

WR-B-00-01

AUDIT
REPORT

ANALYTICAL LABORATORY
CAPABILITIES AT THE HANFORD
SITE



NOVEMBER 1999

U.S. DEPARTMENT OF ENERGY
OFFICE OF INSPECTOR GENERAL
OFFICE OF AUDIT SERVICES



Department of Energy
Washington, DC 20585

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**MEMORANDUM FOR THE MANAGER, RICHLAND OPERATIONS OFFICE AND MANAGER,
OFFICE OF RIVER PROTECTION**

FROM: Lawrence R. Ackerly, Regional Manager **/signed/**
Western Regional Audit Office
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on "Analytical Laboratory Capabilities at the Hanford Site"

BACKGROUND

The Department of Energy (DOE) Richland Operations Office (Richland) was responsible for environmental restoration and waste management programs at the Hanford Site (Site). In support of these activities Site contractors used both on- and off-site analytical laboratory services. The objective of this audit was to determine if Richland had made the best use of the capabilities of the on-site analytical laboratories.

RESULTS OF AUDIT

Richland had not made the best use of the capabilities of on-site analytical laboratories in two of five instances reviewed. In one instance, Richland unnecessarily transferred tank waste vapor characterization from one on-site laboratory to another. In another instance, Richland allowed contractors to use an off-site laboratory to analyze groundwater samples rather than directing them to use a less expensive on-site laboratory with the same capability. These conditions occurred because Richland (1) based the decision to transfer the vapor program on a flawed cost analysis and (2) did not act timely on the on-site laboratory's proposal to analyze groundwater samples. As a result of the transfer, Richland incurred unnecessary costs of approximately \$550,000. In addition, use of the on-site laboratory for groundwater samples would allow better use of \$525,000 annually. We recommended that Richland and the Office of River Protection use the best available data when performing cost analyses and make timely decisions on proposals.

MANAGEMENT REACTION

Richland and the Office of River Protection agreed with the recommendations.

ANALYTICAL LABORATORY CAPABILITIES AT THE HANFORD SITE

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Overview

INTRODUCTION AND OBJECTIVE

The Department of Energy (DOE) Richland Operations Office (Richland) was responsible for environmental restoration and waste management programs at the Hanford Site (Site). These responsibilities included identification and removal of soil and groundwater contaminants as well as storage, retrieval, and disposal of highly radioactive tank waste.

Hanford contractors used on-site and off-site analytical laboratory services in fulfilling these responsibilities. The type and duration of analytical services varied. For example, the duration of the tank waste vapor characterization program was relatively brief. It began in Fiscal Year (FY) 1994 and was largely completed in FY 1998; it had a peak annual budget of \$2,233,000 in FY 1996. In contrast, groundwater monitoring analyses began in FY 1967 and was expected to continue well after site closure, which was planned for 2046. The FY 1999 budget for groundwater monitoring was \$1,729,700.

Prior reviews had disclosed problems with the use of services available at the Site (see Appendix 3). The objective of the audit was to determine if Richland had made the best use of the capabilities of the on-site analytical laboratories.

CONCLUSIONS AND OBSERVATIONS

Richland had not made the best use of the capabilities of on-site analytical laboratories in two of five instances reviewed. In one instance, Richland transferred tank waste vapor characterization from one on-site laboratory to another. The receiving laboratory, however, had to acquire the capability to do the work. This resulted in an unneeded expansion of laboratory capabilities. In the other instance, Richland allowed the contractors to use an off-site laboratory to analyze groundwater samples rather than directing them to use a less expensive on-site laboratory with the same testing capability. As a result of the transfer, Richland incurred unnecessary costs of approximately \$550,000. Use of the on-site laboratory for groundwater samples would allow Richland to better use \$525,000 annually.

In our opinion, the matters discussed in this report represent internal control weaknesses that Richland should consider when preparing its yearend assurance memorandum on internal controls.

