

DOE/IG-0440

AUDIT
REPORT

WASTE TREATMENT PLANS AT
THE IDAHO NATIONAL
ENGINEERING AND
ENVIRONMENTAL LABORATORY



FEBRUARY 1999

U.S. DEPARTMENT OF ENERGY
OFFICE OF INSPECTOR GENERAL
OFFICE OF AUDIT SERVICES

MEMORANDUM FOR THE SECRETARY

FROM: Gregory H. Friedman
Inspector General

SUBJECT: INFORMATION: Audit Report on "Waste Treatment Plans at the Idaho National Engineering and Environmental Laboratory"

BACKGROUND

The Idaho National Engineering and Environmental Laboratory (Laboratory) stores nearly 65,000 cubic meters of waste generated on site or brought to the State of Idaho (Idaho) from Department of Energy (DOE) sites across the country. Because Idaho was concerned that the State might become a "de facto" permanent repository, the Governor of Idaho sought and received an injunction from the Federal courts which prohibited future waste shipments to Idaho. The injunction also affected the Navy's shipment of spent nuclear fuel into the Laboratory. Due to concerns about the injunction's impact, DOE and the Navy negotiated with Idaho and signed the Idaho Settlement Agreement (Agreement) on October 17, 1995.

Under the Agreement, DOE must remove all stored waste from Idaho by December 31, 2018, at the latest. There were additional requirements for construction of a private waste treatment facility (Treatment Facility). In December 1996, DOE awarded a contract for construction of the new Treatment Facility, nearly 6 months ahead of the required contract award date of June 1, 1997; the Agreement also required the Treatment Facility to begin operations by March 31, 2003. Likewise, the Agreement mandated some milestones for shipment of the first 3,100 cubic meters of waste from Idaho to the Waste Isolation Pilot Plant (WIPP). The first portion of the 3,100 cubic meters of waste must be shipped by April 30, 1999, and all 3,100 cubic meters must be shipped by December 31, 2002. The purpose of our audit was to determine whether it is in the best interest of the Government to defer processing the 3,100 cubic meters of waste until the new Treatment Facility can do so.

RESULTS OF AUDIT

Our analysis showed that waiting until the Treatment Facility could process the 3,100 cubic meters of mixed waste would be more economical and reduce the environmental risks to Laboratory employees. By deferring processing until the new Treatment Facility is operational, DOE could save \$66 million. Therefore, a compromise between DOE and Idaho officials allowing such a deferral would be in the best interest of the Government. We recommended that DOE initiate discussions with Idaho to negotiate such a deferral.

MANAGEMENT REACTION

While management generally agreed with the report and its contents, it did not agree to implement the recommendation. Therefore, we consider management's response to be a non-concurrence.

Attachment

cc: Acting Deputy Secretary
Under Secretary

WASTE TREATMENT PLANS AT THE IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY

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OVERVIEW

INTRODUCTION AND OBJECTIVE

The Idaho National Engineering and Environmental Laboratory (Laboratory) stores nearly 65,000 cubic meters of waste¹ generated on site or brought to the State of Idaho (Idaho) from Department of Energy (DOE) sites across the country since 1970. This represents approximately 62 percent of the stored waste that DOE plans to ship and permanently dispose of at the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico. Although WIPP was scheduled to begin receiving waste as early as 1988, its official opening date has been and continues to be delayed. Idaho, therefore, became concerned that the Laboratory, although originally intended as a temporary storage facility, might become a "de facto" permanent repository. Consequently, the Governor of Idaho acquired an injunction to prohibit future waste shipments from entering Idaho. The injunction also affected the Navy's shipment of spent nuclear fuel into the Laboratory.

