



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

# Audit Report

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National Nuclear Security  
Administration's Construction of a  
Radiological/Nuclear Complex for  
Homeland Security

DOE/IG-0775

September 2007



## Department of Energy

Washington, DC 20585

September 12, 2007

### MEMORANDUM FOR THE SECRETARY

FROM:

*Gregory H. Friedman*  
Gregory H. Friedman  
Inspector General

SUBJECT:

INFORMATION: Audit Report on "National Nuclear Security Administration's Construction of a Radiological/Nuclear Complex for the Department of Homeland Security"

### BACKGROUND

The Department of Energy's National Nuclear Security Administration (NNSA) works with the Department of Homeland Security to ensure the safety of the United States and its citizens from acts of nuclear and radiological terrorism. As part of the war on terror, the Homeland Security Act of 2002 (the Act) authorized the Department of Homeland Security access to Department of Energy's national laboratories and other facilities to conduct research and develop advanced technologies to detect and respond to the use of nuclear, biological and chemical weapons. The Department of Energy's Work for Others program allows its contractors to perform work for the Department of Homeland Security and other agencies.

In accordance with the Act and the multi-faceted relationship between Energy and Homeland Security, the Department of Homeland Security entered into an interagency agreement with NNSA's Nevada Site Office to construct the Radiological/Nuclear Countermeasures Test and Evaluation Complex. The Department of Homeland Security requested that the project be fast-tracked so that construction at the Nevada Test Site could begin before building design was completed in order to have the project completed by February 2007. In August 2006, with only 68 percent of the construction complete, the Nevada Site Office suspended work on the project. At that time, it had incurred \$29.7 million of the total budgeted cost of \$33 million, or 90 percent of the available funds.

Based on information we received regarding potential cost overruns, we initiated this audit to determine if the Nevada Site Office had effectively managed this project.

### RESULTS OF AUDIT

The fast-track strategy employed for the construction of the Radiological/Nuclear Countermeasures Test and Evaluation Complex increased risk. Yet, the Nevada Site Office had not aggressively managed this critically important project. Specifically, the Site Office had not:

- Ensured that cost and schedule baselines were prepared, coordinated and used for project management;
- Allocated adequate contingency funds for the project;

- Effectively monitored project status; and,
- Effectively communicated project status to senior Department of Energy and Homeland Security officials.

In addition, without validation, the Nevada Site Office accepted the assurance of its contractor, Bechtel Nevada, that the project was on schedule and within budget despite early warning signs to the contrary.

Our examination of the project further determined that management and coordination responsibilities between the Department and Homeland Security were not clearly defined and the project was not appropriately staffed. Specifically, the Nevada Site Office and the Department of Homeland Security did not develop or execute a formal agreement defining their respective management and coordination responsibilities until May 2006, or two years after Bechtel Nevada started work on the project and three months prior to the suspension of work.

We also found a disturbing lack of clarity as to which agency was responsible for management and coordination of the project. This led to conflicting views on this subject, between Nevada Site Office personnel and Department of Homeland Security officials. Additionally, the Nevada Site Office assigned oversight responsibility for the effort to a program office that had limited construction project experience. For example, staff assigned by the program office had not managed capital asset construction projects and were not certified in project management as required by Department of Energy guidance.

At the end of our field work, the Radiological/Nuclear Countermeasures Test and Evaluation Complex had not been completed. The Department of Homeland Security was evaluating options for completing the Test and Evaluation Complex -- one option under consideration was contracting the remaining work to the Army Corps of Engineers. Nevada officials estimated that as much as \$10.5 million would be needed to complete the project.

Even if an effective fix is implemented, completion of the project will have been significantly delayed and the cost will have substantially exceeded original estimates. More importantly, the delay may impact the Nation's testing capability to detect nuclear and radioactive materials in a variety of circumstances.

We concluded that experience with the Radiological/Nuclear Countermeasures Test and Evaluation Complex project provides important "lessons learned" for managing the Department's expanding portfolio of Work for Others projects. This is particularly true of those with the Department of Homeland Security, which have national security implications.

To their credit, NNSA and National Security Technologies, LLC, the current Nevada Test Site contractor, have performed several reviews of the project since September 2006. These reviews found project management weaknesses at the contractor level similar to

those discussed in this report. To assist the Department in managing future Homeland Security projects, we made a number of recommendations to ensure that responsibilities and coordination mechanisms are agreed upon before initiating Work for Others projects, and that appropriate expertise is assigned to such projects.

#### MANAGEMENT REACTION

Management agreed with the report's findings and recommendations and agreed to be more aggressive in managing future Work for Other projects.

