



OFFICE OF INSPECTOR GENERAL

U.S. Department of Energy

AUDIT REPORT

DOE-OIG-24-22

July 2024

**ALLEGATIONS CONCERNING QUALITY
ASSURANCE OVER GLOVEBOX
PROCUREMENTS AT LOS ALAMOS
NATIONAL LABORATORY**



Department of Energy
Washington, DC 20585

July 3, 2024

**MEMORANDUM FOR THE ADMINISTRATOR, NATIONAL NUCLEAR SECURITY
ADMINISTRATION**

**SUBJECT: Audit Report on Allegations Concerning Quality Assurance Over Glovebox
Procurements at Los Alamos National Laboratory**

The attached report discusses our audit of allegations related to quality assurance over glovebox procurements at Los Alamos National Laboratory. This report does not contain recommendations or suggested actions. Therefore, no management response is required.

We conducted this audit from July 2023 through April 2024 in accordance with generally accepted government auditing standards. We appreciated the cooperation and assistance received during this audit.

A handwritten signature in blue ink, appearing to read "M. Dove", with a long horizontal stroke extending to the right.

Matthew Dove
Assistant Inspector General
for Audits
Office of Inspector General

cc: Deputy Secretary
Chief of Staff



Department of Energy Office of Inspector General

Allegations Concerning Quality Assurance Over Glovebox Procurements at Los Alamos National Laboratory (DOE-OIG-24-22)

WHY THE OIG PERFORMED THIS AUDIT

The Office of Inspector General received a hotline complaint that contained five allegations regarding Los Alamos National Laboratory's (LANL) Plutonium Infrastructure Engineering Division Procurement Engineering Group's (PIE-1) glovebox procurements. The allegations included a lack of written job functions and training requirements, subcontracts containing outdated and unsigned documents, issuing contracts without resolving open action items, and contracts containing conflicting technical requirements regarding Commercial Grade Dedication.

We initiated this audit to determine the validity of the five allegations related to quality assurance of glovebox procurements at LANL.

What Did the OIG Find?

We did not substantiate the five allegations pertaining to Los Alamos National Laboratory's Plutonium Infrastructure Engineering Division, PIE-1 quality assurance over glovebox procurements. Specifically, we did not substantiate that: (1) PIE-1 did not have documented procedures that prescribed job functions; (2) PIE-1's determination and identification of required qualifications and training for Procurement Engineers was not formally determined or documented; (3) procurement packages for three subcontracts were found to contain uncontrolled documents, documents that were not the latest revision, and documents that did not have required approval signatures; (4) one subcontract was issued without resolving open action items or obtaining commitments to resolve the open action items; and (5) a procurement package Statement of Work contained conflicting technical requirements with respect to Commercial Grade Dedication.

What Is the Impact?

Because we did not substantiate any of the allegations, there is no impact related to the reported concerns.

What Is the Path Forward?

We did not identify any issues that need to be addressed. Therefore, we made no recommendations or suggested actions.

BACKGROUND

The Department of Energy's National Nuclear Security Administration (NNSA) is responsible for maintaining the U.S. nuclear weapons stockpile and ensuring that the weapons in the stockpile remain safe, secure, and effective. During the Cold War, the U.S. produced plutonium pits, a key component of a nuclear weapon system at the Rocky Flats Plant in Colorado. In 1992, Rocky Flats closed, and the U.S. lost the capability to manufacture new pits at the rate needed to maintain the nuclear deterrent. Today, NNSA has designated Los Alamos National Laboratory (LANL) as one of two sites to produce plutonium pits for the Nation's nuclear weapons. LANL's Plutonium Infrastructure Engineering Division supports the plutonium national security mission by providing a diverse set of engineering resources to the infrastructure modernization and production capabilities. Within the Division is the Procurement Engineering Group (PIE-1). PIE-1 personnel develop procurement packages and solutions for nuclear and non-nuclear equipment and materials, including gloveboxes. Gloveboxes are sealed containers that protect workers from special nuclear materials and are used in the production of plutonium pits.

