



U.S. Department of Energy
Office of Inspector General
Office of Audit Services

Audit Report

Remote Treatment Facility

DOE/IG-0573

November 2002



U. S. DEPARTMENT OF ENERGY
Washington, DC 20585

November 5, 2002

MEMORANDUM FOR THE SECRETARY

FROM: Gregory H. Friedman (Signed)
Inspector General

SUBJECT: INFORMATION: Audit Report on the "Remote Treatment Facility"

BACKGROUND

The Department of Energy stores about 676 cubic meters of highly radioactive solid waste at the Idaho National Engineering and Environmental Laboratory (INEEL) reservation. The Office of Nuclear Energy, Science and Technology's Argonne National Laboratory West (Argonne West), located on the reservation, generated about half of this waste and is responsible for its disposal. Argonne West also continues to generate highly radioactive waste as part of its ongoing operations. The remainder of the waste on the reservation is the responsibility of the Office of Environmental Management and consists of material generated as a result of INEEL's historic mission to build and test nuclear reactors as well as waste transferred to INEEL from other sites for interim storage.

Due to the high levels of radioactivity, the waste can only be safely processed by facilities capable of remote manipulation or handling. To provide this capability, the Department plans to construct a Remote Treatment Facility to segregate, characterize, treat, and repackage the waste. Based on a 1998 Departmental decision to return waste management responsibilities to the program office responsible for its generation, Nuclear Energy assumed responsibility for developing the Remote Treatment Facility and began preconceptual design work on the proposed facility.

We initiated this audit to determine whether the proposed facility was designed to treat all remote handled solid waste at the INEEL reservation.

RESULTS OF AUDIT

The Department's conceptual plan for the Remote Treatment Facility design and schedule did not provide the capability to treat all remote handled solid waste at the INEEL reservation. Although the plan dealt with waste currently stored by Argonne West, as well as waste resulting from its processes in the future, it did not specifically address treating the remaining INEEL reservation highly radioactive solid waste, which was the responsibility of Environmental Management. We found that the Department had not integrated all mission needs in the planning process for the Remote Treatment Facility and, as a consequence, the Facility would not be able to meet operation needs, nor would it be able to simultaneously process all remote handled solid waste in accordance with established deadlines. We noted that the implications of this could include fines and enforcement actions against the Department and, ultimately, construction of a second remote handling facility or transportation of waste offsite for treatment.

The Office of Inspector General has addressed the need for a more comprehensive approach to waste-disposal projects in a number of recent reports. Based, in part, on these observations and our conclusion that, in a number of cases, waste-disposal operations could be more cost-effective, we have identified Environmental Standards and Stewardship as among the most difficult challenges the Department faces. In addition, members of the "Top-to-Bottom" review team commissioned by the Assistant Secretary for Environmental Management noted that the Department's sometimes fragmented approach to cleanup results in costly duplication of effort.

In this context, we recommended that senior management of Nuclear Energy and Environmental Management work together to design a facility that will permit the timely treatment of all INEEL remote handled solid waste. Further, the Department should mandate a performance management system to evaluate the adequacy and completeness of contractor planning efforts. In response to Congressional direction issued in November 2001, representatives from Environmental Management and Nuclear Energy began a series of meetings to evaluate remote handled waste treatment options at INEEL. Based on the results of those meetings, Environmental Management officials initiated an independent review to determine whether the Remote Treatment Facility was needed. While yet to be reviewed or approved, management informed us that it had updated a number of relevant planning documents, including the conceptual design. Further, management believed that the outcome of its independent review should resolve many of the concerns addressed in our report.

MANAGEMENT REACTION

Management agreed with our recommendations and indicated that Environmental Management was waiting on the results of the independent review that is expected to be completed in November 2002. Management officials also indicated that they are committed to developing performance measures related to remediating INEEL remote handled waste.