 /signed/
Office of Inspector General

Utilization Of Hanford Site Analytical Laboratory Capabilities

Use Of On-Site Analytical Laboratory Capabilities Not Maximized

In two instances the use of on-site analytical laboratory capabilities was not maximized.

Unneeded Expansion Of Tank Waste Vapor Analytical Capability

Richland expanded on-site tank waste vapor analytical capabilities when it transferred the analytical work from one on-site laboratory to another. For FYs 1994-1996, the Battelle-Pacific Northwest National Laboratory (Battelle) analyzed tank waste vapor samples. For FY 1997, Richland transferred the analyses to Numatec Hanford Company's (Numatec) laboratory and directed it to acquire the necessary capabilities to do the work. Richland directed this expansion even though Battelle had the capability and capacity to continue to perform the required analyses. In FY 1997, in fact, Richland had the Battelle laboratory analyze samples from 28 of the 42 tanks characterized.

The characterization program then began to decline. In FY 1998, the Numatec laboratory characterized only 10 tanks (Battelle characterized none) and there were no characterizations scheduled for FY 1999.

Unused On-Site Groundwater Monitoring Analytical Capability

Richland had on-site capability at a Waste Management Hanford (Waste Management) laboratory to perform the analyses needed by the groundwater monitoring program. During the first quarter of FY 1997, in fact, Waste Management submitted a proposal to perform the analyses for less cost. Site contractors continued, however, to use the off-site laboratory. This left the on-site capability unused.

DOE Goal: Maximize Resources And Reduce Costs

DOE set forth the goals of maximizing resources and reducing costs in its *1997 Strategic Plan* and *FY 1999 Revised Final Performance Plan*. These documents were submitted under the Government Performance and Results Act (GPRA) of 1993. GPRA, which is intended to improve Federal program effectiveness, requires each agency to prepare a strategic plan (to be updated and revised every three years) that states the general goals and objectives of program activities. It also requires annual performance plans in which each agency provides information on performance to be achieved during a particular year.

**Inaccurate Cost
Analysis And Untimely
Decisionmaking**

The unneeded expansion of the vapor analytical capability and the unused capability for groundwater monitoring analyses occurred because Richland based its decision to expand laboratory capabilities on a flawed analysis and had not acted timely on Waste Management's proposal.

Flawed Cost Analysis

Richland directed the transfer of tank waste vapor analyses based on a cost comparison that showed Numatec's cost to be lower than Battelle's. Richland's cost comparison was flawed, however, because it was not based on the best available data. That is, Richland's comparison:

- did not consider acquisition and startup costs of \$187,000 for the Numatec laboratory and ramp down costs of \$227,000 for the Battelle laboratory;
- did not exclude the indirect costs that would continue regardless of which laboratory did the work. Our analysis showed that when indirect costs were excluded, Battelle's direct costs were \$136,000 less than Numatec's; and,
- compared Numatec's costs to perform FY 1997 tests against Battelle's costs, which included both FY 1997 workscope and \$252,000 of workscope carried over from FY 1996. When Battelle submitted a cost proposal for FY 1997 work only, Richland did not use the proposal in its cost comparison.

Untimely Decisionmaking

The on-site capability for groundwater monitoring analyses was left unused because Richland did not act timely on Waste Management's proposal. When the proposal was received, Richland and its contractors had concerns about the future of Waste Management's on-site laboratory. The primary concern—whether the laboratory would continue to exist—was resolved after the proposal was received when Richland determined that this laboratory was required to meet mission needs. Another concern was the possible privatization of the laboratory. However, a final decision on privatization still had not been made two years after Richland received the proposal and Richland had missed the opportunity to reduce its costs during those two years.

