



U.S. Department of Energy
Office of Inspector General
Office of Audits and Inspections

Audit Report

Los Alamos National Laboratory
Environmental Management
Activities Funded by the Recovery
Act



OAS-RA-11-15

August 2011



Department of Energy
Washington, DC 20585

August 25, 2011

MEMORANDUM FOR THE MANAGER, LOS ALAMOS SITE OFFICE, NATIONAL
NUCLEAR SECURITY ADMINISTRATION

FROM:

A handwritten signature in cursive script, reading "George W. Collard".

George W. Collard
Assistant Inspector General
for Audits

SUBJECT:

INFORMATION: Audit Report on "Los Alamos National Laboratory
Environmental Management Activities Funded by the Recovery Act"

BACKGROUND

In February 2009, the American Recovery and Reinvestment Act of 2009 (Recovery Act) was enacted. The Department of Energy's (Department) National Nuclear Security Administration (NNSA) received approximately \$212 million in Recovery Act funds from the Office of Environmental Management (EM) for legacy environmental remediation activities at Los Alamos National Laboratory (Los Alamos). NNSA's Los Alamos Site Office (Site Office) is responsible for oversight of the legacy cleanup projects funded by the Recovery Act at Los Alamos' Technical Area 21 (TA-21) site, including:

- The Delta Prime East and West project – a \$58 million project to demolish 18 radiological and industrial facilities and remove slabs and surface contamination;
- The Tritium Systems Test and Assembly project – a \$14.8 million project to demolish 5 radiological and industrial facilities and remove the slabs and surface contamination; and,
- The Material Disposal Area B (MDA-B) project – a \$93.5 million project to excavate low-level nuclear waste and to restore the site.

The Recovery Act funded work is part of an estimated \$2.2 billion effort to remediate Los Alamos by December 2015, as required by a Consent Order agreement with the New Mexico Environment Department (NMED). Due to the significant investment in these projects and the importance of these projects to remediating nuclear waste at Los Alamos, we initiated this audit to determine whether the Department had effectively managed the Los Alamos TA-21 projects and achieved the goals and objectives of the Recovery Act.

RESULTS OF AUDIT

Our testing did not reveal any significant issues concerning Los Alamos' compliance with Recovery Act requirements for reporting, job creation, segregation of funds, and flow down of requirements to subcontracts. In addition, we determined that the Delta Prime East and West,

and Tritium Systems Test and Assembly projects were completed ahead of schedule and under budget. MDA-B project costs had increased and the project schedule had slipped, however, due to reasons largely beyond Los Alamos' control, such as encountering greater than anticipated waste volumes and hazards.

Although MDA-B project cost increases and schedule slippages were driven by factors generally beyond its control, we noted that Los Alamos had not:

- Established a management reserve to fund cost increases and schedule slippages caused by MDA-B project risks that was commensurate with the level of uncertainty that existed about the type and amount of waste to be remediated;
- Fully implemented the established baseline change control process for the Los Alamos TA-21 Recovery Act projects to ensure that project scope, schedule, and cost changes were documented and formally resolved; and,
- Updated the Recovery Act Project Execution Plan as required.

Due to MDA-B project's cost and schedule increases, Los Alamos was unable to meet a Consent Order milestone to submit a remedy completion report to NMED on December 31, 2010. In November 2010, Los Alamos asked the NMED for an extension for completing the report and in December 2010, the NMED extended the milestone to August 31, 2011.

Although we did not find any significant issues with Los Alamos' compliance with Recovery Act reporting requirements, we did identify duplicate reporting of four subcontract awards for the MDA-B project to *Recovery.gov*, the U.S. Government's official website used to track Recovery Act funds. As a result of our review, Los Alamos corrected the discrepancies in its subsequent quarterly submission to *Recovery.gov*.

Management Reserve

NNSA's and Los Alamos' allocation of funds to management reserve for the MDA-B project was not commensurate with the level of risk for the project. Management reserve is an integral part of the Department's capital asset project risk management process, providing project managers with the funds necessary to respond to project risks and uncertainties. Our review of the October 2009 risk analysis for the MDA-B project disclosed that Los Alamos identified a low risk factor for "Higher quantities than planned of nuclear materials or hazardous chemicals are encountered exceeding the HC2 (hazard category) threshold," even though it recognized that there was significant uncertainty about the volume and hazards of the waste to be remediated. In November 2009, EM's Office of Cost Estimating and Analysis prepared an Independent Review and Validation (IR&V) Report that concluded the established management reserve for the project of \$1.2 million did not represent the true risk (programmatic, schedule, technical and cost) of the project. In particular, there was much uncertainty about the volume and hazards of the waste buried at the site. In response to the IR&V, Los Alamos increased the management reserve by \$6.2 million to a total of \$7.4 million prior to establishing the initial project baseline in January 2010.

