



Department of Energy
Under Secretary for Nuclear Security
Administrator, National Nuclear Security Administration
Washington, DC 20585



May 27, 2015

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dr. Charles F. McMillan, President
Los Alamos National Security, LLC
Los Alamos National Laboratory
Mailstop A 100, Drop Point 03140071S
Bikini Atoll Road, TA-3
Los Alamos, New Mexico 87545-1663

WEA-2015-04

Dear Dr. McMillan:

This letter refers to the Department of Energy's (DOE) investigation into the facts and circumstances associated with a March 5, 2013, event in which five Los Alamos National Security, LLC (LANS) workers were exposed to chlorine (Cl₂) during a job scoping activity at the Los Alamos National Laboratory (LANL), Technical Area 14, building 23. The results of the investigation were provided to LANS in an investigation report dated May 28, 2014. DOE convened an enforcement conference on July 22, 2014, with you and members of your staff to discuss the report's findings and LANS's response. A summary of the conference and list of attendees is enclosed.

The National Nuclear Security Administration (NNSA) considers the workers' exposure to Cl₂ during the performance of a job scoping activity associated with legacy apparatus removal to be of high safety significance. The aggregate of the deficiencies cited in both of the violations in the enclosed Preliminary Notice of Violation (PNOV) represents conditions that have the potential to cause serious physical harm to workers. NNSA's evaluation of the circumstances of the Cl₂ release determined that LANS did not apply rigor and formality to plan and execute the job scoping activity and worker exposure assessment processes consistent with established LANL procedures. LANS's lack of work definition for the scoping activity allowed workers complete discretion to evaluate the equipment, including handling of equipment components, which led to the unplanned release of Cl₂.

Notwithstanding these issues, NNSA acknowledges LANS's initial response to the event and subsequent corrective actions to address the potential violations and prevent their recurrence. NNSA has concluded that LANS's corrective action plan appears to address the deficiencies identified in the LANS event causal analysis and the violations cited in this PNOV. NNSA recognizes LANS's substantial progress in a number of areas related to this event, including integration of the exposure assessment program into the LANL integrated work management process; analysis and control of legacy hazards; subject matter expert involvement in work planning processes; and hazard identification and control development.



Based on an evaluation of the evidence in this matter, NNSA has concluded that violations of 10 C.F.R. Part 851 (Part 851), *Worker Safety and Health Program*, by LANS have occurred. Accordingly, NNSA is issuing the enclosed PNOV, which cites two Severity Level I violations with a total base civil penalty of \$150,000. In Fiscal Year 2014, NNSA significantly reduced award fee and term for the LANS contract for safety and operational deficiencies. Although the reduction in fee was not related to this specific event, considering that the amount withheld was significant and addressed work planning and control issues that were factors in this incident, NNSA proposes no civil penalties in this PNOV.

Pursuant to 10 C.F.R. § 851.42, *Preliminary Notice of Violation*, you are obligated to submit a written reply within 30 calendar days of receipt of the enclosed PNOV and to follow the instructions specified in the PNOV when preparing your response. If you submit no reply within 30 days, in accordance with 10 C.F.R. § 851.42(d), you relinquish any right to appeal any matter in the PNOV, and this PNOV will constitute a final order.

After reviewing your response to the PNOV, including any proposed additional corrective actions, NNSA will determine whether further action is necessary to ensure compliance with worker safety and health requirements. In addition, LANS must provide NNSA with updates on the status of corrective action implementation not less than once per calendar quarter until all corrective actions taken in response to the TA-14 chlorine exposure event are completed. LANS must also demonstrate to NNSA in effectiveness reviews that LANS has fully implemented institution-wide measures to prevent recurrence of uncontrolled worker exposures to chemical hazards and that LANL subject matter experts are consistently integrated into hazard identification, assessment and control processes. NNSA will continue to monitor the completion of corrective actions until these matters are fully resolved.

