



U.S. Department of Energy  
Office of Inspector General  
Office of Audits and Inspections

# Inspection Report

Accountability and Control of Explosives  
at Lawrence Livermore National  
Laboratory's High Explosives  
Applications Facility

INS-O-13-06

September 2013



**Department of Energy**  
Washington, DC 20585

September 30, 2013

MEMORANDUM FOR THE MANAGER, LIVERMORE FIELD OFFICE

*Sandra D. Bruce*

FROM: Sandra D. Bruce  
Assistant Inspector General  
for Inspections  
Office of Inspector General

SUBJECT: INFORMATION: Inspection Report on "Accountability and Control of Explosives at the Lawrence Livermore National Laboratory's High Explosives Applications Facility"

BACKGROUND

The High Explosives Applications Facility (HEAF) is a state-of-the-art explosives research facility located on-site at the Lawrence Livermore National Laboratory (Livermore). Livermore is managed and operated by Lawrence Livermore National Security, LLC, for the National Nuclear Security Administration, and the Livermore Field Office is responsible for administering the contract.

The HEAF became operational in 1990 and was designed specifically to safely integrate the operations of synthesis, formulation, and explosives testing in a single, synergistic facility. The explosive operations area is confined to the lower level of the 3-story building and has 56 individual explosive workrooms, 7 fully contained explosive firing chambers, and an indoor explosive storage magazine vault. The workrooms have an explosive storage capacity that ranges from a few grams to a maximum of 10 kilograms (22 pounds).

The Office of Inspector General received a complaint alleging weaknesses with the controls over physical access to explosive material, as well as weaknesses with explosive inventory control and accountability in the HEAF explosive operations area. We initiated this inspection to determine the facts and circumstances surrounding the allegations.

RESULTS OF INSPECTION

We substantiated the allegations regarding weaknesses with controls over access and inventory of explosive materials at HEAF. Specifically, we found that:

- Individuals at Livermore with high-level security clearances had the potential to access the HEAF explosive operations area even though they lacked specific authorization

and/or had not received required safety training. Further, some cleared personnel had been granted unescorted access to enter the HEAF explosive operations area, an area that permitted direct access to explosives workrooms, despite the fact that they did not have an official need or the additional training required for unescorted access into the workrooms.

- Livermore's Safety Access Training, a training requirement for unescorted access to HEAF's explosive operations area, did not adequately address the requirements for unescorted access to the facility's explosive workrooms.
- A unified perpetual system of records capable of tracking and accounting for explosives acquired, stored, and expended at HEAF from acquisition to disposition did not exist.

The issues identified in this report regarding potential unauthorized access occurred, in part, because officials did not adequately consider the risks associated with access to the facility and the increased potential for theft or diversion of explosives. For example, we learned that the badge reader at the HEAF rear entry gate was modified to accommodate construction activities that had been taking place in that area of the facility. Livermore officials did not recognize the impact of such a decision; however, when we notified Livermore Field Office officials about the rear entry gate badge reader, the issue was immediately corrected. It also appeared that officials may not have fully considered the security risk associated with the open access design of the facility. According to HEAF officials, the facility has a unique safety design — the absence of doors in most of the explosive workrooms — therefore, it was difficult to limit physical access.

The weaknesses identified with training occurred because the HEAF Safety Plan requirement related to unescorted workroom access was not fully incorporated into the Safety Access Training module. New employees or individuals who only periodically accessed the explosive operations area were not required to read the HEAF Safety Plan and had to rely on the information presented in the Safety Access Training. These individuals may not have been aware that the HEAF Safety Plan administratively limited access to the workrooms to explosive handlers and explosive support workers who had a preapproved need for the access and the proper training. A HEAF official we interviewed was not aware that the training was confusing and that it did not clearly address the requirements for unescorted access to HEAF's explosive workrooms. Therefore, there was an increased safety risk if individuals mistakenly entered workrooms where explosives were often sitting on workbenches in plain view, even if explosive handlers were present.

