



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



August 25, 2015

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dr. Raymond J. Juzaitis
President
National Security Technologies, LLC
P.O. Box 98521, NSF001
Las Vegas, Nevada 89193-8521

WEA-2015-07

Dear Dr. Juzaitis:

This letter refers to the U.S. Department of Energy (DOE) investigation into the facts and circumstances associated with the June 13, 2014, chemical explosion that injured two workers at the Nevada National Security Site's Nonproliferation Test and Evaluation Complex. DOE's Office of Enterprise Assessments' Office of Enforcement provided the results of the investigation to National Security Technologies, LLC (NSTec) in an investigation report dated March 2, 2015. An enforcement conference was convened on March 31, 2015, with you and members of your staff to discuss the report's findings and NSTec's response. A summary of the conference and list of attendees is enclosed.

The National Nuclear Security Administration (NNSA) considers the factors that led to the explosion to be of high safety significance. The drum explosion and expelled steel shrapnel had the potential to cause a fatality or more serious physical harm to the workers. The Office of Enforcement's investigation revealed that weaknesses in NSTec's implementation of work planning and control processes, hazard identification, hazard communication, fire and explosion prevention procedures, and timely abatement of known hazards and issues affecting safety were direct contributors to the cause of the event. Notwithstanding these issues, NNSA acknowledges NSTec's initial response to the event and subsequent corrective actions to address the potential violations. Further, NSTec's corrective action plan appears to address the deficiencies identified in the NNSA/NSTec *Accident Investigation Board* report and the regulatory noncompliances identified during this investigation.

Based on an evaluation of the evidence in this matter, including information presented at the enforcement conference, NNSA concludes that NSTec violated requirements prescribed under 10 C.F.R. Part 851, *Worker Safety and Health*



Program. Accordingly, NNSA hereby issues the enclosed Preliminary Notice of Violation (PNOV), which cites four Severity Level I violations and one Severity Level II violation. During the performance period in which this event occurred, NNSA reduced the contract fee that was awarded to NSTec for failure to fully meet specific contract performance objectives, including the chemical explosion referenced in this PNOV, by \$2.05 million. Therefore, in accordance with 10 C.F.R. § 851.5 (c), NNSA proposes no civil penalties for the Part 851 violations cited 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 fail to submit a reply within 30 calendar days, then in accordance with 10 C.F.R. § 851.42(d), you relinquish any right to appeal any matter in the PNOV, and the PNOV will constitute a final order.

After reviewing your reply to the PNOV, and any proposed additional corrective actions entered into the DOE Noncompliance Tracking System, NNSA will determine whether any further activity is necessary to ensure compliance with DOE worker safety and health requirements. NNSA will continue to monitor the completion of corrective actions until this matter is fully resolved.

Sincerely,



Frank G. Klotz

Enclosures: Preliminary Notice of Violation (WEA-2015-07)
Enforcement Conference Summary and List of Attendees

cc: Steven Lawrence, NA-NV
Brian Barbero, NSTec

Preliminary Notice of Violation

Nevada National Security Site
National Security Technologies, LLC

WEA-2015-07

A U.S. Department of Energy (DOE) investigation into the facts and circumstances associated with the June 13, 2014, chemical explosion that injured two workers at the Nevada National Security Site (NNSS) Nonproliferation Test and Evaluation Complex (NPTEC) revealed five violations of DOE worker safety and health (WSH) requirements by National Security Technologies, LLC (NSTec). DOE provided NSTec with an investigation report dated March 2, 2015, and convened an enforcement conference on March 31, 2015, with NSTec representatives to discuss the report's findings and NSTec'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, codified at 42 U.S.C. § 2282c, and DOE regulations set forth in 10 C.F.R. Part 851, *Worker Safety and Health Program*, the National Nuclear Security Administration (NNSA) hereby issues this Preliminary Notice of Violation (PNOV) to NSTec. The violations included deficiencies in hazard identification and assessment; hazard prevention and abatement; hazard communication; fire protection; and training and information. NNSA has grouped and categorized the violations as four Severity Level I violations and one Severity II violation.

