



memorandum

DATE: August 19, 2004

Audit Report Number: OAS-L-04-18

REPLY TO

ATTN OF: IG-36 (A03IF009)

SUBJECT: Audit of the "Revised Pit 9 Cleanup Project at the Idaho National Engineering and Environmental Laboratory"

TO: Paul Golan, Acting Assistant Secretary, Office of Environmental Management

INTRODUCTION AND OBJECTIVE

The Idaho National Engineering and Environmental Laboratory's (INEEL) subsurface disposal area was established in 1952 for disposal of solid radioactive waste and now encompasses an area of approximately 88 acres. Wastes from the INEEL and other Department of Energy (Department) sites, most notably Rocky Flats, were buried in the subsurface disposal area's pits, trenches and soil vaults. One of the pits, Pit 9, is a 1-acre site that was used to dispose of radioactive and hazardous waste, primarily from Rocky Flats, between 1967 and 1969. Since that time, the public, the State of Idaho, and the Department have become concerned that radioactive and hazardous particles buried in the disposal area could migrate and contaminate the Snake River Plain Aquifer.

The Department selected Pit 9 to demonstrate how the entire subsurface disposal area could be cleaned up. After an unsuccessful attempt to privatize the cleanup of the pit, the Department modified the strategy to involve a three-stage approach to the cleanup of Pit 9: subsurface exploration using probes and core samples, pilot waste retrieval demonstration, and complete remediation of Pit 9. Subsequently, to resolve a dispute with regulators over progress and timing, the Department modified its approach and began a project designed to demonstrate the ability to retrieve waste from Pit 9. The objective of this review was to determine whether the demonstration project successfully supports full-scale remediation and reduces environmental risk.

CONCLUSIONS AND OBSERVATIONS

While the Department completed the modified demonstration project, the effort did not significantly advance its understanding of how to proceed with the remediation of Pit 9. Specifically, the Glovebox Excavator Method (GEM) used to carry out the demonstration project was not capable of supporting full-scale remediation or significantly reducing environmental risks. The GEM project actually avoided known radioactive "hot spots" in the pit and retrieved only 75 cubic yards of low-risk waste and soil. In fact, the decontamination and demolition of the GEM facility will result in more waste than was actually removed from Pit 9.

On December 10, 2003, we briefed the Assistant Secretary for Environmental Management (EM) on the issues regarding the project and indicated that it may not be appropriate to expend the \$29 million required to complete the GEM project. Despite the lack of cleanup or demonstration value to be gained by executing the project, the Department initiated operations on December 12, 2003, to satisfy agreements with regulators. When we issued a draft of our report on this matter on December 18, 2003, we recommended that EM engage regulators in a discussion of the merits of the demonstration project and suspend operations until a reevaluation of the project's cost and benefits could be performed. The Department, however, in its February 9, 2004 response to our draft, did not agree to suspend operations and the project was completed approximately 2 weeks later.

Although we believe additional scrutiny of the merits of this project was warranted, we acknowledge that the Department tried to resolve disputes with its regulators over Pit 9 cleanup progress prior to proceeding with the GEM Project. Had the Department not agreed or suspended operation of the project, it would have been subjected to fines of up to \$4 million. As the Department moves forward and refines approaches to remediating the entire subsurface disposal area, we suggest that retrieval or demonstration methods be evaluated to determine applicability across the entire disposal area. Based on the outcome of such evaluation, we suggest that the Department engage regulators to make needed changes to project direction.

Since the Department concurred with similar suggestions in its February 9, 2004 response to our former draft report, no future action or response is required.

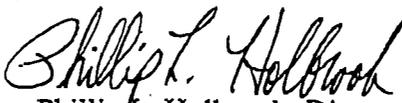
SCOPE AND METHODOLOGY

The audit was performed from May 19, 2003 through November 19, 2003 at the Department's Idaho Operations Office in Idaho Falls, Idaho; and Bechtel Idaho BWXT, LLC in Idaho Falls, Idaho. The audit scope was limited to the GEM Project and Pit 9 cleanup actions taken from 1998 through 2003. To accomplish the audit, we obtained and reviewed regulatory and legal agreements applicable to the revised Pit 9 remediation plan; obtained and reviewed technical and budget planning documents for the GEM Project; researched Federal and Departmental regulations; reviewed findings from prior audit reports regarding Pit 9; assessed internal controls and performance measures established under the *Government Performance and Results Act of 1993*; and, interviewed Idaho Operations Office and Bechtel personnel responsible for the GEM Project and Pit 9.

