



Department of Energy
National Nuclear Security Administration
Washington DC 20585

October 17, 2012

OFFICE OF THE ADMINISTRATOR

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-2012-03

Dear Dr. McMillan:

This letter refers to the Office of Health, Safety and Security's Office of Enforcement and Oversight investigation into the facts and circumstances surrounding four electrical safety-related events that occurred at the Los Alamos National Laboratory (LANL) from October 2010 through January 2011. The noncompliances associated with these events were reported in the Department of Energy's (DOE) Noncompliance Tracking System (NTS) as follows:

- NTS Report No. NTS--LASO-LANS-LANL-2011-0001, *RLUOB LO/TO Noncompliance Results in Near Miss*, reported on February 11, 2011.
- NTS Report No. NTS--LASO-LANS-LANL-2011-0002, *TA-55 UPS Battery Shock*, reported on February 23, 2011.
- NTS Report No. NTS--LASO-LANS-LANL-2011-0003, *TA-55: 13.2 kV Manhole Core Drilling*, reported on February 23, 2011.
- NTS Report No. NTS--LASO-LANS-LANL-2010-0016, *Worker Crosses Arc Flash Boundary Without Proper PPE*, reported on November 23, 2010.

The results of DOE's investigation were provided to Los Alamos National Security, LLC (LANS) in an investigation report dated January 20, 2012. An enforcement conference was held on March 20, 2012, with you and members of your staff to discuss the report's findings and the LANS corrective action plan. A summary of the conference and list of attendees is enclosed.



The National Nuclear Security Administration (NNSA) considers the four electrical safety-related events and the associated violations to be of high safety significance. LANS performed the core drilling on a manhole and the repair of a malfunctioning crane disconnect switch activities in a manner that exposed workers to uncontrolled shock, thermal burn, and arc flash hazards.

Both events revealed the need to stop work and reevaluate work control documents to ensure that a change in work scope did not create new hazards that required adjustments in controls. In the core drilling operation, LANS used a work control document that did not adequately describe the scope of work and the hazards and preventive measures associated with drilling in close proximity to energized 13.2 kV distribution lines located inside the manhole. In the crane disconnect switch repair task, LANS failed to amend the applicable preventive maintenance work control document to incorporate the potential hazards involving the work on a disconnect switch that was not placed in a safe work mode before troubleshooting operations began.

Furthermore, the investigation involving the uninterruptible power supply high voltage electrical shock and lighting inverter electrical near miss demonstrated weaknesses in LANS' safety management oversight of subcontractor work and implementation of LANL integrated work management controls. LANS did not ensure that its subcontractors implemented LANL 10 C.F.R. Part 851 program requirements in accordance with established LANS environment, safety, and health criteria. Additionally, LANS inappropriately relied on subcontractor expertise to conduct work; did not adequately validate subcontractor electrical safety training and qualifications before the commencement of work; and assigned unqualified workers to perform the duties of a person-in-charge.

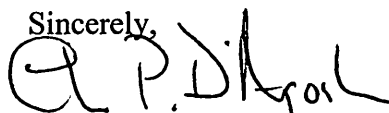
Based on an evaluation of the evidence in this matter, including information presented during the enforcement conference, NNSA has concluded that violations of 10 C.F.R. Part 851, *Worker Safety and Health Program*, by LANS have occurred. Accordingly, NNSA is issuing the enclosed Preliminary Notice of Violation (PNOV) to LANS consisting of three Severity Level I violations and one Severity Level II violation with a total proposed base civil penalty of \$262,500.

NNSA believes that the four electrical safety-related events were preventable and that LANS missed several opportunities to recognize and control workplace hazards consistent with the LANL integrated work management process. LANS was aware of many of these integrated work management deficiencies from the results of internal assessments and occurrences that preceded the four events. These assessments also revealed that LANS safety and health personnel did not appropriately perform subcontractor oversight to ensure safe and compliant work. As a result, LANS allowed its employees and subcontractors to perform work without implementing electrical hazard identification and control measures identified in institutional procedures and regulatory requirements.

