks relate to and are being coordinated with DOE's 5820.2A revision efforts.
- DOE staff met with DNFSB staff on July 25 to discuss overall progress on DNFSB 94- 2 implementation activities.
- On August 1, DOE and DNFSB staff held a video conference to discuss the LLW minimization strategy report being prepared as one of the DNFSB 94-2 commitments.
- On August 2, DOE staff and DNFSB staff held a teleconference in which DOE staff discussed the hazards evaluation approach being taken to facilitate development of LLW requirements for inclusion in the DOE Order 5820.2A revision.
- On September 5, DOE staff met with DNFSB staff to discuss concerns about the revised DNFSB 94-2 IP, the timing for a briefing to update the DNFSB on 94-2 implementation, and coordination of DOE Order 5820.2A revisions activities with DNFSB 94-2 implementation initiatives.

2.2.2 Meetings in Future Reporting Periods

The following interactions with the DNFSB or staff are anticipated during the next reporting period:

- DOE anticipates briefing the DNFSB on progress in implementing Recommendation 94-2 and the Order DOE 5820.2A revision effort on November 5, 1996.

3.0 SUMMARY OF COMMITMENTS DUE IN THE CURRENT REPORTING PERIOD

The following table summarizes the status of commitments that were due to be completed during the current reporting period. [Appendix A](#) provides a listing of all task initiatives committed to in the 94-2 IP and their status, as reported in DOE's Safety Issues Management System (SIMS). Two indicators are provided in the first column of the table. The first correlates with the commitment as numbered in the IP. The second number corresponds to the numbering system used in SIMS.

Status of Task Initiatives Due July 1 - September 30, 1996

<i>IP Task #</i> <i>SIMS ID #</i>	Title or Description	Due Date	Status
<i>IV.B.3</i> R94-02 005	LLW System Description Document	09/30/96	Completed. The LLW SDD was submitted to DNFSB on October 7, 1996.
<i>IV.B.4</i> R94-02 006 (partial) ¹	LLW Disposal Privatization Evaluation Report	09/30/96	Completed. The report was submitted to DNFSB on October 2, 1996
<i>IV.B.6.b.1</i> R94- 02 008	Complex-Wide Vulnerabilities Corrective Action Plan	07/31/96	Completed. The plan was submitted to the DNFSB on July 31, 1996.
<i>IV.B.6.b.2</i> R94-02 009	Site-Specific Vulnerabilities Corrective Action Plan	07/31/96	Completed. The plan was submitted to the DNFSB on July 31, 1996.
<i>VI.B.2.b.2</i> R94-02 016	Revised Interim Policy on Regulatory Structure for LLW Management and Disposal	07/31/96	Completed. Revised policy transmitted to the field and submitted to DNFSB on July 31, 1996.

<u>VII.B.4.b.1</u> R94-02 027	Prepare PA Maintenance Guidance Document	09/30/96	Completed. Guidance document transmitted to the field and submitted to DNFSB on October 1, 1996.
<u>VII.B.5.b.1</u> R94-02 029 012 (partial) ²	Complete HQ Review of Savannah River Site Saltstone PA	07/31/96	Completed. However, HQ requested additional information from DOE- SR regarding groundwater protection. DNFSB advised of status on July 31, 1996.
<u>VII.B.5.b.1</u> R94-02 029 010 (partial) ²	Submit Hanford 200-E Burial Grounds PA to HQ	08/31/96	Completed. PA was submitted to Headquarters August 22, 1996; DNFSB was notified on August 30, 1996.
<u>VII.B.5.b.1</u> R94-02 029-004 (partial) ²	Complete HQ Review of Nevada Test Site Area 5 PA	08/31/96	Completed. PA conditionally accepted. Compliance evaluation submitted to DNFSB on August 30, 1996.
<u>VII.B.5.b.1</u> R94-02 029 003 (partial) ²	Complete HQ Review of Idaho National Engineering Laboratory Radioactive Waste Management Site PA	08/31/96	Completed. PA conditionally accepted. Compliance evaluation submitted to DNFSB on August 30, 1996.
<u>VIII.B.1.b.1</u> R94-02 032	LLW Disposal Capacity Report (volumetric)	07/31/96	Completed. Report submitted to DNFSB on July 31, 1996.
<u>VIII.B.3</u> R94-02 035	Evaluation and Strategy for LLW Minimization Improvements	08/31/96	Completed. Report submitted to DNFSB on August 31, 1996.

¹Completion of this item only partially completed the full commitment in the IP which involves not only an evaluation of privatization of DOE LLW disposal, but also the preparation of guidelines to the field on privatization (to become part of the Program Management Plan, due March 31, 1997).

²Completion of this item only partially completes the full commitment in the IP which involves not only the performance assessment, but the composite analysis and disposal authorization statement.

