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

February 18, 2016

VIA OVERNIGHT MAIL CARRIER

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

MAR - 9 2016

NEA-2016-01

Dear Dr. McMillan:

This letter refers to the U.S. Department of Energy (DOE) investigation into the facts and circumstances associated with deficiencies in the packaging and remediation of transuranic (TRU) waste drums at the Los Alamos National Laboratory (LANL) as they relate to the radiological release event at the Waste Isolation Pilot Plant (WIPP) on February 14, 2014. The Office of Enterprise Assessments' Office of Enforcement provided the results of the investigation to Los Alamos National Security, LLC (LANS) in an investigation report dated May 13, 2015. An enforcement conference was convened on June 17, 2015, with members of your staff to discuss the report's findings and LANS' corrective action plan. A summary of the enforcement conference and list of attendees is enclosed.

The National Nuclear Security Administration (NNSA) considers the deficiencies in the LANS TRU waste program to be of high safety significance. These deficiencies impacted work in a DOE hazard category 2 nuclear facility containing TRU waste. This waste was then shipped to another DOE hazard category 2 nuclear facility, where it was comingled with a large number of TRU waste drums stored in the underground area of the WIPP facility. The ensuing radiological release event resulted in low-level internal exposures of more than 20 workers, release of a small amount of radiation to the environment, and disruption of a key waste management capability with a broad adverse impact on DOE. The investigation found deficiencies in the areas of safety basis, unreviewed safety questions, work processes, and quality improvement.

Based on the evaluation of the evidence in this matter, including information presented at the enforcement conference, NNSA concludes that LANS violated requirements enforceable under 10 C.F.R. Part 820, *Procedural Rules for DOE Nuclear Activities*, including 10 C.F.R. Part 830, *Nuclear Safety Management*, Subpart A, *Quality Assurance Requirements*, and Subpart B, *Safety Basis*

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Requirements. Accordingly, NNSA hereby issues the enclosed Preliminary Notice of Violation (PNOV), which cites two Severity Level I violations and two Severity Level II violations.

NNSA reduced the total contract fee that was awarded to LANS in fiscal year 2014 by over 90 percent, or approximately $57 million, with most of this reduction due to deficiencies in the processing and handling of transuranic waste and the resultant impact on operations at WIPP. NNSA also withheld the Award Term (i.e., the award of a one year extension to the contract term) for 2014 and withdrew a one year contract extension previously earned by LANS. In consideration of these significant adverse contract actions already taken, and in accordance with established DOE enforcement practices, NNSA proposes no civil penalty for the violations cited in this PNOV.

Pursuant to 10 C.F.R. § 820.24, *Preliminary Notice of Violation*, you are obligated to file a written reply within 30 calendar days after the date of filing 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 the 30 calendar days, then in accordance with 10 C.F.R. § 820.33, *Default order*, subsection (a), NNSA may pursue a Default Order. Alternatively, you may terminate this enforcement action by providing a reply that waives any right to contest this PNOV. If you elect this option, the PNOV will be deemed a Final Order upon the filing of your reply.

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

Sincerely,

Frank G. Klotz

Frank G. Klotz

Enclosures: Preliminary Notice of Violation (NEA-2016-01)
Enforcement Conference Summary and List of Attendees

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

Enclosure 1

Preliminary Notice of Violation

Los Alamos National Security, LLC
Los Alamos National Laboratory

NEA-2016-01

A U.S. Department of Energy (DOE) investigation into the facts and circumstances associated with a radiological release event at the Waste Isolation Pilot Plant (WIPP) on February 14, 2014, revealed multiple violations of DOE nuclear safety requirements by Los Alamos National Security, LLC (LANS) associated with the packaging and remediation of transuranic (TRU) waste drums at the Los Alamos National Laboratory (LANL). DOE's investigation, conducted by the Office of Enterprise Assessments' Office of Enforcement, relied significantly on the DOE Office of Environmental Management's accident investigation report, *Radiological Release Event at the Waste Isolation Pilot Plant on February 14, 2014, Phase 2*, dated April 16, 2015. DOE provided LANS with an investigation report dated May 13, 2015, and convened an enforcement conference on June 17, 2015, with LANS representatives to discuss the report's findings and the LANS response. A summary of the conference and list of attendees is enclosed.