LANS promptly responded to the four events, immediately ceased all work operations, disseminated lessons learned with emphasis on stop work responsibilities, and conducted validation walkdowns of work control documents to verify that hazards were identified and controls were in place and functional before authorizing work. LANS Occurrence Reporting and Processing Systems teams performed thorough investigations for each event to determine causal factors and develop corrective actions. Furthermore, the Laboratory Director appointed an Integrated Work Management Performance Review Team to examine LANL's integrated work performance deficiencies following the four events that were the subject of this investigation. NNSA acknowledges LANS' substantial progress in implementing the Team's integrated work management program recommendations, including measures to: (1) address work planning and control with continual emphasis on streamlining work packages for craft use; (2) improve subcontract management through increased oversight to ensure proper flow-down of responsibilities to lower tier contractors; and (3) evaluate subcontractor work and training for compliance with worker safety and health requirements. In recognition of LANS' responses to the events and corrective actions that address the Part 851 violations in the enclosed PNOV to prevent recurrence, NNSA has incorporated 50 percent mitigation of the proposed penalty for one Severity Level I violation related to subcontractor oversight; 25 percent mitigation of the two Severity Level I violations related to hazard identification, assessment, prevention, and abatement; and 50 percent mitigation for the Severity Level II violation associated with worker training. As a result, the total proposed civil penalty is \$168,750.

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

After reviewing your response to the PNOV, including any proposed additional corrective actions entered into DOE's Noncompliance Tracking System, NNSA will determine whether further action is necessary to ensure compliance with worker safety and health requirements. NNSA will continue to monitor the completion of corrective actions until these matters are fully resolved.

Sincerely,

Thomas P. D'Agostino
Administrator

Enclosures: Preliminary Notice of Violation
Enforcement Conference Summary

cc: Kevin Smith, LASO
Marjorie Gavett, LANS

Preliminary Notice of Violation

Los Alamos National Security, LLC
Los Alamos National Laboratory

WEA-2012-03

A U.S. Department of Energy (DOE) investigation into the facts and circumstances associated with four electrical safety-related events that occurred between October 2010 and January 2011 at the Los Alamos National Laboratory (LANL) identified multiple violations of DOE worker safety and health requirements by Los Alamos National Security, LLC (LANS). The violations involved deficiencies in general requirements, hazard identification and assessment, hazard prevention and abatement, and worker training and information. The four events are summarized as follows:

- On October 29, 2010, a LANS maintenance coordinator (MC) in Technical Area (TA) 15 crossed an arc-flash boundary without the required personal protective equipment (PPE) to perform repair work on a malfunctioning crane disconnect switch that was not placed in a safe work mode.
- On December 15, 2010, two LANS electricians were exposed to a potentially serious electrical shock, thermal burns, and electrocution while drilling holes in an underground concrete utility vault (designed as manhole MH-121) in close proximity to energized 13.2 kiloVolt (kV) power lines in TA-55.
- On January 18, 2011, a Control Power Company (CPC) (LANS subcontractor) technician was exposed to a potential electrical shock involving 120/277 Volts, alternating current (AC) while performing intrusive troubleshooting on a malfunctioning lighting inverter in the Radiological Laboratory Utility Office Building at TA-55.
- On January 27, 2011, an On Computer Services (LANS subcontractor) technician received a high voltage direct current electrical shock while performing preventive maintenance on a Liebert uninterruptible power supply (UPS) battery bank in TA-55.

The National Nuclear Security Administration (NNSA) has grouped and categorized the violations as three Severity Level I violations and one Severity Level II violation. In consideration of the mitigating factors, NNSA imposes a total proposed civil penalty of \$168,750, which includes 50 percent mitigation of the base civil penalty for one Severity Level I violation; 25 percent mitigation each for the other two Severity Level I violations; and 50 percent mitigation for the Severity Level II violation. As explained in 10 C.F.R. 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.” Section VI(b)(2) provides that “[a] Severity Level II violation is an other-than-serious violation. An other-than-serious violation occurs where the most serious injury or illness that would potentially result from a hazardous condition cannot reasonably be predicted to cause death or serious physical harm to employees but does have a direct relationship to their safety and health.”

