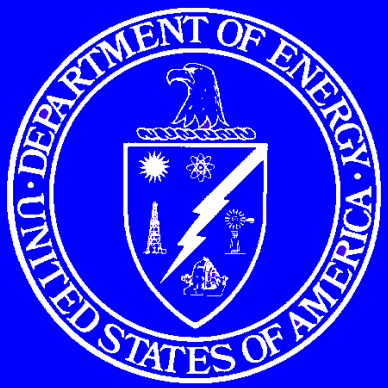
DOE/IG-0571

AUDIT REPORT



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

IDAHO SETTLEMENT AGREEMENT ACTIVITIES

OCTOBER 2002

U. S. DEPARTMENT OF ENERGY
Washington, DC 20585

October 9, 2002

MEMORANDUM FOR THE SECRETARY

FROM: Gregory H. Friedman (Signed)
Inspector General

SUBJECT: INFORMATION: Audit Report on "Idaho Settlement Agreement Activities"

BACKGROUND

The task of cleaning up contaminated sites and disposing of radioactive waste, as reported in the Department of Energy's recent *Performance and Accountability Report*, is one of the greatest challenges the Department faces. The Department's effort is estimated to cost over $220 billion for remediation activities at 114 separate sites, including waste stored at the Idaho National Engineering and Environmental Laboratory (INEEL).

In 1995, as part of its agency-wide effort, the Department entered into a settlement agreement for the management of spent nuclear fuel and radioactive waste at INEEL. Two of the near-term milestones specified in the agreement were transferring Three-Mile Island spent nuclear fuel, which had been stored at INEEL on an interim basis, to a new dry storage facility and shipping certain transuranic (TRU) waste to the Waste Isolation Pilot Plant (WIPP). Specifically, under the terms of the agreement, the Department agreed to: (1) move Three-Mile Island spent nuclear fuel into a new dry storage facility by June 1, 2001, and (2) ship the first 3,100 cubic meters of TRU waste out of the State by December 31, 2002.

The Idaho Operations Office budgeted about $39 million for the transfer of Three-Mile Island spent nuclear fuel and estimated that it would cost $64 million to make the initial shipment of waste from INEEL to WIPP. Given your concerns regarding the environmental management program's cost and schedule, and parallel concerns by other interested parties, we conducted this audit to determine whether the Department would meet the completion dates and cost expectations incorporated in the settlement agreement.

RESULTS OF AUDIT

The Idaho Operations Office met the June 1, 2001, commitment for transferring Three-Mile Island fuel to dry storage and is on track to meet the commitment for shipping 3,100 cubic meters of transuranic waste from the State of Idaho. However, the Three-Mile Island fuel project exceeded cost expectations by $18 million and the TRU waste project is expected to exceed cost expectations by $150 million. Although events outside the Operations Office's control, such as changes in permit requirements at WIPP, contributed to cost overruns, we found that weaknesses in basic project management controls were also factors. Because of the overruns, the Department has had to cancel, defer, or reduce the scope of other mission-critical work at INEEL.

We made recommendations intended to help focus the Department's attention on key controls for planning, executing, and evaluating current and future Environmental Management projects. Our recommendations are consistent with the findings of the Department's *Top-to-Bottom* review, which emphasized the need for more progress in applying the principles and standards of performance associated with capital projects to operationally-funded projects for waste management and environmental remediation.

MANAGEMENT REACTION

The Assistant Secretary of Environmental Management and the Acting Manager, Idaho Operations Office concurred with our recommendations and initiated corrective actions. Management comments are included in their entirety in Appendix 1.

Attachment

cc: Chief of Staff
Under Secretary for Energy, Science and Environment
Assistant Secretary for Environmental Management
Manager, Idaho Operations Office

IDAHO SETTLEMENT AGREEMENT ACTIVITIES

TABLE OF CONTENTS

SETTLEMENT AGREEMENT COMMITMENTS

The Operations Office Performance

The Idaho Operations Office met the Department's June 1, 2001, commitment for transferring Three-Mile Island fuel to dry storage and is on track to meet the commitment for shipment of transuranic (TRU) waste. However, both projects exceeded cost expectations. For the transfer of Three-Mile Island fuel to dry storage, the Department had budgeted a total of $39 million. The project's actual cost, however, was about $57 million, 46 percent more than expected. With regard to the TRU waste shipments, the Department had estimated that all the waste could be shipped for about $64 million. At the time of our review, Idaho's revised estimate for shipping the entire 3,100 cubic meters of TRU waste to the Waste Isolation Pilot Plant (WIPP) was $214 million, more than triple the original estimate.