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. 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, since we did not rely upon automated data processing equipment to accomplish our

audit objective, we did not conduct an assessment of the reliability of computer processed data. We held an exit conference with Idaho Operations Office personnel on February 26, 2004.

We appreciate the cooperation of your staff during our review.


Phillip L. Holbrook, Director
Environmental Audits Division
Office of Inspector General

cc: Director, Office of Nuclear Energy, Science and Technology
Manager, Idaho Operations Office

memorandum

DATE: August 19, 2004

REPLY TO:

ATTN OF: IG-30 (A03IF009)

SUBJECT: Audit Report on "Revised Pit 9 Cleanup at the Idaho National Engineering and Environmental Laboratory."

TO: Team Leader, Audit Liaison Team (ME-2.1)

Attached is the subject report. Since there are no recommendations, a Management Decision is not required and the report does not need to be tracked in the Departmental Audit Report Tracking System.

We appreciate your cooperation.


Phillip L. Holbrook, Director
Environmental Audits Division
Office of Inspector General

Attachments

cc: Assistant Secretary, Office of Environmental Management
Director, Office of Nuclear Energy, Science and Technology
Audit Liaison, Office of Environmental Management

DOE F 1325.8
(08-93)

United States Government

Department of Energy

memorandum

DATE: August 19, 2004

REPLY TO:
ATTN OF: IG-36 (A03IF009)

SUBJECT: Audit Report on "Revised Pit 9 Cleanup at the Idaho National Engineering and Environmental Laboratory."

TO: Director for Performance Audits and Administration

Attached is the required final report package on the subject audit. The pertinent details are:

1. Staff days:	Programmed <u>N/A</u>	Actual <u>N/A</u>
Elapsed days:	Programmed <u>386</u>	Actual <u>458</u>

2. Names of OIG audit staff:

Assistant Director:	Fredrick Pieper
Team Leader:	Jonathan Black
Auditor-in-Charge:	Jason Kirkham
Audit Staff:	Robert O'Keefe

3. Coordination with Investigations and Inspections:

The report was sent to Mike Matkowski, Office of Investigations, and Henry Minner, Office of Inspections, on December 19, 2003. Their responses indicated that the report would not affect any ongoing investigations or inspections.



Phillip Holbrook, Director
Environmental Audits Division
Office of Inspector General

Attachments:

1. Final Report (2)
2. Monetary Impact Report
3. Audit Project Summary Report
4. Audit Database Information Sheet

MONETARY IMPACT OF REPORT NO.: OAS-V-04-18

- 1. Title of Audit: Revised Pit 9 Cleanup at the Idaho National Engineering and Environmental Laboratory
- 2. Division: Environmental Audits Division
- 3. Project No.: A03IF009
- 4. Type of Audit: (Definitions and examples of audit types are found in Chapter 2 of the OIG Audit Manual.)

Financial: _____ Performance: X
 Financial Statement _____ Economy and Efficiency X
 Financial Related _____ Program Results _____
 Other (specify type): _____

- 5. Please report monetary savings identified in the report using applicable columns. Provide additional explanations of audited activities/locations in Section No. 6 - Remarks.

FINDING		COST AVOIDANCE		QUESTIONED COSTS				MGT. POSITION	POTENTIAL BUDGET IMPACT
(A)	(B) Title	(C) One Time	(D) Recurring Amount Per Year	(E) Questioned	(F) Unsupported	(G) Unresolved	(H) Total (E)+(F)+(G)	(I) C-Concur N=Noncon U=Undec	(J) Y=Yes N=No
								N	
TOTALS--ALL FINDINGS									

6. Remarks: The Department's Stage II demonstration project will not successfully demonstrate full-scale remediation and will not meaningfully reduce environmental risks. As a result, the Department will get little return for its \$80 million investment.

7. Contractor: _____ 10. Approvals: _____
 8. Contract No.: _____ Division Director/Date: [Signature] 8/17/04
 9. Task Order No.: _____ Technical Advisor & Date: [Signature]

Office of the Inspector General (OIG)
 Audit Project Office Summary (APS)

Report run on: August 19, 2004 4:42 PM

Audit#: A03IF009 Ofc: IFA Title: REVISED PIT 9 CLEANUP PLAN AT INEEL

**** Milestones ****

	Planned	End of Survey	Revised	Actual
Entrance Conference:.....	01-OCT-02		19-MAY-03	19-MAY-03
Survey:.....			04-AUG-03	04-AUG-03
Draft Report:.....	15-OCT-03		15-NOV-03	18-DEC-03
Completed (With Report):.	31-DEC-03	04-AUG-03	08-JUN-04	19-AUG-04 (R)
-----Elapsed Days:	456	77	386	458