Because of concerns about the injunction's impact on shipments of waste and spent nuclear fuel, DOE and the Navy negotiated with Idaho and signed the Idaho Settlement Agreement (Agreement) on October 17, 1995. As a result, the injunction was lifted; however, the Agreement imposed specific milestones on DOE for removing the waste from the State. Specifically, all waste must be removed from Idaho by December 31, 2015, but not later than December 31, 2018, the date WIPP was originally scheduled to close. Additional milestones included:

- awarding a contract for construction and operation of a private waste treatment facility by June 1, 1997;
- shipping the first load of waste from Idaho by April 30, 1999;
- shipping at least 3,100 cubic meters of waste out of Idaho by December 31, 2002; and,
- beginning operation of the waste treatment facility by March 31, 2003.

In December 1996, DOE met the first milestone by awarding a fixed-price contract to a private company to construct and operate the Advanced Mixed Waste Treatment Facility (Treatment Facility)--

¹ For purposes of this report, "waste" is defined as the stored transuranic, alpha contaminated low-level, and alpha contaminated low-level mixed waste.

nearly 6 months ahead of schedule. DOE has demonstrated its commitment to meet the second milestone by spending \$559,000 to characterize and certify the first shipment of 42 drums of non-mixed transuranic waste.

Because the Treatment Facility would not be available to meet the 3,100 cubic meter milestone by December 31, 2002, DOE decided to dispose of untreated waste using the characterization process that was in place in 1989, and adapting it to meet new characterization requirements. This process was augmented in May 1998 to include additional characterization analysis required to certify that the initial shipment to WIPP contained only non-mixed transuranic waste.

The purpose of the audit was to determine whether it is in the best interest of the Government to defer processing the 3,100 cubic meters of waste until the new Treatment Facility can do so.

Our analysis showed that waiting until the Treatment Facility can process the 3,100 cubic meters of waste would be more economical and reduce the environmental risks to Laboratory employees. Therefore, a compromise between DOE and Idaho officials allowing such a deferral would be in the best interest of the Government.

In our opinion, the audit identified issues that management should consider when preparing its yearend assurance memorandum on internal controls.

CONCLUSIONS AND OBSERVATIONS

(Signed)

Office of Inspector General

MODIFICATION OF AGREEMENT MILESTONE SUPPORTABLE

Treatment Facility Provides Greater Benefit Than Existing Process

If processing the 3,100 cubic meters of waste was deferred until the Treatment Facility was operable, DOE could save approximately \$66 million, characterize the waste in a safer and more efficient manner, treat the waste, and still meet the 2015 deadline established in the Agreement. The contracted cost for the Treatment Facility to characterize, treat, and prepare the waste for shipment is \$4,647 per cubic meter as compared to \$25,200 per cubic meter for simply characterizing the waste using the existing process. The Treatment Facility would also require less movement of the waste, reduce the waste volume by 65 percent, and provide for more secure waste handling. Thus, the chance of an accidental exposure would be reduced. Finally, since the Treatment Facility was designed for production purposes, it would take only 6 months to treat the 3,100 cubic meters instead of the 5 years currently planned. Under full operation, the Treatment Facility would be able to process all of the waste--including the 3,100 cubic meters--by 2015.

Treatment Facility Operations

As required in the Agreement, DOE awarded a fixed-price contract for the construction and operation of the Treatment Facility to remove the 65,000 cubic meters of waste from the Laboratory by 2015. While the Treatment Facility will not be available to treat waste until March 2003, DOE has stated it will be a cost effective and environmentally safe method of removing the waste from the Laboratory. The terms of the contract established a unit price cost of \$4,647 per cubic meter. This price includes all activities necessary to retrieve, characterize, treat, and prepare the waste for final disposal at WIPP. At this price, DOE could save \$64 million by deferring the milestone until the Treatment Facility can process the 3,100 cubic meters. The reduction in waste volume could also reduce the shipping costs for the 3,100 cubic meters by approximately another \$2 million.

