



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

Audit Report

Management Controls over the Hanford Environmental Information System

OAS-M-07-06

September 2007



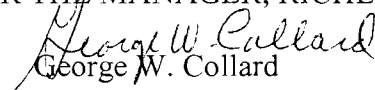
Department of Energy

Washington, DC 20585

September 17, 2007

MEMORANDUM FOR THE MANAGER, RICHLAND OPERATIONS OFFICE

FROM:


George W. Collard
Assistant Inspector General
for Performance Audits
Office of Inspector General

SUBJECT:

INFORMATION: Audit Report on "Management Controls
over the Hanford Environmental Information System"

BACKGROUND

The Hanford Environmental Information System (HEIS) database is the official repository of data from soil, biota, atmospheric, miscellaneous material, surface water and groundwater samples at the Hanford Site. The HEIS is required by the Tri-Party Agreement, which is a legally binding agreement among the Department of Energy (Department), Washington State Department of Ecology and the U.S. Environmental Protection Agency (EPA). The majority of the data in HEIS is associated with samples collected in support of the cleanup requirements, groundwater monitoring, environmental impact statements, waste site remediation and characterization, and biological/ecological monitoring. In particular, data contained in HEIS is obtained from samples taken to characterize the level of contamination at a site before and during cleanup, as well as samples taken to monitor the site at the completion of cleanup.

As the official repository for environmental samples at the Hanford Site, it is important that HEIS contain complete data, especially regarding the number and locations of samples and sample results in terms of detected contamination levels. Sample data contained in HEIS is used to assist in making cleanup decisions.

Given its importance to Hanford's cleanup effort, the objective of this audit was to determine whether HEIS contains complete environmental sampling data.

RESULTS OF AUDIT

Our review disclosed that HEIS did not contain complete environmental sampling data. Specifically, HEIS did not always:

- Contain required sample data obtained from sites that had been cleaned up to regulatory standards; and,
- Identify the location of where samples were taken. This information is needed to assist in developing environmental models and making cleanup decisions.



The Department did not ensure that the River Corridor Cleanup contractor entered required sample data into the system. In particular, the contractor was not required to reconcile sample data contained in hard copy reports used to document that sites had been cleaned up to regulatory standards with sample data contained in HEIS. As a result, contractor personnel were unaware that data from 14 of the 51 reports that we tested was not in the database. Additionally, the Department did not require contractors to update HEIS for missing sample location data that was not entered into the system prior to August 2003. Finally, the Department did not require contractors to participate in an advisory group specifically established to address HEIS data quality issues such as incomplete sample data being entered into the system.

As a result of incomplete data, the Department is at a greater risk of making uninformed cleanup decisions and being unable to defend against litigation. For example, the Department recently had to rely on source documents rather than HEIS data to assist in preparing an Environmental Impact Statement necessitated by a legal challenge made by the State of Washington. If HEIS had been reliable, it would have been a more cost-effective data source than the hard copy documentation which had to be searched for and retrieved.

MANAGEMENT REACTION

The Department's Richland Operations Office concurred with the report recommendations and provided actions in their comments. The Office of Inspector General considers management's actions responsive to the audit recommendations.

Attachment

cc: Assistant Secretary for Environmental Management
Chief of Staff
Team Leader, Audit Liaison Team, CF-1.2
Audit Liaison, EM-33
Audit Liaison, Richland Operations Office

REPORT ON MANAGEMENT CONTROLS OVER THE HANFORD ENVIRONMENTAL INFORMATION SYSTEM

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MAINTAINING THE HANFORD ENVIRONMENTAL INFORMATION SYSTEM

Maintaining the System

The Hanford Environmental Information System (HEIS) did not contain all of the environmental sampling data needed to assist in making cleanup decisions and to demonstrate the results of cleanup actions.

Missing Closeout Data to Support Cleanup

Sampling data from hard copy Cleanup Verification Packages (CVPs) are required to be entered into HEIS. However, we found that data had not been entered into HEIS from 14 of the 51 CVPs we tested. The 14 CVPs had 110 sample records that contained data results for contaminants of concern in soil samples. These samples are taken to demonstrate that the sites had been cleaned up to regulatory standards.