Elap. Less Susp:

Date Suspended: Date Terminated:
 Date Reactivated: Date Cancelled:
 Days Suspended (Cur/Tot): () Report Number: OAS-L-04-18
 Rpt Title: Report Type: LTR LETTER REPORT
 REVISED PIT 9 CLEANUP PROJECT AT THE IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY

**** Audit Codes and Personnel ****

Class: PER PERFORMANCE
 Program: EM Not Found
 MgtChall: 032 ENVIRONMENTAL CLEANU
 Site: SSA SINGLE-SITE AUDIT AD: 496 PIEPER
 SecMiss: ENV ENVIRONMENTAL QUALIT AIC: 760 KIRKHAM
 PresInit: Not Found Team Ldr: 531 BLACK
 Tech Adv: 544 ACTON

**** Task Information ****

Task No:
 Task Order Dt: CO Tech. Rep:
 Orig Auth Hrs: Orig Auth Costs:
 Current Auth: Current Auth Cost:
 Tot Actl IPR Hr: Tot Actl Cost:

**** Time Charges ****

Emp/Cont Name	Numdays	Last Date
DUDLEY, M	2.3	28-JUN-03
SERRANO, S	4.1	07-AUG-04
BLACK, J	31.0	04-SEP-04
O'KEEFE, R	51.8	09-AUG-03
KIRKHAM, J	166.0	24-JUL-04
Total:	255.2	

Office of the Inspector General (OIG)
Audit Project Office Summary (APS)

Report run on: August 19, 2004 4:42 PM

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**** Keywords ****

GEM
GLOVEBOX EXCAVATOR METHOD
PIT 9
TRANSURANIC
TRU
WASTE RETRIEVAL

**** Location Information ****

<u>Loc Code</u>	<u>Description</u>
IDO	IDAHO OPERATIONS OFFICE
INE	IDAHO NATIONAL LABORATORY

**** Finding Information ****

<u>Find#</u>	<u>Title</u>	<u>Type</u>	<u>Amount</u>	<u>Yrs</u>	<u>Imp</u>	<u>Pos</u>	<u>Pos</u>	<u>Dept</u>	<u>Dept</u>	<u>Dept</u>	<u>Date</u>
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Office of the Inspector General (OIG)
Audit Project Office Summary (APS)

Report run on:

August 19, 2004 4:42 PM

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Audit History

Audit No: A03IF009

History Date: 19-AUG-04

History Text:

PB/ ENTERED COMPLETED WITH REPORT DATE.

AUDIT DATABASE INFORMATION SHEET

1. Project No.: A03IF009
2. Title of Audit: Revised Pit 9 Cleanup at the Idaho National Engineering and Environmental Laboratory
3. Report No./Date OAS-V-04-18; August 19, 2004
4. Management Challenge Area: (032) Environmental Cleanup
5. Presidential Mgmt Initiative: None
6. Secretary Priority/Initiative: (ENV) Environmental Quality
7. Program Code: (EM) Environmental Management
8. Location/Sites: Idaho Operations Office
9. Finding Summary: The Department plans to spend almost \$80 million on a demonstration project that will clean up less than one percent of Pit 9 and demonstrate a remediation technology that is unlikely to be used for ultimate cleanup of the pit. Specifically, the GEM project, as currently configured, will avoid known radioactive "hot spots" in the pit and retrieve only 75 cubic yards of low-risk waste and soil. In addition, the Department has recognized that the technology to be used in the demonstration project will not be practical for cleaning up the entire pit. Despite the lack of cleanup or demonstration value to be gained by executing the demonstration project, the Department intends to proceed with the project to satisfy deadlines established by its regulators rather than explore other alternatives with them. As a result, the Department's \$80 million investment, including \$29 million still to be spent, will not substantially reduce environmental risks or accelerate cleanup of the subsurface disposal area.
10. Keywords: (include as many as you like)
 - Transuranic
 - TRU
 - Pit 9
 - GEM
 - Waste Retrieval
 - Glovebox Excavator Method

memorandum

DATE: February 9, 2004

REPLY

ATTN OF: EM-21 (M. Frei, 301-903-7282)

SUBJECT: Response to Inspector General Draft Report on "Revised Pit 9 Cleanup at the Idaho National Engineering and Environmental Laboratory"

TO: Frederick D. Doggett, Assistant Inspector General for Audit Services
Office of the Inspector General, IG-32

The Office of Environmental Management (EM) has reviewed the draft report on the subject audit that was transmitted by your December 18, 2003, memorandum. Your draft report recommends:

1. Suspension of operations;
2. Re-evaluation of the project mission to determine whether the scope of work is appropriate for the desired outcome; and
3. Engagement of the regulators to change the direction of the project consistent with the outcome of the re-evaluation.