In May 2023, the Office of Inspector General received a hotline complaint that contained five allegations regarding LANL's PIE-1 organization. Specifically, the complainant alleged that: (1) PIE-1 did not have documented procedures that prescribes the group's job functions; (2) PIE-1 had not identified or formally documented the required qualifications and training for Procurement Engineers; (3) procurement packages for three subcontracts included uncontrolled documents (i.e., documents that had no form number, revision level, or effective date), documents that were not the latest revision, and documents that did not have the required approval signatures; (4) one subcontract was issued without resolving or obtaining commitments to resolve open action items; and (5) a procurement package Statement of Work (SOW) contained conflicting technical requirements with respect to Commercial Grade Dedication (CGD). Several of these allegations asserted that PIE-1 had not met the requirements of *The American Society of Mechanical Engineers Quality Assurance Requirements for Nuclear Facility Applications* (NQA-1) associated with prescribing job functions, training, and the procurement of gloveboxes. We initiated this audit to determine the validity of the five allegations related to quality assurance over glovebox procurements at LANL.

DOCUMENTED PROCEDURES FOR PROCUREMENT ENGINEERING GROUP

We did not substantiate the allegation that PIE-1 did not have a documented procedure that prescribes job functions. First, we determined that LANL has a procedure that prescribes job functions and details how PIE-1 personnel should perform those job functions. All PIE-1 engineers are hired as Nuclear Facilities Engineers (NFE) in level 1 through level 4 positions. NFEs are deployed throughout LANL to fill a variety of engineering roles which have job-specific documented procedures to describe job functions. For example, LANL's Human Resources Division Office provided us with the job descriptions for NFEs in level 1 through level 4 positions, and we confirmed that job functions exist for each of these positions. Second, we reviewed the specific job functions for LANL NFEs. Since the hotline allegation specifically mentioned the procurement of gloveboxes, we focused on procedures related to procurement. One role of a PIE-1 engineer is that of Subcontract Technical Representative (STR). According

to LANL's *P850 - Subcontract Technical Representative Procedure*, STRs are required to possess relevant technical knowledge and experience sufficient to monitor and surveil a subcontractor's work performance and compliance with LANL subcontract terms and conditions. The procedure defines four types of STRs (i.e., Administrative, Programmatic, STRs, and High-Consequence) and describes the basic roles, responsibilities, authorities, and accountability for each position. We found the procedure adequately covered the details on how PIE-1 STRs should perform their job functions.

IDENTIFYING JOB QUALIFICATIONS AND TRAINING FOR PROCUREMENT ENGINEERS

We did not substantiate the allegation that PIE-1 had not identified or formally documented the required qualifications and training for Procurement Engineers. As discussed above, all PIE-1 hired engineers are NFEs. According to a PIE-1 official, the added label of "Procurement Engineer" is a description for the role since NFEs cover a lot of engineering roles in a nuclear facility and indicates the position is specific to procurement and not focused on another engineering task such as design.

Although PIE-1 does not have a "Procurement Engineer" position, we reviewed the required qualifications and training for NFEs. LANL's Human Resources Division Office provided us with four job descriptions for NFEs level 1 through level 4. Each NFE level had an education qualification requirement. Specifically, NFEs level 1 through level 4 require a bachelor's degree in engineering from an accredited college or university, and an advanced engineering or technical degree was desired. NFEs level 1 through level 4 require 2, 3, 6, and 12 years of practical work experience, respectively, necessary to perform responsibilities. In addition, for NFE level 1, having a current registration as an Engineer in Training was highly desirable while for NFE level 2 through level 4, having a current registration as a Professional Engineer, was highly desirable.

In addition, LANL provided us with the training requirements for different NFE curriculums including Project Engineering, Facility Procurement Engineering, and CGD Preparers. Project Engineers and Facility Procurement Engineers had similar course requirements. According to a LANL official, PIE-1 had additional STR training and a year-long mentorship. Depending on the employee's STR position, there is a training curriculum that consists of a variety of subjects that an STR within PIE-1 is responsible for taking. For example, a PIE-1 STR receives training on LANL's *Procedure No. P840-1, Quality Assurance for Procurements*, and *P850 - Subcontract Technical Representative (STR) Procedure*. Therefore, we conclude that PIE-1 job qualification and training requirements exist.

