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

Audit Report

Demolition and Replacement of Hanford's Radiological Calibration Laboratory

DOE/IG-0711

December 2005

Department of Energy

Washington, DC 20585

December 5, 2005

MEMORANDUM FOR THE SECRETARY

FROM: Gregory H. Friedman
Inspector General

SUBJECT: INFORMATION: Audit Report on "Demolition and Replacement of Hanford's Radiological Calibration Laboratory"

BACKGROUND

The Department of Energy's Radiological Calibration Laboratory is responsible for functions related to dosimetry and radiological instrument calibrations at the Hanford, Washington Site. Representing a $15 million investment, the 39,000 square foot Laboratory is located in the site's 300 Area, and it includes unique rooms that facilitate gamma, neutron, x-ray and beta irradiations. Annually, the Laboratory performs more than $9 million of dosimetry and calibration work, approximately 60 percent of which is performed for the Department's Office of Environmental Management (Environmental Management) operations at Hanford. The remainder of the work is for the Office of Science (Science), other government agencies and various private companies. Environmental Management and Science share responsibility for the Laboratory - - Environmental Management provides landlord support while Science manages operations.

Environmental Management's cleanup plan for the 300 Area calls for the demolition of the Laboratory by the end of Fiscal Year 2009. Although it is not radiologically contaminated and was originally exempted from cleanup, in 2003 Environmental Management's accelerated cleanup plan was modified to include demolition of the Laboratory. Science, recognizing a continuing need for Laboratory services, began preliminary design work to replace it and other buildings in the 300 Area. Given the significance of this facility to the Department's remediation goals and infrastructure requirements, we conducted this audit to determine whether the planned replacement of Hanford's Radiological Calibration Laboratory will meet programmatic needs.

RESULTS OF AUDIT

While the planned replacement facility may meet the needs of the Office of Science, it will not provide the capabilities essential to meet future Environmental Management workload requirements. In short, the curtailment of operations of the current Laboratory, as currently planned, will leave Environmental Management without site capability to perform internal and external dosimetry assessments and radiological calibrations. We found this to be of concern because: (1) historically, the Environmental Management program has been the largest user of the services of Hanford's Calibration Laboratory;

and, (2) Hanford remains one of the Department's most contaminated sites, which confirms that dosimetry assessment and radiological calibration services will be needed far into the future.

In planning for the replacement facility, the Department relied on what appeared to be a "stove piped" concept. The Department did not:

- Adequately integrate the program requirements of Environmental Management and Science when making programmatic decisions, nor resolve differences between the programs that, ultimately, limited the Department's options in designing the replacement facility; and,

- Perform a comprehensive cost-benefit analysis of all viable options.

Since the planned replacement facility will not provide the capabilities essential to meet Environmental Management's dosimetry and calibration needs, the Department risks increased costs from duplication of resources and/or the loss of mission critical dosimetry and calibration services. Accordingly, we recommended that the Assistant Secretary for Environmental Management and the Director, Office of Science, integrate programmatic resources and needs, and perform a cost-benefit analysis of the available options.

MANAGEMENT REACTION

The Assistant Secretary for Environmental Management and the Director, Office of Science, generally concurred with the finding and recommendations. Management stated that, consistent with the recommendations, a cost-benefit analysis of appropriate options is ongoing, integrating the programmatic requirements of all interested parties. Management also indicated that it is acting to ensure that dosimetry and calibration services are available to Environmental Management and that the new facility is appropriately designed and sized. The Program Offices' comments are included in their entirety in Appendix 3.

Attachment

cc: Deputy Secretary
Under Secretary for Energy, Science and Environment
Chief of Staff
Assistant Secretary for Environmental Management
Director, Office of Science
Manager, Richland Operations Office
Manager, Office of River Protection
Manager, Pacific Northwest Site Office

REPORT ON DEMOLITION AND REPLACEMENT OF HANFORD'S RADIOLOGICAL CALIBRATION LABORATORY

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Programmatic Needs for Calibration Services

The planned replacement of Hanford's Radiological Calibration Laboratory, as currently conceived, will not meet the Department of Energy's programmatic needs. Specifically, the replacement facility will not have the capability to serve the mission needs of the EM program at the Hanford site, even though the EM program has, historically, been the largest user of the Laboratory.

The planned facility will not include approximately 10,000 square feet of "dry" Laboratory space needed to support EM clean-up activities. The "dry" Laboratory space enables bench-top calibrations and dosimetry processing on the materials and equipment being tested prior to and after irradiation. Loss of the space will also hinder the performance of certain neutron services for dosimetry and calibration work. Since there are very few providers of neutron services, Hanford's EM programs could have difficulty in replacing this capability.