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

VIOLATIONS

I. General Requirements

Title 10 C.F.R. § 851.10, *General requirements*, at paragraph (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.” In addition, 10 C.F.R. § 851.11(2) requires, in pertinent part, that “[i]f more than one contractor is responsible for covered workplaces, each contractor must: . . . (ii) Coordinate with the other contractors responsible for work at the covered workplaces to ensure that there are clear roles, responsibilities and procedures to ensure the safety and health of workers at multi-contractor workplaces.”

Contrary to these requirements, LANS failed to establish and implement safety and health procedures to ensure that its subcontractors perform work in accordance with the approved LANL 10 C.F.R. Part 851 worker safety and health program and other requirements described in the document *Los Alamos National Laboratory Integrated Safety Management System Description Document with Embedded 10 CFR 851 Worker Safety and Health Program* (System Description (SD) 100, revision 2, dated November 4, 2010). SD 100 describes the policies and procedures that comprise the worker safety and health program at LANL, as required by 10 C.F.R. § 851.10. SD 100 invokes the following implementing procedures: (1) the LANL *Integrated Work Management* program (Procedure 300 (P300), revision 2, dated July 16, 2010); (2) the LANL *ES&H Requirements for Subcontractors* document (P101-12, revision 1, dated August 31, 2010); and (3) the LANL *Electrical Safety Program* document (P101-13, Revision 0, dated August 26, 2008). Specific examples of applicable health and safety procedures that were not followed are listed below:

- A. LANS did not apply the Environment, Safety, and Health (ES&H) criteria in P101-12 to require CPC to develop a site-specific ES&H plan before performing repair activities on the lighting inverter.

- B. LANS did not coordinate and supervise the lighting inverter repair work performed by CPC in accordance with P300. LANS did not:
1. Prepare an Integrated Work Document (IWD) describing CPC's scope of work involving intrusive troubleshooting and replacement of a circuit board;
 2. Involve CPC in the work control process to analyze the hazards and develop protective measures;
 3. Perform a validation walkdown of the activity with the CPC technician; and
 4. Confirm that the CPC technician had the required training, authorization, and qualifications to perform the activity.
- C. LANS did not perform effective safety management oversight of the CPC lighting inverter repair, in accordance with P101-12, to ensure subcontractor compliance with 10 C.F.R. Part 851 requirements and associated safety and health standards, including 29 C.F.R. Part 1926, *Safety and Health Regulations for Construction*, and National Fire Protection Association (NFPA) 70E, *Standard for Electrical Safety in the Workplace, (2004)*, as required in 10 C.F.R. § 851.23. LANS did not evaluate and monitor CPC inverter repair work practices to ensure that they included:
1. An electrical hazard analysis;
 2. The application of lockout/tagout devices to help establish an electrically safe-work condition and eliminate the 120/277 Volt AC electrical energy source;
 3. Use of hand and arm PPE during the repair activity; and
 4. Barricades and signs to prevent unauthorized entry into the inverter area.
- D. LANS did not ensure that On Computer Services performed work in accordance with SD 100 and implemented the mandatory requirements in subcontract document Exhibit F, *Environmental, Safety, and Health Requirements* (revision 3, dated May 30, 2008), and the protective measures described in IWD No. PS-2-2010-006, revision 3, *Maintenance of UPS Systems*, to safely perform preventive maintenance on the Liebert UPS system. These requirements and protective measures include:
1. Providing a safety watch or a qualified electrical worker to monitor the subcontractor technician performing high-hazard electrical work;
 2. Using an energized electrical work permit to perform work on or near exposed electrical hazards; and
 3. Using barricades and signs to exclude unauthorized individuals from the UPS system work area.
- E. LANS reviewed and approved a subcontractor site-specific ES&H Plan that did not incorporate hazards and protective measures relative to the subcontractor scope of work,

contrary to subcontract Exhibit F requirements. The On Computer Services Safety Work Plan did not:

1. Incorporate the fire and battery safety precautions from the Liebert UPS Operation and Maintenance Manual;
2. Identify the use of voltage-rated gloves prescribed in the IWD and NFPA 70E;
3. Address proper methods for accessing the upper trays of the Liebert UPS battery cabinet to ensure maintenance activities are performed safely from elevated locations; and
4. Incorporate an electrical hazard analysis that fully assessed the Liebert UPS battery maintenance and inspection procedure, including the hazards associated with the design limitations of the Liebert UPS cabinet.

