OFFICE OF INSPECTOR GENERAL

U.S. Department of Energy

AUDIT REPORT

DOE-OIG-23-31

August 2023

THE NATIONAL NUCLEAR SECURITY ADMINISTRATION'S UNIVERSAL CHANGE CONTROL PROCESS IN RELATION TO THE STOCKPILE SURVEILLANCE PROGRAM

Department of Energy
Washington, DC 20585

August 31, 2023

MEMORANDUM FOR THE DIRECTOR, OFFICE OF STOCKPILE SUSTAINMENT

SUBJECT: Audit Report on The National Nuclear Security Administration's Universal Change Control Process in Relation to the Stockpile Surveillance Program

The attached report discusses our audit of the National Nuclear Security Administration's Universal Change Control Process and whether it captures negative impacts to surveillance testing scope, cost, or schedule. This report contains no recommendations because the National Nuclear Security Administration implemented corrective actions during the course of our audit, and we commend management for taking immediate action.

We conducted this audit from June 2022 through May 2023 in accordance with generally accepted government auditing standards. We appreciated the cooperation and assistance received during this audit.

Earl Omer
Assistant Inspector General
for Audits
Office of Inspector General

cc: Deputy Secretary
Chief of Staff

DOE-OIG-23-31

Department of Energy
Office of Inspector General

The National Nuclear Security Administration's Universal Change Control Process in Relation to the Stockpile Surveillance Program
(DOE-OIG-23-31)

WHY THE OIG PERFORMED THIS AUDIT

Surveillance testing is the process whereby individual weapons undergo inspections, including inspections and tests of components and materials, to determine whether performance expectations are met and to acquire a deeper understanding of material degradation mechanisms.

The National Nuclear Security Administration (NNSA) uses a Universal Change Control Process to initiate, communicate, evaluate, control, and document changes in surveillance testing requirements.

We conducted this audit to determine if NNSA's Universal Change Control Process captures negative impacts to surveillance testing scope, cost, or schedule.

What Did the OIG Find?

We determined there were weaknesses in NNSA's Universal Change Control Process, which limited NNSA's access to and use of data regarding impacts to surveillance testing cost, scope, or schedule. While NNSA defined a process for change control of its surveillance activities, we identified gaps in NNSA's policies and procedures concerning the Universal Change Control Process. Specifically, NNSA was not maintaining all approved change forms; therefore, NNSA did not have a history of the reasoning behind decisions that changed surveillance testing cost, scope, or schedule. Additionally, we found that changes directed by a Federal employee to surveillance testing cost, scope, or schedule did not require a change form. As a result, documentation standards between Federal employees and contractors were inconsistent.

These gaps occurred because NNSA's policy for the Universal Change Control Process did not address how changes to surveillance testing cost, scope, or schedule should be documented and maintained after approval, nor did it specify which personnel were required to submit a change form.

What Is the Impact?

Because of the corrective actions taken by NNSA during the course of our audit, there is no expected ongoing impact as a result of what we identified during this audit.

What Is the Path Forward?

NNSA took immediate action to address our findings. These actions will help NNSA ensure that change forms are completed for all changes to surveillance testing cost, scope, or schedule; and will ensure that documentation of the changes is maintained, so it can be used in making future decisions and in conducting trend analysis to identify problem areas. Because NNSA implemented corrective actions during the course of the audit, we have no additional recommendations.

BACKGROUND

Established by Congress in 2000, the National Nuclear Security Administration (NNSA) is a semi-autonomous agency within the Department of Energy responsible for enhancing national security through the military application of nuclear science. One of NNSA's core missions is to ensure that the U.S. maintains a safe, secure, and reliable nuclear stockpile through the application of unparalleled science, technology, engineering, and manufacturing. The Office of Defense Programs carries out NNSA's mission to maintain and modernize the nuclear stockpile through the Stockpile Stewardship and Management Program (Stockpile Stewardship). Stockpile Stewardship has allowed the Department of Energy and the Department of Defense to certify the safety, security, and effectiveness of the U.S. nuclear weapons stockpile to the U.S. President without the use of nuclear explosive testing.