Attachment

cc: Chief of Staff

Under Secretary for Energy, Science and Environment
Administrator, National Nuclear Security Administration
Assistant Secretary for Environmental Management
Director, Office of Nuclear Energy, Science and Technology

REMOTE TREATMENT FACILITY

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OVERVIEW

INTRODUCTION AND OBJECTIVE

A significant amount of highly radioactive waste, currently about 676 cubic meters, is stored at a number of locations at the Idaho National Engineering and Environmental Laboratory (INEEL) reservation, including Argonne National Laboratory West (Argonne West). In addition, it is estimated that 5.8 cubic meters of remote handled waste will be generated each year over the next 40 years at Argonne West. This waste was produced by various site operations or transported from other Department sites for interim storage. Because of high levels of radioactivity, such waste can only be safely processed by facilities capable of remote manipulation or handling. To provide such capability, the Department of Energy (Department) planned to construct the Remote Treatment Facility (RTF) to segregate, characterize, treat, and repackage this waste. When initially conceived, and prior to conceptual design, the RTF was to have the ability to treat all remote handled solid waste produced or stored at the INEEL reservation at an estimated cost of about \$68 million.

While the Office of Environmental Management (Environmental Management) has overall responsibility for the cleanup of legacy waste at the INEEL reservation, the Office of Nuclear Energy, Science and Technology (Nuclear Energy) is responsible for waste generated by past and on-going operations at Argonne West. Based on a Departmental decision to return waste management responsibilities to generators in 1998, Nuclear Energy assumed responsibility for developing the RTF and began conceptual design work on the proposed facility.

Remote handled solid waste stored at the INEEL reservation is subject to one or more of three mandates that require a plan and timetable for treating the waste and preparing it for shipment to a final repository. First, the October 17, 1995, "United States vs. Batt" Settlement Agreement and Consent Order requires certain waste, including remote handled transuranic waste in storage at the INEEL, be put in shippable condition and removed from the State of Idaho no later than 2018. Second, the INEEL Site Treatment Plan Consent Order with the State of Idaho requires the Department to provide treatment capacity for remote handled waste that has been in storage for over one year. Finally, waste storage permits issued by the State of Idaho require the Department to provide treatment capacity for all mixed wastes in storage.

The objective of this audit was to determine whether the proposed RTF was designed to treat all remote handled solid waste in storage or to be generated at the INEEL reservation.

**CONCLUSIONS AND
OBSERVATIONS**

The Department's conceptual plan for the RTF design and schedule did not provide the capability to treat all remote handled solid waste at the INEEL reservation. The plan addressed waste then stored at, and to be generated by Argonne West, but did not contain specific plans for treating other highly radioactive solid waste stored at the INEEL reservation. Based on our review of the conceptual design, we determined that the facility would be unable to simultaneously satisfy operational needs and process all remote handled solid waste within established legal and statutory deadlines. This problem occurred because the Department did not integrate all mission needs in the planning process. Unless progress is made on a treatment facility, the Department may have to curtail site operations, may be subject to fines and enforcement actions, and may have to make alternate plans to construct an additional facility or to transport certain remote handled waste to another location.

In our opinion, the matters discussed in this report should be considered by management when preparing its yearend assurance memorandum on internal controls.

(Signed)
Office of Inspector General

REMOTE HANDLED WASTE TREATMENT

Planned Approach

Despite being designated in the Site Treatment Plan as the "path forward" for all of the Idaho reservation's remote handled solid waste, the conceptual design for RTF did not provide the capability to treat all such waste. As described in the conceptual design, the RTF would only be capable of processing current or future waste from Argonne West. As such, the proposed facility would not be appropriately sized to permit the simultaneous processing of both Argonne West and remote handled waste from the rest of the INEEL. Initial planning documents and the draft RTF environmental assessment indicated that remote handled waste stored at locations other than Argonne West and managed by Environmental Management could be processed at RTF as a follow-on activity. However, both site and contractor officials told us this option was not viable because it would not permit treatment and removal from the State by the deadline of 2018 called for in the 1995 settlement agreement.

