



OFFICE OF INSPECTOR GENERAL
U.S. Department of Energy

AUDIT REPORT

OAI-L-17-04

April 2017

**FOLLOWUP ON THE K BASIN SLUDGE
REMOVAL PROJECT**



Department of Energy
Washington, DC 20585

April 13, 2017

MEMORANDUM FOR THE MANAGER, RICHLAND OPERATIONS OFFICE

A handwritten signature in black ink, appearing to read "David Sedillo".

FROM: David Sedillo
Deputy Assistant Inspector General
for Audits and Inspections
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on "Followup on the K Basin Sludge Removal Project"

BACKGROUND

The K West Reactor Fuel Storage Basin is one of the last facilities along the Columbia River at the Department of Energy's Hanford Site that contains nuclear material. The K Basin contains highly radioactive sludge resulting from long-term storage and degradation of spent nuclear fuel. CH2MHill Plateau Remediation Company, LLC (CHPRC), managed by the Department's Richland Operations Office, has a mission to begin removal of 27 cubic meters of radioactive sludge by September 30, 2018.

To achieve its mission, in March 2015, the Department converted the K Basin Sludge Removal Project to a capital asset project. The Sludge Removal Project was previously managed as an operations activity from August 2009 through March 2015. The Sludge Removal Project is required to follow the formal Critical Decision (CD) process established in Department Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*. Using the Critical Decision process, the performance baseline and start of construction was approved in June 2016.

In February 2011, the Office of Inspector General reported that the project's previous contractor and one of its subcontractors failed to apply key project management principles and did not ensure that the contractor followed best business practices. Therefore, we initiated this followup audit to determine whether the Department was effectively managing the K Basin Sludge Removal Project at the Hanford Site.

RESULTS OF AUDIT

Although the K Basin project has experienced cost and schedule performance issues throughout its history, according to CHPRC and the Department's records, as of October 20, 2016, the Sludge Removal Project appears to be on schedule to meet current milestones. However, we

identified a concern where management reserve was used to reset the project's performance measurement baseline, which included completed workscope. This occurred because CHPRC did not follow specific guidance required by the contract on the accepted use of management reserve. Specifically, CHPRC's contract with the Department states that CHPRC is to establish a Project Control System Description that complies with requirements of the *American National Standards Institute/Electronic Industries Alliance - 748-C Earned Value Management Systems*. As a result, a cost overrun of \$17.9 million was reset for completed workscope. Although we are not questioning the allowability of these costs, the manner in which the cost overrun was accounted for in the project's earned value management system could be misleading in portraying the historical cost performance of the Sludge Removal Project.

We followed up on issues identified in a prior audit report and found that the Department made changes to the Sludge Treatment Project which addressed the project management concerns. Notably, the Department changed the contract scope and strategy; established the Sludge Removal Project - Engineered Container Retrieval Transfer System Project as a line item capital asset project; and made a management decision on \$1 million in questioned fee paid to contractor.

Use of Management Reserve

In May 2016, CHPRC used \$17.9 million of management reserve to reset the Sludge Removal Project performance measurement baseline to the actual cost of work performed. This occurred months after cost overruns associated with the annex construction and other sludge treatment activities had occurred. Specifically, the \$17.9 million in management reserve was applied to multiple control accounts. Two significant contributors were the control accounts for the construction of the annex and the Containerized Sludge CD-2/3. For example:

- CHPRC applied \$11 million in management reserve to a control account associated with the Annex construction that was already completed, that had a planned cost of \$24.3 million and actual costs of \$35.3 million. Applying management reserve to the account effectively erased the cost variance of -\$11 million.
- CHPRC applied approximately \$3.6 million in management reserve to a control account associated with the Containerized Sludge CD-2/3 that was already completed, that had a planned cost of \$33.3 million and actual costs of \$36.9 million. Applying management reserve to the account effectively erased the cost variance of -\$3.6 million.