A key component of Stockpile Stewardship is surveillance testing. Surveillance testing is the process whereby individual weapons undergo inspections, including inspections and tests of components and materials, to determine whether performance expectations are met and to acquire a deeper understanding of material degradation mechanisms. Data collected during surveillance is used to support the assessment process and inform life extension decisions. The annual stockpile assessment is a written assessment on the state of each warhead in the nuclear weapons stockpile. These annual assessment letters are included in the congressionally mandated Report on Stockpile Assessment, which is signed by both the Secretaries of Energy and Defense and delivered to the President. The Office of Stockpile Sustainment is responsible for conducting surveillance testing.

Key System Used in Surveillance

The data collected during surveillance testing is entered into several systems, including the Logistics, Accountability, Planning, and Scheduling System (LAPS). LAPS determines deliverables mandatory to support the Program Control Document (PCD) and maintains the Production Program Definition that provides weapon program descriptions and support definitions. The PCD and the Production Program Definition constitute the Program Management Documents, prepared by NNSA, which integrate the current production and retirement directives from the Office of Defense Programs. The PCD is part of the stockpile authorization flow from the Nuclear Weapons Stockpile Memorandum, which is signed by the President of the U.S. and authorizes work on the nuclear stockpile. LAPS maintains the information, to include surveillance testing, so that NNSA program engineers can track completed tasks against planned items in the PCD, making it a key system for the surveillance program. Sandia National Laboratories developed LAPS for NNSA and is responsible for its maintenance on NNSA's behalf.

Universal Change Control Process

Based on Presidential authorization and funding,[1] NNSA establishes and records the number of surveillance tests per weapon system, which is intended to be completed in the current fiscal year

[1] Presidential authorization comes from the Nuclear Weapons Stockpile Memorandum, which is signed by the President. Funding comes from the multiprogram budget.

in the PCD. This is referred to as the baseline. Once a baseline is established for the execution year, changes are managed in accordance with guidance found in T081—*Universal Change Control Process* (T081).

NNSA developed the T081 to serve as an official guide to the Universal Change Control Process. The Universal Change Control Process was intended to standardize the change control process that initiates, communicates, evaluates, controls, and documents changes in technical scope, cost, and schedule that affect the baseline. The T081 includes guidance on the use of a Universal Change Form (UCF). The UCF starts the formal process to initiate a change, and key pieces of information related to the change are documented on this form. Key pieces of information captured include surveillance testing scope, cost, or schedule. The NNSA sites performing the surveillance requirements may request changes to the execution year baseline. NNSA consults its design agencies regarding any changes to the baseline and the impacts those changes may have on its ability to assess the stockpile. Completing required work early or below budget does not require formal change control using this process. The UCF is important because it documents the basis for why a change was made to the baseline and that the changes were directed and authorized by a Federal employee. Contractors are not authorized to independently make changes to the baseline, as making changes to the baseline is an inherently governmental function.

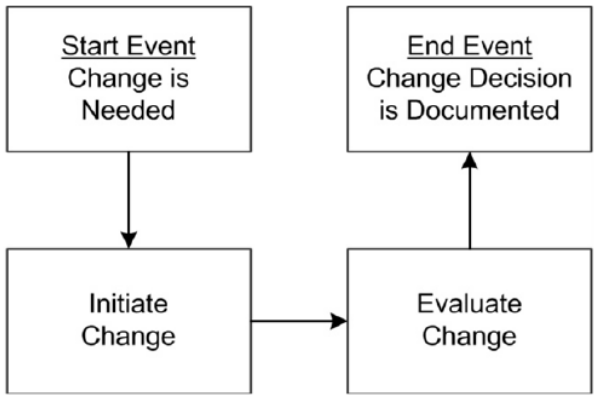

Figure 1: Source T081—Universal Change Control Process

Due to the importance of the UCF for documenting the impacts to the baseline testing, we conducted this audit to determine whether the NNSA's Universal Change Control Process captures negative impacts to the surveillance testing scope, cost, or schedule.