4.0 TASK AREA STATUS

4.1 Systems Engineering

During this reporting period, the systems engineering effort continued with the refinement of the functional analysis of the LLW system which has been ongoing. DOE LLW-system-specific requirements which had been documented previously were correlated with the functions and measures to evaluate performance against the system requirements. Over the course of this effort, the DOE Headquarters and field staff defined the boundary of the LLW system and identified the other activities or programs with which the LLW system interfaces. The above items taken together constitute the LLW system as described in the *DOE Low-Level Waste System Description Document*. The document was transmitted to the DNFSB on October 7, 1996.

The Department completed a Complex-Wide Review of LLW management and reported on system and site vulnerabilities and concerns in May 1996. Site-specific and complex-wide corrective action plans were prepared during the current reporting period. The complex-wide corrective action plan documents those elements of the DNFSB 94-2 implementation activities that address the DOE-wide vulnerabilities and concerns identified in the review. Site-specific corrective action plans were prepared to address vulnerabilities

and concerns identified at individual sites and compiled into a single document. Since closure of some of the site-specific vulnerabilities depends on resolution of the underlying complex-wide vulnerabilities, some actions in the site plans are interim pending implementation of the corresponding complex-wide response. Both the Complex-Wide Corrective Action Plan and the Site-Specific Corrective Action Plans were submitted to the DNFSB on July 31, 1996.

On October 2, 1996, DOE transmitted *the Evaluation of the Safety Merits and Demerits of Using Privately Operated Facilities for Disposal of DOE Low-Level Waste*. The report evaluates safety issues associated with low-level waste disposal at privately operated versus DOE-managed facilities. The report will serve as the basis for requirements and criteria to be included in the DOE Order 5820.2A revision, (draft February 1997) and the LLW Management Program Plan (March 1997).

During the next reporting period, the systems engineering effort will focus on development of the *LLW Program Management Plan*. DOE staff and management in the Offices of Waste Management and Environmental Restoration will develop the conceptual scope and content of the document. The LLW Program Management Plan will build on input derived from the complex-wide review, the system description document, and the DOE Order 5820.2A revision activities.

4.2 Complex-Wide Review

The Final Complex-Wide Review (CWR) Report was transmitted to the DNFSB on May 17, 1996. This completed all CWR task initiatives. DOE-wide and site-specific corrective actions in response to the CWR are being addressed under a Systems Engineering task initiative and are discussed in 4.1 above.

4.3 Regulatory Structure and Process

During the current reporting period, DOE issued the "Revised Interim Policy on Regulatory Structure for Low-Level Radioactive Waste Management and Disposal." This revised policy replaces two policies issued in 1995. The

revision was developed to reflect the revised approach for conducting radiological assessments that is described in the revised IP in which the performance assessment focuses on the active or planned disposal facility and a composite analysis is prepared to evaluate the impacts of other radioactive sources that may add to the dose projected for the LLW disposal facility.

In support of the development of the DOE Order 5820.2A revision process, DOE is developing a hazard and safety analysis process. A draft process for conducting the hazard and safety analysis was developed as part of the DNFSB 94-2 implementation activities and subjected to review and testing during this quarter. As a result of the review and testing the process on several functional activities of the LLW system, the staff working on the process identified improvements to be made.

The process is to be applied by the DOE Headquarters, field, and contractor staff team that has been formed to prepare the LLW section of the revised Order. The team will conduct one or two workshops in the upcoming quarter at which the hazard and safety analysis process will be applied to the operational functions of the LLW management system. This will provide the technical basis for many of the requirements to be included in the Order revision.

4.4 Radiological Assessments

The revised IP describes DOE's approach of preparing three related documents as part of each disposal site's radiological assessment: (1) the performance assessment or Comprehensive Environmental Response, Compensation, and Liability Act/Resource Conservation and Recovery Act (CERCLA/RCRA)

documentation, as appropriate, (2) the composite analysis, and (3) the disposal authorization statement. The performance assessment (or CERCLA/RCRA documentation) is a tool to be used in designing a disposal facility and justifying the operational constraints (e.g., waste acceptance criteria). The composite analysis is a separate assessment of the impacts of other sources of radioactive material (past disposal sites, spills, etc.) that contribute to the projected radiological dose to an offsite member of the public from an active or planned LLW disposal facility. The composite analysis would be prepared to demonstrate that the potential dose to a person at the point of public access, the land-use boundary, would not exceed specified limits. The disposal authorization statement is the authorization for the facility to operate under the conditions that are described in the performance assessment (or CERCLA/RCRA documentation) and composite analysis, and cannot be issued until the performance assessment and composite analysis have been completed and approved.