Pursuant to Section 234A of the Atomic Energy Act of 1954, as amended, and DOE regulations set forth in 10 C.F.R. Part 820, *Procedural Rules for DOE Nuclear Activities*, the National Nuclear Security Administration (NNSA) hereby issues this Preliminary Notice of Violation (PNOV) to LANS. The violations included deficiencies in: (1) safety basis management, (2) unreviewed safety question (USQ) determinations (USQDs), (3) work control processes and ability to follow procedures, and (4) quality improvement measures to identify processes needing improvement and correct deficiencies to prevent recurrence. NNSA has grouped and categorized the violations as two Severity Level I violations and two Severity Level II violations.

Severity levels are explained in 10 C.F.R. Part 820, Appendix A, *General Statement of Enforcement Policy*, paragraph VI(b), which states: "Severity Level I is reserved for violations of DOE Nuclear Safety Requirements which involve actual or high potential for adverse impact on the safety of the public or workers at DOE facilities." Paragraph VI(b) also states that "Severity Level II violations represent a significant lack of attention or carelessness toward responsibilities of DOE contractors for the protection of public or worker safety which could, if uncorrected, potentially lead to an adverse impact on public or worker safety at DOE facilities."

NNSA reduced the total contract fee that was awarded to LANS in fiscal year 2014 by over 90 percent, or approximately $57 million, with most of this reduction due to deficiencies in the processing and handling of transuranic waste and the resultant impact on operations at WIPP. NNSA also withheld the Award Term (i.e., the award of a one year extension to the contract term) for 2014 and withdrew a one year contract extension previously earned by LANS. In consideration of these significant adverse contract actions already taken, and in accordance with established DOE enforcement practices, NNSA proposes no civil penalty for the violations cited in this PNOV.

As required by 10 C.F.R. § 820.24(a) and consistent with 10 C.F.R. Part 820, Appendix A, the violations are listed below. Citations specifically referencing the quality assurance criteria of 10 C.F.R. § 830.122 constitute a violation of § 830.121(a), which requires compliance with those quality assurance criteria.

I. VIOLATIONS

A. Safety Basis

Title 10 C.F.R. § 830.201, *Performance of work*, states that "[a] contractor must perform work in accordance with the safety basis for a hazard category 1, 2, or 3 DOE nuclear facility and, in particular, with the hazard controls that ensure adequate protection of workers, the public, and the environment."

Title 10 C.F.R. § 830.202, *Safety basis*, subsection (a) states that "[t]he contractor responsible for a hazard category 1, 2, or 3 DOE nuclear facility must establish and maintain the safety basis for the facility."

Title 10 C.F.R. § 830.202, subsection (b) states that "[i]n establishing the safety basis for a hazard category 1, 2, or 3 DOE nuclear facility, the contractor responsible for the facility must: (2) [i]dentify and analyze the hazards associated with the work."

Title 10 C.F.R. § 830.202, subsection (c) states that "[i]n maintaining the safety basis for a hazard category 1, 2, or 3 DOE nuclear facility, the contractor responsible for the facility must: (1) [u]pdate the safety basis to keep it current and to reflect changes in the facility, the work and the hazards as they are analyzed in the documented safety analysis [(DSA)]."

Contrary to the above requirements, LANS did not conduct work in accordance with the DOE-approved safety basis at the Waste Characterization, Reduction, and Repackaging Facility (WCRRF) and did not maintain the WCRRF safety basis consistent with changes in the facility, the work, and the hazards at WCRRF. The DOE-approved *Basis for Interim Operation for WCRRF*, ABD-WFM-005 (WCRRF BIO), Revision 2.1, dated November 2011, describes fire events initiated by oxidizers as unlikely and states that oxidizers are not expected to be a part of the waste stream and are prohibited in WCRRF. However, LANS processed nitrate salt waste, a known oxidizer, in WCRRF from September 2011 through May 2014 and did not update the WCRRF BIO before conducting work. In addition, LANS did not properly review the hazards analysis to verify that the proper controls were in place to minimize the increased risk of a fire due to the presence of oxidizers at WCRRF.

Collectively, these noncompliances constitute a Severity Level II violation.

B. Unreviewed Safety Question Process

Title 10 C.F.R. § 830.203, *Unreviewed safety question process*, subsection (a) states that "[t]he contractor responsible for a hazard category 1, 2, or 3 DOE nuclear facility must

establish, implement, and take actions consistent with a USQ process that meets the requirements of this section."