UNCONTROLLED DOCUMENTS IN PROCUREMENT PACKAGES

We did not substantiate the allegation that LANL's completed procurement packages contained uncontrolled documents (i.e., no form number, revision level, or effective date) and none of the procurement packages were missing the required approval signatures. The allegation cited these

deficiencies in three contracts identified as CW26871, CW20810, and C3062¹. Our review of all three contracts identified that the contracts had the correct form number, contract revision, and effective date. In addition, the contracts contained the required approvals. While the electronic versions of the contracts had missing approval signatures for the company's Contractor Representative and LANL's Subject Matter Experts, the LANL Procurement Compliance Officer was able to provide us with copies of the original contracts showing the required approval signatures. LANL officials explained to us that it is common for signatures to fall off electronic versions of a contract due to technical issues. We reviewed and validated that both the company's Contractor Representative and LANL's Subject Matter Experts had signed and approved all three contracts in question.

ISSUING CONTRACT WITHOUT CLEARING OPEN ACTION ITEMS

We did not substantiate the allegation that contract CW20810 was issued to a contractor without resolving the open action items or obtaining commitments to resolve the open action items. More specifically, the complainant alleged Form 15.1.2, *Technical Evaluation*, did not contain evidence of resolution or commitments to resolve open action items. A Technical Evaluation is performed by LANL STRs and is used to evaluate the contractor's ability to meet the fabrication, testing, and delivery of gloveboxes. In our review of Form 15.1.2, we found that there were two open actions related to the contractor's ability to meet the required delivery dates and provide a staffing plan with a staffing curve reflecting current employee resources and resources planned to hire. These actions were determined by the STR to be acceptable actions rather than unacceptable quality assurance conditions. NQA-1 requires, prior to the award of a contract, the purchaser (i.e., LANL) resolve or obtain commitments to resolve unacceptable technical and quality assurance conditions resulting from the bid evaluation. Since the actions were acceptable open actions rather than unacceptable technical and quality assurance conditions, the contract was not out of compliance with NQA-1.

In addition, we reviewed LANL's Institutional Quality and Performance Assurance Division's May 2021 *NQA-1 Supplier Quality Audit Report* for the CW20810 contractor. This audit evaluated the supplier's quality assurance program and determined that the contractor's quality assurance management systems have the capability to supply items in accordance with established requirements. The audit results provide further evidence that the CW20810 contract was issued to an NQA-1 approved contractor.

STATEMENT OF WORK CONTAINED CONFLICTING TECHNICAL REQUIREMENTS

We did not substantiate the allegation that the procurement package SOW for a Glovebox Appurtenance Fabrication contract contained conflicting technical requirements with respect to

¹ According to LANL officials, the numbering differences with the contracts are attributed to a June 2021 change to LANL's Procurement to Pay System. Prior to June 2021, LANL's Procurement to Pay System was an Oracle-based system. After June 2021, LANL transitioned to an Ariba-based Procurement to Pay System, and its contract numbers now include CW, which means Contract Workspace.

CGD. The SOW for the Glovebox Appurtenance Fabrication contract requires CGD² and for CGD plans and procedures for the glovebox window to be provided to LANL 30 days before the window's fabrication. In the Quality Assurance/Quality Control section of the contract, it also states that the plans and procedures for CGD need to be in place before fabrication, but no timeframe is given. The complainant told us that he believed that the two statements were conflicting. However, in our review of the contract, we determined that the statements did not conflict, and LANL may have exceeded the NQA-1 requirements. We found that the SOW applied to the glovebox windows whereas the Quality Assurance/Quality Control requirements applied to the fabrication of the entire glovebox.