During the period, DOE Headquarters received the Performance Assessment Peer Review Panel letter on the technical adequacy of the performance assessment for the Nevada Test Site (NTS) Area 5 Radioactive Waste Management Site. The Panel had previously reported to DOE Headquarters on the technical adequacy of the performance assessment for the Idaho National Engineering Laboratory (INEL) Radioactive Waste Management Complex. Based on the input from the Panel and DOE reviewers, DOE Headquarters staff completed a compliance evaluation and conditionally accepted the performance assessment for the NTS Area 5 and the INEL Radioactive Waste Management Complex. Conditional acceptance memoranda for both facilities were issued and transmitted to the DNFSB on August 31, 1996.

Headquarters reviewed the Savannah River Site Saltstone performance assessment and developed a predecisional draft compliance evaluation. The review could not be completed due to insufficient information being available to evaluate compliance with recently developed guidance on complying with the DOE Order 5820.2A groundwater performance objective. Additional information was requested from the site and a revised completion date will be established upon determining when the requested information will be available.

During this period, DOE also issued the first of the performance assessment guidance documents committed to in the DNFSB 94-2 IP. The document *Maintenance of U.S. Department of Energy Low-Level Waste Performance Assessments* was issued on October 1, 1996. The document describes the elements of a performance assessment maintenance program including periodic reviews of the performance assessment and activities to improve the analyses.

During the next reporting period, two additional guidance documents are expected to be issued. The first document is to provide guidance to the preparers and reviewers of LLW disposal facility performance assessments. Completion of this guidance is being accelerated consistent with the conditions in the DNFSB letter accepting DOE's revised IP for Recommendation 94-2. Originally, there was to be a document addressing performance assessment format and content, and a separate document to address performance assessment review. Since there was a very strong overlap in the content of the two documents and since preparers and reviewers would use both documents as resources, DOE decided to combine the information into a single document. As appropriate, these critical assumptions will be captured in the revision to the LLW section of the revised DOE Order 5820.2A.

The second guidance document to be issued in the next quarter is the Composite Analysis Review Criteria and Process. This document, currently in draft form, describes the review process to be used depending on whether the disposal facility is authorized under DOE authority or in conjunction with a CERCLA regulated action. The criteria by which the composite analyses are evaluated would be common regardless of the regulatory regime.

The Department review of the Hanford 200 East Area Burial Ground/Performance Assessment is underway. During the next quarter the Peer Review Panel will review the performance assessment for technical adequacy and consistency with the approach taken in other performance assessments. The review will be

completed in the first quarter of calendar year 1997.

4.5 Low-Level Waste Projections

During this reporting period, DOE completed two waste projection commitments from the DNFSB 94-2 IP. DOE staff completed the Disposal Capacity Report which evaluates current volume projections against the volumetric disposal capacity in the complex. The document was transmitted to the DNFSB on July 31, 1996. This analysis will be updated to also account for the radiological capacity constraints as performance assessment and composite analysis results become available. The subject of radiological capacity was discussed in an August workshop. Participants agreed that development of disposal capacity will need to recognize trade-offs between different radionuclides. That is to say, the radiological capacity is not a set number of curies because a reduction in disposal of one particular radionuclide may allow disposal of more curies of another radionuclide.

The Department also completed the *Low-Level Radioactive Waste Minimization Evaluation and Strategy*. The document was sent to the DNFSB on August 30, 1996. The report evaluated waste minimization practices at selected production and cleanup sites, identified common LLW generating activities, and recommended LLW minimization practices. The document is one element supporting the 1996 Pollution Prevention Program Plan.

The Department is working on developing the projections program guidance which is due during the next reporting period. The focus of this effort is to develop a framework within which projections work that has evolved over the last few years, such as the Baseline Environmental Monitoring Report and the Core Data Bases, can be used to provide improved, routine projections. An issue that the staff is developing guidance on is the quality of projection data.

4.6 Research and Development

During this reporting period, task initiatives for LLW research and development remained on hold in accordance with the logic and schedules in the revised IP. Departmental staff have met to discuss the most appropriate method of addressing this task area in light of current efforts to move responsibility for field-related activities to the field. A decision will be made early next quarter in order to allow the tasks to be initiated on a schedule that will meet the DOE commitments. Activities being conducted by the Office of Science and Technology, particularly the Mixed Waste Focus Area and the Subsurface Contaminants Focus Area, will be addressed for appropriate consideration in the identification of outstanding LLW Research and Development needs.

Appendix

This report is NOT available thru the Internet Version of the INFOBASE.

To obtain a hardcopy of the
Safety Issues Management System Report for Recommendation 94-2
(July 1, 1996 - September 30, 1996)

Contact ANTHONY WEST in the Office of the Departmental Representative by calling 202-586-7631, or forward a request via e-mail to anthony.west@hq.doe.gov.