Title 10 C.F.R. § 830.203, subsection (d) states that "[t]he contractor responsible for a hazard category 1, 2, or 3 DOE nuclear facility must implement the DOE-approved USQ procedure in situations where there is a: . . . (2) [t]emporary or permanent change in the procedures as described in the existing [DSA]" or a "(3) [t]est or experiment not described in the existing [DSA] ...."

The LANL USQ process is documented in SBP-112-3 Revision 1.1, *Unreviewed Safety Question (USQ) Process*, dated November 12, 2013 (SBP-112-3). Section 3.6, *Unreviewed Safety Question Determination*, states that "[t]he purpose of a USQD is to determine the approval authority of a proposed change or activity. Proposed changes or activities may present a new or increased risk which DOE/NNSA must be aware of and approve."

Contrary to these requirements, LANS did not effectively implement this USQ procedure as required. The Office of Enforcement investigation found, through document reviews and confirmatory interviews, USQDs that did not describe all changes in the procedure and did not review all the changes that were described. Examples of these deficiencies include the following:

1. The LANS USQ process did not identify the introduction of prohibited materials at WCRRF. USQD worksheet WCRRF-11-070-D documents the review of proposed Revision 25 to EP-WCRR-WO-DOP-0233, *WCRRF Waste Characterization Glovebox Operations* (DOP-0233). This revision removed procedural steps to take if "actual or suspected Class 1 oxidizers...[are] encountered" and also removed a precautionary note describing Class 1 oxidizers as "prohibited items." USQD worksheet WCRRF-11-070-D, Section 1, *Detailed Description of the Change*, requires "a concise but detailed description of the proposed change." However, the list of changes for review did not include the deletion of procedural steps to stop work upon discovery of Class 1 oxidizers. As a result, this process change was not evaluated as part of the USQ process, but the change introduced an inconsistency between facility conditions and the WCRRF BIO.

2. The LANS USQ process did not identify substantial modifications to an existing process at WCRRF involving the processing of nitrate salts. USQD worksheet WCRRF-12-625-D documents the review of proposed Revision 36 to DOP-0233, which added sections 10.3 and 10.6 to specify entry conditions for processing nitrate salts during disposition of prohibited items and new steps for processing nitrate salts. Although the USQD worksheet mentioned "the addition of absorbent when processing Nitrate Salts if liquid is present," it did not identify that this change modifies an existing process (or possibly creates a new process). The USQD worksheet also did not consider the hazards analyses in the BIO or the BIO's specific prohibition of Class 1 oxidizers, such as nitrates, in the WCRRF. As a result, this process change was not evaluated as part of the USQ process, but the change introduced an inconsistency between facility conditions and the WCRRF BIO.

3. The LANS USQ process did not identify substantial modifications to an existing process at WCRRF used to "neutralize" liquid in the waste stream. USQD worksheet WCRRF-13-199-D documents the review of proposed Revision 37 to DOP-0233, which describes a process to "neutralize" liquid in Section 10.3, *Prohibited Item Disposition* (as well as other changes). This process involves adding neutralizing agents to the waste stream, introduces prohibited items into WCRRF, and changes the scope of the processing and remediation work being performed at WCRRF. Section 1 of USQD worksheet WCRRF-13-199-D does not describe the process change to "neutralize" liquid in the waste stream, contrary to the content requirements for Section 1 of the worksheet. As a result, this process change was not evaluated as part of the USQ process, but the change introduced an inconsistency between facility conditions and the WCRRF BIO.

4. SBP-112-3, Section 3.3.3, quotes DOE Guide 424.1-1B, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*, stating that "[w]ritten USQDs are required for tests or experiments not described in the existing safety analyses. Tests and experiments should be broadly interpreted to include new activities or operations." SB-112-3 summarizes its requirements with respect to the DOE guide stating that "[n]ew activities (tests or experiments) not described in the DSA must enter the USQ process." When LANS began using this procedure to process nitrate salt wastes in September 2011, it did not perform a USQD, as required, because the change from inorganic to organic absorbent was incorrectly determined to be an administrative (minor) change. The introduction of nitrate salt wastes in the WCRRF constituted a new activity that represented a potential increase in the probability or consequences of an accident previously evaluated in the BIO. It also resulted in the potential introduction of an accident not previously analyzed in the BIO.