As your report indicates, the Glovebox Excavator Method (GEM) project was agreed to by Secretary of Energy Abraham, U.S. Environmental Protection Agency Administrator, and State of Idaho Governor Kempthorne in April 2002 ["Agreement to Resolve Disputes" (ARD)] as the path forward for the Pit 9 waste retrieval requirements. The project has completed the design, construction, and operational readiness review phases and is now excavating waste, and we are anticipating completing operations by March 2004.

The GEM project is a subset of a larger cleanup issue at the Idaho National Engineering and Environmental Laboratory site, namely the entire 97 acre Subsurface Disposal Area (SDA) that contains numerous pits (including Pit 9) and trenches of buried waste. The ARD documents the role of this project in completing the Stage II portion of the Pit 9 project. The project does achieve the intent and objectives desired by the Department and agreed to by the regulators via the April 2002 ARD and the remedial design, which has been reviewed by the regulatory agencies.

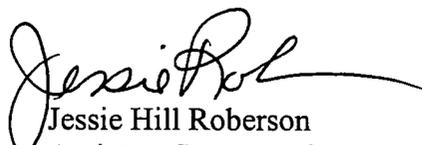
Given the Regulatory Agreement and the status of the project, EM does not agree with Recommendation 1 of the draft report.

The Department agrees with Recommendations 2 and 3. As noted above, the Department is continuing to discuss the Pit 9 project and the overall SDA cleanup project with the State and the EPA consistent with a risk-based approach. In addition, the Department has evaluated lessons learned from this project and is implementing corrective actions to significantly

improve future performance. A prime example is in the area of decontamination and demolition. Future waste retrieval at the SDA will incorporate better waste minimization techniques and a more simplified enclosure structure.

An attachment is included which provides our detailed comments on the draft letter and the report to ensure accuracy and consistency.

If you have any questions, please contact me at (202) 586-7709 or Mr. Eugene Schmitt, Deputy Assistant Secretary for Environmental Cleanup and Acceleration, at (202) 586-0755.


Jessie Hill Roberson
Assistant Secretary for
Environmental Management

Attachment

ATTACHMENT

COMMENTS ADDRESSING REPORT INACCURACIES

1. The **Implementing a Staged Approach** paragraph of the draft report cites the 1998 Explanation of Significant Differences (ESD). This document is no longer applicable to the GEM project. The 2002 ARD superceded the 1998 ESD. The regulators' agreement with this is documented in a September 25, 2003, Idaho Operations Office letter, EM-ER-03-246.
2. The fourth sentence in the same paragraph states the remediation of Pit 9 would be achieved by repetitive applications of the GEM project. This has never been an objective of the GEM project. The actual project objectives, as documented in the project plan and the remedial design, the latter of which was reviewed by the regulatory agencies, are: a) demonstrate waste retrieval, b) provide information on contaminants, c) characterize waste material for storage, and d) package and store waste onsite, pending decision on final disposition.
3. The third paragraph in the **Glovebox Excavator Method** section states the GEM project is limited by focusing on mature technologies, easier waste forms, and inefficient characterization methods. In fact, the use of mature technologies has been a very strong benefit for this project. With \$2 million of potential fines attached to the March 31, 2004, start of excavation regulatory milestone, the use of new and emerging technologies was not a viable option. The GEM project is recovering easier to process sludges, but also will be excavating a potentially large amount of fissionable material.
4. The same paragraph states Pit 9 has already been characterized via probes and cores. In fact, no cores have ever been taken.
5. The paragraph under Actual Cleanup Performed again evaluates the GEM project against ESD objectives, which no longer apply, as discussed previously in 2). This section also states the GEM project is avoiding "hot spots." In fact, the GEM project was located specifically to retrieve material at the most interesting hot spot in the pit. Probe P9-20 indicates a potentially large amount of fissionable material, and this area will be excavated.
6. The third paragraph of **Alternatives and Objectives** says the ARD and its supporting documentation do not support the change in purpose for the GEM project. The supporting documentation to the ARD does specifically address the change implemented by the GEM project. Supporting documentation includes all Critical Decision documentation and the remedial design, all of which were reviewed by the regulators. The remedial design in particular went through a number of review cycles and the regulators agreed on the stated project objectives as addressed previously in 3).