Annually, the existing Radiological Calibration Laboratory performs a heavy workload in support of EM programs, including:

- More than 48,000 internal and external dosimetry assessments on personal dosimeters, fecal and urine samples, and chest and body counts; and,

- Approximately 13,000 radiological calibrations, mostly on portable instruments such as constant air monitors, detectors, meters, and electronic dosimeters.

If the Department continues to proceed with its present plans, the EM program will lose support for these dosimetry and calibration services after 2009, when the facility is scheduled to be demolished. Laboratory management estimates that the Hanford clean-up work driving much of the calibration services will increase slightly or remain stable for the next 15 years, well beyond the currently planned date for cessation of operations of the Radiological Calibration Laboratory.

Although the existing Laboratory could support the anticipated workload, the design of the replacement facility will not support EM needs. Rather, the Department's new facility is being designed to support the Office of Science's (Science) needs, as well as some of its other customers such as the National Nuclear Security Administration and the Department of Homeland Security.

It should be noted that EM management at Hanford is aware that its needs will not be supported in the new Laboratory and has begun to explore options to ensure that these capabilities are maintained. One alternative currently under consideration is to retain the existing Radiological Calibration Laboratory to exclusively support EM programs. To do this, EM will remove the Radiological Calibration Laboratory from its demolition plans and modify the scope of work for the clean-up contractor to include performing dosimetry and calibration services in the facility. Another alternative is to out-source the work to private suppliers across the nation. Regardless of how EM ultimately resolves to meet its future needs, Science plans to build a new calibration Laboratory that will not include capacity to perform EM work. In fact, the Department was scheduled to approve the preliminary design package for the "Capability Replacement Laboratories" in October 2005.

Integration of Resources and Needs

In planning for the replacement facility, the Department did not adequately integrate the resources and needs of its Hanford offices or fully consider alternatives to building a replacement Laboratory. Specifically, the Offices of Science and EM, which have significant activities at the Hanford site, did not effectively coordinate their available resources to support common mission needs. Also, in evaluating its alternatives, Science did not formally consider retention of the existing Laboratory to meet its mission need.

Integration

The Offices of Science and EM did not effectively integrate their planning efforts to support the multi-programmatic needs of the three Hanford offices. Rather, Science focused on meeting its facility construction need while EM focused on meeting its Richland Operations Office and Office of River Protection need for procurement flexibility. For example, to ensure alternate facilities are available after EM closes the existing Laboratory in 2009, Science took action to construct new facilities within four years and has nearly completed the preliminary design package for the Capability Replacement Laboratories. However, the team planning the facilities limited the scope of the design to meet only the needs of those customers providing financial support for the new Laboratory. Since EM would not commit budgetary resources to the new Laboratory, the team proceeded to plan a facility without the space necessary to support EM work.

EM's Richland Operations Office and Office of River Protection in May 2005, chose not to commit resources to the new calibration Laboratory in order to keep the Department's procurement options open and to investigate other options for calibration and dosimetry services, despite Science's immediate need for financial commitment to the new facility. The Richland Operations Office has the option to incorporate these services into a major site contract scheduled to be re-bid in 2006, which provides EM with at least one more year to make a specific decision on maintaining needed services. However, by delaying decisions on how to secure calibration services in the future, the Richland Operations Office and the Office of River Protection effectively excluded their programs from participating in Science's construction plans for a replacement facility.

Cost-Benefit Analysis

In addition, the Department did not perform a cost-benefit analysis to fully consider the range of reasonable alternatives, including:

- Retaining the existing Radiological Calibration Laboratory and removing it from the demolition list;

- Replacing the existing facility with one capable of meeting all programmatic needs, including the needs of EM programs; or,

- Replacing the existing facility with one capable of meeting some programmatic needs and outsourcing the rest.

In reviewing the Critical Decision documents supporting the replacement laboratory, we noted that the Mission Need Statement prepared by Science did not include consideration of the first two alternatives, or justify the third alternative in a formal cost-benefit analysis. This appears to contradict Departmental policy as stated in DOE Manual 413.3-1, *Project Management for the Acquisition of Capital Assets*. According to this guidance, use of, or modification of, an existing facility should be considered when planning new capital assets.

