U.S. Department of Energy
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Office of Audit Services

Audit Report

Report On Management Controls Over the National Nuclear Security Administration's Enhanced Test Readiness Program

OAS-M-04-05 **August 2004**

Department of Energy

Washington, DC 20585

August 3, 2004

MEMORANDUM FOR THE DEPUTY ADMINISTRATOR FOR DEFENSE PROGRAMS

FROM: Rickey R. Hass
Assistant Inspector General
for Audit Operations
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on "Management Controls over the National Nuclear Security Administration's Enhanced Test Readiness Program"

BACKGROUND

Prior to 1992, the Department of Energy (Department) relied on underground nuclear testing and other tests to ensure the safety, reliability, and performance of the Nation's nuclear weapons. When a moratorium was placed on underground testing, the Department implemented a science-based Stockpile Stewardship Program designed to ensure that weapons were safe and reliable. The Department was, however, required to develop the capability to resume testing within 24-36 months should the need arise. In response to external recommendations by a Congressionally chartered panel and the Nuclear Posture Review, the National Nuclear Security Administration (NNSA) initiated efforts to reduce testing lead-time to 18 months. These efforts began in 2002 and were collectively known as the Enhanced Test Readiness Program. This reduction in lead time was estimated to cost $30 million a year over three years. Once achieved, the 18-month posture would require about $26 million a year to maintain.

In the Fiscal Year 2004 Energy and Water Development Appropriations Act conference report, Congress directed NNSA to restore a test readiness program capable of meeting the current 24-month requirement before pursuing a more aggressive goal of an 18-month readiness posture. Rather than modify existing plans, NNSA elected to satisfy the congressional tasking by maintaining its projected September 20, 2005, 18-month testing goal. Because of the importance of this issue to the stockpile reliability, we conducted the audit to determine whether NNSA would meet its September 2005 enhanced test readiness goal.

RESULTS OF AUDIT

While we noted examples of schedule slippages that could potentially impact the program, we were unable to determine whether NNSA was on track to meet its enhanced test readiness goal. Specifically, NNSA had not completed a number of scheduled tasks in three of five major Enhanced Test Readiness Program technical efforts. However, we could not ascertain – and management could not demonstrate – whether or not the failure to meet these objectives would impact achievement of readiness goals.

We were unable to make a definitive determination because the project lacked a number of essential performance management tools, including critical components such as:

- An up-to-date program plan;
- An integrated schedule baseline;
- A risk management plan; and,
- A detailed work schedule.

While NNSA indicated that the milestones missed were not critical and that the delays would not affect the achievement of its September 2005 goal, the limited performance management structure in place did not provide information necessary to support that viewpoint. Should NNSA not meet its goal, it may be unable to perform underground tests in a timely manner.

The Office of Inspector General has previously reported on similar project management issues within NNSA, such as the Enhanced Surveillance Campaign, and on challenges facing the Test Readiness Program. In our report on the *National Nuclear Security Administration's Enhanced Surveillance Campaign* (DOE/IG-0646, April 2004) we determined that NNSA experienced delays in completing certain milestones and is at risk of missing some future milestones. The audit of the *National Nuclear Security Administration's Test Readiness Program* (DOE/IG-0566, September 2002) noted that NNSA was at risk of losing its ability to restart underground testing on a timely basis because it did not have a comprehensive plan or methodology in place to address its most significant test-related concerns. While a number of actions have been instituted to enhance overall project management in NNSA, additional action is necessary to address the specific issues identified in our report. In that connection, we made several recommendations designed to improve management of the Enhanced Test Readiness Program.

MANAGEMENT REACTION

The Associate Administrator for Management and Administration agreed with the report's conclusions and concurred with the specific recommendations. Management's comments are included in Appendix 3.

Attachment

REPORT ON MANAGEMENT CONTROLS OVER THE NATIONAL NUCLEAR SECURITY ADMINISTRATION'S ENHANCED TEST READINESS PROGRAM

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ABILITY TO MEET ENHANCED TEST READINESS GOAL

Background

To achieve the 18-month test readiness posture, the National Nuclear Security Administration (NNSA) Headquarters, the Nevada Site Office, Bechtel Nevada, and Los Alamos, Lawrence Livermore, and Sandia National Laboratories plan to complete activities within five major technical efforts (MTEs).

