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Date: APR 26 2016
Symbol: ADESH-16-054
LA-UR: 16-22268
Locates Action No.: N/A

Mr. John E. Kieling, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Dear Mr. Kieling:

Subject: Final Corrective Action Plan, Accident Investigation Board (AIB) Phase 2 Radiological Release Event at the Waste Isolation Pilot Plant (WIPP)

The purpose of this letter is to provide an informational copy of the *Final Corrective Action Plan* submitted to the National Nuclear Security Administration (NNSA) and U.S. Department of Energy (DOE) Office of Environmental Management (EM) by Los Alamos National Security, LLC (LANS) in response to the Phase 2 Accident Investigation Board report released in April, 2015. It is included as Enclosure 1.

If you have comments or questions regarding this document, please contact Mark P. Haagenstad (LANS) at (505) 665-2014 or David Nickless (EM-WM) at (505) 665-6448.

Sincerely,

Michael T. Brandt, DrPH, CIH
Associate Director
Environment, Safety & Health
Los Alamos National Security, LLC
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Sincerely,

Kimberly Davis Jebak
Manager
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Enclosures: (1) Final Corrective Action Plan, Accident Investigation Board (AIB) Phase 2
Radiological Release Event at the Waste Isolation Pilot Plant (WIPP)

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Mr. John E. Kieling, Chief
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2905 Rodeo Park Drive East, Building 1
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APR 26 2016

Dear Mr. Kieling:

**NMED
Hazardous Waste Bureau**

Subject: Final Corrective Action Plan, Accident Investigation Board (AIB) Phase 2 Radiological Release Event at the Waste Isolation Pilot Plant (WIPP)

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Sincerely,

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ENCLOSURE 1

**Final Corrective Action Plan, Accident Investigation Board
(AIB) Phase 2 Radiological Release Event at the Waste
Isolation Pilot Plant (WIPP)**

ADESH-16-054

LA-UR-16-22268

Date: APR 26 2016

Los Alamos National Security, LLC
Corrective Action Plan
Phase 2 Radiological Release Event at the
Waste Isolation Pilot Plant


Charles F. McMillan
Laboratory Director

10/9/15
Date



DIR-15-142

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ACRONYMS

ADEP	Associate Director for Environmental Programs
ADESH	Associate Director for Environment, Safety, and Health
ADNHHO	Associate Director for Nuclear and High-Hazard Operations
AIB	Accident Investigation Board
AK	Acceptable Knowledge
AOP	Abnormal Operating Procedure
ASM	Acquisition Services Management Division
BIO	Basis for Interim Operation
CAP	Corrective Action Plan
CAS	Contractor Assurance System
CBFO	U.S. Department of Energy Carlsbad Field Office
CCP	Central Characterization Program
CRAD	Criteria Review and Approach Document
DEP	Deployed Environmental Professional
DEP DIR	Deputy Laboratory Director
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
DWT	Difficult Waste Team
EM-LA	EM Los Alamos Field Office
EMRTC	Energetic Materials Research and Testing Center, New Mexico Tech
ENV-CP	Environmental Compliance Group
EPA	U.S. Environmental Protection Agency
ES	EnergySolutions, LLC
ESH	Environment, Safety, and Health
ESS	Evaluation of the Safety of the Situation
EWMO	Environmental Waste Facility Operations
FHA	Fire Hazard Analysis
FOD	Facility Operations Director
GB	Glovebox
HSG	Headspace Gas
HWFP	Hazardous Waste Facility Permit
IG	Office of the Inspector General, U.S. Department of Energy
IMRB	Institutional Management Review Board
IPCT	Integrated Process Control Team
ISM	Integrated Safety Management
JHA	Job Hazard Analysis
JON	Judgment of Need
LANL	Los Alamos National Laboratory
LANL-CO	Los Alamos National Laboratory Carlsbad Office