Management informed us that the alternative to use or modify the current Laboratory was excluded when Science decided not to accept a transfer of EM's landlord responsibility for the facility. However, the Department's management could not locate any documentation which supported this assertion. In our judgment, until the range of reasonable alternatives is fully and formally

considered, the Department cannot be assured that it made the best decision on how to provide laboratory services. The window of opportunity to include space for EM work in the new facility is rapidly closing. After approval of the detailed design and project baseline documents planned for 2006, the impacts to cost and schedule prohibit major changes in the facility's design.

Recent Progress

Although we question the level of integration of programmatic needs and a lack of a formal cost-benefit analysis, we did note a recent increase in efforts by the three offices to communicate regarding future planning at the Hanford site. For example, Science's Pacific Northwest Site Office hosted a workshop in November 2004 to identify specific customer needs for Laboratory services and continued to solicit input from EM when it did not attend the workshop. Later, in March 2005, the Richland Operations Office hosted a workshop to discuss future dosimetry and calibration needs, which included representatives from the Office of River Protection and Science's Pacific Northwest National Laboratory. These groups have also begun communicating specifically on funding needs and commitment deadlines. However, unless further action is taken quickly before Science commits to a specific construction design, potentially more cost effective options will no longer be available for consideration.

Increased Costs and Lost Capabilities

If the Department continues on its current course, it risks loss of required capabilities and increased costs for duplicate facilities. Specifically, the Department may:

- Continue with plans to demolish the existing Radiological Calibration Laboratory and construct a new facility – roughly estimated to cost between $40 to $60 million – that is unable to serve the Department's EM programs.

- Construct a new facility, and, at the same time, take action to maintain the existing facility resulting in increased facility and operations costs. For example, if EM decides to maintain the existing Laboratory, it would cost an estimated $2 million to reroute utilities that connect it with other 300 Area buildings that will be demolished. Also, with two Laboratories, radiological sources necessary to support calibration and dosimetry work would have to be duplicated as well.

Additionally, operational efficiencies in dosimetry and calibrations may be lost. For example, the Richland Operations Office informed us that EM could experience a significant increase in the turnaround time for their dosimetry and calibration needs if they must use service providers outside the Hanford area. For instance, one contractor experienced turnaround times from one to two months when it outsourced calibrations to a provider in New Mexico during 1997 and 1998. This contrasts with Radiological Calibration Laboratory contracts that provide similar Laboratory services and currently require turnaround times from eight to fifteen workdays.

RECOMMENDATIONS

We recommend that the Assistant Secretary for Environmental Management and the Director, Office of Science, take action to:

1. Evaluate the integrated programmatic needs for calibration and dosimetry services of both EM and Science at the Hanford site.

2. Perform a thorough cost-benefit analysis on the options available to meet the needs identified. These options should include:

    a. Retaining the existing Radiological Calibration Laboratory and removing it from the demolition list;

    b. Replacing the existing facility with one capable of meeting all programmatic needs, including those of EM; and,

    c. Replacing the existing facility with one capable of meeting some of the programmatic needs and outsourcing the rest.

3. Select the most viable option and ensure that it is available in a timely manner to meet mission requirements.

MANAGEMENT REACTION

The Assistant Secretary for Environmental Management and the Director, Office of Science, generally concurred with the finding and recommendations. Management stated that, consistent with the recommendations, a cost-benefit analysis of appropriate options is ongoing, integrating the programmatic requirements of

all interested parties. Additionally, management stated that the Department is continuing and expanding the coordination that the Department's Office of Inspector General recognized as having occurred since late 2004.

Furthermore, in separate detailed comments, management emphasized that EM is taking action to ensure that dosimetry and calibration needs will be met. Management stated that EM will have a future contractual arrangement to provide dosimetry and calibration needs. Also, management noted that the new Laboratory is being designed and sized accordingly.

AUDITOR RESPONSE

Management's comments are responsive to the recommendations. We recognize that management plans to act to provide necessary dosimetry and calibration services to EM and to design and size the new Laboratory according to Science's needs. Our concern is that the Department's actions to provide needed services and construct a new Laboratory should be based on a complete analysis of available alternatives to promote efficiencies across programmatic lines. Management's commitment to complete a cost-benefit analysis of alternatives and to fully integrate programmatic needs is responsive to our concerns.

Appendix 1

OBJECTIVE

The objective of this audit was to determine whether the planned replacement of Hanford's Radiological Calibration Laboratory will meet programmatic needs.

SCOPE

The audit was performed from February 2005 to September 2005, at the Richland Operations Office, Pacific Northwest Site Office, Office of River Protection in Richland, Washington, and the Pacific Northwest National Laboratory (PNNL) on the Hanford site. The scope of the audit was limited to activities associated with the Department's planning efforts for clean up of the 300 Area from Fiscal Year 2000 through 2005 and its effect on the existing Radiological Calibration Laboratory at the Hanford site; as well as the Office of Science's planning activities associated with the Capability Replacement Laboratories.