Collectively, these noncompliances constitute a Severity Level I violation.

Base Civil Penalty - \$75,000

Proposed Civil Penalty - \$37,500

II. Hazard Identification and Assessment

Title 10 C.F.R. § 851.21, *Hazard identification and assessment*, at paragraph (a), states that “[c]ontractors must establish procedures to identify existing and potential workplace hazards and assess the risk of associated worker 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; (2) [d]ocument assessment for chemical, physical, biological, and safety workplace hazards using recognized exposure assessment and testing methodologies and using of accredited and certified laboratories;... (5) [e]valuate operations, procedures, and facilities to identify workplace hazards; [and] (6) [p]erform routine job activity-level hazard analyses...” In accordance with paragraph (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. § 851.23, *Safety and health standards*, at paragraph (a)(3) and (14), requires contractors to comply with 29 C.F.R. Part 1910, *Occupational Safety and Health Standards*, excluding 29 C.F.R. § 1910.1096, *Ionizing Radiation*, and NFPA 70E (2004), *Standard for Electrical Safety in the Workplace*, respectively.

Title 29 C.F.R. § 1910.132(d), *Hazard assessment and equipment selection*, at paragraph (1), states, in pertinent part, that “[t]he employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall: (i) [s]elect, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment.”

NFPA 70E (2004), Article 110, *General Requirements for Electrical Safety-Related Work Practices*, section 110.8, *Working On or Near Electrical Conductors or Circuit Parts*, at subsection (B)(1), *Electrical Hazard Analysis*, states that “[i]f the live parts operating at 50 volts or more are not placed in an electrically safe work condition, other safety-related work practices

shall be used to protect employees who might be exposed to the electrical hazards involved. Such work practices shall protect each employee from arc flash and from contact with live parts operating at 50 volts or more directly with any part of the body or indirectly through some other conductive object. Work practices that are used shall be suitable for the conditions under which the work is to be performed and for the voltage level of the live parts. Appropriate safety-related work practices shall be determined before any person approaches exposed live parts within the Limited Approach Boundary by using both shock hazard analysis and flash hazard analysis.”

Contrary to these requirements, LANS failed to identify and assess existing and potential workplace hazards associated with the core drilling operation on manhole MH-121 containing energized 13.2 kV power lines and the repair work on the 480 Volt malfunctioning disconnect switch that was not placed in an electrically safe work condition. Specific examples of related deficiencies are listed below:

- A. LANS did not develop and implement a work control document in accordance with P300 that described the work performed on MH-121. LANS did not stop and reevaluate the drilling activity to identify and characterize the potential electrical hazards associated with drilling in close proximity to energized 13.2 kV distribution lines. Furthermore, LANS did not perform a walkdown of the activity with workers to ensure that controls were in place and functional before work was released.
- B. LANS did not reassess the preventive maintenance operation involving overhead crane No. CTO-001 at TA-15 upon the discovery of a malfunctioning 480 volt disconnect switch that controlled the crane. The repair work on the disconnect switch involved a change in the work scope and the introduction of unanticipated conditions or hazards for the preventive maintenance and inspection (PMI) activity that were not documented or analyzed in standing Facilities Maintenance IWD No. 393374-01. LANS did not stop the PMI operation to:
 - 1. Reevaluate the exposure to potential electrical hazards associated with the repair work on the malfunctioning 480 volt disconnect switch;
 - 2. Amend the IWD to incorporate new hazards and protective measures; and
 - 3. Perform a validation walkdown to determine whether the IWD was correct and complete.
- C. LANS did not perform an electrical hazard analysis to determine boundary requirements and the PPE necessary to protect employees from exposure to potential electrical hazards while troubleshooting a malfunctioning 480 Volt disconnect switch that was not placed in an electrically safe work condition. Therefore, an electrical hazard analysis required by P101-13 was not documented in the applicable IWD.

Collectively, these deficiencies constitute a Severity Level I violation.