LANS	Los Alamos National Security, LLC
NA-LA	NNSA Los Alamos Field Office
NMED	New Mexico Environment Department
NNSA	National Nuclear Security Administration
NWP	Nuclear Waste Partnership LLC
NTP	National TRU Program
PFITS	Performance Feedback and Improvement Tracking System
PISA	Potential Inadequate Safety Analysis
QA	Quality Assurance
QPA	Quality and Performance Assurance
QEV	Qualified Safety Evaluators
R2A2	Roles, Responsibilities, Authorities, and Accountability
RCRA	Resource Conservation and Recovery Act
RNS	Remediated Nitrate Salt
SB	Safety Basis Division
SB-DO	Safety Basis Division Office
SER	Safety Evaluation Report
SME	Subject Matter Expert
STR	Subcontract Technical Representative
SWB	Standard Waste Box
TAT	Technical Assessment Team
TIM	Training Implementation Matrix
TRU	Transuranic
TSDF	Treatment/Storage/Disposal Facility
TSR	Technical Safety Requirements
UNS	Unremediated Nitrate Salt
USQ	Unreviewed Safety Question
USQD	Unreviewed Safety Question Determination
WAC	Waste Acceptance Criteria
WCATS	Waste Compliance and Tracking System
WCRRF	Waste Characterization, Reduction, and Repackaging Facility (Building 50-69)
WCS	Waste Control Specialists, LLC
WD	Waste Disposition Division
WIPP	Waste Isolation Pilot Plant
WMC	Waste Management Coordinator
WPF	Waste Profile Form

1. INTRODUCTION

On February 14, 2014, there was a release of radioactive material from a transuranic (TRU) waste container emplaced in Panel 7, Room 7, of the Department of Energy (DOE) Waste Isolation Pilot Plant (WIPP) underground near Carlsbad, New Mexico. The release was detected by a continuous air monitor located near the Panel and an alarm activated in the Central Monitoring Room on the WIPP surface, which initiated a shift to filtration of the underground ventilation.

Because access to the underground was restricted following the radiological release and examination of the area and containers was not possible, the investigation was broken down into two phases. Phase 1 focused on the WIPP response to the alarm and associated radiological release to the atmosphere. On April 24, 2014, the results were published in a final report, *Phase 1, Radiological Release Event at the Waste Isolation Pilot Plant*. This Phase 1 report had no conclusions or judgments of need (JONs) related to Los Alamos National Security, LLC (LANS).

On February 19, 2014, the Carlsbad Field Office (CBFO) requested that the Los Alamos National Laboratory (LANL) Carlsbad Office (LANL-CO) develop a list of potential source containers for the release. On February 20, 2014, the LANL-CO provided the list based on a comparison of isotopic ratios calculated from the Waste Data System radionuclide data for each emplaced container in Room 7 of Panel 7 and isotopic ratios calculated from data obtained from analysis of WIPP air filter samples. The list included containers from an Idaho - Rocky Flats waste stream and several drums containing nitrate salts from LANL. Subsequently, on May 1, 2014, CBFO declared a Potential Inadequacy in the Safety Analysis (PISA) regarding the potential for untreated nitrate salt waste being emplaced, which later prompted LANL to declare a PISA as well. On May 15, 2014, photographic evidence confirmed that a LANL-LAMIN02-V.001 waste stream container (drum 68660) was in fact breached.

2. ACCIDENT INVESTIGATION

On May 19, 2014, the Deputy Assistant Secretary for Safety, Security, and Quality Programs, U.S. Department of Energy, Office of Environmental Management, appointed a Phase 2 Accident Investigation Board (AIB) to complete the radiological release investigation and determine the cause of the TRU waste container(s) failure in accordance with DOE Order 225.1B, *Accident Investigations*. The AIB completed the investigation and submitted the Phase 2 final report to the appointing official on March 31, 2015. Based upon the evidence gathered and analyzed during the investigation, the AIB concluded that the release from the container(s) was preventable. If LANL had adequately developed and implemented repackaging and treatment procedures that incorporated suitable hazard controls and included a rigorous review and approval process, the release would have been preventable.

The AIB concluded the following causes of the accident.

Direct Cause -- The immediate events or conditions that caused the accident.

The AIB identified the direct cause of this accident to be an exothermic reaction of incompatible materials in LANL waste drum 68660 that led to thermal runaway, which resulted in over-pressurization of the drum, breach of the drum, and release of a portion of the drum's contents (combustible gases, waste, and wheat-based absorbent) into the WIPP underground.

Root Cause -- Causal factors that, if corrected, would prevent recurrence of the same or similar accidents.

