



OFFICE OF INSPECTOR GENERAL

U.S. Department of Energy

AUDIT REPORT

DOE-OIG-18-27

March 2018

DECONTAMINATION AND DECOMMISSIONING ACTIVITIES AT THE SEPARATIONS PROCESS RESEARCH UNIT



Department of Energy
Washington, DC 20585

March 23, 2018

**MEMORANDUM FOR THE DIRECTOR, ENVIRONMENTAL MANAGEMENT
CONSOLIDATED BUSINESS CENTER**

Michelle Anderson

FROM: Michelle Anderson
Deputy Inspector General
for Audits and Inspections
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on “Decontamination and
Decommissioning Activities at the Separations Process Research Unit”

BACKGROUND

The Separations Process Research Unit (SPRU) is a set of inactive radiological facilities located at the Knolls Atomic Power Laboratory in Niskayuna, New York. Constructed in the late 1940s, the SPRU facilities include a former process research building, a waste processing building with an associated waste tank farm, and several interconnecting tunnels. In its September 2007 Action Memorandum, the Department of Energy’s Office of Environmental Management (Environmental Management) set forth its plan to decontaminate and remove SPRU’s buildings and equipment, dispose of the resulting waste and contaminated soil, and return the areas to the Office of Naval Reactors for continuing mission use. In December 2007, Environmental Management awarded a \$67 million cost-plus-incentive-fee task order to URS Energy & Construction, Inc. (contractor) to complete the decontamination and decommissioning (D&D) activities described in the Action Memorandum by November 4, 2011. However, given that the project was still not complete by 2016, we initiated this audit to determine whether the Department was effectively managing the D&D of nuclear facilities at SPRU.

RESULTS OF AUDIT

The Department’s management of the SPRU D&D project was not always effective. Despite the Department’s efforts, the project encountered significant challenges that slowed progress and increased the Department’s costs. While it had made significant cleanup progress, as of January 2018, the contractor’s schedule showed that D&D work most likely would continue into July 2018, nearly 7 years beyond the contract’s original target completion date. Additionally, the contract’s cost to the Department had increased to approximately \$180 million through January 2018. These contract costs included additional reimbursed costs for work scope determined to be the responsibility of the Department. We acknowledge a number of factors contributed to the

schedule and cost increases, including factors beyond the Department and contractor's control. Nevertheless, we believe that there may be lessons to be learned from the various events that challenged the Department's management of the project and have made recommendations to that effect.

Task Order Modification and Cost Cap

In 2010, a radiological release temporarily halted the D&D work and resulted in a change to the D&D strategy. After the Department concluded that the contractor's open-air demolition method caused the radiological event, the parties negotiated a task order change that modified the D&D approach. The new D&D strategy, formalized in February 2011, included the construction of temporary enclosures until the buildings were sufficiently decontaminated to preclude another radiological release. The contractor estimated that it could construct the enclosures and complete the task order's scope of work at a total cost of \$145 million. The terms of the February 2011 task order modification required the Department and the contractor to share project costs between \$105 million and \$145 million equally, with the contractor paying 100 percent of costs above \$145 million. This cost-sharing arrangement effectively placed a \$125 million cap on the Department's financial responsibility for the February 2011 work scope. Even with the radiological release and new D&D strategy, both the Department and its contractor agreed to a physical completion date of December 31, 2011, only 2 months later than the original date agreed to in 2007.

However, as of January 2018, the project remained incomplete and the contractor's schedule indicated that D&D work most likely would continue into July 2018. Meanwhile, the contractor had invoiced the Department more than \$427 million and estimated that its total project costs would likely approach \$460 million at project completion. Citing the terms of the cost cap, the Department had not reimbursed nearly \$250 million of the invoiced costs. In particular, of the total amount invoiced, the Department had authorized approximately \$180 million in payments to the contractor. The additional reimbursed costs beyond the shared and capped amounts were for work scope that the Department determined was either new or for events beyond the contractor's control. While the contractor submitted contract claims in December 2014 seeking more than \$100 million of the denied reimbursement, as of January 2018, the Department had not made a final decision regarding the matter and the claims were still outstanding.

Project Challenges

We acknowledge a number of factors may have contributed to the cost and schedule increases that occurred after implementation of the cost cap, including factors beyond the Department and contractor's control. For example, in 2011, hurricane-related rains added nearly \$30 million to the Department's cost after the severe weather destabilized a hillside and caused two mudslides near the SPRU facilities. This required the contractor to stop critical path D&D work so that it could stabilize the slope, brace an undermined drainage system, and perform additional hillside repairs. According to the contractor, these hillside instability issues prevented it from returning to critical path work for almost 16 months. The Department's cost increased another \$13 million¹ because of the sometimes uncertain nature of cleanup work. For instance, the

¹ As of January 2018, the total contractual liability for the cleanup had yet to be determined.

contractor encountered higher dose rates of radiation than what the Department's initial analysis of the 60-year old facility had estimated. However, we believe that the cost cap itself had unintended and unforeseen consequences that challenged the Department's management of the project.