7. The **Return on Investment** section states \$29 million is yet to be spent on the project. As of January 5, 2004, when the project began excavating waste, \$20 million remained in the project's budget. Completion of excavation operations is expected by mid-March 2004, with complete characterization data to be delivered shortly thereafter.

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United States Government

Department of Energy

memorandum

DATE: December 18, 2003
REPLY TO: IG-30 (A03IF009)
SUBJECT: Draft Report on "Revised Pit 9 Cleanup Plan at the Idaho National Engineering and Environmental Laboratory"
TO: Assistant Secretary, Office of Environmental Management

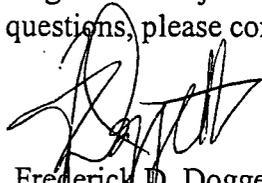
Attached for your review and comment is a copy of our draft report on the subject audit. The audit was performed at the Idaho Operations Office and Idaho National Engineering and Environmental Laboratory. A copy of the related Monetary Impact of the finding is also attached.

Please review the information in this draft and provide written comments within 15 working days on the facts presented, conclusions reached, appropriateness of the recommendations, and reasonableness of the estimated potential monetary impact or other benefits that may be realized. In order to facilitate the process of placing the audit report on our website, please provide the Office of Inspector General (OIG) with an electronic version of your comments. If you agree with the recommendations, please state the corrective actions taken or planned and the actual or target dates for the actions. Your comments should discuss alternative recommendations if you know of better ways to solve the problems discussed in the report. If you submit alternatives, please estimate the potential benefits to be realized from these alternative actions.

The OIG will make every effort to include management's comments in their entirety in the final report. Management should limit its comments to no more than two pages, with more detailed comments addressed in an attachment. The OIG will review the comments submitted by management and address relevant comments in the final report or revise the report, if appropriate. The content of the final audit report is the responsibility of the OIG.

This draft report is subject to change and does not represent the final position of the OIG. Therefore, the contents shall be safeguarded at all times to prevent improper disclosure. The draft report should not be provided to anyone outside the Department without the express approval of the Inspector General. In this context, management and operating contractors shall be considered to be part of the Department. DOE Order 221.3 states that all copies of the draft report remain the property of the OIG and shall be returned on demand.

We will contact you shortly to arrange a meeting on the subject report. Your cooperation will be greatly appreciated. If you have any questions, please contact Jonathan Black at (208) 526-4209.



Frederick D. Doggett
Assistant Inspector General
for Audit Services
Office of Inspector General

Attachment

cc: Manager, Idaho Operations Office
Team Leader, Audit Liaison Team, ME-1.1
Audit Liaison, Office of Environmental Management
Randal Scott, NE-ID



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

Draft Audit Report

Revised Pit 9 Cleanup Plan at the
Idaho National Engineering and
Environmental Laboratory

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

Environmental Audits Division
Oak Ridge, Tennessee 37830

DRAFT

MEMORANDUM FOR THE SECRETARY

FROM: Gregory H. Friedman
Inspector General

SUBJECT: INFORMATION: Audit Report on "Revised Pit 9 Cleanup Plan at the Idaho National Engineering and Environmental Laboratory"

BACKGROUND

The Idaho National Engineering and Environmental Laboratory's (INEEL) subsurface disposal area was established in 1952 for disposal of solid radioactive waste and now encompasses an area of approximately 88 acres. Wastes from the INEEL and other Department of Energy sites, most notably Rocky Flats, were buried in the subsurface disposal area's pits, trenches and soil vaults. One of the pits, Pit 9, is a 1-acre site that was used to dispose of radioactive and hazardous waste primarily from Rocky Flats between 1967 and 1969. Since that time, the public, the State of Idaho, and the Department have become concerned that radioactive and hazardous particles buried in the disposal area could migrate and contaminate the Snake River Plain Aquifer.

The Department selected Pit 9 to demonstrate how the entire subsurface disposal area could be cleaned up. After an unsuccessful attempt to privatize the cleanup of the pit, the Department's current strategy involves a three-stage approach to the clean-up of Pit 9: subsurface exploration using probes and core samples, pilot waste retrieval demonstration, and complete remediation of Pit 9. The Department has completed the exploration stage and is currently pursuing the demonstration project by using what it refers to as the Glovebox Excavator Method (GEM). The demonstration phase of the project is estimated to cost \$80 million and was intended to prove a technology that could be used to complete remediation of Pit 9. Based on this information, the objective of our audit was to determine whether the demonstration project for Pit 9 will successfully support full-scale remediation and reduce environmental risk.