According to CHPRC's Project Control System Description, management reserve cannot be allocated to mask overruns or eliminate cost variances. Management reserve is intended to be used as risks are identified and realized for any planned or unplanned work not yet started. For example, management reserve can be used for changes in direct and indirect rates or fluctuations in unstable market prices on materials used in the project. We observed that it is typical to establish the performance measurement baseline on Capital Asset projects at CD-2 "Approve Performance Baseline" which is prior to the approval of CD-3 "Start of Construction." However, for the Sludge Removal Project, at the time of the approval of the CD-2 "Approve Performance Baseline," cost variances for the construction of the annex had

already occurred and construction was complete. Since the Sludge Removal Project had been classified as an operations project versus a capital asset project, the CD-2 and CD-3 approvals occurred later than the norm for capital asset projects.

During the course of the audit we held discussions with the Office of Project Management Oversight and Assessments concerning the proper use of management reserve, and the unique facts and circumstances associated with the Sludge Removal Project. The Office of Project Management Oversight and Assessments agreed that the use of management reserve to reset the baseline for already completed work scope would under normal circumstances be noncompliant with the *American National Standards Institute 748-C Earned Value Management Intent Guide*.

Guidance

This occurred because CHPRC did not follow required Earned Value Management guidance on the accepted use of management reserve. We recognize that there were some unusual circumstances associated with this particular project, such as the change from an operations project to a capital asset project, resulting in the application of the formal Critical Decision process later than normal. Normally when a project reaches CD-2 “Approve Performance Baseline” and CD-3, “Start of Construction,” the majority of the project had not been completed, unlike with this project. Despite these anomalies, the Department directed CHPRC to reset the baseline in accordance with the Critical Decision process; however, the Department did not provide specific instruction on how to accomplish the baseline reset. Other options were available to CHPRC to reset the baseline that would have been compliant with its policies and procedures, other than using management reserve, such as using an Over Target Baseline or leaving the completed control accounts as historical data. Despite these options, CHPRC used management reserve to reset the baseline versus other compliant options.

Historical Cost Performance

The new performance measurement baseline established for the Sludge Removal Project erased a large negative cost variance of \$17.9 million by resetting the values to zero for multiple completed control accounts. As a result, visibility of past performance issues and cost overruns were made less transparent. In our opinion, using management reserve to reset the baseline cost variances after construction of a project is complete sets a bad precedent for the Department and its contractors. Specifically, it misrepresents the historical project performance and implies that the project is experiencing adequate cost performance. Finally, resetting the baseline will not provide historical costs for future project estimates as it will suggest that the project did not experience cost overruns and was equivalent to the original budget for the project.

PATH FORWARD

We are aware that the circumstances associated with this project were unique, and are not likely to recur. However, we are concerned that CHPRC’s performance on this project will be overstated. Accordingly, to ensure the accuracy of the Sludge Removal Project’s historical cost variances, we suggest the Acting Assistant Secretary, Office of Environmental Management and

CHPRC coordinate with the Director, Office of Project Management Oversight and Assessments to take necessary steps to ensure the Sludge Removal Project's historical cost variances remain visible for project performance reporting purposes.

Attachments

cc: Deputy Secretary
Acting Assistant Secretary for Environmental Management
Chief of Staff

OBJECTIVE, SCOPE, AND METHODOLOGY

OBJECTIVE

We conducted this audit to determine whether the Department of Energy was effectively managing the K Basin Sludge Removal Project at the Hanford Site.

SCOPE

This audit was performed between May 2016 and April 2017. The scope of the audit was limited to the K Basin Sludge Removal Project operated by CH2M HILL Plateau Remediation Company (CHPRC), at the Hanford Site. We conducted work at the Department of Energy's Richland Operations Office, located in Richland, Washington, and at CHPRC. The audit was conducted under Office of Inspector General project number A16RL038.

METHODOLOGY

To accomplish the audit objective we:

- Identified and reviewed applicable laws and regulations and Department directives;
- Obtained and reviewed contract requirements related to the K Basin Sludge Removal Project;
- Obtained and reviewed documentation from the Department and CHPRC to determine the cost and schedule impacts that can be attributed to sludge treatment activities that were not managed effectively;
- Reviewed whether sludge treatment issues contributed to schedule delays and cost overruns, determined any actions taken by the Department and CHPRC to correct and /or minimize any additional adverse impacts to the K Basin Sludge Removal Project;
- Reviewed relevant Government Accountability Office and Office of Inspector General prior reports, following up on previously reported findings and recommendations on [*The Department of Energy's K Basins Sludge Treatment Project at the Hanford Site*](#) (DOE/IG-0848, February 2011); and
- Interviewed key Department and contractor personnel.