More specifically, in the SOW, we found that the contractor planned to use commercially available windows as a safety component in the gloveboxes, which requires a CGD plan and procedure submitted to LANL 30 days in advance of fabrication. The CGD process includes testing to prove that the windows could be used as a high-quality safety part in the glovebox. In contrast, the Quality Assurance/Quality Control section requires the contractor to submit the plans and procedures for CGD to LANL for concurrence prior to fabrication of the gloveboxes. However, no 30-day requirement for the contractor to submit plans and procedures was given.

We concluded that the windows needed to have CGD performed due to their safety function and being a commercial component. LANL required NQA-1 CGD, and the additional requirement for the contractor to submit plans and procedures 30 days in advance does not violate NQA-1 requirements. The contract provision simply adds requirements for specific components—the windows—that will be used for safety, and it requires a timeframe for LANL's review of the contractor's CGD plans to ensure the safe usage of the part.

MANAGEMENT RESPONSE

With no recommendations or suggested actions, NNSA was not required to respond to this report. NNSA informed us that it is choosing not to formally respond to this report.

AUDITOR COMMENTS

The Office of Inspector General appreciates NNSA's cooperation during this audit.

² CGD is an acceptance process performed in accordance with NQA-1 to provide reasonable assurance that a commercial grade item will successfully perform its intended safety function and is deemed equivalent to an item that meets NQA-1 requirements.

Appendix 1: Objective, Scope, and Methodology

OBJECTIVE

We initiated this audit to determine the validity of the five allegations related to quality assurance over glovebox procurements at Los Alamos National Laboratory (LANL).

SCOPE

The audit was performed from July 2023 through April 2024 at LANL. The scope was limited to the facts and circumstances regarding the hotline allegations concerning glovebox procurement at LANL dated May 10, 2023. The audit was conducted under Office of Inspector General project number A23AL014.

METHODOLOGY

To accomplish our audit objective, we:

- Identified criteria (i.e., laws, regulations, Department of Energy directives, and LANL policies and procedures) related to the allegations;
- Interviewed the complainant and officials from LANL;
- Obtained and reviewed documentation pertaining to the circumstances of the allegations and technical matters at LANL; and
- Reworked the complainant's original work to see if we could draw the same conclusions.

We conducted our 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 the control activities and monitoring components as well as the underlying principles of design control activities and remediate deficiencies for the Procurement Engineering Group's management of glovebox procurement documentation. Due to the nature of this audit, we evaluated the hotline complaint to see if we could substantiate the complainant's allegations through rework of the complainant's original work. In particular, we assessed the allegations using identified subcontracts, key pieces of guidance, and LANL policies and procedures. However, because our audit was limited to evaluating five specific allegations, it may have not 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. However, we noted a data reliability issue where large files dropped the official signature on contracts with portable document format also known as PDF. We were provided further source documents and compared them with the final documents which verified that, at the time, the documents had been signed and dated appropriately.

Appendix 1: Objective, Scope, and Methodology

Management officials waived an exit conference on June 7, 2024.

Appendix 2: Prior Report

Audit Report on [*Follow-up on Nuclear Safety: Safety Basis and Quality Assurance at the Los Alamos National Laboratory*](#) (DOE/IG-0941, July 2015). This review found that Los Alamos National Laboratory (LANL) had acted to improve nuclear safety, including seismic-related risks, at its Plutonium Facility (PF-4); established a Safety Basis Quality Review Board; and implemented an institutional Quality Assurance Program to assign responsibilities and authorities, define policies and requirements, and provide for the performance and assessment of laboratory work processes. However, LANL continued to have problems in fully implementing a number of critical nuclear safety management requirements. This situation contributed to multiple safety basis iterations and lengthy update, review, and approval processes. Specifically, LANL had not always: (1) developed safety basis documents that met National Nuclear Security Administration's expectations to ensure that nuclear hazards had been fully identified and that mitigation controls had been implemented; (2) resolved issues identified in the annual updates to the safety bases for two nuclear facilities; and (3) resolved significant and long-standing nuclear safety deficiencies.

FEEDBACK

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