Contributing Factors

To an extent, factors beyond the Operations Office's control contributed to the cost overruns on the projects. For example, construction of the Three-Mile Island dry storage facility was delayed due to a change in the application of industrial code requirements and the bankruptcy of a subcontractor. As a result, the schedule for drying and moving Three-Mile Island spent nuclear fuel had to be compressed and the project went to a 24-hour a day, 7-day a week schedule. Although this change enabled the Operations Office to meet the June 1, 2001, settlement agreement commitment, it contributed to the increased costs of the Three-Mile Island project. Additionally, delays in obtaining a Resource Conservation and Recovery Act Part B permit at WIPP, and subsequent modifications to the permit, increased costs for shipping TRU waste to WIPP for disposal.

Aside from these external factors, however, we also noted weaknesses in basic project management controls. For example, we found problems with project plans, cost estimates, and project oversight that, in our judgment, contributed to the cost overruns.

Project Plans

The original project plan for the Three-Mile Island project was not timely or complete. To illustrate, the plan was not written until November 1999, four years after the start of the project. Moreover, when the project plan was completed, it did not contain key elements such as technical considerations, life-cycle cost estimates, or detailed descriptions of how the work would be accomplished. Consequently, in October 2000, contractor management stated that it had to stand down for two weeks in order to rebuild the project plan "from the ground up." Although the plan was rewritten, management stated that an effective

detailed work plan was not completed and implemented until December 2000, just months before the June deadline, and almost two years past the date of the first shipment.

Similarly, when the original TRU waste plan was developed in 1996, it did not contain project schedules, scope baselines, organizational responsibilities and accountabilities, or a project control and reporting system. In 1997, an Office of Environmental Management review team found that the original plan was not an adequate management tool. After this review, the plan was revised several times. However, project management stated that it was not until 2001 that specific metrics were added to the plan to better track the progress of shipping TRU waste to WIPP.

Cost Estimates

As evidenced by the significant cost growth, estimates for both the Three-Mile Island fuel project and TRU waste project were not adequately developed. In fact, for the Three-Mile Island project, the Operations Office did not develop a life-cycle cost estimate; rather, management simply budgeted a portion of operating funds to the effort annually, based on its estimate of project needs for that year. At our request, management determined that the total amount budgeted in this manner had been $39 million, covering the Operations Office's Fiscal Year (FY) 1996 through 2001 operating budgets. As noted, actual costs for meeting this milestone were almost 50 percent higher than the total budgeted amount. A life-cycle cost estimate could have, in this case, helped management to identify unexpected cost growth and might have prompted corrective actions or alternative strategies.

The estimate for the TRU waste project – $64 million – was also inadequate. In this case, the estimate was not tied to a detailed work plan. In fact, the original estimate had no detailed analysis or breakdown showing key work segments and component costs. In addition, the estimate did not contain any contingency allowance to compensate for unknown factors that might increase the overall cost of the project. For example, one known risk, for which there was no contingency, was the risk that waste characterization requirements for WIPP may change. In 1999, when the requirements changed, the data to characterize 4,500 drums of waste (about 1,000 cubic meters) at the Operations Office was discarded. The Operations Office initially spent approximately $20 million to characterize this waste, and will have to redo this work to meet the newer requirements.

Project Oversight

Finally, we noted that tasks associated with the Settlement Agreement milestones were not subject to DOE Order 413.3, *Program and Project Management for Acquisition of Capital Assets*, because they were financed using operational, as opposed to capital, funding. The order requires application of a number of project management controls, including various tracking and oversight systems, critical decision processes, and detailed work plans. Moreover, capital projects subject to the order tend to receive enhanced senior management scrutiny. As an example, the order requires that "troubled" projects, in danger of not achieving objectives or at risk for significant cost overruns, be included on the Chief Operating Officer's "Watch List." Our observations in this regard are consistent with findings of Environmental Management's *Top-to-Bottom* review team, which also noted that operationally funded projects could benefit, in many cases, from the enhanced controls generally applied to capital projects.