THE UNIVERSAL CHANGE CONTROL PROCESS CRITERIA CONTAINED GAPS

We determined there were weaknesses in NNSA's Universal Change Control Process that limited NNSA's access to and use of data regarding impacts to surveillance testing cost, scope, or schedule. While NNSA defined a process for change control of its surveillance activities, we identified gaps in NNSA's policies and procedures (specifically the T081) concerning the Universal Change Control Process. Specifically, we identified two major process omissions from the Universal Change Control Process that would have inhibited NNSA from reviewing prior decisions to determine why the decision was made and to use in future decision making,

which an NNSA official stated was the intended result of the process. The two major omissions were: 1) there was no written requirement regarding maintaining completed UCFs; and 2) under the current process, changes directed by a Federal employee to the baseline did not require a completed UCF. Due to these two omissions, the basis for the decisions was not documented. This affects NNSA's ability to maintain traceability of authorized changes back to the change control forms, which provide the basis for the decision to authorize the change.

UCFs were not maintained after completion because T081 did not address how the UCFs should be maintained after approval. NNSA told us part of the original intent of the Universal Change Control Process was that all the details of the baseline change requests would be documented and readily available in a centralized database. However, when we asked to access the database, an NNSA official told us that the centralized database was never implemented. NNSA surveillance officials originally planned to implement a centralized database that would have been incorporated into LAPS but delayed it due to other higher priority items. These delays continued, and up until the point of our audit, the database was never implemented. However, when brought to management's attention, they began work to implement a database in LAPS. The audit team was able to observe the changes to LAPS in April 2023.

In addition, the T081 did not require that Federal employees document and explain baseline changes on a UCF. NNSA requires contractors to submit a UCF to be reviewed and approved because changes to the baseline must be enacted by a Federal program manager for the related weapon undergoing a change to the baseline. Contractors do not have access to independently make changes to the baseline, nor do they have access to change the PCD directly, which further prevents unauthorized changes to the baseline. However, according to an NNSA official, Federal program managers can currently make changes to the baseline without a UCF because they are the only ones with access to the PCD to officially enact the change. NNSA noted that although completing a UCF was not a requirement, it was considered a best practice. However, all changes to the PCD that contain the baseline should use the UCF, the primary source of documentation, to explain why the change was needed; therefore, it should be a requirement. During the course of our audit, NNSA issued interim guidance to correctly guide users through the Universal Change Control Process. Interim guidance was issued because the intranet site hosting all guidance for surveillance is currently being reviewed and updated. The interim guidance was provided directly to surveillance personnel.

CRITERIA IS LIMITING USE OF COLLECTED DATA

The lack of access to the surveillance testing baseline—or cost, scope, or schedule—could have resulted in limiting how NNSA used the changes to surveillance data. Specifically, by not completing UCFs for all changes, and not maintaining the impacts to surveillance, the surveillance program faced the following limitations:

- NNSA had limited data to conduct trend analyses to identify problem areas within surveillance testing (broken equipment, repeated failures, etc.). This prevented NNSA from maximizing its effectiveness in identifying and correcting systemic problems.

- NNSA risked losing institutional knowledge due to employee turnover. The UCFs explain why changes to the baseline occurred to include unique situations. Over time, this builds a history and can highlight any unique circumstances that can affect future baselines. Unless the reasoning for changes is documented by employees, this valuable information is at risk of not getting communicated to new employees.

- NNSA's ability to use historical data for future decision making was limited.

As discussed above, NNSA implemented corrective actions during the course of the audit. Because of the corrective actions already taken by NNSA, there is no expected ongoing impact as a result of what we identified during this audit. Therefore, we have no additional recommendations.

PATH FORWARD

NNSA took immediate, appropriate corrective actions when we brought our findings to their attention during the course of the audit. Therefore, we have no additional recommendations.

MANAGEMENT RESPONSE

With no recommendations, NNSA was not required to respond to this report. Based on conversations with NNSA, we were informed that it was choosing not to formally respond to this report.

AUDITOR COMMENTS

We commend management for taking immediate action.

OBJECTIVE

We conducted this audit to determine if the National Nuclear Security Administration's (NNSA) Universal Change Control Process captures negative impacts to surveillance testing scope, cost, or schedule.

