

# memorandum

DATE: October 21, 2009

Audit Report Number: OAS-L-10-02

REPLY TO  
ATTN OF: IG-321 (A08LV022)

SUBJECT: Report on the "Follow-up Audit of Test Readiness at the Nevada Test Site"

TO: Manager, Nevada Site Office

## INTRODUCTION AND OBJECTIVE

As part of a self-imposed moratorium on testing, the United States has not conducted an explosive nuclear test since 1992. Since that time, the Department of Energy's (Department) National Nuclear Security Administration (NNSA) has used the Stockpile Stewardship Program, an effort that includes analytical simulation, laboratory experiments, and weapons refurbishments, to maintain the stockpile without nuclear testing. Under current national policy, however, the Department may be called upon, within a three-year timeframe, to resume underground nuclear testing at the Nevada Test Site (Nevada) under certain circumstances. These situations include the identification of a new type of weapon problem or an accumulation of uncertainties about the reliability of the nuclear stockpile. Prior to performing any test, the Department is required by Title 10 of the Code of Federal Regulations (CFR) Part 830, *Nuclear Safety Management*, to complete various safety analyses. In addition, Department Orders 452.1C, *Nuclear Explosive and Weapon Surety Program*, and 452.2C, *Nuclear Explosive Safety*, require a nuclear explosive safety study, which is a formal evaluation of the controls to meet nuclear explosive safety standards.

In September 2002, the Office of Inspector General reported in *National Nuclear Security Administration's Test Readiness Program* (DOE/IG-0566, September 2002) that the Department's ability to conduct an underground nuclear test within three years was at risk. At that point, the Department and its contractor organizations had lost approximately 50 percent of its employees with actual testing experience and much of the equipment used in testing had become unserviceable, obsolete, or was no longer supported by the manufacturer. Facilities used in the testing program had also been converted to other uses, mothballed, and/or dismantled. Finally, required safety studies had not been updated to satisfy existing requirements. NNSA did not fully agree with our recommendations to correct these problems, but indicated that it would take certain other actions to address the issues outlined in our report. As part of our responsibility to follow-up on prior audit findings and recommendations, we initiated this audit to assess the current state of test readiness at Nevada.

## CONCLUSIONS AND OBSERVATIONS

Since our prior audit, the Department's test readiness capabilities at Nevada have continued to deteriorate. Specifically:

- Legacy physical assets and diagnostic equipment continued to degrade due to age, lack of maintenance, and outdated technological applicability;
- Experienced and trained personnel were not available to fill critical nuclear testing positions; and,
- Nuclear safety analyses needed to support testing were incomplete.

Our testing revealed that there is a risk that physical assets and diagnostic equipment could not be made ready to support an underground nuclear test within the required three-year window. Specifically, equipment and portions of Nevada's infrastructure require reconstitution before use. For example, some components of an experiment used for determining the projected yield of a weapon system were not available and could not be restored within three years. In addition, legacy diagnostic equipment and recording computer systems, were for the most part, technologically obsolete. Furthermore, a number of inventoried assets identified by National Security Technologies (NSTec), NNSA's current management and operating contractor at Nevada, as available for test readiness were actually damaged or unusable. We noted that after our 2002 audit report, NNSA initiated a modernization effort. Specifically, legacy cameras and digitizers used for taking a radiation photograph of a nuclear device were adapted to modern computers and software, and NSTec developed a replacement camera. In addition, an effort to find replacements for the legacy oscilloscopes used for high speed data collection had been initiated. However, reduced funding has delayed the completion of the modernization effort.