Root causes can be local (specific to the one accident) and/or systemic (common to a broad class of similar accidents). For this accident, the AIB identified both local and systemic root causes.

Local Root Cause -- A specific deficiency that, if corrected, would prevent recurrence of the same accident.

The AIB identified the local root cause of the radioactive material release in the WIPP underground to be the failure of LANL to understand and effectively implement the LANL Hazardous Waste Facility Permit (HWFP) and Carlsbad Field Office directed controls. Specifically, LANL's use of organic, wheat-based absorbent instead of the directed inorganic absorbent—such as kitty litter/zeolite clay absorbent—in the glovebox operations procedure for nitrate salts resulted in the generation, shipment, and emplacement of a noncompliant, ignitable waste form.

Systemic Root Cause -- A deficiency in a management system that, if corrected, would prevent the occurrence of a class of accidents (e.g., operational accidents caused by procedural deficiencies).

The AIB identified the systemic root cause as the Los Alamos Field Office (NA-LA) and National Transuranic Program/CBFO failure to ensure that LANL had adequately developed and implemented repackaging and treatment procedures that incorporated suitable hazard controls and included a rigorous review and approval process. NA-LA and CBFO did not ensure the adequate flow-down of the Resource Conservation and Recovery Act (RCRA) and other upper tier requirements, including the WIPP HWFP, Attachment C, Waste Analysis Plan, WIPP Waste Acceptance Criteria (WAC), and the LANL HWFP requirements into operating procedures at LANL.

Contributing Causes -- Events or conditions that collectively with other causes increased the likelihood or severity of an accident but that individually did not cause the accident.

The AIB identified 12 contributing causes to the radiological release investigated in Phase 2:

1. Failure of LANL to implement effective processes for procedure development, review, and change control. Execution of the Waste Characterization, Reduction, and Repackaging Facility (WCRRF) glovebox procedure resulted in a combination of incompatible materials and the generation of an ignitable, noncompliant waste.
2. Failure of LANL to develop and implement adequate processes for hazard identification and control. As a result, an incompatible absorbent was specified and used during nitrate-salt-bearing waste processing.
3. Failure of the LANL Contractor Assurance System (CAS) to identify weaknesses in the processes for operating procedure development; hazard analysis and control; and review that resulted in an inadequate glovebox operation procedure for processing the nitrate-salt-bearing waste.
4. Failure of the Central Characterization Program (CCP) to develop an Acceptable Knowledge (AK) for the mixed inorganic nitrate salt waste stream (LA-MIN02-V.001) that adequately captured all available information regarding waste generation and subsequent repackaging activities in order to prevent the generation, shipment, and emplacement of corrosive, ignitable, or reactive waste. Specifically, the AK Summary Report did not capture changes made to the WCRRF glovebox procedure. The addition of a secondary waste material was not adequately considered.
5. Failure of NA-LA and the National Transuranic Program/CBFO to ensure that the CCP and LANL complied with RCRA requirements in the WIPP HWFP and the LANL HWFP, as well as the WIPP WAC. Examples include the unapproved treatment (neutralization and absorption of liquids) and the addition of incompatible materials. As a result, waste containing incompatible materials was generated and sent to WIPP.
6. Failure of LANL, EnergySolutions, LLC (ES), and NA-LA to ensure that a strong safety culture existed within the Environmental and Waste Management Operations (EWMO) organization at LANL. As a result, although there was a questioning attitude, there was a failure to adequately resolve employee concerns, which could have identified the generation of noncompliant waste prior to shipment.