SCOPE

The audit was performed from June 2022 through May 2023 at NNSA's John A. Gordon Albuquerque Complex in Albuquerque, New Mexico. The audit scope included a review of the NNSA Universal Change Control Process from October 1, 2017, through to May 30, 2022. The audit was conducted under Office of Inspector General project number A22AL007.

METHODOLOGY

To accomplish our audit objective, we:

- Reviewed applicable laws, regulations, policies, and procedures pertaining to stockpile sustainment, including new material and stockpile evaluation, and the Universal Change Control Process;
- Interviewed NNSA and laboratory personnel involved in the surveillance program; and
- Reviewed Universal Change Forms for key pieces of required information related to cost, scope, and schedule.

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 objective. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. We assessed internal controls and compliance with laws and regulations necessary to satisfy the audit objective. In particular, we assessed elements of the monitoring, control activities, and control environment components; as well as the underlying principles of implementation of control activities; remediate deficiencies; establish structure, responsibility, and authority; and perform monitoring activities. However, because our audit was limited to these internal control components and underlying principles, it may not have disclosed all internal control deficiencies that may have existed at the time of this audit. We did not rely on computer-processed data to satisfy our audit objective because we conducted a reliability assessment of computer-processed data and found the data to be unreliable. Because the data was found to be unreliable, we modified our audit to determine the cause of the data reliability issues and how they can be resolved.

Management officials waived an exit conference on July 19, 2023.

Appendix 2: Related Reports

Office of the Inspector General

- Audit Report on *The National Nuclear Security Administration's Weapons Evaluation Test Laboratory* (OAI-M-17-04, January 2017). This report found that Sandia National Laboratories (Sandia) had not met National Nuclear Security Administration's (NNSA) expectations for laboratory testing at the Weapons Evaluation Test Laboratory. This audit disclosed that Sandia experienced delays in executing baselined laboratory tests. Although Sandia completed 98 tests overall, it completed only 88 of 107 (82 percent) baselined laboratory tests from fiscal year (FY) 2013 through FY 2015. In particular, it determined that Sandia had not completed all baselined tests for four of the eight weapons systems. For example, Sandia completed only 8 of 14 (57 percent) laboratory tests for the W80. The testing delays were due primarily to significant unplanned downtime of Weapons Evaluation Test Laboratory testing equipment in FY 2014 and FY 2015. Specifically, one of Weapons Evaluation Test Laboratory's large centrifuges was inoperable due to noise and vibration issues, followed by an unrelated fire in the drive system. This large centrifuge was not used for testing for nearly 2 years.

- Audit Report on *Follow-up Audit of the Stockpile Surveillance Program* (OAS-L-12-10, September 2012). This report found that NNSA had taken actions to mitigate the Surveillance Transformation Project transition challenges identified in the 2010 Surveillance Enterprise Study. The Study states that there were gaps in surveillance data that were further exacerbated by the decline in laboratory tests. Further, non-nuclear components and materials were not being achieved as rapidly as expected. To mitigate the challenges, NNSA: (1) achieved increased surveillance data by increasing funding and expanding laboratory tests; and (2) developed a comprehensive plan to complete baselining non-nuclear components and materials by the end of FY 2018.

Government Accountability Office

- Report to Congressional Committees on *NUCLEAR WEAPONS: NNSA Should Evaluate the Role of the Enhanced Surveillance Program in Assessing the Condition of the U.S. Nuclear Stockpile* (GAO-16-549, September 2016). The Government Accountability Office's review of NNSA documents and interviews with NNSA officials determined that NNSA did not have a current long-term strategy for the Enhanced Surveillance Program that defined the program's strategic goals that includes the following practices: defining strategic goals, defining strategies that address management challenges and identify resources needed to achieve these goals, and developing and using performance measures to track progress in achieving these goals and to inform management decision making. Strategic goals explain the purpose of agency programs and the results—including outcomes—that they intend to achieve. The Enhanced Surveillance Program has general long-term goals, such as "developing tools and information useful to ensure the stockpile is healthy and reliable." However, the program's long-term goals do not provide outcomes that are measurable or that encompass the entirety of the program.

FEEDBACK

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