Severity Levels are explained in Part 851, Appendix B, *General Statement of Enforcement Policy*. Section VI(b)(1) states that “[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) states 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.”

In accordance with 10 C.F.R. § 851.5(b) and DOE Acquisition Regulation 48 C.F.R. § 970.5215-3, Conditional Payment of Fee Clause, under contract number DE-AC02-05CH11231 between NNSA and NSTec, NNSA reduced the amount of at-risk or available fee that NSTec earned for failure to fully meet specific contract performance objectives during the performance period in which this event occurred. Most notably, in the area of Operations and Infrastructure, NSTec's award fee was reduced by \$2.05 million, which was attributed to a number of incidents,

including the chemical explosion referenced in this PNOV. These weaknesses include systemic work planning and control problems and ineffective operations and resolution of issues. As a result, and pursuant to 10 C.F.R. § 851.5(c), NNSA proposes no civil penalty for the violations cited in this PNOV.

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 NSTec 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 and Assessment

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; [and] (5) [e]valuate operations, procedures, and facilities to identify 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. § 851.24, *Functional areas*, subsection (b), states that “[i]n implementing the structured approach required by subsection (a) of [10 C.F.R. Part 851.24], contractors must comply with the applicable standards and provisions in appendix A of [10 C.F.R. Part 851], entitled “Worker Safety and Health Functional Areas.” Appendix A, Section 6, *Industrial Hygiene*, states that “[c]ontractors must implement a comprehensive industrial hygiene program that includes at least one of the following elements: (a) initial or baseline surveys and periodic resurveys and/or exposure monitoring of all work areas and operations to identify and evaluate potential worker health risks; (b) [c]oordination with planning and design personnel to anticipate and control hazards that proposed facilities and operations would introduce....”

Contrary to these requirements, NSTec failed to establish and implement a work planning and control process that identified and assessed workplace hazards consistent with the applicable requirements described in the approved NSTec 10 C.F.R. Part 851 Worker Safety and Health (WSH) Program Description document PD-P200.001, *10 CFR 851 Worker Safety and Health Program Description* (Revision 6, dated October 31, 2013) and the invoked NSTec core company directives (CCDs), company directives (CDs), and organization procedures that implement Part 851. Specific examples include the following:

1. NSTec did not perform a hazard analysis of the NPTEC West Motel storage building to ensure that chemical hazards were appropriately identified before NSTec approved the building for use, handling, and storage of flammable and hazardous chemicals in the NPTEC Real Estate Operations Permit work authorizing document.
2. NSTec did not implement an effective integrated work planning and control process in accordance with CCD-QA05.001, *NSTec Integrated Work Control Process* (Revision 3, dated September 16, 2013); CCD-QA05.001-003, *Activity-Level Hazard Analysis Process* (Revision 3, dated September 28, 2011); and OP-P450.018, *Industrial Hygiene Health Hazard Evaluations, Assessments, and Reports* (Revision 0, dated February 28, 2013) for work conducted under activity-level work document (AWLD) number FY-14-NNSS-X352-Barolo (Revision 0, dated December 5, 2013). Specifically, NSTec did not:
 - a. Identify the activity-level work associated with transferring or dispensing chemicals – including flammable isopropyl alcohol (IPA), a category two flammable liquid according to the Occupational Safety and Health Administration – from the 55-gallon drums to transfer containers at the West Motel Bay 30 or at other NPTEC locations where chemicals were transferred or dispensed.
 - b. Conduct a walkdown or tabletop review to ensure that the tasks and steps of the activity-level work, including the dispensing, handling, and transfer of IPA at the West Motel, were incorporated in the ALWD; that the hazards were appropriately identified; and that the required controls were in place, operational, and functional.
 - c. Identify in the associated job hazard analysis (JHA) the chemical and explosive hazards that can result from the formation of organic peroxides when storing and using IPA under extreme temperatures and exposure to direct sunlight and oxygen, as described in the current, up-to-date Sigma-Aldrich safety data sheet (SDS), version 5.4, dated June 12, 2014.
 - d. Communicate a noted concern or call a time-out in accordance with the ALWD when workers found an unanticipated hazardous condition, such as “sloughing” on the interior of the IPA drum that exploded (the “event drum”) while transferring IPA.
3. NSTec did not effectively evaluate worker exposures to chemical agents and assess the effectiveness of controls at NPTEC consistent with the requirements of OP-P450.018.
 - a. NSTec did not conduct a health hazard evaluation of the NPTEC West Motel on May 21, 2014, that assessed and documented worker exposure to chemicals during the handling/transfer of IPA and the effectiveness of existing control measures, including assessing the feasibility of using engineering and administrative controls before specifying the use of respiratory protection to protect against inhalation hazards. Furthermore, NSTec did not evaluate the potential incompatibility of stored chemicals and identify hazard communication (HAZCOM) deficiencies, including