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 the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. Accordingly, the audit included tests of controls and compliance with laws and regulations to the extent necessary to satisfy the objective. We considered the *GPR Modernization Act of 2010* as necessary to accomplish the

objective, and we determined that performance measures had been established for K Basin Sludge Removal Project. 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 materially rely on computer-processed data to accomplish our audit objective. We held the exit conference with the Department on February 22, 2017.

PRIOR REPORTS

- Audit Report on [*Department of Energy Contractors' Implementation of Earned Value Management*](#) (OAI-L-17-03, November 2016). The Office of Project Management Oversight and Assessments is responsible for ensuring that contractors' Earned Value Management (EVM) systems comply with the guidelines found in the Electronic Industries Alliance (EIA) publication 748. The audit identified that the Office of Project Management Oversight and Assessments was late in performing surveillance reviews for the EVM systems of six contractors with projects that had over \$100 million in total project costs. The Office of Project Management Oversight and Assessments did not perform the reviews within the timeframes that were in effect at the time of our audit as specified in Department of Energy Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*. However, in May 2016, the Department modified Order 413.3B, removing the requirement for reviews every 2 years and replacing the reviews with a "risk-based, data-driven" assessment. Office of Project Management Oversight and Assessments officials stated that, in practice, they began implementing the risk-based, data-driven approach prior to the revision of Order 413.3B, consistent with a Secretarial policy direction issued in June 2015. The Office of Project Management Oversight and Assessments also stated that two contractors did not have certified EVM systems because their EVM systems were deemed significantly noncompliant with EIA-748 based on reviews for cause. In addition, despite having certified systems, two contractors were reporting what is potentially incomplete and unreliable EVM data to the Department. The deficiencies observed, if not corrected, could significantly affect the Department's ability to properly manage its projects. Without certifying compliance with EIA-748 and conducting surveillance reviews to ensure that contractors properly implement their certified EVM systems, the Department cannot ensure that the EVM data it receives from the contractors are reliable. Granting concessions from EVM reporting to troubled projects further impedes Department decision makers.
- Audit Report on [*The Department of Energy's K Basins Sludge Treatment Project at the Hanford Site*](#) (DOE/IG-0848, February 2011). The audit found that the sludge treatment phase of the Spent Nuclear Fuel project had not been effectively managed. Specifically, Fluor Hanford, Inc. and its subcontractor failed to apply key project management principles as the project progressed. The Department's administration of the Fluor contract was also ineffective in ensuring that the project was adequately managed. Ultimately, due in large part to these issues, the Contractor's Stabilization and Packaging System project was abandoned after 3 years of effort and the expenditure of about \$43 million for the Contractor's Stabilization and Packaging System module. Additionally, Fluor Hanford, Inc. paid a \$1 million fee to British Nuclear Group America that was not tied to any performance objectives but appeared to be for contract closeout. Fluor Hanford, Inc. took this action without authorization. Department officials asserted that it had been unaware that this fee had been paid, until it was brought to their attention during the audit. Since the costs were not approved, as required, the allowability of the entire \$1 million payment was questioned.

- Audit Report on *Sludge Removal Operations at the Hanford Site's K Basins* (DOE/IG-0698, September 2005). The audit found that sludge removal operations had slipped in schedule and had experienced significant cost overruns. The project's actual costs had exceeded budgeted costs by \$34 million between October 2002 and June 2005. The project management problems occurred because neither the Department nor Fluor Hanford, Inc. management had focused adequate attention on the critical planning phase of the sludge removal portion of the project, nor had they placed any emphasis on key project actions. The report recommended that the Richland Operations Office develop a complete risk assessment/mitigation plan, ensure long-term project planning was completed, and reevaluate the cost and schedule baseline.

FEEDBACK

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