Program Savings

If it had not transferred the tank waste vapor program from Battelle to Numatec, Richland could have saved (1) \$414,000 in ramp-up and ramp-down costs and (2) the \$136,000 direct cost difference between the Battelle and Numatec proposals had Battelle performed all of the proposed FY 1997 vapor sample analyses rather than only 28 out of 42. In addition, Richland could potentially better use \$525,000 per year by adopting the Waste Management proposal to perform the analytical work for the groundwater monitoring program on-site. This is the difference of \$380,000 between Waste Management's proposed costs and the off-site laboratory's costs and the \$145,000 difference between Waste Management's and Battelle's costs for sample management. Better use would result from applying the savings to other program activities. Achievement of these savings would further demonstrate Richland's commitment to DOE's GPRA goals of reducing costs and maximizing resources.

RECOMMENDATIONS

We recommend that Richland and the Office of River Protection (River Protection) Managers ensure that:

1. cost analyses are performed using the best available data before making decisions affecting Site programs; and,
2. decisions on proposals involving analytical laboratories are made timely.

MANAGEMENT REACTION

Richland and River Protection, which was given responsibility for tank waste matters in FY 1999, concurred with both recommendations.

Regarding Recommendation 1, Richland's Financial Management Division has initiated an effort to review major on-site services to determine whether these services can be performed more economically on-site or by commercial entities. Once the review is completed, Richland and River Protection will issue a site-wide catalog listing the various services that will be mandatory. Regarding Recommendation 2, Richland and River Protection agreed that all future analytical laboratory service proposals will be reviewed in a timely manner.

River Protection officials stated that the transfer of tank waste vapor characterization from Battelle to Numatec was necessary in order to meet quality assurance requirements of the contract. River Protection officials stated that the characterization reports provided by Battelle did not contain the data on quality assurance measures required by Richland.

AUDITOR COMMENTS

Richland's and River Protection's concurrences are responsive to the recommendations.

In reviewing documentation provided by River Protection officials, we found that the tank waste vapor characterization program had a number of quality assurance problems. However, these problems primarily involved other laboratories and the contractor in charge of the program, not Battelle. According to River Protection officials, the data on quality assurance measures was not included in Battelle's reports because Westinghouse Hanford Company, the contractor in charge of the program at the time, did not put the requirement for the data into the Statement of Work given to Battelle. According to the Battelle vapor analyses manager, Battelle informed Richland that the quality assurance data was available at an additional cost of \$125,000 for 60 reports already completed.

Appendix 1

SCOPE

The audit was performed from February 2 through August 2, 1999, at: Fluor Daniel Hanford, Inc. (Fluor Daniel), the managing and integrating contractor for the Project Hanford Management Contract; Bechtel Hanford, Inc. (Bechtel), the environmental restoration contractor; Battelle, the management and operating contractor for the Pacific Northwest National Laboratory; BNFL, Inc., contractor for the Tank Waste Remediation System privatization project; and Richland's offices. In performing the audit, we reviewed five instances where Richland had transferred an analytical program from one laboratory to another or a transfer had been proposed.

METHODOLOGY

To accomplish the audit objective we:

- interviewed Richland and contractor personnel;
- reviewed laws, regulations, and contractual requirements;
- reviewed budgets and expenditures;
- evaluated expansion of analytical laboratory capabilities;
- reviewed cost analyses performed by Richland and Site contractors;
- performed comparative cost analyses; and,
- evaluated Richland and contractor efforts to integrate Site analytical laboratories.

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. Accordingly, we assessed Richland and contractor controls over the use of analytical laboratory capabilities. 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 conduct a reliability assessment of computer-processed data because only a very limited amount of such data was used during the audit. On August 18, 1999, we discussed the Draft Report with River Protection's Assistant Manager for Tank Waste Storage & Retrieval and a representative of Richland's Contract Finance Review Division. Richland waived any further exit conference.

Appendix 2

OTHER MATTERS

Inconsistent Use Of Performance Goals

Richland used performance goals inconsistently in attempting to achieve best use of its laboratories through laboratory integration.