In addition, the inventory controls for explosives within HEAF primarily focused on safety, and not tracking and accountability of high-risk personal property such as explosives from acquisition to disposition. HEAF officials told us that explosive operations often involved very small quantities of explosives; therefore, having to account for such small amounts would be time consuming and could adversely affect operational efficiency. HEAF officials, however, had not specifically evaluated the risk of loss of explosives associated with the lack of a perpetual inventory system.

While our review did not identify any incidents involving loss, misuse, or theft of explosive materials, the weaknesses identified regarding access, training, and inventory controls could increase the potential for theft or diversion of explosive materials at HEAF.

In addition, while we did not identify any previous safety issues, unauthorized access of personnel without the required Safety Access Training or specialized explosive training could increase the opportunity for safety incidents. Accordingly, we made a number of recommendations designed to improve the controls over access and inventory of explosive materials at HEAF.

### MANAGEMENT REACTION

Management generally agreed with the report's findings and recommendations. As appropriate, we modified our report to address management's comments. Management comments are more fully discussed in the body of our report.

Management's formal comments are included in Appendix 3.

Attachment

cc: Deputy Secretary  
Acting Under Secretary of Energy  
Acting Administrator, National Nuclear Security Administration  
Chief of Staff

# REPORT ON ACCOUNTABILITY AND CONTROL OF EXPLOSIVES AT THE LAWRENCE LIVERMORE NATIONAL LABORATORY'S HIGH EXPLOSIVES APPLICATIONS FACILITY

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# ACCOUNTABILITY AND CONTROL OF EXPLOSIVES AT THE LAWRENCE LIVERMORE NATIONAL LABORATORY'S HIGH EXPLOSIVES APPLICATIONS FACILITY

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## ACCOUNTABILITY AND CONTROL OF EXPLOSIVES

The Office of Inspector General received a complaint alleging weaknesses with the controls over physical access to explosive material, as well as weaknesses with explosive inventory control and accountability in the Lawrence Livermore National Laboratory's (Livermore) High Explosives Applications Facility (HEAF) explosive operations area.

The HEAF is a three-story building with an explosive operations area confined to the lower level of the facility. This area is comprised of 56 individual workrooms that varied in maximum storage capacity from a few grams to 10 kilograms (22 pounds) of explosives. A segregated second floor is used for administrative purposes, with the third floor reserved for building mechanical support equipment and functions. Because of the inherently dangerous nature of explosives, ensuring strong and effective access controls, safety training, and accountability are critical to protecting Livermore personnel and infrastructure.

### Access Controls for the HEAF Explosive Operations Area

Our inspection revealed that individuals with a Livermore site activated high-level security badge (L or Q levels) had the potential to access HEAF explosive operations area without proper authorization or the required safety training. Further, some cleared individuals had been granted unescorted access to enter this operations area but did not have an official need or the required training necessary to access the explosive workrooms.

Department of Energy (Department) Standard DOE-STD-1212-2012, *Explosives Safety* indicated that access control procedures should be established for entry to all explosives areas, and that only personnel needed for hazardous operations should be allowed in hazardous locations.<sup>1</sup> In this regard, the HEAF Safety Plan required that all individuals complete DT2017-W Safety Access Training prior to being granted unescorted access to the explosive operations area. In addition, under the Safety Plan, unescorted access into the explosive workrooms required a preapproved need, along with specialized explosive handler or support worker training.

### **Unescorted Access**

Contrary to the HEAF Safety Plan, our testing of security access controls revealed that configuration of the badge reader located at the facility's rear vehicle entry gate permitted access to all L or Q cleared individuals at Livermore. Also, we observed that a rear door leading directly to the explosives operations area and into workrooms where explosives were present was unlocked during daytime hours. Therefore, individuals with access through the vehicle entry

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<sup>1</sup> During the field work of this inspection, Department Manual 440.1-1A - PANTEX/LLNL Version, *DOE Explosive Safety Manual*, was still in Livermore's Management and Operating contract. However, Department Manual 440.1-1A has been replaced by Department Standard DOE-STD-1212-2012, *Explosives Safety*, and in February 2013, DOE-STD-1212-2012 was incorporated into Livermore's Management and Operating contract. We noted that the explosive operation criteria referenced in this report were identical in both the Department Manual 440.1-1A - PANTEX/LLNL Version and DOE-STD-1212-2012.