Even though an independent engineering study concluded that RTF was the most cost effective means of treating all INEEL remote handled waste, the Department subsequently chose to limit the scope of the facility. The re-scoping occurred when responsibility for the project was transferred from Environmental Management to Nuclear Energy in 1998. Nuclear Energy proceeded separately because of its need to treat remote handled waste from continuing operations and the requirement to maintain Argonne West's Resource Conservation and Recovery Act storage permits. Officials told us that maintenance of such permits was essential to decommissioning activities for the Experimental Breeder Reactor II and the cleanup of other contaminated facilities at Argonne West. Nuclear Energy's planning efforts culminated in a design that would permit continued Argonne West processing; however, it provided no capacity to treat other remote handled waste at INEEL.

Facilities Management Requirements

Departmental facilities management policies require that sites or organizations take an integrated, corporate centered approach to facility design and construction. DOE Order O 430.1 requires that "...every site shall be supported by a Headquarters program office that functions as landlord. Landlords shall coordinate their facilities management activities to provide a consistent corporate approach..." Programs and sites are required to employ a formal, comprehensive, integrated, and documented planning process that is sufficient in scope to consider all current mission needs. Project managers are required, at a minimum, to

identify technical and organizational interfaces and integration with other projects and activities prior to the commencement of conceptual design.

**Design and Planning
to Meet Mission Needs**

Based on our audit, we concluded that the Department did not take a corporate approach and did not integrate all mission needs in the RTF planning and design process. While early planning efforts properly considered all remote handling needs for the INEEL reservation, the Department subsequently elected to concentrate on only one of the major generators at the site. All relevant mission needs, including the need to process remote handled waste stored or managed by Environmental Management, should have been considered and incorporated into the preconceptual design of the RTF. Had the Department adopted an inclusive approach as required by its own facility management directive, the conceptual design could have provided the capability to process all remote handled waste in accordance with legal mandates.

We also noted that while the Department had established performance measures as required by the Government Performance and Results Act of 1993, such measures were not sufficient in scope and did not address the ultimate disposition of all site remote handled solid waste. Specifically, the Fiscal Year 2002 measures focused only on completing the conceptual design for RTF and the National Environmental Policy Act determination for disposal of highly radioactive waste at Argonne West. They did not address the remediation of remote handled waste managed by Environmental Management.

**Potential Legal and
Cost Consequences**

The Department's conceptual design would not enable it to disposition Environmental Management's remote handled waste without incurring substantial costs to build a separate facility or to transport the waste to another processing facility. Unless all remote handled waste is addressed, the Department may have to curtail site operations, is at risk of violating legal mandates, and may be subject to fines and enforcement actions. If these mandates are not satisfied, the Department could lose the State of Idaho environmental operating permits for all of its INEEL storage facilities. At the extreme, we believe that the Department could find it necessary to build a redundant

facility at a cost of as much as \$44 million, the estimated cost of the facility designed to accommodate Argonne West waste only.

RECOMMENDATIONS

We recommend that the Assistant Secretary for Environmental Management, in conjunction with the Director, Office of Nuclear Energy, Science and Technology:

1. Arrive at a decision in a timely manner on whether there is a need for construction of a specialized facility to treat remote handled solid waste located at Argonne West and INEEL;
2. Ensure adoption of a corporate approach that integrates all current mission needs and legal considerations regardless of the method of disposition selected; and,
3. Develop specific performance measures to assess progress in dispositioning all remote handled waste at Argonne West and INEEL.

MANAGEMENT REACTION

Based on conversations with management, we learned that they agreed with our recommendations. The Department advised that several actions, including the development of a mission need statement to address all remote handled waste at the reservation, had been initiated and should resolve most of the Office of Inspector General's concerns on the RTF. While it had yet to be reviewed and approved, management also indicated that it had taken action to update the conceptual design. Furthermore, management indicated Environmental Management was waiting for the results of an independent review of the RTF that was directed in an FY 2002 House Conference Report. Management's comments are contained in their entirety in Appendix 3.