- *Planning* - Develop potential test plans and requirements for test readiness.
- *Authorization* - Prepare documents that assure the protection of workers, the public, and the environment.
- *Diagnostics and Training* - Train personnel to execute the necessary underground nuclear test diagnostics.
- *Facilities and Equipment* - Maintain facilities and equipment for fielding an underground nuclear test.
- *Operations* - Prepare and maintain test-specific operational assets.

Each MTE has an overall goal to support the accomplishment of the 18-month test readiness transition. To meet the overall goal, the MTEs are comprised of yearly milestones. The Enhanced Test Readiness program has identified these milestones as a viable approach to successfully achieving the September 2005 goal.

Test Readiness Progress

Our audit disclosed that NNSA had not completed tasks in three of five MTEs detailed in its June 2003 *Program Plan for Test Readiness*. In particular, activities in the authorization, diagnostics and training, and operations MTEs had not been accomplished.

- During FY 2003, Bechtel Nevada did not accomplish two tasks within the authorization MTE — the review and update of external agreements and environmental permits. The review of agreements, which is required to ensure that the Department and other Federal, state, and local officials have reached the necessary consensus to conduct a test, had not yet been completed at the time of our review and was delayed by approximately 12 months. The review of permits, which would ensure that existing permits adequately supported the resumption of testing, was delayed two months.

- Los Alamos National Laboratory (Los Alamos) and Lawrence Livermore National Laboratory (Livermore) delayed the completion of a conceptual study on a diagnostic capability. The study was to have identified facilities and equipment needed to manufacture the diagnostic capability. At the time of our review, this task had not been completed and was six months behind schedule.

- During FY 2003, NNSA also did not complete an activity in the operations MTE. The operations MTE was designed to ensure underground nuclear test-specific capabilities are developed and sustained. NNSA did not complete a draft version of *The Containment of Underground Nuclear Explosions*. This document is important because very few scientists with containment experience are now available to lead future tests or teach new scientists.

Project Management Tools

While the schedule slippages identified could potentially impact the program, we were unable to determine, based on available information, whether NNSA was on track to meet its enhanced readiness goal. Specifically, we could not ascertain, and management could not demonstrate, whether or not the failure to meet these objectives would impact achievement of readiness goals because the project lacked a number of essential project management tools. For example, NNSA had not updated its program plan to reflect changes to the project, did not maintain an integrated schedule baseline, and had not developed a risk management plan or a detailed work schedule.

NNSA did not modify its June 2003 program plan to ensure that scope and schedule baselines were current. In FY 2003, a continuing resolution delayed the start of work from October 2002 until April 2003. However, after the budget was approved, many 2002 start dates were not modified and work scheduled to be completed in twelve months was compressed into six months. Additionally, in the first few months of FY 2004 NNSA again operated under a continuing resolution; however, NNSA did not modify its program plan to address the additional delays and continued to work from its June 2003 program plan.

Further, at the time of our audit and nine months after the start of the project, NNSA had not completed an integrated schedule baseline, which would have provided an overall means of combining crucial schedule and resource requirements for

Bechtel Nevada, Los Alamos, Livermore, and Sandia. Additionally, program officials could not provide evidence that site-level tasks, discrete activities that support the completion of program level milestones, were on track. For example, Livermore and Los Alamos were performing site-level tasks to support the development of a timing and firing system, along with tasks to support drilling to retrieve core samples from the cavity of the explosion. NNSA could neither show the progress of these site-level tasks for FY 2003, nor demonstrate whether the tasks will be completed by their target completion dates.

While the Headquarters program manager indicated that the site organizations would be tracking progress of the site level tasks, site personnel were not able to provide information to demonstrate such activity. We also found that site personnel did not use performance measurement tools to calculate the percent completion at the activity level, cost and schedule variances, or "to-complete" forecasts as required. When requested, program officials provided us with written statements to support the completion of some interim activities, but were unable to demonstrate that the project was on track to meet the 18-month test readiness.