RESULTS OF AUDIT

The Department plans to spend almost \$80 million on a demonstration project that will clean up less than one percent of Pit 9 and demonstrate a remediation technology that is unlikely to be used for ultimate cleanup of the pit. Specifically, the GEM project, as currently configured, will avoid known radioactive "hot spots" in the pit and retrieve only 75 cubic yards of low-risk waste and soil. In addition, the Department has recognized that the technology to be used in the demonstration project will not be practical for cleaning up the entire pit. Despite the lack of cleanup or demonstration value to be gained by executing the demonstration project, the Department intends to proceed with the project to satisfy deadlines established by its regulators rather than explore other alternatives with them. As a result, the Department's \$80 million

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investment, including \$29 million still to be spent, will not substantially reduce environmental risks or accelerate cleanup of the subsurface disposal area.

We recommended that the Assistant Secretary for Environmental Management engage the regulators in a discussion of the current pilot project and suspend operations until a re-evaluation of the project's cost and benefits can be performed. We believe that our recommendations are consistent with the accelerated, risk-based approach to cleanup activities outlined in the Office of Environmental Management's 2002 *Top to Bottom Review*. That review identified obstacles to achieving cleanup that reduces risk to human health and the environment as quickly as possible, including interpretation of cleanup agreements.

MANAGEMENT REACTION

To be added.

Attachment

cc: Deputy Secretary
Under Secretary for Energy, Science and Environment
Assistant Secretary for Environmental Management
Director, Office of Nuclear Energy, Science and Technology
Manager, Idaho Operations Office

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REVISED PIT 9 CLEANUP PLAN AT THE IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY

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Pit 9 Retrieval Demonstration Project

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PIT 9 RETRIEVAL DEMONSTRATION PROJECT

Implementing a Staged Approach

In accordance with the 1998 Explanation of Significant Differences¹ for Pit 9, the Department is pursuing a three-stage approach to achieving remediation of the entire pit. Under this approach, the Department would conduct a pilot project to demonstrate waste retrieval and characterization practices that could eventually be implemented on a full-scale basis. This process is consistent with the National Research Council's most recent report on the Department's project management, *Progress in Improving Project Management at the Department of Energy, 2002 Assessment*, which strongly recommends pilot scale demonstrations for large, first-of-a-kind projects. Accordingly, the Department anticipated that complete remediation of Pit 9 could be accomplished by subsequent, repetitive applications of the retrieval process used in the demonstration project. In 2001, the Department evaluated alternatives and selected the Glovebox Excavator Method (GEM) to achieve the second stage of the approach outlined in the Explanation of Significant Differences.

Glovebox Excavator Method

The Department plans to spend \$80 million on the GEM project, which has virtually no "demonstration" value and will clean up less than one percent of Pit 9.

Demonstration Value of Project

Remediation of the entire pit through deployment of the GEM technology is highly unlikely. The intent of the demonstration was to prove a technology that, by subsequent, repetitive applications, could accomplish the remediation of the entire pit. However, according to documents detailing the technical and functional requirements of the GEM project, the retrieval demonstration will be sited at one Pit 9 location, and the facilities and equipment will not be designed in a manner that allows them to be moved for use at other locations within or outside of Pit 9. The Department recognized the limitations of this technology and recently began consideration of other processes to clean up the rest of the pit. In September 2003, the Department approved the mission need for full remediation of Pit 9 and concluded that, based on knowledge gained from characterization activities, the demonstration project, and other sources, Pit 9 requires a new retrieval approach.

In addition, other information or value that may be gained by implementing the GEM project is limited because the project focuses on mature technologies, easier waste forms, and inefficient characterization methods. Program management stated that the GEM

¹ An Explanation of Significant Differences is prepared by the lead agency when differences in the scope, performance, or cost of a remedy identified in the Record of Decision occur but do not fundamentally alter the remedy selected.