Sincerely,



Frank G. Klotz

Enclosures:
Preliminary Notice of Violation (WEA-2015-04)
Enforcement Conference Summary and List of Attendees

cc: Kimberly Davis Lebak, NA-LA
Alex Romero, LANS

Preliminary Notice of Violation

Los Alamos National Security, LLC
Los Alamos National Laboratory

WEA-2015-04

A U.S. Department of Energy (DOE) investigation into the facts and circumstances associated with a March 5, 2013, event in which five Los Alamos National Security, LLC (LANS) workers were exposed to chlorine (Cl₂) during a job scoping activity at the Los Alamos National Laboratory (LANL), Technical Area 14, building 23 (TA-14-23), identified multiple violations of DOE worker safety and health requirements by LANS. DOE provided LANS with an investigation report dated May 28, 2014, and convened an enforcement conference on July 22, 2014, with LANS representatives to discuss the report's findings and LANS's response. A summary of the conference and list of attendees is enclosed.

Pursuant to section 234C of the Atomic Energy Act of 1954, as amended, and 10 C.F.R. Part 851 (Part 851), *Worker Safety and Health Program*, NNSA hereby issues this Preliminary Notice of Violation (PNOV) to LANS. The violations associated with this event involved deficiencies in hazard identification, assessment, prevention, and abatement; and management responsibilities. NNSA has grouped and categorized the violations as two Severity Level I violations, and in consideration of the significant award fee reduction taken in 2014, NNSA is not imposing a civil penalty. As explained in Part 851, Appendix B, *General Statement of Enforcement Policy*, § VI(b)(1), “[a] Severity Level I violation is a serious violation. A serious violation shall be deemed to exist in a place of employment if there is a potential that death or serious physical harm could result from a condition which exists, or from one or more practices, means, methods, operations, or processes which have been adopted or are in use, in such place of employment.”

As required by 10 C.F.R. § 851.42(b) and consistent with Part 851, Appendix B, the violations are listed below. If this PNOV becomes a final order, then LANS may be required to post a copy of this PNOV in accordance with 10 C.F.R. § 851.42(e).

I. VIOLATIONS

A. Hazard Identification, Assessment, Prevention and Abatement

Title 10 C.F.R. § 851.10, *General requirements*, subsection (a), states that “[w]ith respect to a covered workplace for which a contractor is responsible, the contractor must: . . . (2) [e]nsure that work is performed in accordance with: (i) [a]ll applicable requirements of [10 C.F.R. Part 851]; and (ii) [w]ith the worker safety and health program for that workplace.”

Title 10 C.F.R. § 851.21, *Hazard identification and assessment*, subsection (a), states that “[c]ontractors must establish procedures to identify existing and potential workplace hazards and assess the risk of associated workers injury and illness. Procedures must include methods to: (1) [a]ssess worker exposure to chemical, physical, biological, or safety workplace hazards through appropriate workplace monitoring;... (4) [a]nalyze designs of new facilities and modifications to existing facilities and equipment for potential workplace hazards; (5) [e]valuate operations, procedures, and facilities to identify workplace hazards; (6) [p]erform routine job activity-level hazard analyses;... [and] (8) [c]onsider interactions between workplace hazards...” In accordance with subsection (c) of the same section, “[c]ontractors must perform [these activities] initially to obtain baseline information and as often thereafter as necessary to ensure compliance with the requirements [of 10 C.F.R. Part 851, subpart C].”

Title 10 C.F.R. § 851.22, *Hazard prevention and abatement*, subsection (a), states that “[c]ontractors must establish and implement a hazard prevention and abatement process to ensure that all identified and potential hazards are prevented or abated in a timely manner.” This subsection also requires that “(1) [f]or hazards identified . . . during the development of procedures, controls must be incorporated in the appropriate... procedure” and “(2) [f]or existing hazards identified in the workplace, contractors must: . . . (iii) [p]rotect workers from dangerous safety and health conditions.” Paragraph (b) of this section states that “[c]ontractors must select hazard controls based on the following hierarchy: (1) [e]limination or substitution of the hazards where feasible and appropriate; (2) [e]ngineering controls where feasible and appropriate; (3) [w]ork practices and administrative controls that limit worker exposures; and (4) [p]ersonal protective equipment.”