Samples Missing Location Information

In addition, we noted that HEIS did not always include a unique identifier that defined the location of where the sample was taken. Specifically, our test work of HEIS data showed that more than 8,000 sample records did not contain sufficient information to define the location of where the sample was taken. This information is critical because, according to the contractor's project lead for the HEIS database, the usefulness of sample data is limited without the location of where the samples were taken.

Institutional Controls

Sampling data in HEIS was incomplete because the Department did not:

- Ensure that the cleanup contractor reconciled hard copy data contained in CVPs to the HEIS database;
- Update the location identifier for the 8,000 sample records which were omitted prior to August 2003; and,
- Require contractor participation in the advisory group established to specifically address HEIS data entry and quality issues.

Although the regulator approved a Sampling and Analysis Plan for the cleanup of the 100 Area, which calls for all closeout data to be stored in HEIS, we found that the current River Corridor Cleanup contractor entered only selected data into HEIS on a periodic basis.

In fact, River Corridor Cleanup contractor personnel were unaware that certain information was not in HEIS until we brought the 110 missing sample records to their attention. We also determined that the contractor had not reconciled the CVP data to HEIS to ensure that the database was complete.

Also, HEIS has not been updated to include certain missing location information. Although the Tri-Party Agreement stipulated the establishment of standards for location data in 1993, HEIS location data did not begin to be consistently entered until 2003 when database controls were implemented to require an entry to be made. Some of the records had a general location noted in a separate text field. However, placing the data in this field would make it difficult for the Department or contractor to search the system. Thus, these records could not be used in any form of environmental modeling.

HEIS obtains data from several sources including the River Corridor Cleanup contractor, and is used by numerous groups including the Department, its contractors and regulators. A HEIS Technical Advisory Group (HTAG) was established to address data entry, data quality, and other database issues. Although this group was intended to address data entry and quality issues, the Department had not required its cleanup contractors to participate in the monthly HTAG meetings. Therefore, the advisory group had no effective mechanisms to resolve issues such as discussed above regarding data completeness.

Managing the Legacy

As a result of incomplete data, the Department is at a greater risk of making uninformed cleanup decisions and being able to defend against litigation. For example, the Department discovered data quality errors in the 2004 Hanford Solid Waste Environmental Impact Statement. In response to a State of Washington challenge to that Statement, the Department agreed to prepare a new, broader Environmental Impact Statement. The Department used source documents to assure data quality in preparing the new, broader Statement rather than rely on HEIS, the official repository. If HEIS had been reliable, it would have been a more cost-effective data source than the hard copy documentation which had to be searched for and retrieved. Finally, if HEIS, as the official data repository, is not properly maintained, the Department may not attain its strategic goal to manage post-closure environmental responsibilities and ensure future protection of human health and the environment.

RECOMMENDATIONS

We recommend that the Manager, Richland Operations Office:

1. Ensure that cleanup contractors sample data is entered into HEIS;
2. Evaluate records missing location information in HEIS and update as appropriate; and,
3. Require participation by all Hanford Site data owners in a Technical Advisory Group that is structured to resolve data quality issues.

**MANAGEMENT AND
AUDITOR COMMENTS**

Management concurred with the report recommendations and noted that the findings were consistent with its internal evaluation. Management stated that it would require contractors to develop or update procedures for entering sample data into HEIS, review and approve the procedures, and periodically verify the completeness of sample data. Management also agreed to direct the contractor responsible for the HEIS database to evaluate and update location information. Finally, Management said that it would direct contractor data owners to participate in the Hanford Technical Advisory Group established to address data entry, data quality, database structure, and application issues.

The Office of Inspector General considers management's actions responsive to the audit recommendations.

Management comments are included in their entirety in Appendix 2.

Appendix 1

OBJECTIVE The objective of this audit was to determine whether the Hanford Environmental Information System contains complete environmental sampling data.