5. LANS did not obtain required DOE/NNSA review of procedural changes under its USQ process. In addition, the procedural changes were inconsistent with the DOE-approved DSA. SBP-112-3, Attachment F, *USQD Worksheet*, provides seven USQD criteria questions to determine whether DOE/NNSA approval is required. Guidance for answering these questions is found in SBP-112-3, Attachment E, *Instructions for the USQD Worksheet*. Section E.2, step 4 of these instructions does not ensure that procedural changes receive the required review and that these changes are consistent with the assumptions, precautions, and controls listed elsewhere in the DSA. No specific instruction or guidance indicates how the review of procedural changes differs from the review of facility process changes or how to ensure that all changes and their potential impact on other relevant technical documents are reviewed. Further, Attachment E, Section E.2, step 5 does not ensure that all necessary and appropriate documents are reviewed. In addition, while SBP-112-3 provides guidance for some documents to be listed as references, it does not provide any guidance or requirement for how to review or use these references in the USQD process, and it has no means to ensure an integrated review of the impacts of changes over time.

Collectively, these noncompliances constitute a Severity Level I violation.

C. Work Processes

Title 10 C.F.R. § 830.122, *Quality assurance criteria*, subsection (e), *Criterion 5 - Performance/Work Processes*, requires contractors to "[p]erform work consistent with technical standards, administrative controls, and other hazard controls adopted to meet regulatory or contract requirements, using approved instructions, procedures, or other appropriate means."

Contrary to this requirement, the Office of Enforcement investigation revealed that LANS did not effectively implement the procedural change process as required. The investigation also found instances where LANS improperly reviewed changes to glovebox procedures or did not follow the glovebox procedure change process. In addition, interviews confirmed that LANS did not always conduct work in accordance with its approved instructions or procedures, and in some cases LANS did not comply with the LANL Hazardous Waste Facility Permit, NM0890010515-TSDF (Permit). Examples of these deficiencies include the following:

1. EP-DIR-AP-10007, *Environmental Programs Procedure Preparation, Revision, Review, Approval and Use*, Revision 2.1, dated July 22, 2013 (EP-DIR-AP-10007), Section 4.1, defines what constitutes the classification of "major" and "minor" procedure revisions. Major revisions "require a review of the existing hazard analysis document," while minor revisions are exempt from this requirement. Minor revisions are "[n]on substantive modifications to a document that change format, correct grammatical errors, update references or organizational names, or clarify without changing the original intent." Section 4.1 also adds that "[m]inor revisions enhance usability but do not change the actual performance of work." The investigation found that some changes to DOP-0233 were incorrectly characterized as minor revisions, as defined by EP-DIR-AP-10007, as illustrated by the following:

    a. DOP-0233, Revision 25, removes the prohibition of Class 1 oxidizers at WCRRF in Section 10.1 and removes the procedural steps to take if oxidizers, such as nitrates, are found in the waste stream during processing. This change allowed the processing of nitrate salts in WCRRF and should have been considered a major revision.

    b. DOP-0233, Revision 32, Section 6.2, provides direction on what to do if a parent drum is to be left attached to the waste control glovebox overnight. Since the procedure had not previously allowed drums to be left in process overnight, this change could have introduced a new hazard and should have constituted a major revision.

    c. DOP-0233, Revision 13, Section 8.11, adds a warning, a note, and additional steps, including wait times, to perform "in situations where multiple waste packages are being opened," "in order to prevent the possibility of a flammable gas mixture deflagration." Since this change discusses a potentially new hazard, it should have constituted a major revision.

2. EP-DIR-AP-10007, Section 5.1, *Responsible Line Managers/Document Owners*, requires that LANS assign subject matter experts (SMEs) to the review of procedural changes involving their respective areas of responsibility; however, this document contains no requirements or guidance for the SMEs with respect to their roles and responsibilities during the procedure development and revision process. Section 5.1 does not provide any information on how an SME's "area of responsibility" is defined or determined by the responsible line manager or document owner. In one particular instance, a conduct-of-operations SME, working outside his/her area of responsibility, added new text to DOP-0233 that included using organic kitty litter as an absorbent, as opposed to the inorganic zeolite material discussed previously in technical team meetings.