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project will demonstrate waste separation techniques whereby waste can be sorted in a glovebox. However, manipulating and handling radioactive and hazardous material using a glovebox is a mature process. The Department also stated that the GEM project would demonstrate that an excavator can be used to dig in radioactive waste pits such as Pit 9. Yet, using an excavator to retrieve waste from pits and trenches is not new. In fact, the Department used excavators in the INEEL's pits in order to perform waste condition assessment surveys on several occasions during the 1970s. The results of those excavations are readily available. Using the results of probing and core samples conducted during the exploration stage, the Department selected the location within Pit 9 for the demonstration project, avoiding the more technically complex areas of the pit. Despite the lack of task complexity, the Department believes that the project is still useful in that it will help determine contamination levels in the surrounding soils. However, determining the nature and extent of contamination in the pit has already been performed by using probes and core sampling during the subsurface area exploration stage.

Actual Cleanup Performed

The GEM project, as currently designed, will retrieve only 75 cubic yards of low-risk waste and surrounding soil. This is less than half of the 200 cubic yards agreed upon in the 1998 Explanation of Significant Differences for the demonstration project and less than 1 percent of the 18,500 cubic yards of waste and surrounding soils that must ultimately be retrieved from Pit 9. The value of the project has also been diminished because the GEM project, as currently configured, will avoid known "hot spots" in the pit where complex waste -- such as disintegrated filters that represent the highest possibility of criticality -- was placed, and will focus instead on easier waste forms such as sludge and debris. Further, the decontamination and decommissioning of the facility constructed to carryout the project will generate nearly as much transuranic waste as the project will retrieve from the pit. According to the Department's own estimates, the decontamination and decommissioning process will generate an estimated 74 cubic yards of transuranic waste -- approximately 1 cubic yard less than the amount of waste to be retrieved. In addition, the project could generate as much as 175 cubic yards of low-level and mixed low-level waste.

Alternatives and Objectives

The Department did not re-evaluate alternatives once it knew that the GEM project could not be used to remediate the entire pit. Despite the lack of cleanup or demonstration value to be gained by executing the demonstration project, the Department intends to proceed with the project to satisfy deadlines established by its regulators. Specifically, even though the Department recognized that it is not practical to use the GEM approach as a means to remediate the entire pit, the Department intends to comply with the March 31, 2004 "start of operations" milestone.

Previously, in April 2000, the Department sent a letter to the Environmental Protection Agency (EPA) and the State of Idaho requesting to renegotiate the work plans and

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deadlines for the Pit 9 remediation. The EPA and State of Idaho were unwilling to renegotiate the work plans, and the Department was compelled to agree to current milestones set in the Agreement to Resolve Disputes in April 2002. However, the GEM project's utility in the overall remediation plan has changed considerably since April 2002 and warrants further review before the project proceeds.

During our review, senior management informed us that when the Agreement to Resolve Disputes was signed, the previous project goals were superceded and were no longer applicable to the second stage of the Pit 9 project. Management also stated that the focus of the GEM project became primarily to retrieve waste for characterization purposes rather than to use it as a pilot project to support full remediation of the entire pit. While the Department may have changed its focus at this point, the Agreement to Resolve Disputes and related correspondence do not specifically address this change. Rather, they focus on resolving matters related to the Department's request for extension of deadlines on the project and support the continuing need for a demonstration project. For example, in July 2000, the EPA stated that, "... it is important to complete the Pit 9 Stage II retrieval project to provide a defensible evaluation and cost basis for cleaning up the [Radioactive Waste Management Complex]." Further, the State of Idaho recognized that approaches like the pilot project, "...have the potential for tremendous savings in overall remediation costs of retrieval of the buried waste in the [subsurface disposal area]."

Also, management stated that an additional value of the GEM project is to demonstrate that the Department is willing and able to retrieve the waste in a safe manner. For years, there has been a public perception that the waste in Pit 9 is among the most dangerous waste in the Department. In reality, a majority of the waste is very similar to other transuranic waste in the Department, and the GEM project will allow the Department to demonstrate that it can be cleaned up. Further, several milestones for the remediation of Pit 9 have not been met in the past, requiring the Department to pay fines and renegotiate new milestones. By carrying out the GEM project as planned, the Department intends to show its willingness to comply with existing agreements. However, pursuing an alternative demonstration project could satisfy many of these same objectives and have a greater impact on the ultimate clean up of the subsurface disposal area.

Return on Investment

The Department's almost \$80 million investment, including \$29 million still to be spent, will not substantially reduce environmental risks or accelerate cleanup of the subsurface disposal area. As of September 2003, the Department had spent \$50 million in capital costs on the GEM project. In December 2003, the GEM project began operations to remove the three foot thick overburden covering the waste. Retrieval of contaminated waste is not anticipated to occur until mid-January. Once the Department reaches the contaminated portion of the pit, the equipment will require decontamination or disposal as transuranic and low-level waste. If the Department continues with the operational phase of the project, it will spend an additional \$29 million to demonstrate a technology with little value.