Additionally, experienced and trained personnel were not available to fill critical nuclear testing positions. NSTec identified a total of 183 key and critical positions necessary to conduct an underground nuclear test, but determined that only 122 currently employed individuals were qualified to fill the positions. Even though NSTec assigned 46 of the 122 individuals to more than one position, 34 critical positions cannot be filled with existing personnel. In addition, 30 of the 122 individuals had never been involved in an underground nuclear test. Further, there is no formal program to train personnel to meet the position requirements. Our review of test readiness program documents and discussions with NSTec personnel revealed that existing site training programs were limited to tabletop exercises and lunch and learn seminars, which did not address all aspects of underground nuclear testing activities. We noted that from 2003 to 2004, a number of training materials were developed and presented to familiarize personnel with some diagnostic equipment used in underground nuclear tests. However, according to an NSTec official, as the test readiness budget was reduced, priorities shifted from training personnel to modernization of diagnostic equipment.

Finally, NSTec estimated that it would take nearly four years to develop and complete the safety analyses and a nuclear explosive safety study required to perform underground testing. The underground nuclear testing safety basis was contained in four documented safety analyses. Our review disclosed that one analysis was completed and approved, and each of the remaining three was 70 to 80 percent complete. NNSA reported that actions to complete the documented safety analyses would be delayed until funding became available.

Additionally, of the six areas that made up the nuclear explosive safety study, two studies were current and one study had expired. The remaining three studies had not been completed and there were no plans to initiate them.

NNSA's test readiness deteriorated because of a lack of budgetary support. Specifically, NNSA dedicated an average of \$15.7 million each year to test readiness from Fiscal Years 2004 to 2009, but, had estimated that an average of \$17.5 million per year was needed to maintain a test readiness capability. NNSA's decision not to support maintaining a test readiness posture capable of meeting the three-year goal appears to be consistent with current congressional policy. Specifically, the Committee on Appropriations in its report on the *Energy and Water Development Appropriations Bill, 2010* commended NNSA for requesting no dedicated funding for nuclear test readiness. The Committee noted that nuclear testing cannot be executed because of diplomatic concerns and local opposition to nuclear testing.

We recognize that current national and international priorities make nuclear testing in the future very uncertain. Accordingly, we are not making any recommendations and a formal response is not required.

We discussed the results of our review with NNSA management and Nevada Site Office officials who agreed that budgetary constraints have impacted the state of test readiness at Nevada. However, site office management remains confident that an underground nuclear test could be conducted within the required timeframe. To meet this requirement, the site office intends to utilize personnel who support the Stockpile Stewardship experimental program at Nevada and to incorporate system improvements developed by modernization efforts, thereby reducing the reliance on legacy skills and equipment.



David Sedillo, Director  
National Nuclear Security Administration  
and Science Audits Division  
Office of Inspector General

Attachment

cc: Chief of Staff  
Acting Director, Policy and Internal Controls Management, NA-66  
Audit Liaison, NNSA/Nevada Site Office  
Team Leader, Audit Liaison Team, CF-1.2  
Dianne Williams, Office of Risk Management, CF-1.2

## **SCOPE AND METHODOLOGY**

Because of the importance of stockpile stewardship and the need to ensure the effectiveness of the corrective actions on prior audit reports, we initiated this audit to assess the current state of test readiness at the Nevada Test Site. Our review was conducted at the following locations: NNSA Headquarters, Washington, DC; the Nevada Site Office, Las Vegas, Nevada; and the Nevada Test Site, Mercury, Nevada. The review was performed between May 2008 and July 2009.

We conducted interviews with federal and contractor personnel including underground nuclear testing key and critical personnel. We toured underground nuclear testing facilities at the Nevada Test Site and the North Las Vegas Facility, and observed underground nuclear testing equipment and inventories stored at these locations. In addition, we reviewed laws, regulations, policies, procedures and other documents related to the test readiness program and reviewed pertinent prior audit and assessment reports.

Our review was conducted in accordance with generally accepted government auditing standards and included tests of internal controls and compliance with laws and regulations to the extent necessary to satisfy our 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 evaluation. We also assessed compliance with the Government Performance Results Act of 1993 and found that NNSA had established performance measures for itself and NSTec related to test readiness. Finally, we did not rely on computer processed data to accomplish our audit objective.