missing and outdated material safety data sheets (MSDSs)/SDSs and noncompliant labeling of containers.

- b. NSTec did not evaluate the need to conduct exposure monitoring of work areas or operations necessary to characterize the exposure of employees from other government agencies or NPTEC Work for Others projects who handle chemicals and perform open air testing.

Collectively, these noncompliances constitute a Severity Level I violation.

B. Hazard Prevention and Abatement

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:... (ii) [i]mplement interim protective measures pending final abatement; and (iii) [p]rotect workers from dangerous safety and health conditions.”

Title 10 C.F.R. § 851.23, *Safety and health standards*, paragraph (a)(3), 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*.

Title 29 C.F.R., Part 1910, Subpart I, *Personal Protective Equipment*, § 1910.132, *General requirements*, subsection (d)(1), states 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; (ii) [c]ommunicate selection decisions to each affected employee....”

Title 29 C.F.R. § 1910.151, *Medical services and first aid*, paragraph (c), states that “[w]here the eyes and body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.”

PD-P200.001 invokes American National Standards Institute Standard Z358.1-2009, *Emergency Eyewash and Shower Equipment*, Section 6.4.2, which provides that eyewashes are to be no further than a 10-second walk (approximately 55 feet) from the chemical splash hazard and to be activated weekly to ensure reliability in time of actual need. Additionally, eyewashes are to be inspected annually to ensure that they meet code requirements.

Contrary to these requirements, NSTec failed to implement hazard prevention and abatement controls to ensure that the identified potential hazards were adequately prioritized by worker

risk and that interim protective measures were established in a timely manner to protect workers from dangerous safety and health conditions. Specific examples include the following:

1. NSTec did not implement interim protective measures in a timely manner to protect workers from potentially hazardous workplace conditions that were placed “On Hold” in accordance with CCD-QA03.001, *Issues Management* (Revision 6, dated January 1, 2014) for several years after the deficiencies were identified. For instance:
 - a. NSTec did not address programmatic issues related to the lack of a chemical safety management program and HAZCOM deficiencies involving inadequate storage facilities, housekeeping, labeling of containers, missing MSDSs, and chemical storage incompatibilities. Such issues were identified in an NPTEC Port Gaston Site surveillance report dated September 20, 2011.
 - b. NSTec did not meet the requirement of CD-2120.017, *National Security Technologies, LLC, Fire Protection Program* (Revision 2, dated January 2, 2014) to conduct annual facility Fire Safety Assessments (FSAs). NSTec has not conducted an annual NPTEC FSA since 2008.
2. NSTec did not ensure that the prioritization process established in CCD-QA03.001, which allows managers to place WSH noncompliances “On Hold,” was consistent with Part 851 hazard abatement and prevention requirements. NSTec did not assign priority levels appropriate to worker risk, such as the potential to exceed occupational exposure limits, or identify interim protective measures to protect workers in a timely manner.
3. NSTec did not provide an eyewash/shower station as required by the ALWD before the workers transferred IPA, an eye and skin irritant according to the chemical’s MSDS, from the event drum to the portable container in Bay 30 of the West Motel.
4. NSTec did not ensure that all workers wore safety shoes on June 11 and 13, 2014, as specified in the ALWD, the associated JHA, and the pre-job briefing form (*Pre-Task and Post-Task Hazard Review*, dated May 28, 2014) while performing work under the ALWD.