The Contract Reform Team recommended that contractors be given performance goals and incentives for meeting those goals. Accordingly, in FY 1997 Richland gave Fluor Daniel a performance goal to integrate its analytical laboratories. Richland also gave Fluor Daniel a stretch performance goal to integrate the analytical laboratories of Battelle and Bechtel. While Fluor Daniel successfully integrated its laboratories, it was unsuccessful in integrating the Battelle and Bechtel laboratories. The lack of success can be partially attributed to Richland not giving Battelle and Bechtel performance goals similar to Fluor Daniel's. Similar goals were needed because Fluor Daniel had no control over these two contractors.

Hanford Analytical Policy Board's Ability To Lower Costs Could Be Limited

In FY 1997, Richland supported the creation of the Hanford Analytical Policy Board (Board) to provide a unified approach to analytical laboratories and thereby lower costs and improve service. In reviewing the Board's charter, we noted two factors that could limit the Board's ability to achieve these goals. First, the Board's voting members represented only Site contractors. Richland was represented by a nonvoting member. Second, proposals that came to the Board needed unanimous approval to be implemented. Thus, a contractor that believed that a proposal did not benefit its own interest could block a proposal that could benefit DOE.

Appendix 3

RELATED OFFICE OF INSPECTOR GENERAL AND RICHLAND OPERATIONS OFFICE REVIEWS

This review concerned Richland and its contractors' expansion of analytical laboratory capabilities. Our review identified issues involving Richland/contractor coordination and use of assets, cost analyses, and performance goals. Prior Office of Inspector General and Richland reviews related to similar issues are listed below.

- *Hanford Site Contractors' Use of Site Services*, WR-B-99-03, March 11, 1999

Contractors acquired telecommunications, copying, and photography services even though Site services had enough capacity to respond to contractors' needs.

- *Review of Control of the Spread of Radioactive Contamination Due to Biological Transport on the Hanford Site*, DOE/RL-98-77, November 1998

Richland determined that it needed to issue policy to control the spread of radioactive contamination and to ensure coordination exists among its management groups; the Office of Environment, Safety and Health; and other Richland line organizations.

- *Project Hanford Management Contract Costs and Performance*, DOE/IG-0430, November 5, 1998

Although Richland provided Fluor Daniel with a performance measure containing a quantitative stipulation to create 200 jobs by the end of FY 1997, the measure lacked necessary qualitative characteristics needed to ensure that jobs created met the Management Contract's goal of stabilizing and diversifying the economy.

- *Audit of Renovation and New Construction Projects at Lawrence Livermore National Laboratory*, WR-B-97-06, June 9, 1997

The Oakland Operations Office allowed Livermore to pursue three construction projects because it had not ensured that the laboratory had performed cost and benefit analyses of all alternatives or established benchmarks to assess reasonableness of costs.

- *Audit of the Use of Hanford Site Railroad System*, WR-B-97-04, March 20, 1997

The Site's railroad system was not fully used because it was not integrated into Site activities.

-
- *Audit of Groundwater Monitoring at Hanford*, WR-B-97-03, November 15, 1996

Site well monitoring activities by three principal contractors overlapped and resulted in duplicative groundwater monitoring activities.

- *Audit of the Richland Operations Office Site Characterization Program*, DOE/IG-0368, March 28, 1995

The audit disclosed that neither DOE nor Richland evaluated changes to Site characterization programs to ensure that program benefits justified the increased cost.

- *Audit of Light Vehicle Fleet Management in the Department of Energy*, DOE/IG-0362, December 5, 1994

DOE's operations offices' vehicle fleets were underused because the operations offices did not take an active role in ensuring contractors effectively monitored and managed vehicle utilization.

- *Audit of Equipment Use and Repair at the Hanford Site*, WR-BC-93-1, March 8, 1993

The Site management and operating contractor had not coordinated the use of underutilized equipment.

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