Attachment

cc: Deputy Secretary  
Administrator, National Nuclear Security Administration  
Chief of Staff  
Director, Policy and Internal Controls Management, NA-66

# REPORT ON NATIONAL NUCLEAR SECURITY ADMINISTRATION'S CONSTRUCTION OF A RADIOLOGICAL/NUCLEAR COMPLEX FOR THE DEPARTMENT OF HOMELAND SECURITY

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## Rad/Nuc CTEC Project at the Nevada Test Site

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### Background

The Radiological/Nuclear Countermeasures Test and Evaluation Complex (Rad/Nuc CTEC) is a first of a kind, Hazardous Category-2 nuclear facility being constructed at the Nevada Test Site for the Department of Homeland Security (Homeland Security). The facility will allow Homeland Security to consolidate radiological/nuclear operational test and evaluation activities as well as other training and operational activities. The Rad/Nuc CTEC was designated as a fast-track project for construction to start prior to the completion of building design. Homeland Security approved funding for the project was \$33 million. Bechtel Nevada (Bechtel) initiated the design and construction of the complex. In March 2006, the National Nuclear Security Administration (NNSA) announced that effective July 1, 2006, National Security Technologies, LLC (NSTec), would become the new contractor, thus assuming responsibility for project completion.

### Management of the Rad/Nuc CTEC Project

NNSA's Nevada Site Office (Nevada) did not effectively manage the Rad/Nuc CTEC project to ensure that it would be completed on schedule and within cost limitations. Specifically, Nevada did not follow project management requirements and did not adequately administer the Bechtel contract.

#### Project Management

Department of Energy (Department) Order 413.3 provides guidance for the acquisition of capital assets and construction projects. The Order establishes requirements for risk management, cost and schedule baselines, and periodic reviews of project performance. Our review showed, however, that Nevada did not ensure that cost and schedule baselines were prepared, coordinated, and used for project management; aggressively manage Rad/Nuc CTEC project risk; and, effectively communicate project progress with senior management.

#### Cost and Schedule Baselines

Although Homeland Security approved a funding amount of \$33 million in July 2005, Nevada did not ensure that Bechtel prepared a final approved cost and schedule baseline and an integrated schedule. This cost baseline would show how much the project would cost within the defined scope and allow management to assess whether the project's scope could be completed within available funds. In addition, Bechtel did not ensure departmental schedules, such as engineering, procurement, and construction,

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were integrated in a master plan and schedule for project activities. The lack of integration between procurement and construction schedules had direct impacts on the project and its workers. For example, progress on the Rad/Nuc CTEC project was delayed three months when equipment and building materials including a crane, pipe fittings, and windows for the project were unavailable. As a result, craft workers assigned to the Rad/Nuc CTEC project had to be redirected to other Bechtel projects at the Nevada Test Site.

### Risk Management

Fast-track projects are at risk of costly changes since construction begins before a facility is completely designed. Although construction of the Rad/Nuc CTEC project was expedited, sufficient contingency funds were not allocated to the project to account for construction changes that occurred as the design matured. According to NNSA guidance, contingency for a special, first of a kind construction project such as the Rad/Nuc CTEC should be about 20-30 percent. However, in June 2005, the Nevada Site Office Manager approved a contingency of 16.3 percent. The contingency amount was insufficient to compensate for the approximately 150 cost trends and changes made to the baseline by Bechtel. In fact, the contingency was depleted by April 2006 with only 59 percent of the project construction completed.

Additionally, although a risk management plan for the project was developed in March 2005, which identified excessive project team turnover as a risk, the plan was not updated to identify and mitigate an increased risk associated with a change in contractors announced by NNSA in March 2006. Specifically, effective July 2006, NSTec assumed responsibility for the project as a result of NNSA's competition of its management and operating contract for the Nevada Test Site. As a result of the contractor transition, the Rad/Nuc CTEC lost its entire contractor project management team. NSTec employees, with no prior project knowledge, assumed responsibility for the project after the contract transition.

### Progress Reviews

Further, Nevada made limited use of progress reviews or other Departmental reporting tools to monitor construction activity and to communicate with senior management. During Fiscal Years 2004 through 2006, for example, the Nevada Site Office Manager held only four progress reviews on the Rad/Nuc CTEC project,

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instead of the quarterly meetings suggested in the Department's project management guidance. Also, critical performance information and monthly status reports were not entered into the Department's Project Assessment and Reporting System, which is used to report to senior managers whether a project is on track to meet its performance baselines. These monitoring tools, if effectively used, would have increased communication with senior management about the status of the Rad/Nuc CTEC project's activities, events, milestones, and deliverables.