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gate also had direct access into this operations area. HEAF officials informed us that initially the badge reader at the rear entry gate had been programmed to allow entry only to those individuals who had received the required safety training and were permitted unescorted access. However, the access controls were changed to accommodate construction activities taking place in that area. This change permitted all cleared individuals at Livermore access to the explosive operations area. These issues occurred, in part, because officials did not adequately consider the additional risks associated with changing the badge reader for rear access to the facility, and the increased potential for theft or diversion of explosives.

Further, we observed that there was no sign on the rear entry gate to provide notice that unescorted access to HEAF was prohibited unless individuals had completed the specific Safety Access Training identified in the HEAF Safety Plan. HEAF Officials did not see the necessity for posting a training notice sign until this matter was brought to their attention. During our inspection, we notified Livermore Field Office officials about the issue regarding the entry gate badge reader and the lack of a training notice sign, and both conditions were immediately corrected.

### **Authorized Unescorted Access to HEAF**

We also determined that access to HEAF was not appropriately restricted to only those individuals with a direct and specific mission need. Specifically, we noted that nearly 700 individuals with L or Q clearances who had completed the Safety Access Training were permitted unescorted access to the facility's explosive operations area. However, only 200 had a preapproved need and had successfully completed the Explosive Handler/Explosive Support Person training required for unescorted access into the workrooms. Unfettered access is an overarching concern due to the open floor design and lack of doors segregating the workrooms. Specifically, because the majority of the workrooms stored explosives in plain view and were not physically secured, individuals entering the facility could have accessed explosive material directly. The only physical security to most of the workrooms was a removable plastic chain placed across the entryway with an attached hazardous operations sign warning that individuals should not enter without permission.

HEAF officials told us that the 500 individuals who did not have the preapproved need or proper training to enter the explosive workrooms held positions in areas such as protective force, maintenance, the fire department and administrative support. As such, these individuals may only have required periodic access to the explosive operations area, and may not have the need for unescorted access into the workrooms. In addition, HEAF officials indicated that one of the main reasons that most of the workrooms did not have doors to prevent unauthorized entry was due to a safety design. These officials explained that the explosive operations area, to include the workrooms, were specifically engineered and constructed to withstand theoretical explosive forces based on the maximum allowable inventory of explosives. The officials also told us that any physical changes to the structure of the explosive operations area, to include adding doors, could impact safety and would, therefore, require in-depth engineering studies before any changes could be made. However, it appears that officials may not have fully considered the increased access risks associated with the open design of the facility.

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While we are not questioning the architectural design of HEAF, we believe that adherence to specific controls for entering the facility is necessary to ensure the safety, control and accountability of explosives. Therefore, it is important that all individuals are made fully aware of the specialized safety training requirements for entry into the explosive operations area. Further, while we did not identify any previous safety issues, unauthorized access of personnel without the required Safety Access Training or specialized explosive training could increase the risk of safety and/or security incidents.

#### Safety Training for Unescorted Access

We found that the HEAF's Safety Access Training did not adequately articulate the requirements for unescorted access to the facility's 56 explosive workrooms. The HEAF Safety Plan clearly stipulates that only explosive handlers and explosive support workers are permitted unescorted access to the workrooms. However, our assessment of the Safety Access Training module identified confusing information regarding unescorted access to HEAF's explosive workrooms. For example, slide 14 of the training module stated that the first person to enter and the last person to leave an explosives workroom must be a qualified explosives handler. However, slide 29 indicated that upon completion of the course, non-resident individuals would be granted unescorted access during normal business hours to the first floor where the explosive operations workrooms are located. Slide 14 and slide 29 appeared to be contradictory and presented those taking the training with a mixed message regarding permissible access to the explosive work rooms. We were unable to locate any reference in the training module that clearly indicated that only explosive handlers and explosive support workers had unescorted access to the workrooms. During our inspection we noted that HEAF officials were not aware that the training was confusing and that it did not clearly address the requirements for unescorted access to the explosive workrooms.