Collectively, these noncompliances constitute a Severity Level I violation.

C. Hazard Communication

Title 29 C.F.R. § 1910.1200, *Hazard communication*, paragraph (a)(2), states, in pertinent part, that:

This occupational safety and health standard is intended to address comprehensively the issue of classifying the potential hazards of chemicals, and communicating information concerning hazards and appropriate protective measures to employees....Classifying the potential hazards of chemicals and communicating information concerning hazards and

appropriate protective measures to employees may include, for example, but is not limited to, provisions for: developing and maintaining a written hazard communication [HAZCOM] program for the workplace, including lists of hazardous chemicals present; labeling containers of chemicals in the workplace, as well as of containers of chemicals being shipped to other workplaces; preparation and distribution of safety data sheets [SDSs] to employees and downstream employers; and development and implementation of employee training programs regarding chemical hazards and protective measures.

Contrary to these requirements, NSTec failed to manage the chemical inventory at NPTEC and other facilities consistent with HAZCOM requirements and NSTec procedure CD-P450.0008, *Hazard Communication and Hazardous Substances Use and Storage* (Revision 1, dated October 17, 2013). Specific examples include the following:

1. NSTec did not perform an effective annual review of MSDSs/SDSs to ensure that the list of chemicals in use, including IPA, and associated MSDSs/SDSs was accurate and complete and that new or updated data sheets were obtained as products changed or as the MSDSs/SDSs became outdated.
2. NSTec did not apply HAZCOM labeling provisions to hazardous chemical storage containers at the NPTEC West Motel, including the 55-gallon hydrochloric acid (HCl) drum stored adjacent to the IPA. These containers required labeling to correctly identify the product names and the general hazards associated with the chemicals.
3. NSTec did not store and use IPA 55-gallon drums in accordance with the information described in the IPA Sigma-Aldrich SDS, which warns users to avoid storage in high temperatures and exposure to direct sunlight and oxygen. Such conditions promote the formation and concentration of organic peroxide when the IPA is allowed to evaporate.

Collectively, these noncompliances constitute a Severity Level I violation.

D. Fire Protection

Title 10 C.F.R. Part 851, Appendix A, Section 2, *Fire Protection*, paragraph (a), states, in pertinent part, that “[c]ontractors must implement a comprehensive fire safety and emergency response program to protect workers commensurate with the nature of the work that is performed.” Paragraph (b) states that “[a]n acceptable fire protection program must include those fire protection criteria and procedures, analyses, hardware and systems, apparatus and equipment, and personnel that would comprehensively ensure that the objective in paragraph 2(a) of [Appendix A, Section 2, *Fire Protection*] is met. This includes meeting applicable building codes and National Fire Protection Association [NFPA] codes and standards.”

NFPA 30-2012, *Flammable and Combustible Liquids Code*, Section 6.5.4, *Static Electricity*, subsection 6.5.4.4, states that “[a]ny electrically isolated section of metallic piping or equipment shall be bonded and grounded to prevent hazardous accumulation of static electricity.”

NFPA 30-2012, Section 9.17, *Separation from Incompatible Materials*, states that “[e]xcept as provided for in 9.17.3 [of NFPA 30], liquids shall be separated from incompatible materials where the stored materials are in containers having a capacity of more than 5 lb or ½ gal.” Subsection 9.17.1.1 states that “[s]eparation shall be accomplished by one of the following methods:

- (1) Segregating incompatible materials storage by a distance of not less than 20 feet
- (2) Isolating incompatible materials storage by a noncombustible partition extending not less than 18 inches above and to the sides of the stored materials
- (3) Storing liquid materials in flammable liquids storage cabinets in accordance with Section 9.5 [*Flammable Liquids Storage Cabinets*, of NFPA 30].”

NFPA 30-2012, Section 18.4, *Dispensing, Handling, Transfer, and Use*, subsection 18.4.1, states that “[c]lass I liquids shall be kept in closed tanks or containers when not actually in use.”