#### Contract Administration

As the project progressed, Nevada accepted Bechtel's assurances, without validation, that the project was on schedule and within budget despite early warning signs to the contrary. For example, the Earned Value Management System used by Nevada and Bechtel, identified cost and schedule performance indicators; however, both entities ignored key warning signs indicating potential schedule and cost overruns. Nevada accepted Bechtel's assurances that the project was still on track without validating Bechtel's explanations for low performance indicators. Starting in January 2006, cost and schedule indicators continually decreased below the desired measurement levels. Although Bechtel reported these low performance indicators, it assured Nevada that delays would not affect the overall schedule or budget because the delays were not on the critical path. Nevada accepted Bechtel's explanation and did not request additional information to determine how these delays would be overcome. However, we found that some of the delays such as the previously mentioned crane, which was delayed for more than three months, were essential to completing the project and were symptomatic of larger problems such as the lack of an integrated master plan.

#### **Responsibilities and Assignments**

The project was not effectively managed because management and coordination responsibilities were not clearly defined. Specifically, Nevada and Homeland Security did not have a formal agreement defining their respective management and coordination responsibilities until May 2006, or 28 months after Bechtel started work on the project. For example, there was no agreement between Nevada and Homeland Security regarding how cost estimate increases would be handled; that is, whether Homeland Security would increase funding or reduce project scope. Without such an agreement, cost increases were absorbed by contingency until the funds were exhausted. Further, without an agreement, coordination and communication problems occurred. Several Homeland



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Security officials, for example, told us that they were not provided enough detail about the project status and were unaware until July 2006, that available funds were not adequate to complete work.

We also found conflicting views among Nevada personnel and Homeland Security officials about which agency was responsible for management and coordination of the project. A Nevada official, for example, told us that Homeland Security was responsible for management of the project; however, Homeland Security officials told us that Nevada prohibited them from directly contacting Bechtel to discuss project status.

Additionally, Nevada assigned oversight responsibility for the project to a program office that had limited construction project experience. For example, staff assigned to the project had not previously managed construction projects under Department Order 413.3. The staff assigned to the project also was not certified in project management as required by Department guidance. In addition, a Nevada official told us that staffing resources were not adequate to review contractor performance on Work for Others projects.

## **Project Impact**

As of February 2007, Nevada and NSTec estimated an additional ten months and approximately \$7.4-10.5 million were needed to complete the project. Homeland Security officials, at the time of our review, were considering several options including de-scoping the project or contracting the remaining work to the Army Corps of Engineers under a fixed price contract.

Inadequate project management and contract administration resulted in additional costs to the government and delays in the completion of the Rad/Nuc CTEC project. As a result, Homeland Security's testing capability to detect radiological and nuclear materials that could move across and through our borders, tunnels, bridges and toll plazas has been reduced. Also, Homeland Security's consolidation of its radiological/nuclear operational test and evaluation activities, and other training and operational activities will be delayed.

## **RECOMMENDATIONS**

We recommend that the Administrator, NNSA:

1. Establish, prior to initiating Work for Others projects, Memorandums of Agreement that at a minimum specify responsibilities for:
  - a. Monitoring contract performance,

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- b. Approving project baselines and baseline changes to cost, scope and schedule; and,
  - c. Communicating project status to senior Department and customer management.
2. Ensure that construction projects, including Work for Others efforts, are managed by Department offices with appropriate experience, including certified project directors.

**MANAGEMENT  
COMMENTS**

NNSA management agreed with our report findings and recommendations related to Work for Others issues, particularly as it relates to Homeland Security. Specifically, management stated they would review Work for Others processes and procedures and appropriately establish roles and responsibilities in future agreements. In addition, NNSA intends to provide updated guidance to the site offices on conducting Work for Others projects.

Management comments are included in its entirety in Appendix 4.

**AUDITOR  
COMMENTS**

Management's comments were responsive to our recommendations.

