

memorandum

DATE: August 20, 2009

Audit Report Number: OAS-L-09-16

REPLY TO
ATTN OF: IG-32 (A09AL004)

SUBJECT: Audit Report on "Follow-Up Audit of the Stockpile Surveillance Program"

TO: Deputy Administrator for Defense Programs, NA-10

INTRODUCTION AND OBJECTIVE

The Department of Energy's National Nuclear Security Administration's (NNSA) stockpile surveillance program provides information on the status of the Nation's nuclear weapons stockpile. The scope, frequency and type of testing necessary to satisfy stockpile surveillance requirements are defined by the three nuclear weapons laboratories, while testing is carried out at seven sites in the weapons complex. Through a variety of tests, the stockpile surveillance program ensures that weapon systems function as expected and detects defects due to handling, aging, manufacturing, or design. The test results are used to help support NNSA's annual assessment of the reliability, safety, and security of the stockpile.

Several prior Office of Inspector General and Government Accountability Office audits found that stockpile surveillance testing was not being completed as scheduled. These audits include: *Stockpile Surveillance Testing* (DOE/IG-0528, October 2001); *Follow-Up Audit on Stockpile Surveillance Testing* (DOE/IG-0744, October 2006); and, *Nuclear Weapons: Improvements Needed to DOE's Nuclear Weapons Stockpile Surveillance Program* (GAO/RCED-96-216, July 1996). The audits found that a lack of safety studies and poor coordination between sites were major reasons for the existence of significant testing backlogs. Due to these backlogs, NNSA lacked certain information needed to assess the reliability of the stockpile, as well as vital information regarding potential weapon system anomalies and defects.

Because of the importance of the surveillance program to the nuclear weapons stockpile, we initiated this audit to determine whether the stockpile surveillance testing backlogs continued and, if so, to what extent. The audit objectives were consistent with a stipulation in the Fiscal Year (FY) 2009 National Defense Authorization Act which required a review of previously reported test backlogs.

CONCLUSIONS AND OBSERVATIONS

Our review revealed that during 2007, NNSA made fundamental changes to the stockpile surveillance program, including the initiation of a new testing approach. These changes had the practical effect of eliminating all of the testing backlogs that we had previously identified. Thus, we were unable to specifically answer the question

posed in the National Defense Authorization Act as to the state of testing backlogs. Nor, were we able to independently determine whether previously backlogged tests were properly eliminated or appropriately absorbed into the new testing approach. This was due, primarily, to the highly technical nature of the decisions made relating to the changes in the surveillance program. However, nothing came to our attention to indicate that NNSA's actions were inappropriate.

NNSA officials told us that its new approach to the stockpile surveillance program emphasized tests intended to assess the impact of aging on weapon systems and components, fill gaps in knowledge, and resolve uncertainties about critical performance parameters. In contrast, they asserted that NNSA's previous approach emphasized tests intended to identify design, production, and alteration problems. Our evaluation established that NNSA met all of its FY 2008 surveillance testing milestones under the new approach. However, because of the short period of time the new program has been in effect, we were unable to make a definitive determination as to whether the approach will ultimately be effective.

Transformation of the Stockpile Surveillance Program

In 2001, NNSA began considering changes to the stockpile surveillance program to emphasize tests that addressed the types of data needed to ensure the safety, security, and reliability of the current stockpile. NNSA officials provided documentation showing that they began evaluating possible changes to the test methodology because weapons were remaining in the stockpile longer than expected. Officials also indicated that historic budget shortfalls had hampered their ability to complete all scheduled tests and that a better, more efficient approach to testing could help reduce program stresses.

Prior to its relatively recent shift in strategy, the stockpile surveillance program sampled weapons in the stockpile and provided data on production and design defects for weapon systems that were newly produced or that had undergone major changes through the life extension, alteration, or modification processes. Based on studies conducted by Sandia National Laboratories (Sandia) and later adopted by NNSA, officials concluded that additional design and production defect data was of limited utility because new weapons were not being designed or produced and data was already available on these issues from previously conducted tests. Rather, NNSA concluded that additional data was needed to address the changing data requirements of the program.