AUDITOR COMMENTS

Management's comments are responsive to our recommendations.

RELATED AUDIT REPORTS

- *Idaho Operations Office Planned Construction of a Waste Vitrification Facility*, (DOE/IG-0549, April 1, 2002). The audit found that the Department had not adequately considered potentially less costly alternatives to constructing the vitrification facility, including several proposed by the National Research Council.
- *Idaho Operations Office Mixed Low-Level Waste Disposal Plans*, (DOE/IG-0527, September 28, 2001). The audit found that Idaho's plans to dispose of its mixed low-level waste at WIPP were inconsistent with the Department's waste disposal strategy.
- *Utilization of the Department's Low-Level Waste Disposal Facilities*, (DOE/IG-0505, May 25, 2001). The audit found that the Department had not developed and implemented a corporate approach to maximize the safe and cost-effective disposal of low-level waste.
- *Disposal of Low-Level and Low-Level Mixed Waste*, (DOE/IG-0426, September 3, 1998). The Department's strategy for disposal of low-level and low-level mixed waste was not as cost-effective as possible.

Appendix 2

SCOPE

The audit was performed from October 10, 2001, to April 19, 2002, at Argonne, IL; Idaho Falls, ID; and Germantown, MD. The scope of this audit included the need for treating remote handled radioactive waste present at numerous sites on the Idaho National Engineering and Environmental Laboratory grounds.

METHODOLOGY

To accomplish the audit objective, we:

- Interviewed officials from Nuclear Energy's Office of Nuclear Facilities Management;
- Interviewed officials from Environmental Management's Small Sites Closure Office and their Waste Isolation Pilot Plant Office;
- Interviewed officials from the Argonne National Laboratory (ANL), ANL West, the Argonne Area Office (AAO), AAO West, the Idaho National Engineering and Environmental Laboratory (INEEL), the Chicago and Idaho Operations Offices, and supporting contractors from both Argonne West and INEEL;
- Reviewed applicable documentation generated prior to and during the preconceptual activities of the project;
- Evaluated federal and Departmental regulations concerning RTF planning, construction, and management;
- Reviewed Congressional direction concerning the Department's need and funding of the RTF; and,
- Reviewed NE efforts to obtain Departmental support for the RTF and coordinate with Environmental Management in the conceptual design phase of RTF planning.

The audit was performed in accordance with generally accepted Government auditing standards for performance audits and included tests of internal controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective.

Accordingly, the assessment included reviews of Departmental orders and directives, and the initial and preconceptual planning documents. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We did not conduct a reliability assessment of computer-processed data because such information was not considered critical to satisfying our audit objective. Finally, we evaluated the Department's expectations and performance measures for the RTF.

We held an exit conference with Environmental Management and Nuclear Energy on September 19, 2002.

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United States Government


Department of Energy

memorandum

DATE: September 25, 2002
REPLY
ATTN OF: EM-34 (R. Fleming, 301-903-7627)
SUBJECT: Office of Inspector General "Draft Report on the Remote Treatment Facility"
TO: Gregory H. Friedman, Inspector General, IG-1

This replaces my September 5, 2002, memorandum to you responding to your report entitled "Draft Report on the Remote Treatment Facility." In language contained in the House Conference Report appropriating Fiscal Year 2002 funding, EM was directed to evaluate the need for a remote-handled transuranic waste facility at Argonne National Laboratory-West and to initiate conceptual design if needed. Accordingly, the Office of Environmental Management is waiting for the results of an independent review underway on the Remote Treatment Facility. We will provide you the results of this review which is expected by November 2002.

If you have any questions, please contact me or John Lehr, Director, Small Sites Closure Office, at (301) 903-3850.


Jessie Hill Roberson
Assistant Secretary for
Environmental Management

cc: Frederick D. Doggett, IG-30

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