The weaknesses identified with the training occurred because the HEAF Safety Plan's requirement related to unescorted workroom access was not fully incorporated into the Safety Access Training module. New employees or individuals who only periodically access the explosive operations area were not required to read the HEAF Safety Plan and had to rely on the information presented in the Safety Access Training. These individuals may not have been aware that the HEAF Safety Plan administratively limits access to the workrooms to explosive handlers and explosive support workers who had a preapproved need for the access and the proper training. Therefore, there was an increased risk to safety if these individuals mistakenly enter the workrooms where explosives were often sitting on workbenches in plain view, even if explosive handlers were in the rooms.

#### Accountability and Inventory of Explosives

We found that HEAF did not have a unified perpetual system of records capable of tracking and accounting for explosives from acquisition to disposition. As stipulated by Department Standard, *Explosives Safety*, a verifiable system should be established to control the amount of explosives present in an explosives facility. In addition, Department Order 580.1A, *Department of Energy Personal Property Management Program*, specifically defines explosives as accountable "High Risk Personal Property," and stipulates that accountable property records

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must be managed and maintained current in a property management system of records from inception to formal disposition and removal from the Department's inventory.<sup>2</sup> Further, the Order requires that organizations with approved use of firearms, ammunition, pyrotechnics, and explosives, and their associated components, must have processes in place to ensure the safe handling, storage, inventory control, and maintenance of this High Risk Personal Property. In addition, Department Order 580.1A indicates that physical inventories serve to "validate" accountable property record accuracy.

We determined that HEAF had what appeared to be a verifiable system of records for explosives it received, and for explosives placed into and removed from the indoor explosive magazine vault. However, once explosives were taken to the workrooms, the system of records used in those workrooms to account for and track the use of explosives was inconsistent, lacked the capacity to track explosives from workroom to workroom, and did not provide a consistent record of final disposition. Specifically, most explosive workrooms had an erasable white marker board at the entrance as the primary method to account for explosives in the workrooms. For safety purposes, the HEAF Safety Plan required explosive handlers to use the white boards to annotate the type and quantity of explosives that were brought in and out of the rooms to prevent the accumulation of unsafe amounts of explosives.

HEAF officials told us that the values on the white boards constantly changed because explosives were brought in and out of the rooms on a routine basis. Officials also stated that they conducted white board audits approximately twice a year in which the total amounts of explosives in the rooms were measured and compared against the "current" amounts listed on the white boards. However, officials indicated they did not conduct acquisition to disposition inventories to validate the workrooms' white board records. Some of the explosive operations workroom personnel we spoke with indicated that they could "probably" account for most of the recently acquired explosives in their work area by simply asking coworkers about the disposition of the explosives. Nonetheless, the majority of these personnel told us that it would be difficult to conduct historical explosive inventories because there was no record system in place that tracked and accounted for explosives from acquisition to disposition.

In addition, HEAF explosive operations workroom personnel told us that, in many cases, the final disposition of explosives was not documented or verified. For example, explosive operations personnel told us that when explosives were detonated in one of the explosive chambers, a "shot form" was completed, documenting information such as the type and amount of explosives used. However, no information was recorded to show the origin of the explosive. Upon completion of the experiment, the amount and type of explosives detonated were erased from the workroom white board where the explosive was last recorded.

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<sup>2</sup> Even though Department Order 580.1A became effective in March 2012, it was not incorporated into Livermore's Management and Operating Contract until June 2013. However, Department Order 580.1, *Department of Energy Personal Property Management Program*, Title 41 Code of Federal Regulations 109, *Department of Energy Property Management Regulations*, and Title 48 Code of Federal Regulations 970.5245-1, *Property*, were in Livermore's contract at the time and together provide the same general guidance as Department Order 580.1A regarding the control and accountability of high risk and sensitive property.

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While the individual white board record system in the workrooms was the primary method used to track explosives within each workroom, we learned of two explosive inventory database systems developed by explosive handlers that were in operation in two separate explosive workrooms. We were given a presentation on one of the systems that included a barcode printer and scanner. Although we did not test the system, HEAF officials demonstrated that the system had the capability to document and account for explosives from the time explosives entered the room to final disposition within that room. This system, however, lost track of explosives that were moved to other workrooms. We also learned that, in addition to the white boards, several other workrooms tracked explosives via paper logs or spreadsheets, but still did not account for explosives from acquisition to disposition.