In 2007, NNSA actually began transforming the surveillance program to tailor tests to each weapon system's life cycle. Specifically, instead of a rigid testing regime that scheduled the same number of tests on eleven units of each weapon system taken from the stockpile each year, NNSA claimed that the new program provides flexibility by matching the number of units and types of tests to the specific data needs of each weapon system. The new surveillance program also focused on establishing additional testing methods and capabilities, such as expanding the use of non-destructive testing techniques. Under the new approach, weapons testing needs are determined annually, a schedule is developed, and the weapons complex performance in completing each test is closely monitored. Overall, officials indicated that the changes in the surveillance program have reduced the number of weapons taken from the stockpile for testing.

As noted previously, Sandia was initially commissioned by the Department to evaluate methods of improving the surveillance testing program. In addition to the Sandia studies on which the new testing regime is based, several peer reviews, including two reviews performed by independent nuclear weapons experts, found the changes to the stockpile surveillance program to be reasonable. Each of the reviews noted that, in their opinion, the new surveillance program was fundamentally sound with acceptable levels of risk. As discussed earlier in this report, nothing came to our attention to indicate that there were problems with the conclusions reached by the reviewers. Yet, we were unable to validate their findings and assumptions because of the technical nature of the studies and timing of implementation of the new approach.

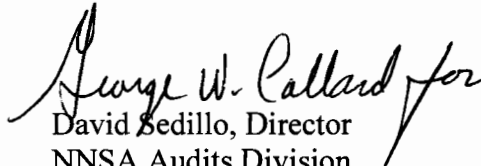
Disposition of Surveillance Testing Backlogs

Our review confirmed that NNSA had eliminated some backlogged surveillance tests as part of its redesign of the surveillance program. We found that NNSA had established Integrated Weapon Evaluation Teams (Teams) to revise surveillance requirements and to determine whether the backlogged tests continued to be needed. These Teams were composed of weapons engineers from design and production agencies and NNSA program managers who considered the amount of data already obtained from prior tests, reviewed the system technical requirements, and provided expert engineering judgment about the continued need for the tests. Based on the reviews conducted by these Teams, program officials incorporated backlogged tests determined to still be necessary into the new surveillance program testing requirements and eliminated all those judged to be unnecessary. We were not in a position to validate the appropriateness of the disposition of all of the eliminated and/or merged tests.

SUGGESTION ACTION

Because of the importance of the stockpile surveillance program, the historic record of backlogged testing elements, and the significance of the shift in testing approach, we suggest that NNSA conduct a post-implementation review to validate the efficacy of the new approach. As part of our overall risk-based audit approach, we may reevaluate the current program in the coming years to determine whether changes to the surveillance program have been effective.

No formal recommendations are being made as part of this report. Nonetheless, we would appreciate receiving management's comments on the content of this memorandum report based on the importance of the surveillance testing program and the fairly long history of interest in the surveillance program by the Office of Inspector General. We appreciated the cooperation of your staff throughout the audit.


David Sedillo, Director
NNSA Audits Division
Office of Inspector General

Attachment

cc: Administrator, National Nuclear Security Administration
Chief of Staff
Acting Director, National Nuclear Security Administration, NA-66
Team Leader, Audit Liaison Team, CF 1.2
Dianne Williams, Office of Internal Review, CF-1.2
Audit Liaison, Sandia Site Office

SCOPE AND METHODOLOGY

We performed the audit between October 2008 and June 2009. We conducted work at the National Nuclear Security Administration (NNSA) Service Center and Sandia National Laboratories in Albuquerque, New Mexico, as well as at the Pantex Plant in Amarillo, Texas.

To accomplish the audit objective, we reviewed and evaluated documentation related to stockpile surveillance, as well as interviewed NNSA and contractor personnel responsible for surveillance activities.

Our review of the change in testing approach for the stockpile surveillance program was limited to interviews of program officials, reviews of studies, peer reviews, and any associated program guidance. Because of their technical complexity, we were unable to specifically evaluate whether decisions to modify the program, eliminate backlogged tests, and merge other tests were appropriate.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. The audit 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 also assessed performance measures in accordance with the *Government Performance and Results Act of 1993* relevant to NNSA's stockpile surveillance program. We found that NNSA had established measures specific to this area. We did not rely on computer-processed data to satisfy our audit objective.

Management waived the exit conference.