### OTHER MATTERS

During our review, we found that the Nevada Site Office (Nevada) decided to reduce Bechtel Nevada's (Bechtel) facility operations award fee by \$686,995 due to deficiencies in its oversight of the Radiological/Nuclear Countermeasures Test and Evaluation Complex (Rad/Nuc CTEC) project. The award fee reduction decreased the amount of fees paid to the contractor by Nevada for managing and operating the Nevada Test Site. However, Nevada did not reduce the fixed fee of \$1.2 million paid to Bechtel for the Rad/Nuc CTEC project. This fee was paid by the Department of Homeland Security (Homeland Security). Since Bechtel's poor performance directly impacted the Rad/Nuc CTEC project, it may also have been more appropriate to reduce the amount of fixed fee paid by Homeland Security. In response, Nevada officials told us that they believed the National Nuclear Security Administration's (NNSA) Work for Others policy required the payment of a fixed fee and precluded a fee reduction. We noted, however, that the Department of Energy regulations included in the Bechtel contract state that "fees, including fixed fees, may be reduced when performance deliverables are not met." Accordingly, we suggest that NNSA ensure that all sites understand its Work for Others policy, especially regarding reductions in fixed fees paid to contractors who have not performed as expected.

## Appendix 2

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**OBJECTIVE** Our objective was to determine if the Nevada Site Office (Nevada) effectively managed the Radiological/Nuclear Countermeasures Test and Evaluation Complex project.

**SCOPE** The audit was performed between September 2006 and July 2007, at the Nevada Site Office and National Security Technologies, LLC in Las Vegas, Nevada. The scope was limited to the activities associated with Department of Homeland Security (Homeland Security) sponsored work from October 2005 through September 2006.

**METHODOLOGY** To accomplish the objective, we:

- Reviewed applicable Federal and Departmental regulations, Departmental Orders, internal policies and procedures, and Homeland Security project documents;
- Reviewed prior audits and reviews from the Office of Inspector General, Government Accountability Office, National Nuclear Security Administration (NNSA) and contractors;
- Analyzed Nevada and contractor compliance with Departmental Orders for the acquisition of capital assets, including their administration, monitoring, project reviews, scheduling, risk management and trending practices;
- Assessed compliance with the Government Performance and Results Act of 1993; and,
- Interviewed appropriate NNSA, Homeland Security, and contractor personnel.

The audit was conducted in accordance with generally accepted government auditing standards for performance audits and included limited 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. We relied on computer processed data to accomplish our audit objective and performed limited testing on the data we used to satisfy the audit objective. NNSA established performance measures under the Government Performance and Results Act of 1993. While there were no

## Appendix 2 (continued)

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specific performance measures related to Work for Others, performance in this area was assessed under the contractor's general management performance. NNSA waived an exit conference.

### **PRIOR AUDIT REPORT**

- *Nuclear Detection Devices* (DOE/IG-0720, February 2006). The Department of Energy (Department) had not developed procedures that detailed how research being conducted by the national laboratories for the Department of Homeland Security (Homeland Security) should be coordinated with parallel or similar research sponsored by the Department. In addition, the Department had not developed procedures nor required reporting Homeland Security funded research to Headquarters or any other central entity. As a result, neither the Department nor Homeland Security had a complete inventory of research being conducted at the national laboratories. The Office of Inspector General recommended that the Department establish formal procedures to coordinate radiation detection research being conducted by the national laboratories, regardless of the funding source.




Department of Energy  
National Nuclear Security Administration  
Washington, DC 20585



September 4, 2007

MEMORANDUM FOR George W. Collard  
Assistant Inspector General  
for Performance Audits

FROM: Michael C. Kane   
Associate Administrator  
for Management and Administration

SUBJECT: Comments to the Draft Report on the  
Countermeasures Test Facility; A06LV048;  
IDRMS 2006-28678

The National Nuclear Security Administration (NNSA) appreciates the opportunity to review the Inspector General's (IG) draft report, "NNSA's Management of the Radiological/Nuclear Countermeasures Test and Evaluation Complex Project." After NNSA provided information to the IG concerning the Nevada Site Office's Radiological/Nuclear Countermeasures Test and Evaluation Complex, the IG conducted their audit on the effectiveness of the project's management. We appreciate the IG's notation in the report that NNSA identified problems associated with the construction management and was working to mitigate the problems.

NNSA agrees with the report and the corresponding recommendations related to Work For Others issues, particularly associated with the Department of Homeland Security. NNSA will review our Work For Others processes and procedures and will appropriately establish roles and responsibilities agreements. NNSA will provide up to date guidance to the Site Offices on the conduct of Work For Others projects.

Should you have any questions, please contact Richard Speidel, Director, Policy and Internal Controls Management

cc: Jerry Talbot, Manager, Nevada Site Office  
Bruce Scott, Associate Administrator for Environment and Infrastructure  
Karen Boardman, Director, Service Center  
David Boyd, Senior Procurement Executive  
David Crandall, Assistant Deputy Administrator  
for Research, Development and Simulation



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