Mission-Critical Work Deferred

As a result of cost overruns associated with the Three-Mile Island and TRU waste projects, the Department had to cancel, defer, or reduce the scope of other mission-critical work. For example, in October 2001 the Assistant Secretary for Environmental Management postponed the shipment of spent nuclear fuel from the West Valley Demonstration Project to the Idaho National Engineering and Environmental Laboratory (INEEL), citing the need to concentrate on meeting the commitment to ship 3,100 cubic meters of TRU waste to WIPP. The delay will result in additional costs such as retraining emergency crews in 11 states along the route. Fuel shipments to INEEL will be rescheduled once the production levels required to meet the settlement agreement with the State of Idaho are achieved.

Also, in FY 2000 INEEL transferred about $390,000 from the Irradiated Fuel Storage Facility maintenance fund to meet the milestone for moving Three-Mile Island spent nuclear fuel. As a result of the transfer of funds, INEEL deferred repairs to the Irradiated Fuel Storage Facility Breathing Air System and eliminated half of the corrective maintenance for process instruments and cameras. The Irradiated Fuel Storage Facility is the principal storage, consolidation, and staging area at the INEEL for the transfer of spent nuclear fuel into dry storage. Thus, the movement of spent nuclear fuel on site depends on the Irradiated Fuel Storage Facility being in operation.

Finally, according to the *Department of Energy Performance and Accountability Report FY 2001*, the Department did not meet its Departmentwide FY 2001 goal to dispose of 2,425 cubic meters of TRU waste at the WIPP, due largely to INEEL not meeting its goal to ship 1,160 cubic meters in FY 2001.

RECOMMENDATIONS

We recommend that the Assistant Secretary for Environmental Management apply the project management principles contained in Order 413.3 to all projects, including operational projects.

We also recommend that the Manager, Idaho Operations Office strengthen project management controls to ensure that:

a. Project plans adequately define the work to be performed; and,

b Life cycle cost estimates are established before work begins, including contingencies for unknown factors that could result in additional costs.

MANAGEMENT AND AUDITOR COMMENTS

Management concurred with our recommendations to improve project management controls. The Office of Environmental Management has taken actions to enforce vigor and visibility of implementation of DOE Order 413.3 to all projects. In addition, the INEEL contractor is implementing a planning process that identifies the detailed work scope, schedule, and resources necessary to complete a project. The Department's verbatim comments are included as Appendix 1.

We consider management's comments and actions responsive to our recommendations and the issues addressed in our report.

Appendix 1

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United States Government **Department of Energy**

memorandum

DATE: September 19, 2002

REPLY TO ATTN OF: EM-41 (Dick Blaney, 301-903-7103)

SUBJECT: Draft Report on *Idaho Settlement Agreement Milestones*

TO: Frederick D. Doggett
Deputy Assistant Inspector General for Audit Services, IG-32

On July 12, 2002, you provided a copy of your draft report on the subject audit for the Office of Environmental Management (EM) to review and comment. You also provided a copy of the report to the Acting Manager, Idaho Operations Office (ID). Specifically, you asked that we review the information in this draft and provide written comments within 15 working days on the facts presented, conclusions reached, appropriateness of the recommendations, and reasonableness of the estimated potential monetary impacts or other benefits that may be realized. This memorandum provides the DOE consolidated response from EM and the Acting Manager, ID, and conveys EM's and ID's agreement with the draft report's recommendations.

Recommendation 1, to the Assistant Secretary for Environmental Management--Apply the project management principles contained in Order 413.3 to all projects, including operational projects. EM is now applying the project management principles of DOE Order 413.3 to all of its work. Clearly the report points to improvements needed in implementing project controls. This is consistent with the Department's Top to Bottom Review findings. Moreover, the review highlighted that checking off procedural steps contained in Order 413.3 was not adequate. That the true corrective action was to enforce vigor and visibility of implementation. EM has taken actions to address this recommendation. EM is establishing controls to address the Top to Bottom Review findings.