METHODOLOGY

To accomplish the audit objective, we:

- Interviewed key personnel in the Richland Operations Office, Pacific Northwest Site Office, Office of River Protection, and Pacific Northwest National Laboratory responsible for providing or obtaining radiological calibration services;
- Reviewed planning documentation regarding environmental clean up of Hanford's 300 Area;
- Reviewed planning documentation regarding replacement and retention of PNNL capabilities in the 300 Area;
- Researched Federal and Departmental regulations regarding capital asset management;
- Reviewed findings from prior audit reports regarding radiological calibration Laboratories;
- Assessed available documentation associated with plans to demolish and replace Hanford's calibration services capabilities;
- Assessed internal controls and performance measures established under the *Government Performance and Results Act of 1993*; and,

- Interviewed key personnel in the Office of Science and Office of Environmental Management regarding management decisions for PNNL facilities and the 300 Area.

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 compliance with respect to the Department's DOE Manual 413.3-1, *Project Management for the Acquisition of Capital Assets*. The weaknesses noted have been addressed in the body of the report. 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 considered the establishment of performance measures in accordance with the *Government Performance and Results Act of 1993* as they relate to the audit objective. We found no performance measures related specifically to the scope of this audit. Finally, since we did not rely on automated data processing equipment to accomplish our audit objective, we did not assess automated data processing systems.

Management waived the exit conference.

PRIOR AUDIT REPORTS

- *Idaho Operations Office Planned Construction of a Waste Vitrification Facility* (DOE/IG-0549, April 2002). This audit identified problems with the Department's considerations of alternatives to construct a vitrification facility in Idaho. Additionally, this report identified weaknesses with the Department's consideration of alternatives to construction of a new Health Physics Instrumentation Laboratory. The audit made recommendations to ensure full evaluation of alternatives in the construction of new facilities.

- *Environmental Monitoring and Health Physics Laboratories at the Savannah River Site* (ER-B-98-02, October 1997). The audit concluded that alternatives to building two new facilities had not been fully analyzed and the Department could not be certain it had chosen the most cost-effective solution to replace aging buildings. Specifically, the contractor over the project did not perform life-cycle cost analyses and periodic reassessments. As a result, the Department was planning to spend $30 million for facilities that may not be needed.

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United States Government **Department of Energy**

memorandum

DATE: October 24, 2005

REPLY ATTN OF: EM-21 (Andrew Szilagyi, 301-903-4278)

SUBJECT: Draft Audit Report on "Demolition and Replacement of Hanford's Radiological Calibration Laboratory"

TO: Gregory H. Friedman, Inspector General

The Office of Environmental Management (EM), the Office of Science (SC), and our respective Hanford organizational counterparts have reviewed the Draft Audit Report, "Demolition and Replacement of Hanford's Radiological Calibration Laboratory," and generally concur with the findings and recommendations.

Consistent with the recommendations, a cost-benefit analysis of appropriate options is ongoing, integrating the programmatic requirements of EM, SC, and the other customers requiring calibration, dosimetry, recordkeeping, and associated analytical services currently provided at the Radiological Calibration Laboratory (Building 318). This cost-benefit analysis, conducted jointly by EM and SC, is scheduled to be completed no later than November 30, 2005. The results of this analysis, coupled with other relevant information such as regulatory agreement milestones, impact of schedule modifications, and short- and long-term facility use, will provide input for a recommendation and selection of the most viable option.

This single reply is deemed responsive to all three related recommendations. Additionally, and specifically with respect to Recommendation 1, "Evaluate the integrated programmatic needs for calibration and dosimetry services of both EM and Science at the Hanford site," we are continuing and expanding the coordination that the IG has recognized as having occurred since late 2004. In particular, both EM and SC senior managers are interacting even more frequently at both Headquarters and the Field, and are providing direction required to adequately evaluate the costs, benefits, and risks of the various options to procure radiological services for all customers. Specific comments related to the Draft Audit Report are provided in Attachment 1.

EM, SC and our colleagues at Hanford appreciate the opportunity to review the draft report and to provide our joint comments. The Office of Science has concurred on this response. If you have any questions or require additional clarifications, please contact Mrs. Sandra Waisley, Director of the Office of Cleanup Technologies, at (202) 586-3087, or Mr. Andrew Szilagyi, at (301) 903-4278.

FOR
James A. Rispoli
Assistant Secretary for
Environmental Management

Attachment

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