NNSA also had not developed a risk management plan or a detailed work schedule. Without a risk management plan, NNSA could not identify all obstacles to completing FY 2003 activities and may be unable to react quickly to adjust the program plan or established strategies for resolving schedule or funding delays. Finally, a work schedule, such as a Work Breakdown Structure (WBS), would have allowed program officials to organize the project elements and define total scope, providing the detailed steps for the project, technical planning, cost estimates, resource allocations, performance measurements, and detailed status reports. A detailed WBS would also have provided NNSA with a system to integrate all project work to identify and track specific work scopes and overall progress.

Readiness

NNSA's ability to provide a timely test and certify the performance of the stockpile could be adversely impacted if delays in achieving the 18-month test readiness continue. As weapons in the stockpile age and are refurbished, the capability to conduct a test within the required timeframe could be essential to the certification of the

performance of the stockpile. Implementation of a comprehensive performance management system for the test readiness program will, in our view, increase the likelihood of success of the program.

RECOMMENDATIONS

We recommend that the Deputy Administrator for Defense Programs require the Enhanced Test Readiness Program to implement appropriate performance management tools, including:

- An updated annual Program Plan;
- An integrated schedule baseline;
- Performance measurement methodology;
- A risk management plan; and,
- A detailed Work Breakdown Structure.

MANAGEMENT REACTION

The Associate Administrator for Management and Administration concurred with the recommendations and agreed with the need for effective performance-based management in the Test Readiness Program. The Associate Administrator stated that as a result of FY 2003 and FY 2004 program accomplishments, most of the recommendations have been completed. These accomplishments include releasing an updated Program Plan on January 15, 2004, producing an integrated baseline schedule in January 2004, and improving the quality of the program performance measures. Management's written comments can be found in Appendix 3 of this report.

AUDITOR COMMENTS

We consider management's comments and corrective actions to be responsive to the report's recommendations.

Appendix 1

OBJECTIVE

We conducted the audit to determine whether NNSA would meet its September 2005 enhanced test readiness goal.

SCOPE

We performed the audit from May 2003 through March 2004 and reviewed data through December 2003. We conducted work at NNSA, Germantown, MD; Sandia National Laboratories, Albuquerque, NM; Los Alamos National Laboratory, Los Alamos, NM; Lawrence Livermore National Laboratory, Livermore, CA; Nevada Site Office, in North Las Vegas, NV; and the Nevada Test Site, Mercury, Nevada.

METHODOLOGY

To accomplish the audit objective, we:

- Interviewed NNSA/Headquarters, Lawrence Livermore National Laboratory, Sandia National Laboratories, Los Alamos National Laboratory, Nevada Site Office, and Bechtel Nevada personnel;
- Reviewed and evaluated the Test Readiness Program Plan dated June 5, 2003;
- Analyzed supporting documents for various milestone's completion;
- Visited facilities at the Nevada Test Site; and,
- Reviewed prior audit reports related to the audit objective.

We conducted the audit according to 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. We did not rely on information processed on automated data processing equipment to accomplish our audit objective. We discussed our findings with the Test Readiness Program Manager on July 15, 2004, and NNSA subsequently waived an exit conference.

PRIOR AUDIT REPORTS

- *National Nuclear Security Administration's Test Readiness Program* (DOE/IG-0566, September 2002). The audit found that the Nevada Operations Office's ability to conduct an underground nuclear test within established parameters was at risk due to the current status of available human and physical resources. This occurred because NNSA did not have a comprehensive plan or methodology in place to address its most significant test-related concerns. The audit concluded that unless these challenges are addressed, the Department risked losing its ability to restart underground testing on a timely basis, should the need arise.

- *The National Nuclear Security Administration's Enhanced Surveillance Campaign* (DOE/IG-0646, April 2004). The audit found that NNSA experienced delays in completing milestones within the campaign and is at risk of missing future milestones. The delays were due to weaknesses in project planning, such as not adequately planning for unexpected delays.