Project Baseline

Complicating the management of the project was the inability of the Department and contractor to agree upon a baseline after implementing the cost cap in 2011. In addition to being a contractual requirement, a baseline serves as the standard for measurement and control during the performance of a project. However, we found that the SPRU D&D project had been without an approved baseline since early 2011. Specifically, in May 2011, just 3 months after agreeing to the cost cap, the contractor submitted a baseline change request that depicted a \$45 million cost increase. While the contractor attributed the change to new requirements, and thus sought reimbursement, the Department maintained the position that the increase was instead a contractor-caused cost overrun and therefore subject to the cost cap. Because the Department and contractor did not concur on who should bear the responsibility for the increase, they were also unable to agree on a baseline to manage it.

After it provided additional funds related to the weather issues noted above, the Department paid the contractor nearly \$1 million to revise the project baseline yet again. However, a few months after its submission in 2012, the contractor notified the Department that work was no longer proceeding in accordance with the revised baseline. The contractor asserted that conditions had changed from the agreed-upon task order and claimed that the Department had not provided adequate funding to address issues affecting the project. According to the contractor, it would develop and implement another revised baseline once its purported contract and funding issues were resolved. However, at the time of our audit, the Department had disagreed with the contractor's assertions and the issues remained unresolved. Consequently, the project continued without an approved and validated baseline and the Department had limited means of tracking the contractor's progress.

Schedule Incentive

In addition, we noted that the cost cap lacked effective mechanisms to incentivize schedule performance once the contractor reached the capped amount. In accordance with the terms of the cost cap, the Department had not reimbursed the contractor for a majority of the project's critical path D&D costs after the contractor's costs exceeded the cap in 2011. While not necessarily foreseeable at the time, instead of incentivizing the contractor to expedite cleanup and limit costs it was now bearing, the cap may have had the unintended consequence of actually decelerating the cleanup effort. Federal officials believed that, after the Department was no longer reimbursing D&D costs, the contractor worked at a slower pace than previously planned in an effort to conserve its monthly cash flow. In a series of letters between the Department and the contractor during 2012 and 2013, the contractor often cited inadequate funding as an issue impeding completion of the project. Then, in 2013, the contractor unilaterally implemented several schedule changes that deferred D&D efforts until an unspecified date in either 2014 or 2015, and instead refocused work on non-critical path activities. According to the contractor, the

deferral was to allow for the resolution of contractual, funding, and technical issues that were impeding progress. Because the task order itself did not include enforceable milestones or schedule penalties, the Department had little recourse to motivate the contractor to complete the work any sooner. However, according to the Department, since 2016 the contractor has worked multiple shifts and increased work to 6 days per week to facilitate project completion. Further, the Department stated that it had provided additional oversight resources to ensure the contractor could work to this schedule.

Impact and Path Forward

Due to the lagging schedule, the Department estimated that it could incur nearly \$18 million in additional direct costs to oversee the project, as compared to the original project baseline. According to the Department, the additional costs were for subcontracted subject matter expertise. Additionally, while not in Environmental Management's work scope, the Department identified a volatile-organic-compound plume on the SPRU site that cannot be remediated until the SPRU buildings are removed. While we did not find any indication that the plume is currently a risk to the nearby workforce or the public, we believe the delays in completing the SPRU cleanup mission have prolonged the potential risks inherent to any contaminated site.

Further, the Department will incur long-term storage costs for the site's transuranic waste. The waste, discovered during D&D activities in 2015 and 2016, does not have an immediate path for off-site certification and disposition. In particular, according to the Department, some of the waste has radiation dose rates such that it must be managed as remote-handled transuranic waste. However, the Department does not expect the Waste Isolation Pilot Plant, the nation's only transuranic waste repository, to accept remote-handled transuranic waste for several more years. As a result, the Department and the State of New York drafted an Administrative Consent Order that requires the SPRU site to apply for a hazardous waste storage permit. The permit will regulate the storage of the site's transuranic waste until the waste is shipped off-site for disposal. While we could not quantify costs given these unknowns, we noted that Environmental Management's SPRU mission could continue as long as the transuranic waste remains on-site.

In a previous audit, we noted that the Department's use of a cost cap on another Environmental Management project also experienced an unintended effect. In that case, the cost cap had not successfully limited the costs borne by the taxpayers. In particular, our March 2016 Audit Report on *Management of the Startup of the Sodium-Bearing Waste Treatment Facility* (DOE-OIG-16-09) revealed that the Department shifted the costs of a functionality test, normally performed during the construction phase of a project, to the operations phase of the project, thereby avoiding the cost cap placed on the construction phase. As a result, we concluded that the Department likely understated the construction cost of this facility by about \$181 million.

