John T. Conway, Chairman
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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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March 7, 2003

The Honorable Jessie Hill Roberson
Assistant Secretary for Environmental Management
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0113

Dear Ms. Roberson:

A review team from the Defense Nuclear Facilities Safety Board (Board) visited the Advanced Mixed Waste Treatment Project (AMWTP) at the Idaho National Engineering and Environmental Laboratory on December 11, 2002. The Board has been monitoring activities on this project since its inception in 1996. The project is approaching readiness to retrieve transuranic waste drums and boxes; however, questions remain as to the adequacy of the contractor's worker protection program.

In discussions with the Department of Energy Idaho Operations Office and the AMWTP contractor during March, June, and September 2002, the contractor provided assurances that the safety of workers was paramount and that no personal protective equipment was needed to ensure their safety during routine operations. However, the Board's staff determined that the required activity-based hazard analyses that ought to serve as the basis for safety measures during the retrieval of waste containers had not been performed. During the review team's December visit, considerable progress in the approach to worker safety was demonstrated, and the AMWTP contractor agreed that it is important to complete the activity-based hazard analyses. Recently, the AMWTP contractor provided a lengthy assessment of the potential for exposures to hazardous chemicals, and the Idaho Operations Office issued a letter requiring respirators be worn by the work force until justification can be provided to relax this control. However, the integrated activity-based hazard analysis needed to provide a sound basis for the project's approach to worker protection has still not been conducted.

Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests a briefing within 30 days of receipt of this letter regarding the resolution of the outstanding issues described in the enclosed report prepared by the Board's staff.

Sincerely,

John T. Conway
Chairman

c: Mr. Warren E. Bergholz, Jr
Mr. Mark B. Whitaker, Jr.

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

January 28, 2003

MEMORANDUM FOR: J. K. Fortenberry, Technical Director

COPIES: Board Members

FROM: R. S. Daniels

SUBJECT: Advanced Mixed Waste Treatment Project

This report documents observations made during a visit by a review team from the Defense Nuclear Facilities Safety Board (Board) to the Idaho National Engineering and Environmental Laboratory. Representatives of the Department of Energy (DOE) Idaho Operations Office and its contractor discussed the Advanced Mixed Waste Treatment Project (AMWTP) with the review team on December 11, 2002. The review team also observed mock-up training at the Transuranic Waste Storage Area Retrieval Enclosure.

Background. The AMWTP is a privatized project to retrieve, characterize, repackage, and ship 65,000 m^3 of transuranic (TRU) waste to the Waste Isolation Pilot Plant, beginning this year. The contractor is scheduled to begin retrieval and characterization by March 31, 2003, but is behind schedule because DOE has not agreed with the adequacy of procedures and practices to ensure worker protection. Indeed, the Board's staff has questioned the adequacy of the activity-based hazard analyses for retrieval since March 2002. The AMWTP contractor agreed to address the outstanding issues promptly.

Activity-Based Hazard Analyses. DOE Order 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*, requires the analysis of hazards associated with specific activities performed by workers:

> Identify existing and potential workplace hazards and evaluate the risk of associated worker injury or illness.
>
> (1) Analyze or review:
>
> (a) designs for new facilities and modifications to existing facilities and equipment;
>
> (b) operations and procedures; and
>
> (c) equipment, product, and service needs.
>
> (2) Assess worker exposure to chemical, physical, biological, or ergonomic hazards through appropriate workplace monitoring (including personal, area, wipe, and bulk sampling), biological monitoring, and observation. Monitoring results shall be recorded. Documentation shall describe the tasks and locations where

monitoring occurred, identify workers monitored or represented by the monitoring, and identify the sampling methods and durations, control measures in place during monitoring (including the use of personal protective equipment), and any other factors that may have affected sampling results.

Methods for performing an integrated hazard analysis are identified in DOE Guide 440.1-1, *Worker Protection Management for DOE Federal and Contractor Employees Guide.* AMWTP incorporates the functional requirements of DOE Order 440.1A in addressing industrial hygiene hazards. In discussions with the Board's staff, the contractor has agreed to complete the activity-based hazard analyses for chemical and radiological constituents, incorporate the results of the analyses into procedures and work packages, and formalize the process for conducting exposure assessments. The contractor has provided an assessment of potential exposures to hazardous chemicals. To date, however, the contractor has not completed the required activity-based hazard analyses—an essential prerequisite for the selection of appropriate controls to protect the workers performing retrieval operations. In particular, the AMWTP contractor has not fully evaluated the hazards of handling TRU waste drums that may have degraded while stored under an earthen berm since 1970. Some of the questions which arise from not having adequately performed these analyses include:

Radiological Detection as Tracer for Chemical Hazards—The contractor's approach to workplace monitoring relies upon using radiological contamination as an indication of the potential for chemical hazards. Selection of this approach was based on a belief that field radiological monitoring is more sensitive than field monitoring for chemical contaminants. The contractor agreed to justify technically the assumption that the release of chemical contaminants, such as beryllium, would always be accompanied by radiological contamination. However, the documents that were subsequently provided simply restated the conclusion that "radioactive substances are known to be commingled with chemical wastes" without technical explanation. Further justification is needed.

Personal Protective Equipment—The waste handling procedures for AMWTP currently do not require the use of personal protective equipment. The DOE Idaho Operations Office recently issued a letter to the contractor requiring that workers performing waste retrieval operations use respirators until justification can be provided to relax this control. The staff believes that this control will provide adequate protection while it is in place. In making any revisions to the controls, it will be necessary to review the internal dosimetry technical basis documents to ensure that dose limits can still be met. Making an informed decision on the appropriate level of protection will depend heavily on appropriate evaluation and response to workplace indicators as well as the internal dosimetry technical basis documentation.