7. Failure of the execution of the LANL Unreviewed Safety Question (USQ) process to identify the lack of a hazard analysis of the proposed changes to the WCRRF glovebox waste repackaging procedure (i.e., consistent with Integrated Safety Management [ISM] core functions), and to recognize that an incompatible reactive nitrate-salt-bearing waste would be created by using “organic” absorbents. As a result, the Unreviewed Safety Question Determination (USQD) did not ensure that nuclear safety basis documents, including the WCRRF and Area G Basis for Interim Operation (BIO), were updated to evaluate hazards associated with material incompatibility in the nitrate-salt-bearing waste stream and to specify preventive or mitigative controls.
8. Failure of NA-LA to establish and implement adequate line management oversight programs and processes in accordance with DOE Order 226.1B, *Implementation of Department of Energy Oversight Policy*. As a result, weaknesses in LANL/ES programs and waste operations procedures were not identified and corrected which allowed an ignitable, noncompliant nitrate-salt-bearing waste to be generated, shipped, and emplaced at WIPP.
9. Failure of DOE Headquarters to perform adequate or effective line management oversight required by DOE Order 435.1, *Radioactive Waste Management*, dated July 9, 1999. As a result, waste containing incompatible materials was generated and sent to WIPP.
10. Failure of Nuclear Waste Partnership LLC (NWP) to ensure that the WIPP Fire Hazard Analysis (FHA) recognized the potential for a fire starting within the waste array as well as the potential for propagation within the array. As a result, fire protection controls focused on prevention of propagation to the array from external sources (e.g., vehicles) and did not consider the magnitude of the combustible material hazard.
11. Failure of LANL/ES to adequately train and qualify ES operators and supervisors in the identification and control of incompatible materials during waste processing. As a result, personnel did not question the instruction to add organic absorbent and other secondary waste items to the nitrate-salt-bearing waste.
12. Failure of ES operators and LANL/ES supervisors to effectively execute the stop work process when unexpected conditions, including foaming reactions and smoke during waste processing, were encountered at WCRRF. This resulted in waste containing incompatible materials being generated and sent to WIPP.

3. CORRECTIVE ACTION PLAN DEVELOPMENT

LANL reviewed the conclusions and JONs from the AIB Report and developed actions to address each of the JONs and supporting conclusions identified in the report pertaining to LANL (a total of 17 JONs). The JON action plans and tables in Section 6 of this corrective action plan (CAP) present the JON, approach, actions, and planned due dates to respond to each JON. Due dates correspond to dates on which actions by LANL will be completed and objective evidence of the deliverables placed into the LANL Performance Feedback and Improvement Tracking System (PFITS) for review and validation by the LANL Institutional Management Review Board (IMRB) that LANL’s actions are complete. The resumption of some activities will require readiness reviews or other independent verification before authorization to resume operations, and the readiness activities will be performed but are not included in the completion dates for specific actions in the CAP. Initiation of unremediated nitrate salt (UNS) and remediated nitrate salt (RNS) treatment will require a federal readiness review and DOE approval.

A number of the corrective actions include training of workers, and the Responsible Line Manager for these actions must determine if training is required for specific workers. For Institutional Policy Procedures, such as P409, *Waste Management*, the effective date shown on the procedure issued by the LANL Policy Office is the implemented date. For other procedures, LANL follows a document control process that includes a training needs assessment before the procedure is implemented. In accordance

with LANL's work planning and authorization requirements, workers who have not completed the required training will not be authorized by their Responsible Line Manager to perform work that requires the training. Training to procedures is an integral part of procedure implementation, and actions to perform training to all new or revised procedures are not called out as specific actions in the CAP. For purposes of this CAP, a procedure will be considered implemented when 80% of the workers who require training on the procedure have completed the training. Only workers who have completed required training will be authorized to perform work.

LANL has conducted extensive evaluations of enduring and legacy waste management and conduct of operations that go beyond the areas identified by the AIB. Corrective actions are being developed and implemented to address the findings of an Administrative Compliance Order from the New Mexico Environment Department. LANL is also conducting extent-of-condition reviews to look more broadly at problems identified by the AIB. Those actions complement and expand on corrective actions described below that specifically address the AIB JONs.

4. CORRECTIVE ACTION PLAN MANAGEMENT

LANL plans to conduct monthly status reviews of all actions in the CAP with the NA-LA and EM-LA field offices. During implementation of the CAP, it may be necessary to revise specific actions in order to optimize the effectiveness of associated programs. Proposed changes to the specified actions in this plan, including due dates, will be identified and addressed proactively with field office personnel. Changes to the CAP will be approved as required by NA-LA and EM-LA. Other corrective action progress meetings will be conducted at the request of field office personnel.