Base Civil Penalty - \$75,000

Proposed Civil Penalty - \$56,250

III. Hazard Prevention and Abatement

Title 10 C.F.R. § 851.22, *Hazard prevention and abatement*, at paragraph (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 paragraph 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.”

Title 29 C.F.R. § 1910.333, *Selection and use of work practices*, at paragraph (a), *General*, states that “[s]afety-related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards.” Paragraph (a)(1), *Deenergized parts*, states that “[l]ive parts to which an employee may be exposed shall be deenergized before the employee works on or near them, unless the employer can demonstrate that deenergizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations.”

Title 29 C.F.R. § 1910.333, at paragraph (a)(2), *Energized parts*, states that “[i]f the exposed live parts are not deenergized (i.e., for reasons of increased or additional hazards or infeasibility), other safety-related work practices shall be used to protect employees who may be exposed to the electrical hazards involved. Such work practices shall protect employees against contact with energized circuit parts directly with any part of their body or indirectly through some other conductive object. The work practices that are used shall be suitable for the conditions under which the work is to be performed and for the voltage level of the exposed electric conductors or circuit parts. Specific work practice requirements are detailed in [29 C.F.R. § 1910.333(c).]”

Title 29 C.F.R. § 1910.333(b), *Working on or near exposed deenergized parts*, at paragraph (1), *Application*, states that “[c]onductors and parts of electric equipment that have been deenergized but have not been locked out or tagged in accordance with paragraph (b) of [29 C.F.R. § 1910.333] shall be treated as energized parts, and paragraph (c) of [29 C.F.R. § 1910.333] applies to work on or near them.” Paragraph (b)(2), *Lockout and tagging*, states that “[w]hile any employee is exposed to contact with parts of fixed electric equipment or circuits which have been deenergized, the circuits energizing the parts shall be locked out or tagged or both in accordance with the requirements of [29 C.F.R. § 1910.333(b)(2)]. . . .” Paragraph (b)(2)(ii), *Deenergizing equipment*, at paragraph (B), states that “[t]he circuits and equipment to be worked on shall be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches, and interlocks, may not be used as the sole means for deenergizing circuits or equipment. . . .” Paragraph (b)(2)(iii), *Application of locks and tags*, at

paragraph (A), states that “[a] lock and a tag shall be placed on each disconnecting means used to deenergize circuits and equipment on which work is to be performed...”

Title 29 C.F.R. § 1910.335, *Safeguards for personnel protection*, at paragraph (b)(2), *Barricades*, states that “[b]arricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas exposing employees to uninsulated energized conductors or circuit parts...”

NFPA 70E, Section 110.8, *Working On or Near Electrical Conductors or Circuit Parts*, at paragraph (A)(1), *Live Parts--Safe Work Condition*, states that “[l]ive parts to which an employee might be exposed shall be put into an electrically safe work condition before an employee works on or near them...”

NFPA 70E, Section 110.8, at paragraph (B), *Working On or Near Exposed Electrical Conductors or Circuit Parts that Are or Might Become Energized*, states that “[p]rior to working on or near exposed electrical conductors and circuit parts operating at 50 volts or more, lockout/tagout devices shall be applied in accordance with 120.1...”

NFPA 70E, Section 110.8, at paragraph (B)(2), *Energized Electrical Work Permit*, states that “[i]f live parts are not placed in an electrically safe work condition (i.e., for the reasons of increased or additional hazards or infeasibility per 130.1), work to be performed shall be considered energized electrical work and shall be performed by written permit only.”

NFPA 70E, Article 120, *Establishing an Electrically Safe Work Condition*, at section 120.1, *Process of Achieving an Electrically Safe Work Condition*, states that “[a]n electrically safe work condition shall be achieved when performed in accordance with the procedures of 120.2 and verified by the following process:

- (1) Determine all possible sources of electrical supply to the specific equipment. Check applicable up-to-date drawings, diagrams, and identification tags.
- (2) After properly interrupting the load current, open the disconnecting device(s) for each source.
- (3) Wherever possible, visually verify that all blades of the disconnecting devices are fully open or that drawout-type circuit breakers are withdrawn to the fully disconnected position.
- (4) Apply lockout/tagout devices in accordance with a documented and established policy.
- (5) Use an adequately rated voltage detector to test each phase conductor or circuit part to verify they are de-energized. Test each phase conductor or circuit part both phase-to-phase and phase-to-ground. Before and after each test, determine the voltage detector is operating satisfactorily.
- (6) Where the possibility of induced voltages or stored electrical energy exists, ground the phase conductors or circuit parts before touching them. Where it could be reasonably anticipated that the conductors or circuit parts being de-energized could contact other exposed energized conductors or circuit parts, apply ground connecting devices rated for the available fault duty.”

