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

Audit Report

Audit of Moab Mill Tailings Cleanup Project

OAS-RA-L-10-03

April 2010

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United States Government **Department of Energy**

Memorandum

DATE: April 23, 2010 Audit Report Number: OAS-RA-L-10-03

REPLY TO

ATTN OF: IG-34 (A09ID019)

SUBJECT: Report on "Moab Mill Tailings Cleanup Project"

TO: Deputy Assistant Secretary, Program and Site Support, EM-50

INTRODUCTION AND OBJECTIVE

The Moab Uranium Mill Tailings Remedial Action Project (Moab Project) is located at a former uranium-ore processing facility near Moab, Utah on the west bank of the Colorado River. In 2005, the Department of Energy (Department) issued a Record of Decision to relocate, by rail, approximately 16 million tons of uranium mill tailings from that location to a disposal site 30 miles away in Crescent Junction, Utah. In June 2008, the Department awarded a $92 million contract, with approximately $6 million in available fee, to Energy*Solutions* to construct the necessary infrastructure, upgrade the rail lines, and begin the transportation of mill tailings to Crescent Junction. Under the terms of the contract, Energy*Solutions* was required to relocate about 2.5 million tons of tailings by the end of Fiscal Year 2011. In April 2009, Energy*Solutions* completed the first shipment of tailings to Crescent Junction.

Under the terms of the American Recovery and Reinvestment Act (Recovery Act) of 2009, the Department allocated an additional $108 million to the Moab Project to accelerate work and create jobs. With the additional funding, Energy*Solutions* plans to relocate an additional 2 million tons of tailings by September 30, 2011. In keeping with the Recovery Act, this work was estimated to create or save 160 jobs. To achieve this, Energy*Solutions* doubled the number of work shifts per day and has increased rail shipments from 4 per week to 10. Because of the inherent risk associated with large-scale cleanup projects and the addition of Recovery Act funding, we conducted this audit to determine whether the Department was effectively managing the Moab Project.

CONCLUSIONS AND OBSERVATIONS

Generally, we found that the Moab Project was proceeding as planned and within budget. As of January 2010, the project was slightly ahead of schedule and six percent under cost. In September 2009, Energy*Solutions* submitted a performance baseline to support the tracking and reporting of Recovery Act work as well as the overall integrated project. Nothing came to our attention to indicate that base and Recovery Act costs were not properly segregated and adequately supported. Additionally, the number and weight of shipments we reviewed for both Recovery Act and base work scopes were separately tracked and reported. We also found that the contractor's reporting of 200 jobs created/retained as of December 31, 2009, was properly documented and appeared to be reasonable.

Our audit testing did, however, reveal several opportunities to improve the management of the project's performance baseline. These issues relate specifically to the baseline change control process and increased the risk that the contractor's performance rating may be inflated.

Baseline Management

Although the Moab Project was, for the most part, proceeding as planned, we noted certain weaknesses in the management of the performance baseline. The Department requires the use of the Earned Value Management System (EVMS) to evaluate project performance. Under EVMS, the contractor's performance is measured against the project baseline, so effective management of the baseline is critical. However, for some of the work, we noted that the Department did not sufficiently decrease the project baseline to reflect reduced work scope, which resulted in overstating the contractor's performance.

Specifically, we concluded that the contractor's performance was overstated by $1.3 million for construction of a "haul road" for the project, as a result of incorrect baseline management practices. To illustrate, the originally approved Moab Project baseline included construction of a two-lane paved haul road and rail bench for $7 million. To decrease costs and address operational needs, the Department approved a re-design to the haul road to be one-lane and unpaved. Although the baseline was reduced to $6.3 million to reflect this decrease in scope, it was not reduced as much as it should have been to fully account for the removal of one-lane and of the costs to pave the road. We calculated that the baseline should have been reduced to $5 million based on data found in the contractor's analysis of estimated costs and savings to redesign this project. Upon completion, the actual cost of constructing the haul road was just over $6 million. Thus, when the Department compared the actual costs to the incorrectly revised $6.3 million baseline, the comparison erroneously demonstrated the contractor had constructed the haul road for $.3 million less than the estimate. However, the actual costs should have been compared to the correct $5 million estimate, thus showing the contractor had constructed the haul road for $1 million more than the estimate. The use of the higher baseline estimate, therefore, overstated the contractor's performance under EVMS by $1.3 million.

Haul Road Baseline Example

Baseline Management	Department Calculation	Auditor Calculation	Overstatement
Estimated Cost to Construct	$6.3 million	$5 million	$1.3 million
Actual Cost to Construct	$6 million	$6 million	0
Performance Savings	$.3 million	($1 million)	$1.3 million

We also identified weaknesses with the baseline management of a lidding/delidding facility where the baseline was overstated by about $400,000. The contractor's $884,000 estimate to construct this facility consisted of a single-line item amount with no supporting detail in its approved performance baseline. Subsequent to completing the baseline, the contractor finished the detailed design of the facility. The designed facility did not conform to the original estimate. Indicative of problems with the baseline estimate and the initial design was that a bid for just one component of the facility, the Heating, Ventilating, and Air-Conditioning (HVAC) system, was over $1 million, exceeding the original estimate to construct the entire facility. Once the estimate for the HVAC was received, and to avoid constructing a facility significantly over budget, the Department directed Energy*Solutions* to re-design the facility to be within the original estimate.