HEAF officials told us that because explosive operations often involved very small quantities of explosives, having to account for such small amounts could negatively affect operational efficiency. However, we noted that although Department Order 580.1A allows the inventory process to be aligned with risk assessments, HEAF officials had not specifically evaluated the risk of loss of explosives associated with the lack of a unified perpetual inventory system. Additionally, we observed that the database tracking system already in operation in one of the workrooms appeared to improve the accountability of explosives without imposing a negative impact on workroom operational efficiency.

While our review did not identify any incidents involving loss, misuse, or theft of explosive materials, the weaknesses identified with regard to inventory controls, coupled with the weaknesses in access control and training could increase the potential for theft or diversion of explosive materials at HEAF. Accordingly, we made a number of recommendations designed to improve the controls over access and inventory of explosive materials at HEAF.

## **RECOMMENDATIONS**

To address the issues identified during our inspection, we recommend that the Manager, Livermore Field Office ensure that:

1. The HEAF access control systems adequately prevent people without the preapproved need or proper training from entering the explosive workrooms;
2. The requirements of the HEAF Safety Plan are adequately incorporated into the Safety Access Training module so that individuals taking the training clearly understand that only explosive handlers and explosive support workers have unescorted access to the explosive workrooms; and
3. Lawrence Livermore National Laboratory develops and implements a risk-based perpetual system of records and a supporting inventory system within HEAF that is capable of tracking and accounting for explosives from inception to formal disposition, consistent with Department Order 580.1A.

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## MANAGEMENT COMMENTS

Management generally agreed with the report's findings and recommendations and suggested changes in several sections of the report. We considered the suggestions and made changes we deemed appropriate. Management comments are included in Appendix 3.

## INSPECTOR COMMENTS

Management's comments and planned corrective actions are generally responsive to our report findings and recommendations. However, with regard to Recommendation 1, management took the position that "access control systems" as referenced in the recommendation are used to enforce security requirements, not safety requirements. Management suggested we change the wording of Recommendation 1 to read, "Ensure that HEAF adequately prevents people without the preapproved safety training from entering the explosive workrooms." Nevertheless, our position throughout the report has been that limiting access to the workrooms to only those who have a pre-approved need and the proper training applies "both" to the safety of individuals and to the security of explosives. Therefore, the wording of Recommendation 1 was not changed.

While management concurred in principle with Recommendation 3 and indicated that it will ensure there is an inventory system within HEAF that is capable of tracking and accounting for explosives, management comments indicated that Livermore was not contractually bound by Department Order 580.1A at the time of our inspection as it had not been incorporated into Livermore's Management and Operating contract. This is technically true, and our report states that Department Order 580.1A was not incorporated into Livermore's Management and Operating Contract until June 2013. However, our report identified weaknesses with regard to the tracking and accounting for explosives within the HEAF that existed at the time of our inspection. Recommendation 3 addresses the cause of these weaknesses and the recommended action is based on requirements that were in Livermore's contract at that time. Specifically, Department Order 580.1, *Department of Energy Personal Property Management Program*, Title 41 Code of Federal Regulations 109, *Department of Energy Property Management Regulations*, and Title 48 Code of Federal Regulations 970.5245-1, *Property*, had been incorporated into the Livermore contract, and Livermore was contractually bound by these requirements. Together, these regulations provided guidance similar to Department Order 580.1A regarding a perpetual system of records and a supporting inventory system.

Finally, at the end of our inspection we noted that the warning signs hanging across the entrance to the HEAF explosive workrooms had been changed. The signs now warn that only explosive handlers and explosive support workers are allowed unescorted access to the workrooms. We believe this is a positive change in response to our inspection.

## **Appendix 1**

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### **OBJECTIVE, SCOPE AND METHODOLOGY**

#### **OBJECTIVE**

The objective of this inspection was to determine the facts and circumstances surrounding the allegation that there were weaknesses with controls over physical access to explosive material, as well as weaknesses with explosive inventory control and accountability in the High Explosives Applications Facility (HEAF) explosive operations area.