   Section 6.3, *Procedure Review and Concurrence Process*, does not ensure that the text added by an SME is reviewed by other SMEs when the change involves their area of expertise or responsibility. In the previous example, the SME's addition of text to DOP-0233, Section 10.6, which included the word "organic," was submitted informally as a "minor" comment, rather than an "essential" comment that would have required explicit concurrence from the entire SME team. The lack of SME direction in EP-DIR-AP-10007 contributed to the comingling of nitrate salts and organic kitty litter during TRU waste processing in WCRRF and subsequently the introduction of prohibited items into WIPP.

   Neither Section 5.1 nor Section 6.3 of EP-DIR-AP-10007 provides adequate guidance to ensure that LANS workers involve the appropriate SMEs in the review of procedural changes. For example, the Document Action Request form for DOP-0233, Revision 36, did not list SMEs for the disciplines of environmental, industrial hygiene, or chemistry as required for the review. Further, EP-DIR-AP-10007, Appendix 1, provides a document review/approval matrix that outlines the SME disciplines involved in procedure review, with a note stating that this list is not all-inclusive. However, interviews with LANS workers, including procedure writers and procedure owners, indicated that any SME disciplines not on this list (e.g., chemistry) would not be considered for participation in the procedure change review process. Consequently, appropriate SMEs were not always selected to review changes to waste processing procedures.

3. EP-DIR-AP-10007, Section 6.2, states that "[p]rocedures shall describe project activities in adequate detail to ensure that the steps can be performed as required." Revisions 37 and 38 to DOP-0233 included the addition of directions to "neutralize" the waste stream, but did not provide adequate detail to ensure that the neutralization process specified by the directions could be performed as required. These revisions did not describe the instructions for measuring pH, actions to take in response to pH measurements, requirements for recording results, range of acceptable pH values, or neutralization steps. These deficiencies contributed to the introduction of triethanolamine (TEA) as a neutralizing agent, which was then comingled with nitrate salts and nitric acid. According to the *Summary of WIPP Hypotheses*, dated June 6, 2014, and the *WIPP Technical Assessment Team Report*, dated March 17, 2015, TEA

reacts with nitric acid to produce triethanolammonium nitrate, TEAN, an energetic combustible material that is prohibited at WIPP.

4. SD330, *Los Alamos National Laboratory Quality Assurance Program*, Attachment B, *Nuclear and Radiological Activities QA Requirements, B1.6, Requirement 5 – Instructions, Procedures, and Drawings*, states that "[a]ctivities affecting quality and services shall be prescribed by and performed in accordance with documented instructions, procedures, or drawings that include or reference appropriate quantitative or qualitative acceptance criteria for determining that prescribed activities have been satisfactorily accomplished." EP-DIR-AP-10007, Section 6.3, states that "[p]rocedures are reviewed to ensure adherence to all environmental, technical, administrative and quality assurance requirements." DOP-0233 was developed and revised using the EP-DIR-AP-10007 process; however, the review of revisions 36 through 38 to DOP-0233 did not identify conflicting requirements, and as a result, LANS did not adhere to certain requirements. For example, Section 3 of DOP-0233 prohibited the introduction of nitrate salts in WCRRF, whereas Section 10.6 provided steps for processing nitrate salts in WCRRF. Revision 36 to DOP-0233, Section 10.3[F], included steps that could not be executed sequentially without performing contradictory actions.

5. DOP-0233 allows the addition of secondary waste, generated during the processing of parent drums, to daughter drums (i.e., waste drums that result from remediation of the original "parent" drum). However, the controls on the type, quantity, packaging, and documentation of secondary waste materials did not ensure that unanalyzed hazards are not introduced.

6. The LANL Hazardous Waste Facility Permit (Permit) provides conditions under which LANS can store, treat, characterize, and mix various hazardous waste streams that are generated at LANL. In some cases, LANS processed waste in a manner that was not authorized by the Permit, as evidenced by the following examples:

   a. The Permit does not allow neutralization of nitrate salt wastes processed at WCRRF. There is a limited exception for treatment when the waste is considered Resource Conservation and Recovery Act hazardous waste for corrosivity – Environmental Protection Agency (EPA) Hazardous Waste Number (HWN) D002 – only and processed in an elementary neutralization unit; however, this exception did not apply to treatment of nitrate salt waste at WCRRF. LANS used neutralizing agents in processing nitrate salt waste at WCRRF from October 1, 2012, until May 8, 2014, at which time LANS issued EP-WCR-SO-1241, Revision 0, *Restrictions on Processing Nitrate Salt* (EP-WCR-SO-1241). On December 4, 2013, parent drum S855793 (drum 68725) was neutralized and remediated at WCRRF to produce daughter drums 68660 and 68685. Daughter drum 68660 was shipped to WIPP on January 29, 2014, and emplaced in Panel 7 in the underground. Drum 68660 has been identified as responsible for the radiological release at WIPP on February 14, 2014.