Contrary to these requirements, LANS did not identify, assess, and abate workplace hazards consistent with the applicable requirements and procedures invoked by the approved LANS 10 C.F.R. Part 851 worker safety and health program described in the *Los Alamos National Laboratory Integrated Safety Management System Description Document with embedded 10 CFR 851 Worker Safety and Health Program – System Description 100*, revision 3, dated February 1, 2012. These procedures include the *Integrated Work Management* procedure 300 (P300, revision 4, dated March 30, 2012), the *Worker Exposure Assessments* procedure 101-32 (P101-32, revision 1, dated January 10, 2012), the *Laboratory Industrial Hygiene and Safety Manual* (LIHSM) (document number OST 402-00-00, revised March 9, 2012), and the *Weapons Facilities Operations Building Emergency Plan* (WFO BEP) (document number WFO-PRO-EM-035, dated July 2, 2012, revision B). Specific examples include the following:

1. LANS did not conduct a qualitative workplace chemical exposure assessment for the legacy apparatus removal and document the results in Facilities Maintenance Integrated Work Document (IWD) No. 452744-03, *Remove and Dispose Hood* (revision 0) consistent with P101-32 and Attachment C in Chapter 45, *Industrial Hygiene Exposure Assessments*, of the LIHSM.
2. LANS did not document the potential hazards and associated controls involving chlorine trifluoride (CTF) and breakdown products, such as Cl₂, metal halides, and hydrogen fluoride (HF), in the *General Hazards* section and in Task 4 of the IWD.

3. LANS did not appropriately apply the provisions in P-300, section 4.7, that require subject matter experts (SME) to assist in identifying and evaluating hazards and developing controls to ensure that the information developed during work planning was accurate and complete before work was approved and authorized. As a result:
 - LANS did not ensure that the tasks and steps required for the workability of the apparatus removal and disposal process and the identification of hazards and required controls, including worker exposure assessments, were effectively performed in accordance with the IWD validation walkdown requirements in P-300, section 3.1.3.c.
 - LANS did not affix labels or signs on the apparatus and/or fume hood in room 103 to alert workers to the potential contents of the equipment. Room 103 is a storage/laboratory room that is accessible to workers who may be unfamiliar with the historical use of the apparatus. Additionally, LANS did not purge the system to ensure that the equipment was free of potentially hazardous chemicals and did not apply other means, such as lockout or tagout devices, to prevent workers from operating the equipment and/or manipulating components and valves.
4. LANS did not ensure that the mitigating actions associated with the risk assessment code (RAC) 1 (first priority) and RAC 2 (second priority) rankings in Chapter 45, Attachment C of the LIHSM met the criteria for the hierarchy of controls described in 10 C.F.R. 851.22(b) and P300, Section 3.1.3. The mitigating actions associated with RAC 1 or RAC 2 activities were not prioritized using the appropriate hierarchy of hazard controls stated in P300, from the most effective (hazard elimination by process modification) method to the least (personal protective equipment).
5. LANS did not quantify or estimate the potential exposure to CTF and breakdown products, such as Cl₂, metal halides, and HF, to assess the feasibility of engineering and administrative controls before specifying in the IWD the use of a full face respirator with an MSA Safety Incorporated GME P-100 cartridge as the primary control measure for removing the apparatus.
6. LANS did not perform an effective peer review in accordance with P300 to ensure that the IWD adequately identified and documented all potential hazards and controls related to the removal of the apparatus that had contained CTF, including the results of exposure assessments. Additionally, LANS did not perform an industrial hygiene peer review as required by Chapter 45 of the LIHSM.
7. LANS did not adequately perform an exposure assessment following the inadvertent release of Cl₂ vapors from the apparatus at TA-14-23. LANS personnel responded to TA-14-23 and performed measurements for Cl₂ and HF approximately one hour and ten minutes after the release of the Cl₂ vapors following a scoping activity by five workers to evaluate the removal of the apparatus located in room 103 at TA-14-23. The workers had left the room entrance door open after the Cl₂ release to allow ventilation and dissipation of the vapors.