#### **SCOPE**

The inspection fieldwork was conducted at the Lawrence Livermore National Laboratory (Livermore) in Livermore, California from September 2012 to September 2013. The focus of the inspection was the explosives operations area at the HEAF.

#### **METHODOLOGY**

To accomplish the inspection objectives we:

- Interviewed key individuals that provided information about HEAF and the explosive operations area within HEAF;
- Examined HEAF's internal and external physical access controls;
- Conducted tours of the HEAF explosives operations area;
- Obtained and reviewed Livermore and HEAF internal documents, policies and procedures; and
- Reviewed applicable Department regulations.

We conducted this inspection in accordance with the Council of the Inspectors General on Integrity and Efficiency, *Quality Standards for Inspection and Evaluation*, January 2012. Those standards require that we plan and perform the review to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our objective. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our inspection objective. The inspection included tests of controls and compliance with laws and regulations to the extent necessary to satisfy the 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 inspection. Finally, we relied on computer-processed data to some extent to satisfy our inspection objective. We confirmed the validity of such data, as appropriate, by conducting interviews and reviewing source documents.

The exit conference was waived by National Nuclear Security Administration management.

### PRIOR REPORTS

- Inspection Report on [\*Management of Explosives at Selected Department Sites\*](#) (INS-O-12-02, July 2012). The report concluded that problems existed with handling and storing explosives at each of the four contractor-operated sites visited, potentially increasing the risk of harm to personnel and infrastructure. For instance, contrary to established practice designed to minimize the impact of inadvertent detonation, the Savannah River Site and the Idaho National Laboratory performed explosive shipment inspections during peak traffic hours at populated main gates rather than at remote areas and/or during non-peak traffic hours. The inspection determined that excess combustible and non-combustible materials were being stored in explosives bunkers, incorrect bunker placards and fire symbols were posted on bunkers and buildings, and, excess explosives waste was not being disposed of timely. The report concluded that Department of Energy (Department) management had not focused the attention needed to ensure that the responsible facilities contractors properly implemented Department policies for handling and storing explosives, as required. Also, contractor officials charged with managing and safeguarding explosives had not ensured compliance with various aspects of the *DOE Explosives Safety Manual*.
- Audit Report on [\*The Department's Management of Non-Nuclear High Explosives\*](#) (DOE/IG 0730, June 2006). The audit was conducted at three defense laboratories and concluded that two defense laboratories did not maintain adequate control, accountability, and safety over their high explosives inventories. At Sandia National Laboratories, contractor officials did not always track the acquisition and use of explosives and could not account for significant quantities of explosive material and devices. In addition, both Sandia National Laboratories and the Los Alamos National Laboratory maintained large quantities of high explosives that were unlikely to be needed for current or future missions. Finally, both organizations were not regularly evaluating the stability and safety of the high explosive materials as required. The report indicated that a third defense contractor, Lawrence Livermore National Laboratory, effectively managed high explosives. However we noted that the scope of the audit did not include the accountability and control of explosives within the High Explosives Applications Facility.

**MANAGEMENT COMMENTS**



Department of Energy  
National Nuclear Security Administration  
Washington, DC 20585  
August 19, 2013



MEMORANDUM FOR SANDRA D. BRUCE  
ASSISTANT INSPECTOR GENERAL  
FOR INSPECTIONS

FROM: CYNTHIA A. LERSTEN *Platzberg for*  
ASSOCIATE ADMINISTRATOR  
FOR MANAGEMENT AND BUDGET

Subject: National Nuclear Security Administration Comments on the Draft  
Inspection Report titled "Accountability and Control of Explosives at  
the Lawrence Livermore National Laboratory's High Explosives  
Applications Facility" (S12IS007/2012-01033)

Thank you for the opportunity to review the subject draft Inspector General (IG) report. The report identifies three recommendations for National Nuclear Security Administration (NNSA) action. NNSA appreciates the IG's efforts and recommendations which will help to further enhance internal controls at the High Explosives Applications Facility. The safety and security of our employees and materials is a top priority at Lawrence Livermore and all NNSA sites, and we have taken immediate action to mitigate the key concerns noted in the report, while identifying additional milestones to enhance operations and ensure comprehensive corrective actions are sustained.