NFPA 70E, Article 130, *Working On or Near Live Parts*, at paragraph 130.7 (A), *General*, states that “[e]mployees working in areas where electrical hazards are present shall be provided with,

and shall use, protective equipment that is designed and constructed for the specific part of the body to be protected and for the work to be performed.”

NFPA 70E, Section 130.7, *Personal and Other Protective Equipment*, at paragraph (C)(1), *General*, states that “[w]hen an employee is working within the Flash Protection Boundary he/she shall wear protective clothing and other personal protective equipment in accordance with 130.3.

NFPA 70E, Section 130.7, at paragraph (E)(2), *Barricades*, states that “[b]arricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas containing live parts...”

Contrary to these requirements, LANS failed to establish and implement hazard prevention and abatement controls or safety-related work practices to effectively plan and execute the core drilling activity performed on MH-121 and the repair work on a malfunctioning 480 volt disconnect switch that controlled overhead crane No. CTO-001. Specific examples are listed below:

- A. LANS did not evaluate and implement work practices that would reduce or eliminate employee exposure to energized 13.2 kV distribution lines inside MH-121 before the electricians performed the core drilling operation in close proximity to the power lines. LANS did not follow the Hilti DD-250 E Diamond System manufacturer safety precaution to switch off supply lines that are in close proximity to locations where holes are to be drilled. Electricians drilled holes approximately one to five inches from the 13.2 kV power lines. In addition, LANS did not consider the LANL institutional practice to plan and conduct a utility outage.
- B. LANS did not effectively implement the steps for achieving an electrically safe work condition as specified in NFPA 70E and P101-13 before performing repair work on a malfunctioning 480 Volt disconnect switch that was not placed in a safe work mode. Workers performed repair work without:
 1. Donning the required PPE while working within the flash protection boundary;
 2. Opening the disconnect switch;
 3. Applying lockout/tagout devices identified in Attachment C of the IWD, Form 2004, *Affected Worker Notification*; and
 4. Performing zero voltage verification.
- C. LANS did not erect barricades and signs to prevent access by unauthorized individuals while workers performed the repair work on a malfunctioning 480 volt disconnect switch.

Collectively, these noncompliances constitute a Severity Level I violation.

Base Civil Penalty - \$75,000

Proposed Civil Penalty - \$56,250

IV. Training and Information

Title 10 C.F.R. § 851.25, *Training and information*, at paragraph (a), states that “[c]ontractors must develop and implement a worker safety and health training and information program to ensure that all workers exposed or potentially exposed to hazards are provided with the training and information on that hazard in order to perform their duties in a safe and healthful manner.” Paragraph (c) states that “[c]ontractors must provide training and information to workers who have worker safety and health program responsibilities that is necessary for them to carry out those responsibilities.”

Title 29 C.F.R. § 1910.332(b), *Content of training*, at paragraph (1), *Practices addressed in this standard*, states that “[e]mployees shall be trained in and familiar with the safety-related work practices required by 1910.331 through 1910.335 that pertain to their respective job assignments.”

Title 29 C.F.R. § 1910.333(c), *Working on or near exposed energized parts*, at paragraph (2), *Work on energized equipment*, states that “[o]nly qualified persons may work on electric circuit parts or equipment that have not been deenergized under the procedures of paragraph (b) of this section. Such persons shall be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.”

NFPA 70E, Section 110.4, *Multiemployer Relationship*, at paragraph (B), *Outside Personnel (Contractors, etc.)*, states that “[w]henver outside servicing personnel are to be engaged in activities covered by the scope and application of [NFPA 70E], the on-site employer and the outside employer(s) shall inform each other of the existing hazards, personal protective equipment/clothing requirements, safe work practice procedures, and emergency evacuation procedures applicable to the work to be performed. The coordination shall include a meeting and documentation.”