The Treatment Facility will also reduce DOE's environmental, safety and health risks to Laboratory employees, as well as the general public. Specifically, because the Treatment Facility is to be constructed adjacent to the waste storage facilities, the process will require little movement of waste during retrieval, characterization, and treatment. Further, by treating the waste thermally and encapsulating the waste in

either a grouted or vitrified form, the Treatment Facility will be capable of reducing waste volume by up to 65 percent. In its evaluation of privatization studies, DOE determined that treating the waste prior to disposal would stabilize the waste and thus decrease environmental and health risks to workers and the public, assuming adequate worker protection standards and criticality controls are maintained. In vitrified or grout form, an accidental release to the environment would be less likely, making it safer for long-term or permanent storage.

Finally, the Treatment Facility is being designed as a production rather than an experimental facility and will be capable of treating up to 7,000 cubic meters of waste per year when fully operational. Although the Treatment Facility is not scheduled to be operational until March of 2003, it will be able to process all of the Idaho waste--including the 3,100 cubic meters--ahead of the 2015 milestone required by the Agreement.

Characterization Process

Because it wanted to meet the 3,100 cubic meter milestone date of December 31, 2002, DOE decided to dispose of untreated waste for an estimated cost of \$25,200 per cubic meter by using a characterization process implemented in 1989, and adapting it to meet current characterization requirements. In this process, all drums being sent to WIPP will be non-intrusively characterized at Laboratory facilities.

In addition, a sample of drums will also be intrusively characterized to validate the results of the non-intrusive characterization. Because the Laboratory does not have facilities capable of performing intrusive characterization, the waste will be sent to Argonne National Laboratory--West, approximately 15 miles away from the storage facilities. The entire process for waste to be intrusively characterized, sampled, analyzed, and made ready for WIPP can take up to 6 months per drum. However, the waste still remains in an untreated form for transportation to, and final disposal at, WIPP. Therefore, the process for removing the 3,100 cubic meters to meet the Agreement's December 31, 2002, milestone will be costly and create otherwise avoidable environmental, health and safety risks to Laboratory employees.

DOE Negotiated The Idaho Agreement Without Adequate Cost Or Program Considerations

While DOE's effort to facilitate removal of the 3,100 cubic meters of waste from Idaho by December 31, 2002, is laudable, it agreed to the interim milestone without adequate knowledge and consideration of the cost. DOE was unable to provide any substantial contemporaneous documentation that it might have used to support its decision to agree to ship 3,100 cubic meters of waste to WIPP prior to the operation of the Treatment Facility. Further, the information DOE Headquarters used to support the negotiations was not originally developed for that purpose. Although this information indicated that the cost to meet the milestone would be \$20.7 million, an analysis performed within a month after the Agreement was signed showed that the cost could be up to eight times higher. Even though nearly all DOE officials we spoke to agreed that it was not anticipated that the cost of complying with the 3,100 cubic meter milestone would be so significant, DOE has not approached Idaho officials to discuss this matter. It appears, therefore, DOE would rather proceed with the characterization process than attempt to amend the Agreement and possibly save \$66 million.

Changes In Regulatory Requirements Continue To Escalate Waste Processing Costs

When it entered into the Agreement, DOE believed that the 3,100 cubic meter milestone was achievable because it had already characterized approximately 3,100 cubic meters of waste in accordance with Revision 3 of the WIPP Waste Acceptance Criteria (WAC). However, changes to the requirements have increased cost. Shortly after the Agreement was signed, Revision 5 of the WAC was issued. This change required DOE to perform intrusive characterization and sampling of waste containers, including the 3,100 cubic meters previously certified. To meet this sampling requirement for the 3,100 cubic meters of mixed waste, DOE would have to open and intrusively characterize nearly 600 drums at a cost of about \$16 million.

In addition, recent regulatory activities will only compound this problem. In May 1998, New Mexico State regulators issued for comment the draft Resource Conservation and Recovery Act (RCRA) Part B permit, which would allow DOE to permanently dispose of mixed waste at WIPP. According to DOE officials, the draft permit could require DOE to perform intrusive characterization and RCRA analysis on nearly twice the number of sample drums currently planned for. Not only would this regulatory requirement increase the time needed to certify the waste for shipment to WIPP, it could further increase DOE's cost of meeting the 3,100 cubic meter milestone. These

modifications, however, will have less impact on the Treatment Facility operations since the current plan for the treatment process already includes opening a large majority of the waste containers.