Although it increased the management reserve, Los Alamos did not revise its risk assessment nor make further increases in the management reserve to reflect increased knowledge about the types and amounts of waste to be remediated as work progressed in 2010. Specifically, MDA-B excavation activities during August through October 2010, uncovered nuclear material and hazardous chemicals that required work stoppages totaling 42 days and process and equipment modifications due to the discovery of waste that exceeded the "planned for" hazard category.

A Site Office official stated that there had been a series of miscalculations and overly optimistic projections for the project, including having to excavate about 25 percent more material with over twice the amount of radioactivity than originally planned. As of December 2010, Los Alamos had expended 87 percent of the available management reserve. Los Alamos also projected a budget shortfall of \$26.8 million to complete the MDA-B project. Los Alamos did not increase the management reserve to cover increased costs until March 2011, at which time it reassessed project risks and added \$787,000 to the management reserve. The Department's risk management guidance (DOE Guide 413.3-7), requires that managers assign a rating commensurate with the risk associated with a project. Appropriate risk ratings are vital in establishing management reserve funds necessary to ensure completion of the projects.

To cover the shortfall, Los Alamos identified \$17 million from savings and unused management reserve from other Recovery Act projects and retroactively applied a capital project General and Administrative (G&A) rate to the project, which in effect, freed up an additional \$8.6 million. Historically, Los Alamos considered environmental cleanup work as an "operating activity" based on the type of appropriation and applied a 27 percent operating G&A rate. However, in January 2011, Los Alamos proposed using the capital asset project rate of six percent for the MDA-B project, citing Department Order 413.3B which states that capital assets include environmental remediation of land to make it useful. Los Alamos stated that it had typically not considered environmental remediation work for the capital asset G&A rate, since the work does not result in the creation of an asset that would be placed on the balance sheet.

The NNSA Field Chief Financial Officer (NNSA CFO), however, did not recommend approval of the G&A rate change due to concerns about possible Cost Accounting Standards violations in that the reduced G&A rate may be too low to adequately allocate costs and it would inequitably shift administrative costs to other programs. The NNSA CFO was also concerned with the appearance that Los Alamos was mitigating program performance issues through accounting adjustments. On February 17, 2011, the Site Office contracting officer determined that the reduced rate was appropriate and immaterial in the context of Los Alamos' annual G&A account. The contracting officer noted, however, that the NNSA CFO had determined that Los Alamos needed to re-evaluate its entire G&A structure by 2013. On March 2, 2011, the Site Office approved a new project baseline which incorporated and accounted for the \$8.6 million in reduced G&A costs.

Baseline Change Control

Los Alamos had not fully implemented the established baseline change control process for the TA-21 Recovery Act projects. According to Department Manual 413.3-1, *Program Management for the Acquisition of Capital Assets*, the objective of the baseline change control

process is to ensure that project scope, schedule, and cost changes are documented and formally resolved¹. We found, however, that work associated with baseline changes for the Los Alamos TA-21 Recovery Act projects was initiated without approved Baseline Change Proposals (BCPs) or written work authorization. As of August 2010, our review of 26 BCPs disclosed six BCPs (23 percent), including two for the MDA-B project, were not approved within the month that work was started. For example, on May 3, 2010, Los Alamos started work on design changes to the fixed enclosures at MDA-B. However, this work, which involved project scope and budget revisions, was not approved by the Site Office until July 27, 2010, nearly three months after the start of work for this activity. According to Los Alamos' Baseline Change Control Procedure, new work is not to begin until the BCP is approved, unless the project manager has provided written work authorization.

Similarly, an August 2010 Site Office assessment of the Earned Value Management System (EVMS) for Los Alamos projects, including Recovery Act projects, reported that work was performed without approved BCPs or written authorization. EVMS provides a method for measuring project cost and schedule performance that compares budgeted costs with actual costs. Initiating work without approved BCPs can distort EVMS data, which provides project managers with visibility into cost, schedule, and technical progress to measure and manage project performance. According to Department Manual 413.3-1, documenting and controlling changes provides better risk mitigation, supports better decision making, and is necessary for accurate performance reporting, including Earned Value Management.

The Site Office asserted that the baseline change control process as described in the Recovery Act Project Execution Plan (Plan) was adequate and was followed in principle, but recognized that the formality called for in the Plan was lacking. Los Alamos also stated that the project team attends "trend" meetings to discuss the merits of identified trends and their potential impacts and therefore, both Los Alamos and the Site Office are cognizant of the trends and their impacts and are provided the opportunity to comment on the need to further develop the trends for incorporation into the project baseline. While the "trend" meetings may provide information concerning needed BCP changes, Los Alamos Trend Program work instructions also require generating the necessary change control actions and obtain proper approvals prior to incorporating trends into the baseline. Los Alamos project management did acknowledge that efforts to approve BCPs prior to work commencement, as described above, were not always successful.