NFPA 70E, Section 110.7, *Electrical Safety Program*, at paragraph (G)(1), *General*, states that “[b]efore starting each job, the employee in charge shall conduct a job briefing with the employees involved. The briefing shall cover such subjects as hazards associated with the job, work procedures involved, special precautions, energy source controls, and personal protective equipment requirements.”

NFPA 70E, Section 120.2, *Working On or Near De-energized Electrical Conductors or Circuit Parts That Have Lockout/Tagout Applied, Hazardous Electrical Energy Control Procedures*, at paragraph (D)(5), *Training and Retraining*, states that “[e]ach employer shall provide training as required to ensure employees’ understanding of the lockout/tagout procedure content and their duty in executing such procedures.”

Contrary to these requirements, LANS failed to implement a worker safety and health training program to ensure that the scope of work, hazards and ES&H requirements related to those activities were reviewed and discussed with properly trained and qualified workers. Specific examples are listed below:

- A. LANS did not coordinate the lighting inverter repair work with CPC before formally releasing the work. LANS did not conduct a pre-job briefing to ensure that workers from both companies thoroughly discussed and understood procedures applicable to the inverter repair work, including lockout/tagout, and safety and health requirements.
- B. LANS did not assign a person in charge (PIC) with the proper qualifications and training to provide effective oversight for the On Computer Services preventive maintenance operation on a Liebert UPS system. The designated LANS PIC was not familiar with electrical safety requirements and work practices associated with the UPS work. The PIC did not perform an effective pre-job briefing to communicate the scope, hazards, expected outcomes, and controls in the applicable IWD to the On Computer Services technician.
- C. LANS did not conduct a formal pre-job briefing to discuss the work steps, and the potential hazards and controls associated with the core drilling operation on MH-121. The designated PIC authorized work without ensuring that the assigned workers had the required training to perform core drilling adjacent to 13.2 kV power lines and without obtaining the required signatures to formally validate and release the work.
- D. LANS did not verify that workers were properly authorized and qualified to perform or supervise repair work on a malfunctioning 480 volt disconnect switch. The MC troubleshooting the disconnect switch was not qualified as an electrician and was not familiar with arc-flash hazards and protective boundaries. Additionally, an electrician in the composite crew had not completed course No. 23387, *National Electrical Code Changes*, in accordance with P101-13.

Collectively, these noncompliances constitute a Severity Level II violation.

Base Civil Penalty - \$37,500

Proposed Civil Penalty - \$18,750

REPLY

Pursuant to 10 C.F.R. § 851.42, 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 and the proposed remedy, the reply should state that LANS waives the right to contest any aspect of this PNOV and the proposed remedy. In such cases, the total proposed civil penalty of \$168,750 must be remitted within 30 calendar days after receipt of this PNOV by check, draft, or money order payable to

the Treasurer of the United States (Account 891099) and mailed to the address provided below. This PNOV will constitute a final order upon the filing of such reply.

If LANS disagrees with any aspect of this PNOV or the proposed remedy, then as applicable and in accordance with 10 C.F.R. § 851.42(c)(1), the reply must: (i) state any facts, explanations and arguments that support a denial of the alleged violation; (ii) demonstrate any extenuating circumstances or other reason why the proposed remedy should not be imposed or should be further mitigated; (iii) 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:

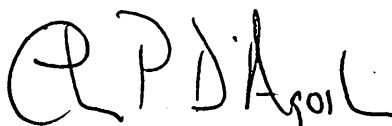
Director, Office of Enforcement and Oversight
Attention: Office of the Docketing Clerk
U.S. Department of Energy
19901 Germantown Road
Germantown, MD 20874-1290

A copy of the reply should also be sent to my office and the Manager of the Los Alamos Site 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, including the proposed remedy, will constitute a final order.

CORRECTIVE ACTIONS

Corrective actions that have been or will be taken to avoid further violations should be delineated with target and completion dates in DOE's Noncompliance Tracking System.



Thomas P. D'Agostino
Administrator
National Nuclear Security Administration

Washington, DC
this 17th day of Oct 2012