SCOPE The audit was performed from October 2006 to July 2007, at the Hanford Site in Richland, Washington. The scope of the audit covered the Hanford Environmental Information System.

METHODOLOGY To accomplish the audit objective, we:

- Obtained and reviewed annual budget documents for the Hanford Environmental Information System;
- Researched Federal and Departmental regulations;
- Analyzed and assessed the Department and Fluor Hanford, Inc. internal controls over managing the Hanford Environmental Information System;
- Analyzed the Fluor Hanford, Inc. contract Statement of Work with the Department pertaining to data management services for the Hanford Environmental Information System; and,
- Interviewed key personnel in the Richland Operations Office, Fluor Hanford, Inc., Pacific Northwest National Laboratory, and Washington Closure LLC.

The audit was conducted 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. We assessed internal controls established under the *Government Performance and Results Act of 1993* related to the Department of Energy's Richland Operations Office Hanford Environmental Information System at the Hanford Site. 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. Regarding our reliance on computerized data, we satisfied our audit objective by determining that the data was incomplete.

The Richland Operations Office waived an exit conference.

United States Government

Department of Energy

Richland Operations Office

memorandum

DATE: **AUG 21 2007**
REPLY TO
ATTN OF: AMCP:JGM/07-AMCP-0265

SUBJECT: DRAFT AUDIT REPORT - MANAGEMENT CONTROLS OVER THE HANFORD ENVIRONMENTAL INFORMATION SYSTEM

TO: George W. Collard, Assistant Inspector General
for Performance Audits, IG-32, HQ

The purpose of this memorandum is to respond to the August 7, 2007, request for review and comment on the Draft Audit Report "Management Controls Over the Hanford Environmental Information System (HEIS)." The DOE Richland Operations Office (RL) concurs with the report recommendations and offers specific comments below.

The sampling data in the HEIS was correctly identified as incomplete because RL did not:

- Ensure that the cleanup contractor entered hard copy data contained in Closeout Verification Packages into the HEIS database;
- Update the location identifier for the 8,000 sample records which were omitted prior to August 2003; and,
- Require contractor participation in the advisory group established to address HEIS database issues.

These findings are consistent with RL's own internal evaluation and RL will incorporate identified actions into our project baseline and perform periodic evaluations to gauge the improvements' effectiveness.

RL offers the following comments regarding the draft report recommendations:

1. Ensure that cleanup contractors' sample data is entered into the HEIS.

Action Planned

RL will direct the contractors to ensure that sample data is entered into the HEIS. This direction will require the development or update of procedures as needed for entering sample data into the HEIS; the review and approval of the procedures by RL; and periodic checks to verify the completeness of sample entry into the HEIS. Letters of direction will be sent to the contractors by October 31, 2007. Revised sample data entry procedures will be due to RL by December 15, 2007, and approved procedures will be in place by January 31, 2008. Review and verification of data entry completeness will be conducted six months after initiation of the new procedures.

George W. Collard
07-AMCP-0265

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AUG 21 2007

2. Evaluate records missing locational information in the HEIS and update as appropriate.

Action Planned

RL will direct the contractor responsible for data contained in the HEIS database to evaluate and update the location information for the estimated 8,000 sample records that currently have no information in that field in the data records. These are older records where the location information was just left out or is not readily available. The contractor will either obtain and enter the appropriate information or insert a note indicating that information is not available. RL will provide direction to the contractor by September 30, 2007. The contractor will be expected to complete the task and report to RL by September 30, 2008.

3. Require participation by all Hanford Site data owners in a Technical Advisory Group that is structured to resolve data quality issues.

Action Planned

RL will direct the appropriate Hanford Site data owners (Contractors) to participate in the existing Hanford Technical Advisory Group that is set up specifically to address data entry, data quality, database structure, and application issues. Formal contract direction will be provided by October 31, 2007.

If there are any questions, please contact me, or your staff may contact Matt McCormick, Assistant Manager for the Central Plateau, on (509) 373-9971.


David A. Brockman
Manager

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