Since the need for a re-design was driven by the contractor's inaccurate baseline estimate rather than a change in mission need or scope directed by the Department, the contractor's performance, in our judgment, should have been measured against the original $884,000 estimate. A basic principle of project management is that a contractor's performance is measured against its approved performance baseline. However, the Department approved a baseline increase of approximately $400,000 to add the cost to redesign the facility. When the construction costs to complete the facility, including the additional re-design costs, totaled $1.4 million, the EVMS compared this to the revised baseline of $1.3 million, rather than the original baseline estimate of $884,000, thus overstating the contractor's performance.

Development of the Baseline

These problems occurred because the Department did not ensure that the project's baselines could be traced to project work scope or that they were properly supported and appropriately managed. While the Department has issued guidance to facilitate the proper management of project baselines, this guidance was not always followed.

The descriptions of cost estimates in the baseline were not delineated clearly enough to readily determine which part of the project they were supporting. In some cases, the baseline estimates were not adequately supported. To illustrate, the estimated costs of the haul road were split between multiple elements in the Work Breakdown Structure instead of estimated as a discrete project. Additionally, the estimate in the baseline for the lidding/delidding facility was not adequately documented or supported. It consisted only of a single line estimate of $884,000, with no details identifying the various elements of the facility. Upon review of our findings, management agreed that inadequate contractor estimates in the performance baseline were a major contributor to the need for re-designs. However, we noted that the Department approved the contractor's original estimates with approval of the baseline even though there was very little support available. DOE Order 413.3A identifies the guidelines for developing and approving the performance baseline. For the Department to approve the performance baseline, it should be based on a mature design, a well-defined and documented scope, and a definitive cost estimate. However, for these two elements of the Moab Project, the baseline estimates did not meet these criteria.

In addition, we noted weaknesses in baseline management that occurred, in part, because the Department did not follow accepted guidelines when making changes to the baseline. In particular, the Department approved reductions to the work scope but did not make corresponding reductions to the baseline cost estimates. The Federal Project Director indicated that the baseline increases were appropriate in order to document the changes and track the contractor's performance to the new design. While we agree with the importance of documenting changes, the changes made did not allow the Department to track the contractor's performance to the new design. As previously discussed, the re-design of the haul road resulted in an estimate significantly less than the original baseline; however, the Department did not compare the contractor's performance to the appropriate baseline amount. The lidding/delidding facility was scaled back but the actual costs were still compared to the original baseline estimate. The contractor's performance was overstated because work scope was reduced without reducing the baseline estimate.

Further, the Baseline Change Control Board Charter identifies the procedures for incorporating changes to the scope of work into the baseline and states that retroactive changes are not allowed. However, the re-design of both the haul road and the lidding/delidding facility was completed before the baseline changes were approved. In both instances, the Department erroneously used the actual costs of the re-design to update the baseline rather than the original estimated cost. During our review, we found that for 19 of the 49 Energy*Solutions* baseline changes we reviewed, the work had already been started, and in some cases completed, before the baseline change was approved. In May 2009, after an independent review of the contractor's EVMS revealed similar weaknesses, Energy*Solutions* completed corrective actions on controls over the baseline change procedures.

Contractor Performance

As a result, inflating the budgeted cost through erroneous baseline increases overstates the contractor's performance and its eligibility to earn award fee. The Energy*Solutions* contract is structured as a cost plus award fee, so all allowable costs are reimbursed to the contractor with the payment of an extra award fee based on performance. The award fee has a "gateway" performance measure based on the contractor's EVMS scores. Specifically, the contractor's eligibility for an award fee is dependent upon its performance and measured by the EVMS. To be eligible for the full award fee, the contractor's cost and schedule variances must be less than 10 percent. While the weaknesses we found may not be sufficient to move the contractor below the threshold for earning a full award fee, an inflated baseline does improve the variance scores. Thus it is imperative that the Department accurately manage the baseline to ensure that the contractor is not rewarded for performance that was less than desirable. Additionally, incorrectly inflated baselines decrease the incentive for Energy*Solutions* to reduce costs on the project.

SUGGESTED ACTIONS

To address the issues described in this report, we suggest that the Deputy Assistant Secretary of Program and Site Support:

1. Revise the project baseline to correct the problems identified in this report;

2. Ensure that the Energy*Solutions* EVMS is accurately tracking performance against valid baseline estimates; and,

3. Ensure that baseline changes are not made retroactively based on actual costs.

Because no formal recommendations are being made in this report, a formal response is not required. We appreciate the cooperation of your staff and the various Departmental elements that provided information and assistance.

Daniel M. Weeber, Director
Environment, Technology, Corporate
and Financial Audits Division
Office of Inspector General

Attachment

cc: Team Leader, Office of Risk Management, CF-1.2
Audit Liaison, Office of Environmental Management, EM 4.1

SCOPE AND METHODOLOGY

The audit was performed from April 2009 to April 2010 and included fieldwork at the Moab Site near Moab, Utah and the Grand Junction Office in Grand Junction, Colorado. The audit covered project documents from the Department field office, as well as both contractors, Energy*Solutions* and S&K Aerospace, Inc.

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 objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our 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. Also, we examined the establishment of performance measures in accordance with the *Government Performance and Results Act of 1993* as it relates to the audit objective. Finally, since we did not rely upon automated data processing information to accomplish our audit objective, we did not conduct an assessment of the reliability of computer processed data.

The Grand Junction Office waived the exit conference.

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