- *Dual Axis Radiographic Hydrodynamic Test (DARHT) Facility* (DOE/IG-0599, May 2003). The audit found that (1) DARHT was 15 months behind schedule, (2) scope changes had reduced or eliminated work elements, (3) critical activities had been shifted to other programs, and (4) two project activities were being completed with non-project funds. It was determined that the NNSA's project management controls needed improvement.

Department of Energy
National Nuclear Security Administration
Washington, DC 20585

July 16, 2004

MEMORANDUM FOR: Lawrence R. Ackerly
Division Director, NNSA Audits Division
Office of Inspector General

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

SUBJECT: Revised Comments on Draft Report on Enhanced Test Readiness

The National Nuclear Security Administration (NNSA) is submitting revised comments to the Inspector General's (IG) draft report, "Management Controls Over the National Nuclear Security Administrations's Enhanced Test Readiness Program." We appreciate the opportunity to have reviewed the draft report and the IG's resolving the technical issues raised in our previous memorandum.

NNSA believes that management tools and procedures are in place to demonstrate our progress toward achieving a 24-month readiness posture. Preparations for the enhanced readiness program were affected by a delay in funding caused by a six-month continuing resolution, so the appropriate documents were not available at the time of the audit. New program plans are now complete.

The difficulty in managing a diverse and complex program such as the Enhanced Test Readiness Program through startup, while simultaneously making significant adjustments to the program plans and schedules, led to the deficiencies described in the report. This is demonstrated specifically in regard to the two key findings:

- Many of the FY 2003 program management documents mentioned in the report were out of date as stated, and the replacement documents were still being developed during the first quarter of FY 2004. While the Program participants were well aware of the changes being incorporated into the new program plans, it was difficult for the auditors to assess the status of the ongoing efforts or the likelihood of future success based only on the released documents at the time.

- The Test Readiness Program did miss four milestones scheduled for FY 2003 as stated in the report, due to the compressed schedule, but has since accommodated these shortcomings in other, more recent activities. The

report neglected to mention that the Program actually did complete 28 of its 32 scheduled milestones during the six months of FY 2003 when work was allowed.

We want to point out that the tone of the report is more attuned to project management than is appropriate for test readiness, since the Test Readiness program is not an acquisition program for capital assets or new construction.

NNSA agrees with the need for effective performance-based management in the Test Readiness Program and concurs with the specific recommendations listed in the report. In fact, many of the documents mentioned in the recommendations were in development at the time of the audit. These documents were finalized early in the second quarter of FY 2004 and are currently being implemented by the Program management team. These documents benefitted from the ongoing discussions relating to the audit during their development. Of the four milestones missed in FY 2003, one was completed in the first quarter of FY 2004 and the others have been fully incorporated into the new program plans and schedules.

As a result of the FY 2003 and FY 2004 program accomplishments, most of the recommendations contained in the draft report have been completed. Nevertheless, we will periodically review implementation of the various management controls for opportunities to improve and enhance the likelihood of program success.

- *Provide an updated annual Program Plan* - An updated Program Plan was released on January 15, 2004. Since acknowledging that a plan must be current to be usable, changes to the plan are discussed at the monthly status meetings and approved through a change control process before implementation.

- *Produce an integrated schedule baseline* - The Test Readiness integrated schedule baseline was produced in January 2004. It is updated monthly and used to report progress toward milestone completion.

- *Implement performance measurement methodology* - The Test Readiness Team improved the quality of the Program performance measures, as evidenced in the January 15 Program Plan, and will continue to refine them as more experience is gained.

- *Develop a risk management plan* - Risk management and mitigation are integrated into the individual elements of the current Program Plan. However, the Test Readiness Team will examine the adequacy of that approach.

- *Produce a detailed Work Breakdown Structure* - A work breakdown structure for each major technical element was included in the Program Plan and was used to implement the integrated schedule. The work breakdown structure is also used to integrate and track the specific work scopes and overall progress.

Should you have any questions about this response, please contact Richard Speidel, Director, Policy and Internal Controls Management. He may be contacted at 202-586-5009.

cc: Deputy Administrator for Defense Programs

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