Recommendation 2, to the Manager, Idaho Operations Office--Strengthen project management controls to ensure that (a) project plans adequately define the work to be performed and (b) life-cycle cost estimates are established before work begins, including contingencies for unknown factors that could result in additional costs. ID has communicated the expectation that the contractor's work be adequately defined before work begins. In response, the contractor is implementing a planning process that uses a Work Breakdown Structure to define projects that support the INEEL mission and objectives. When each project is defined, a bottoms-up approach is used to identify the detailed work scope, schedule, and resources required to accomplish the individual tasks that form the project. The detailed work plans that are produced in this planning process are reviewed by the senior management of ID to assure that ID's expectations are being met. ID holds the contractor accountable for successfully completing the work through oversight of work activities. Regarding Recommendation 2(b), the contractor has been directed to develop life-cycle baselines to reflect the INEEL accelerated cleanup initiatives. These baselines are scheduled to be completed for all work by the end of January 2003. The development of these baselines should include the identification of credible risks and appropriate mitigation strategies in order to provide an appropriate project

risks and appropriate mitigation strategies in order to provide an appropriate project contingency and help ensure that the project will be completed within the cost and schedule baseline.

We appreciate the opportunity to comment on your draft report. If you have further questions, please contact me at (202) 586-7709 or Mark Frei at (202) 586-0370. If your staff would like to arrange further discussions, please have them contact Randal Scott at (301) 903-3626.

Jessie Hill Roberson
Assistant Secretary for
Environmental Management

Appendix 2

PRIOR REPORTS

- *Waste Treatment Plans at the Idaho National Engineering and Environmental Laboratory* (DOE/IG-0440, February 1999), concluded that the Department could have saved approximately $66 million by processing 3,100 cubic meters of TRU waste through the Advanced Mixed Waste Treatment Facility rather than using existing treatment and shipment processes.

- *Idaho Operations Office Mixed Low-Level Waste Disposal Plans* (DOE/IG-0527, September 2001), concluded that the Idaho Operations Office should not continue with plans to dispose of its mixed low-level waste at WIPP because its disposal plan was not updated and integrated with the Office of Environmental Management's disposal strategy. If the Department disposes of mixed low-level waste as transuranic waste, it would cost the Department millions more to execute this strategy and needlessly add additional waste volumes to the WIPP facility.

Appendix 3

OBJECTIVE

The objective of this audit was to determine whether the Operations Office met the Department's commitment dates and cost expectations for the transfer of Three-Mile Island fuel and the shipment of 3,100 cubic meters of TRU waste.

SCOPE

The audit was performed from October 9, 2001, to June 1, 2002, at Idaho Operations Office and Bechtel BWXT Idaho, LLC offices in Idaho Falls, Idaho. The audit scope was limited to the projects established to comply with requirements of the settlement agreement with the State of Idaho for transferring Three Mile Island spent nuclear fuel into a new dry storage facility by June 1, 2001, and removing 3,100 cubic meters of transuranic waste from the State by December 31, 2002.

METHODOLOGY

To accomplish the audit objective, we:

- Obtained and reviewed planning documents for the activities under audit;
- Researched Federal and Departmental regulations;
- Reviewed findings from prior audit reports regarding the disposal of transuranic waste at the Waste Isolation Pilot Plant;
- Researched the Office of Environmental Management Top-to-Bottom Review Team Report, *A Review of the Environmental Management Program* (February 2002);
- Assessed internal controls and performance measures established under the Government Performance and Results Act of 1993;
- Interviewed key personnel in the Operations Office and the Office of Environmental Management; and,
- Evaluated performance and cost data for applicable projects.

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.

Specifically, we tested controls with respect to the Department's planning process for waste management activities. 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 relied on automated data processing equipment to accomplish our audit objective. Specifically, we relied on the contractor's cost accounting system, and conducted tests to ensure reliability of the data.

We held an exit conference with Environmental Management's Office of Project Completion and the Idaho Operations Office on September 24, 2002.

IG Report No.: DOE/IG-0571

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