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It should be noted that if the March 2004 milestone is not met, the Department risks forfeiting \$4 million in fines to the State of Idaho, and an additional \$520,000 in fines per year. While the potential fines are significant, they are relatively minor compared to spending \$29 million for a pilot project that will not reduce the environmental risks associated with Pit 9 or provide a path forward for ultimate cleanup of the pit.

RECOMMENDATIONS

We recommend that the Assistant Secretary for Environmental Management:

1. Suspend operations of the GEM project;
2. Re-evaluate the project's mission to determine whether the scope of work is appropriate for the desired outcome; and,
3. Engage the regulators in discussion to change the direction of the project consistent with the results of the re-evaluation.

MANAGEMENT REACTION AND AUDITOR COMMENTS

To be added.

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APPENDIX 1

PRIOR REPORT

Department of Energy's Project to Clean Up Pit 9 at Idaho Falls is Experiencing Problems (GAO/RCED-97-180, July 1997). The Department chose a fixed-price approach for the Pit 9 project because management believed a fixed price would help limit the project's total cost and provide an incentive for contractors to use efficient practices in carrying out the cleanup by shifting the risk of nonperformance to the contractors. However, according to the General Accounting Office, the Pit 9 project, as originally conceived, was clearly a failure. It simply could not be completed in the time frame or within the price agreed to by the subcontractor.

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APPENDIX 2

OBJECTIVE, SCOPE, AND METHODOLOGY

OBJECTIVE

The objective of this audit was to determine whether the demonstration project for Pit 9 will successfully support full-scale remediation and reduce environmental risk.

SCOPE

The audit was performed from May 19, 2003, to November 19, 2003, at the Idaho Operations Office and Bechtel BWXT Idaho, LLC (Bechtel) in Idaho Falls, Idaho. The audit scope was limited to the Glovebox Excavator Method (GEM) Project and Pit 9 cleanup actions taken from Fiscal Years 1998 through 2003.

METHODOLOGY

To accomplish the audit objective, we:

- Obtained and reviewed regulatory and legal agreements applicable to the revised Pit 9 remediation plan;
- Obtained and reviewed technical and budget planning documents for the GEM Project;
- Researched Federal and Departmental regulations;
- Reviewed findings from prior audit reports regarding Pit 9;
- Assessed internal controls and performance measures established under the *Government Performance and Results Act of 1993*; and,
- Interviewed Idaho Operations Office and Bechtel personnel responsible for the GEM Project and Pit 9.

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 controls with respect to the Department's planning process for waste management activities. 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 rely on automated data processing equipment to accomplish our audit objective.

MONETARY IMPACT REPORT

MONETARY IMPACT OF REPORT NO.: _____

1. Title of Audit: Revised Pit 9 Cleanup Plan at the Idaho National Engineering and Environmental Laboratory
2. Division: Environmental Audit Division
3. Project No.: A03IF009
4. Type of Audit: (Definitions and examples of audit types are found in Chapter 2 of the OIG Audit Manual.)

Financial: _____	Performance: <u> X </u>
Financial Statement _____	Economy and Efficiency <u> X </u>
Financial Related _____	Program Results _____
Other (specify type): _____	

5. Please report monetary savings identified in the report using applicable columns. Provide additional explanations of audited activities/locations in Section No. 6 - Remarks.

FINDING		COST AVOIDANCE		QUESTIONED COSTS				MGT. POSITION	POTENTIAL BUDGET IMPACT
(A)	(B) Title	(C) One Time	(D) Recurring Amount PerYear	(E) Questioned	(F) Unsup-ported	(G) Unre-solved	(H) Total (E)+(F)+(G)	(I) C=Concur N=Noncon U=Undec	(J) Y=Yes N=No
	Pit 9 Retrieval Demonstration Project	\$24 M							
TOTALS--ALL FINDINGS		\$24 M							

6. Remarks: The Department's Stage II demonstration project will not successfully demonstrate full-scale remediation and will not meaningfully reduce environmental risks. As a result, the Department will get little return for its investment. While the Department has already spent \$50 million for the facility, it could save \$29 million, less \$5 million in State of Idaho fines and penalties, by terminating the GEM project.

- | | |
|--------------------------|---------------------------------|
| 7. Contractor: _____ | 10. Approvals: _____ |
| 8. Contract No.: _____ | Division Director/Date: _____ |
| 9. Task Order No.: _____ | Technical Advisor & Date: _____ |