8. LANS did not appropriately implement the provisions of the WFO BEP that require workers to warn others of unsafe or hazardous events, including the release of hazardous materials. LANS did not ensure that the SME and two other workers involved in the initial scoping activity on March 5, 2013, warned the incoming LANS Operations Manager and Shift Operations Manager of the presence of Cl₂ vapors in room 103, leading to chemical exposure of additional individuals.

Collectively, these noncompliances constitute a Severity Level I violation.

Base Civil Penalty - \$75,000

Proposed Civil Penalty (as adjusted) - \$0

B. Management Responsibilities

Title 10 C.F.R. § 851.20, *Management responsibilities and worker rights and responsibilities*, subsection (a), *Management responsibilities*, states that “[c]ontractors are responsible for the safety and health of their workforce and must ensure that contractor management at a covered workplace:...(3) [a]ssign worker safety and health program responsibilities, evaluate personnel performance, and hold personnel accountable for worker safety and health performance.”

Contrary to these requirements, LANS did not provide effective safety management oversight for the initial scoping entry of TA-14-23 by an SME and two other workers on March 5, 2013. LANS did not communicate to the SME and two other accompanying workers the steps to follow to safely perform the scoping activity and the potential hazards and necessary controls associated with the operation of equipment components, including manipulation of valves. LANS instructed the SME to evaluate the apparatus to help determine its configuration and the appropriate removal and disposition processes. However, LANS did not discuss the evaluation process with the workers or develop a formal plan to perform the evaluation. P-300 requires the development of an IWD when scoping activities involve physical interaction with the equipment. As a result of these management failures, workers were exposed to Cl₂ vapors after they opened equipment valves during the evaluation activity.

Collectively, these noncompliances constitute a Severity Level I violation.

Base Civil Penalty - \$75,000

Proposed Civil Penalty (as adjusted) - \$0

II. REPLY

Pursuant to 10 C.F.R. § 851.42(b)(4), LANS is hereby obligated, within 30 calendar days of receipt of this PNOV, to submit a written reply. The reply should be clearly marked as a "Reply to the Preliminary Notice of Violation."

If LANS chooses not to contest the violations set forth in this PNOV, then the reply should clearly state that LANS waives the right to contest any aspect of this PNOV. This PNOV will constitute a final order upon the filing of the reply.

If LANS disagrees with any aspect of this PNOV, then as applicable and in accordance with 10 C.F.R. § 851.42(c)(1), the reply must state any facts, explanations, and arguments that support a denial of an alleged violation, and discuss the relevant authorities that support the position asserted, including rulings, regulations, interpretations, and previous decisions issued by DOE. In addition, 10 C.F.R. § 851.42(c)(2) requires that the reply include copies of all relevant documents.

Please send the appropriate reply by overnight carrier to the following address:

Director, Office of Enforcement
Attention: Office of the Docketing Clerk
U.S. Department of Energy
19901 Germantown Road
Germantown, MD 20874-1290

A copy of the reply should also be sent to my office and the Manager of the Los Alamos Field Office.

Pursuant to 10 C.F.R. § 851.42(d), if LANS does not submit a written reply within 30 calendar days of receipt of this PNOV, LANS relinquishes any right to appeal any matter in this PNOV, and this PNOV will constitute a final order.



Frank G. Klotz
Under Secretary for Nuclear Security
Administrator, NNSA

Washington, DC

This 27 day of May 2015