RECOMMENDATIONS

We acknowledge the Department's efforts to enforce the cost cap and control costs. However, given the subsequent project challenges, we recommend the Director, Environmental Management Consolidated Business Center:

1. Implement a process to identify, document, and disseminate lessons-learned from Environmental Management's projects utilizing cost caps; and
2. Consider incorporating alternative methods to enforce schedule milestones, such as schedule or milestone-based financial penalties, in any future Environmental Management contracts containing a cost cap.

MANAGEMENT RESPONSE

Management concurred with the report's recommendations and indicated that corrective actions are planned to address the issues identified in the report. Management's formal comments are included in Attachment 3.

AUDITOR COMMENTS

Management's comments and planned corrective actions were responsive to our recommendations.

Attachments

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

OBJECTIVE, SCOPE, AND METHODOLOGY

OBJECTIVE

The objective of the audit was to determine whether the Department of Energy was effectively managing the decontamination and decommissioning of nuclear facilities at the Separations Process Research Unit (SPRU).

SCOPE

The audit was performed from January 2016 through March 2018, and included site visits to the SPRU site in Niskayuna, New York. The scope of the audit included Department and contractor activities performed under the SPRU Nuclear Facility decontamination and decommissioning contract. The audit was conducted under Office of Inspector General project number A16OR013.

METHODOLOGY

To accomplish the audit objective, we:

- Reviewed laws, regulations, and program guidance applicable to the SPRU decontamination and decommissioning project;
- Held discussions with key Department and contractor officials to gain an understanding of the project's challenges;
- Reviewed the plan and estimated timeline for the SPRU decontamination and decommissioning project and compared it to work accomplished; and
- Reviewed contract requirements, performance measures, and progress reports for the SPRU decontamination and decommissioning project.

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 the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. Accordingly, we assessed internal controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective. Additionally, we assessed the implementation of the *GPRA Modernization Act of 2010* and found that the Department had established performance measures related to the cleanup of radioactive facilities and the disposition of radioactive waste. 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. Finally, computer-processed data did not materially support the findings, conclusions or recommendations of the audit objective and therefore we did not perform a reliability assessment.

Management waived an exit conference on March 7, 2018.

PRIOR REPORTS

Audit Report on [*Management of the Startup of the Sodium-Bearing Waste Treatment Facility*](#) (DOE-OIG-16-09; March 2016). The audit revealed significant problems with the Department of Energy's management of the startup of the Sodium-Bearing Waste Treatment Facility. In December 2010, to address cost overruns, the Department implemented a contract modification where it placed a cost cap of \$571 million for the construction of the facility, with any construction costs above that amount to be borne by the contractor. However, the audit found that the Department moved work that should have been included as part of the construction cost to the operations phase of the project, thereby avoiding the cap. This shift in work resulted in the Department not performing a rigorous test of the functionality of the facility before it declared construction complete. In light of these issues, the audit report concluded that the Department's cost cap did not successfully limit the construction costs borne by the taxpayers, and the total actual construction cost for this facility was likely understated by about \$181 million as of March 2016.

MANAGEMENT COMMENTS



Department of Energy
Washington, DC 20585

JAN 02 2018

MEMORANDUM FOR MICHELLE ANDERSON
DEPUTY INSPECTOR GENERAL
FOR AUDITS AND INSPECTIONS

FROM: JAMES M. OWENDOFF *JO*
PRINCIPAL DEPUTY ASSISTANT SECRETARY FOR
ENVIRONMENTAL MANAGEMENT

SUBJECT: Management Response to the Office of Inspector General Draft
Audit Report on Decontamination and Decommissioning
Activities at the Separations Process Research Unit (SPRU)

The U.S. Department of Energy (DOE) Office of Environmental Management (EM) appreciates the opportunity to review and comment on the subject draft Office of Inspector General report. We reviewed the information in the draft report with respect to the facts presented, conclusions reached, and recommendations made. A discussion of the report's recommendations is below and comments on specific sections of the draft report are included in the Attachment. There was no Monetary Impact Report associated with this report.

Recommendation 1:

Implement a process to identify, document, and disseminate lessons-learned from Environmental Management's projects utilizing cost caps.

Management Response:

EM concurs. EM will ensure that the Lessons-Learned process as required by DOE Order 413.3B, Change 4, *Program and Project Management for the Acquisition of Capital Assets*, is used.

Recommendation 2:

Consider incorporating alternative methods to enforce schedule milestones, such as schedule or milestone-based financial penalties, in any future Environmental Management contracts containing a cost cap.

Management Response: EM will consider incorporation of alternative methods to enforce schedule milestones such as financial schedule incentives as well as potential



price/fee reductions in future Environmental Management Contracts containing a cost cap.

Attachment

cc: Jeffrey Grimes, EMCBC (Acting)
Mell Roy, EMCBC
Ken Armstrong, EMCBC
Tamara Miles, EMCBC
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