b. The Permit does not allow the mixing of ignitable wastes (nitrate salts) and organic material (absorbents and neutralizers) in the same container at WCRRF. However, contrary to Permit requirements, LANS processed nitrate salt wastes (oxidizers, HWN D001) using organic absorbents from September 1, 2011, until the issuance of EP-WCR-SO-1241 on May 8, 2014. The processing of nitrate salts was first proceduralized in Revision 36 of DOP-0233, when Section 10.6 was added to provide explicit steps for nitrate salt processing in the WCRRF. This unpermitted mixing of incompatible materials (organic absorbent added to nitrate salt wastes) also resulted in the introduction of ignitable materials (HWN D001), which are prohibited items, into WIPP.

Collectively, these noncompliances constitute a Severity Level I violation.

D. Quality Improvement

Title 10 C.F.R. § 830.122(c), *Criterion 3 - Management/Quality Improvement*, subsection (2), requires DOE contractors to "[i]dentify, control, and correct items, services, and processes that do not meet established requirements."

SD330, *Los Alamos National Laboratory Quality Assurance Program*, states that conditions adverse to quality shall be identified promptly and corrected as soon as practicable. In the case of a significant condition adverse to quality, the cause of the condition shall be determined and corrective action taken to preclude recurrence.

Contrary to these requirements and as evidenced by the following facts, LANS did not effectively correct known radiological material processing and remediation deficiencies at WCRRF. The Office of Enforcement investigation revealed that LANS continued to treat ignitable and corrosive waste and comingle organic material with oxidizers even after multiple sources identified compatibility issues and opportunities for improvement. In some cases, LANS's own analyses and prior experience demonstrated the incompatibility or prohibited nature of certain materials; however, LANS continued to process waste in the same manner with no significant process improvements or modifications. When modifying its processes and procedures, LANS did not consider readily available documentation that should have raised significant concerns about the mixing of organic material with nitrate salts and the categorization of nitrate salts as ignitable based on their properties as an oxidizer. LANS also did not declare materials as corrosive even though pH measurements determined that the material met the EPA definition for corrosivity. LANS's missed opportunities to consider known information regarding material properties and interaction potential resulted in the miscategorization of hazardous waste, the shipment of prohibited items to WIPP, and the subsequent recategorization using HWNs for ignitability (D001) and corrosivity (D002). Examples of information and analyses that identified process deficiencies include the following:

1. LANS had readily available information indicating that material being processed at WCRRF was ignitable material, which is prohibited at WIPP, and should have been characterized as such. LANS stated to the New Mexico Environment Department

(NMED), in its October 21, 2014, letter, *Second Addendum, Reporting Additional Instances of Noncompliance with Hazardous Waste Facility Permit and Generator Requirements, Los Alamos National Laboratory*, that LANS did not conduct an adequate hazardous waste determination of its nitrate salt waste stream. The letter states that "[t]he Permittees believe that they failed to conduct an adequate hazardous waste determination for the nitrate salt-bearing waste with regard to EPA Hazardous Waste Number D001 (ignitability characteristic)" and that "there are specific requirements for ignitable D001 wastes that likely were not met." The letter further states that "Pemittees have labeled all remediated and unremediated nitrate-salt bearing waste containers with the appropriate HWNs (D001, D002, D007, D008, and D009)." LANS's inability to identify this material as ignitable, using the appropriate D001 HWN, contributed to the comingling of potentially incompatible materials. Specific known sources of information regarding the ignitability of oxidizers and the treatment of nitrate salts as oxidizers are as follows:

a. Title 40 C.F.R. § 261.21, *Characteristic of ignitability*

b. DOP-0233, WCRRF *Waste Glovebox Operations*, Revision 38, dated August 29, 2013

c. Energetic Materials Research and Testing Center (EMRTC) Report FR 10-13, *Results of Oxidizing Solids Testing*, dated April 12, 2010