The attachment to this memorandum provides our specific response to each recommendation, highlighting actions taken and planned, as well as estimated completion dates for key milestones. In addition, we have provided general and technical comments for the IG's consideration to improve the clarity and factual accuracy of the report. Should you have any questions regarding this response, please contact Dean Childs, Director, Audit Coordination and Internal Affairs at (301) 903-1341.

Attachment



Printed with soy ink on recycled paper

**NNSA Response to Inspector General (IG) Draft Inspection Report**  
“Accountability and Control of Explosives at Lawrence Livermore  
National Laboratory’s (LLNL) High Explosives Applications Facility (HEAF)”

To address the issues identified in the report, the (IG) recommended the National Nuclear Security Administration (NNSA):

**Recommendation 1:** Ensure that the HEAF access control systems adequately prevent people without the pre-approved need or proper training from entering the explosive workrooms.

***Management Response: Concur in Principle***

NNSA would like clarify that “access control systems” as referenced in the recommendation are used to enforce security requirements—not safety requirements. To be accurate, NNSA suggests changing the recommendation to read: “*Ensure that HEAF adequately prevents people without the preapproved safety training from entering the explosive workroom.*”

NNSA will evaluate the issues identified in the report, and develop and fully implement a comprehensive corrective action plan to ensure access to explosives workrooms is limited to properly approved and trained personnel. In the interim, HEAF has added the requirement of completing HEAF Safety Access Training (DT2017) to all access points for the hazardous/explosives work areas. This requirement limits access to the facility and provides consistency with other facilities. Upon completion of the course, the employee seeking access must state the hours that they need access to the facility (i.e. continuous or specific business hours) and they must have a facility contact person who can substantiate their need for access. Each request is screened by the Facility Administrative Team, and access is granted or a request for further justification is sent to the requestor. The estimated completion and verification date for all actions is January 15, 2014.

**Recommendation 2:** Ensure that the requirements of the HEAF Safety Plan are adequately incorporated into the Safety Access Training module so that individuals taking the training clearly understand that only explosives handlers and explosives support workers have unescorted access to the explosives workrooms.

***Management Response: Concur***

HEAF management has conducted a thorough review of the HEAF Safety Access Training (DT2017). This review identified several areas for improvement and areas for clarification, including adding verbiage to re-enforce the fact that unescorted non-high explosives trained personnel shall not enter rooms containing explosives unless accompanied by a qualified High Explosives Handler or Explosives Support Personnel. This training module will be updated and changes relayed to those outside of the renewal cycle. LLNL will also add specific training in the HEAF Safety Plan addressing unescorted access to workrooms. The estimated completion and verification date for all actions is February 28, 2014.

**Recommendation 3:** Ensure Lawrence Livermore National Laboratory develops and implements a risk based perpetual system of records and a supporting inventory system within HEAF that is capable of tracking and accounting for explosives from inception to formal disposition, consistent with Department of Energy (DOE) Order 580.1A, DOE Personal Property Management Program..

***Management Response: Concur in Principle***

NNSA agrees that the requirements of DOE Order 580.1A should be adopted by the contractor as applicable and appropriate. However, we would like to clarify that LLNL was not contractually bound by DOE Order 580.1A at the time of the subject audit. The contract required LLNL to comply with Department of Energy Acquisition Regulations (DEAR) 970.5245-1 and DOE 580.1, upon which the contractor developed its set of policies and procedures, approved by the Contracting Officer which specified that explosives would be tracked in accordance with DOE M 440.1-1A, DOE Explosives Safety Manual. This manual has been cancelled and superseded by DOE STD 1212-2012.

DOE Order 580.1A has now been incorporated into the contract, and NNSA will ensure that there is an inventory system within HEAF that is capable of tracking and accounting for explosives from inception to formal disposition. LLNL is working to develop a risk-based approach to implement new requirements of DOE Order 580.1A, Administrative Change 1, and DOE STD 1212-2012. LLNL is also revising its property policies and procedures to describe its implementation of the aforementioned directives. NNSA considers this recommendation closed based on the incorporation of 580.1A into the contract, and will monitor implementation as with all contractual requirements.

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