Project Execution Plan

The Recovery Act Project Execution Plan had not been updated at least biannually as required. Information in the Plan, such as project schedules and cost plans had not been revised since the Plan's inception in January 2010. We found that significant changes to the MDA-B project schedule were not documented in the Plan, including two project re-planning actions approved in March 2010 and March 2011, and several other schedule and design changes. In addition, the

¹ On November 29, 2010, the Department revised its guidance related to project management by issuing Department Order 413.3B. The revisions contained similar assurances regarding change control. Specifically, the Order stated that change control ensures that project changes are identified, evaluated, coordinated, controlled, reviewed, approved/disapproved, and documented in a manner that best serves the project.

project experienced multiple shut downs due to encountering contaminated materials above the planned hazard classification level. These events represented major project changes, which warranted updating the Plan. The Federal Project Director (Director) is responsible for ensuring distribution of the updated Plan to all project team members and other involved organizations, as necessary. An up-to-date project management plan is important since it is the core document for management of a project in that it includes an accurate reflection of how the project is to be accomplished, resource requirements, technical considerations, risk management, configuration management, and roles and responsibilities. The Director stated that the Plan was under revision at the time of this review.

ACTIONS TAKEN

NNSA and Los Alamos management have taken action to improve project management of the Recovery Act funded Los Alamos TA-21 projects. NNSA informed us that the Site Office Manager and other senior staff have instituted weekly meetings with the MDA-B project staff to increase federal oversight and ensure that Los Alamos and its subcontractors are properly communicating and managing technical risks. Management also told us that the management reserve has been reevaluated and that remaining risks were again quantified and included in the baseline change control process. Regarding the baseline change control process, management stated that the process is being updated to reflect a Site Office Change Control Board that is commensurate with change actions on projects consistent with principles of Department Order 413.3B and Energy Systems Acquisition Advisory Board Processes. Change control is also being reviewed and integrated within the Site Office's EVMS procedures and such procedures are being updated accordingly. In the interim, all change actions on Recovery Act projects are raised to the Deputy Manager level at the Site Office for final endorsement. Finally, management stated that Los Alamos is working closely with the Site Office to update the Project Execution Plan.

The actions initiated by Los Alamos and NNSA should, if successfully implemented, resolve the project management concerns discussed in this report. However, continued effort is needed to ensure adequate allocation of administrative costs.

RECOMMENDATION

The Site Office estimates that it will cost over \$1.5 billion to complete the remaining cleanup work, of which \$358 million was requested for Fiscal Year 2012. In light of the significant amount of funding needed to complete environmental cleanup work at the site under the Consent Order agreement, NNSA and Los Alamos need to ensure that G&A costs are properly allocated among projects.

To this end, we recommend that the Manager, Los Alamos Site Office, ensure that Los Alamos completes the review of its G&A rate structure by 2013.

MANAGEMENT REACTION AND AUDITOR RESPONSE

Management stated that the G&A tax rate structure is under review by the NNSA CFO office and should be completed in 2013. Management's comments were responsive to our recommendation.

Attachment

cc: Deputy Secretary
Associate Deputy Secretary
Administrator, National Nuclear Security Administration
Acting Assistant Secretary for Environmental Management
Chief of Staff

SCOPE AND METHODOLOGY

This audit was performed between June 2010 and July 2011, at the Los Alamos National Laboratory (Los Alamos) and the Los Alamos Site Office, located in Los Alamos, New Mexico; and, the National Nuclear Security Administration (NNSA) in Albuquerque, New Mexico. Our scope encompassed approximately \$166 million of American Recovery and Reinvestment Act of 2009 (Recovery Act) funds provided for environmental cleanup activities at the Los Alamos Technical Area 21 (TA-21) site. Our scope did not include a \$45 million Groundwater Monitoring Wells project, which is also funded through the Recovery Act. To accomplish the audit objective, we:

- Reviewed and evaluated documentation, such as monthly project management reports, change control requests, and project implementation plans, related to the environmental management work at the Los Alamos TA-21 site;
- Judgmentally selected subcontracts awarded for the environmental management work and reviewed the subcontracts for the presence of required contract clauses;
- Judgmentally selected Recovery Act transactions recorded by Los Alamos and traced them to supporting vendor invoices;
- Reviewed data reported by Los Alamos to the *FederalReporting.Gov* website; and,
- Held discussions with personnel from the Los Alamos Site Office, Los Alamos, and NNSA.

We conducted this performance audit in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. The audit included tests of controls and compliance with laws and regulations necessary to satisfy the audit objective. 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. During the audit, we assessed the Department's compliance with the *Government Performance and Results Act of 1993* and found that specific performance measures related to the Los Alamos TA-21 Recovery Act projects were established. We did, however, note that performance measures relevant to the projects were not specific to waste management. We utilized computer-processed data to identify the population of costs spent using Recovery Act funding in order to accomplish our audit objective. Based on our comparisons of computer-processed data to supporting documentation, we determined that the data critical to achieving our audit objective were sufficiently reliable.

Management waived an exit conference.

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