d. ABD-WFM-005, Revision 2.1, *Basis for Interim Operation for Waste Characterization, Reduction, and Repackaging Facility (WCRRF)*, dated November 2011

e. ABD-WFM-001, Revision 0.3, *TA-54, Area G Documented Safety Analysis*, dated January 24, 2012, and ABD-WFM-001, Revision 1.0, *Basis for Interim Operation for Technical Area 54, Area G*, dated January 25, 2012

f. The LANL-Carlsbad Office Difficult Waste Team white paper, *Amount of Zeolite Required to Meet the Constraints Established by the EMRTC Report RF 10-13: Application to LANL Evaporator Nitrate Salts*, dated May 8, 2012

g. Solution Package Scope Definition, Report-72, Salt Waste (SP #72) Revision 1, dated July 17, 2012.

2. Title 40 C.F.R. § 261.22, *Characteristic of corrosivity,* subsection (a)(1), defines a waste as being corrosive if "it is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using Method 9040C in 'Test Methods for Evaluating Solid Waste Physical/Chemical Methods,' EPA Publication SW–846, as incorporated by reference in § 260.11 of [40 C.F.R. Chapter I]." However, LANS processed waste at WCRRF with a pH determined to be less than 2 or greater than 12.5, which meets the EPA definition of corrosive material. LANS did not declare this material corrosive and did not meet the requirements of the Permit.

LANS began using Kolorsafe acid neutralizer on or about September 12, 2013, soon after the issuance of DOP-0233, Revision 37, which first explicitly added steps to "neutralize" the nitrate salt waste. In its July 1, 2014, letter to NMED, *Addendum to the Los Alamos National Laboratory Hazardous Waste Facility Permit Reporting on Instances of Noncompliance and Releases for Fiscal Years 2012 and 2013*, LANS concluded that "the processing of the nitrate salt-bearing waste involved adding neutralizing agents to a waste stream and did not qualify for the elementary neutralization treatment permit exemption because the waste stream...was not a hazardous waste solely due to the corrosivity (D002) characteristics or listing." LANS's inability to declare this waste as corrosive for an extended period of time was also contrary to field observations, in which operators noted such reactions as sparking, smoke, and foam while neutralizing nitrate salt waste during processing. Interviews confirmed that operators were told these reactions were normal and resulted from the neutralization of the nitrate salts. While these observations could have resulted from neutralization of acidic, but noncorrosive material, these energetic reactions, coupled with pH measurements, provided an opportunity for LANS to recognize that it might be treating or neutralizing corrosive waste.

3. LANS had readily available information indicating that organic material should not be mixed with oxidizers, such as waste that includes nitrate salts. A standard EPA Hazardous Waste Compatibility Table/Chart (EPA-600/2-80-076, April 1980) indicates that a mixture of combustible and flammable material with oxidizing agents is likely to result in heat generation, fire, or innocuous and non-flammable gas generation. Despite the lessons learned from previous waste remediation campaigns in 2011-2012 with regards to using Waste Lock 770 (an organic absorbent) with nitrate salts, which can render the waste stream more dangerous by comingling an oxidizer with a fuel, LANS continued to use another organic absorbent (i.e., Swheat Kitty Litter) with nitrate salts from October 2012 to April 2014. The NMED Administrative Compliance Order HWB-14-20, dated December 6, 2014, found that "[r]espondents mixed incompatible wastes (nitrate salts) and organic materials (organic absorbents and organic neutralizers) in the same container in violation of Permit Condition 2.8 and 20.4.1.500."

Collectively, these noncompliances constitute a Severity Level II violation.

II. REPLY

Pursuant to 10 C.F.R. § 820.24(b), LANS is hereby obligated to submit a written reply within 30 calendar days after the date of filing of this PNOV. The reply should be clearly marked as a "Reply to the Preliminary Notice of Violation" and must be signed by the person filing it.

If LANS' reply specifically states that LANS waives any right to contest this PNOV, then, pursuant to 10 C.F.R. § 820.24(d), 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. § 820.24(c), 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. § 820.24(c) 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 Site Office.

Pursuant to 10 C.F.R. § 820.33, *Default order*, subsection (a), if LANS fails to submit a written reply within 30 calendar days after the date of filing of this PNOV, the NNSA Administrator may pursue a Default 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 18th day of Feb. 2016