Deferring Processing Will Reduce Costs While Meeting Final Removal Date

Deferring processing of the 3,100 cubic meters until the Treatment Facility becomes operational would significantly reduce costs while still enabling DOE to meet the final removal date of 2015. Further, spending an additional \$66 million to meet the 3,100 cubic meter milestone of December 31, 2002, will provide little benefit. For example, it will complete the removal of only 5 percent of the waste from Idaho just 3 months before the new facility is operational. Using these funds to meet the milestone may jeopardize other environmental and site closure projects at the Laboratory. In addition, deferring the processing of waste will not significantly impact final removal of waste from Idaho. Processing capabilities of the Treatment Facility could treat in 6 months what it will take the existing process 5 years to characterize.

RECOMMENDATION

We recommend that the Acting Deputy Assistant Secretary for Waste Management, in conjunction with the Idaho Operations Office, initiate discussions with the State of Idaho to negotiate a deferral on processing the 3,100 cubic meters of waste until the new Treatment Facility can process it.

MANAGEMENT REACTION

Management stated that it was in general agreement with the contents of the report and its recommendation. Further, it had been communicating regularly with Idaho on the progress of the Treatment Facility. However, management stated that there are a number of substantive issues that could arise in negotiating with Idaho on a deferral of the 3,100 cubic meter milestone. For example, Idaho may be unwilling to relax any requirement for removing radioactive waste from the State and could add new milestones for high-level waste and spent nuclear fuel. Further, Idaho could also add fines and penalties for all of the Agreement milestones. Thus, the overall cost impact of the milestone deferral is not clearly known at this time.

AUDITOR COMMENTS

Although DOE management stated that it was in general agreement with the report contents and recommendation, in our opinion its failure to act makes its comments non-responsive to the recommendation. Specifically, DOE asserted that it was regularly informing Idaho on the progress of the Treatment Facility and would continue to do so. This communication provides an ideal means for DOE to approach discussions of a deferral of the 3,100 cubic meter milestone. However, thus far DOE has not attempted to discuss this matter with Idaho. Therefore, in our opinion, DOE's expressed concerns are only speculative at this point. This audit projects that deferral of processing the waste will save DOE \$66 million while still meeting the final 2015 deadline. Any offsetting costs from potential new fines and penalties could only be determined through negotiations. Until DOE approaches Idaho, it cannot make an informed decision on whether deferral is in the best interest of the Government.

Appendix 1

SCOPE

The audit was performed from January 13 through September 30, 1998, at DOE Headquarters in Washington, D.C.; the Idaho Operations Office and the Laboratory in Idaho Falls, Idaho; and the Carlsbad Area Office in Carlsbad, New Mexico. The audit included a review of documentation associated with the Laboratory's Transuranic Waste Program and the Treatment Facility from May 1995 through June 1998.

METHODOLOGY

To accomplish the audit objective, we:

- interviewed key DOE management responsible for initiating and negotiating the Agreement with the State of Idaho;
- reviewed the negotiation files used to support the Agreement;
- reviewed applicable DOE publications, including DOE's *Evaluation of Feasibility Studies for Private Sector Treatment of Alpha and TRU Mixed Wastes* and *The National TRU Waste Management Plan*;
- evaluated the Laboratory's methods for characterizing and certifying mixed waste shipments to WIPP;
- interviewed DOE and contractor personnel responsible for managing the mixed waste project at the Laboratory; and,
- reviewed the DOE contract for treatment of waste in the Treatment Facility and established Project Management Plans associated with the project.

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 management controls over waste treatment programs managed by DOE. 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. Our review did not rely on computer processed data.

An exit conference was waived by management.

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