Title 29 C.F.R. § 1910.106, *Flammable liquids*, paragraph (e)(6)(ii), *Grounding*, states, in pertinent part, that “Category 1 or 2 flammable liquids, or Category 3 flammable liquids with a flashpoint below 100 °F (37.8 °C), shall not be dispensed into containers unless the nozzle and container are electrically interconnected.”

Contrary to the requirements of 10 C.F.R. Part 851, Appendix A, Section 2, 29 C.F.R. § 1910.106, and NSTec procedures CD-P280.029, *Flammable/Combustible Liquids and Aerosol Products* (Revision 1, dated August 3, 2010) and CD-2120.017, *National Security Technologies, LLC, Fire Protection Program* (Revision 2, dated January 2, 2014), NSTec failed to appropriately segregate, store, dispense, and use IPA and other chemicals to prevent the potential for fire and explosion hazards at the NPTEC West Motel Bay 30. Specific examples include the following:

1. NSTec did not bond the 55-gallon metal event drum and the portable metal container during an IPA liquid transfer on June 11, 2014, to prevent an accumulation of static electricity that could ignite flammable vapors.
2. NSTec did not maintain a distance of at least 20 feet between the IPA and the incompatible HCl (a corrosive) during storage in Bay 30.
3. When the IPA was not being transferred or used, NSTec did not keep it in a closed container to prevent its evaporation and the formation of shock-sensitive organic peroxides within the storage containers when exposed to direct sunlight, oxygen, and high temperatures.
4. NSTec did not ensure that no more than a one-day supply of IPA was stored outside an approved flammable liquid storage cabinet or an approved flammable liquid storage room in the NPTEC West Motel Bay 30.

Collectively, these noncompliances constitute a Severity Level I violation.

E. Training and Information

Title 10 C.F.R. § 851.25, *Training and information*, subsection (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 (b)(3) states that “[t]he contractor must provide:...(3) [a]dditional training when safety and health information or a change in workplace conditions indicates that a new or increased hazard exists.”

Title 10 C.F.R. § 851.25, subsection (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.”

Contrary to these requirements, NSTec failed to properly train and brief workers in accordance with CCD-QA05.001, *NSTec Integrated Work Control Process* (Revision 3, dated September 16, 2013), the AWLD number FY-14-NNSS-X352-Barolo, and CCD-QA05.001-003, *Activity-Level Hazard Analysis Process* (Revision 3, dated September 28, 2011) to ensure that personnel involved in the work activity were familiar with their responsibilities and that the hazards and mitigations associated with the work were communicated to workers. Specific examples include the following:

1. NSTEC did not ensure that the staff augmentation engineer completed General Employee Radiological Training, First Aid, and Integrated Work Control Process Course 1G000574 before commencing work.
2. NSTec did not conduct an effective pre-job briefing to ensure that workers had the required training to perform all assigned tasks and that they understood the PPE requirements for the job and the MSDS/SDS information, including hazard identification, handling and storage, and stability and reactivity data, associated with the chemicals in use at the West Motel Bay 30.
3. NSTec did not implement an effective training process that assigns training requirements for subcontractor employees based on potential exposure to hazards in the workplace and did not ensure that the staff augmentation engineer supporting the NPTEC staff completed the Training Requirements Questionnaire and had a current, consistently maintained employee learning history (listing the required training).

Collectively, these noncompliances constitute a Severity Level II violation.

II. REPLY

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

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

If NSTec disagrees with any aspect of this PNOV, then as applicable and in accordance with 10 C.F.R. § 851.42(c)(1)(i) and (iii), the reply must: (1) state any facts, explanations, and arguments that support a denial of an alleged violation; and (2) 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, EA-10
 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 to the Manager of the Nevada Field Office.

Pursuant to 10 C.F.R. § 851.42(d), if NSTec fails to submit a written reply within 30 calendar days of receipt of this PNOV, NSTec relinquishes any right to appeal any matter in this PNOV, and this PNOV will constitute a final order.

III. 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.


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

Washington, D.C.

This 25th day of August 2015