5. CORRECTIVE ACTIONS VERIFICATION

The Action Owners for the LANL corrective actions consist of the Quality and Performance Assurance (QPA), Associate Director for Environmental Programs (ADEP), Associate Director for Environment, Safety, and Health (ADESH), Associate Director for Nuclear and High Hazard Operations (ADNHHO), and the Deputy Laboratory Director (DEP DIR). LANL Action Owners will ensure that actions are completed in a timely manner and that objective evidence of completions is provided to the LANL IMRB for review of the objective evidence and validation of completion of the issues in the PFITS system. Effectiveness evaluations will be incorporated into the CAS Project Plan that will be developed under Action 25-2, below.

6. JON ACTION PLANS

The following subsections include the 17 JONs pertaining to LANL. Each subsection includes the AIB report conclusion and JON descriptions, and LANL's approach for addressing the JON. Actions, deliverables, action owners, and planned due dates are listed in table format. There is also discussion of how actions to address the JONs are interrelated. The JONs are grouped by types of corrective actions as shown in Figure 1, below, and are presented in this section in the order shown in the figure.

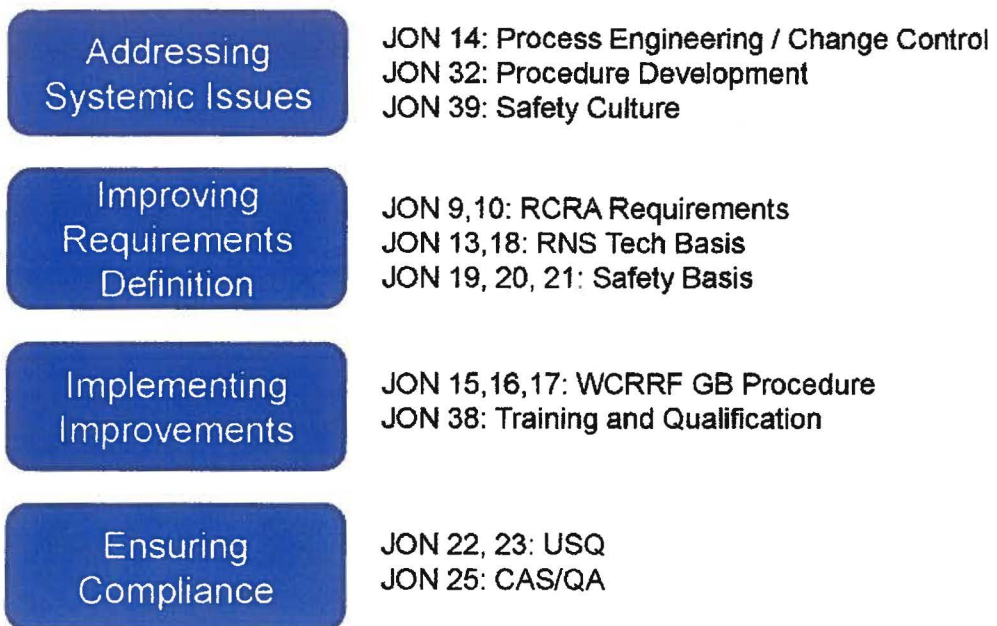


Figure 1. Types of Corrective Actions

Judgment of Need (JON 14)

Conclusion 11: Los Alamos National Laboratory (LANL) did not utilize a formal engineering change control process to develop modifications to repackaging activities in the Waste Characterization, Reduction and Repackaging Facility (WCRRF).

JON 14: LANL needs to implement an effective engineering change control process that includes defensible technical bases to justify process modifications.

Approach

LANL’s approach to addressing JON 14 is to apply engineering discipline to ADEP waste processing, emphasizing change control and configuration management. We will stand up a group and discipline that will enable the systems, processes, and expertise to develop technical processes and support configuration management for waste processing within the WCRRF glovebox and Permacons at Area G. Specific actions related to process engineering, new activity, change control (including what constitutes a change that triggers change control), and configuration management will be defined. A new procedure will be issued to ensure a sound technical basis for all waste processing that will require development by an Integrated Process Control Team of process flow sheets that define process, material specifications, and controls for safe and compliant operation; define specific critical process steps or elements; and define documentation requirements. Corrective actions under JON 14 will tie in to documented processes in a new procedure ADEP-AP-10007, *Technical Procedure Development*, developed under JON 32, to CAS and Quality Assurance (QA) implementation under JON 25, and to improvements in safety culture under JON 39.

Predecessor Actions

None

JON 14				
Number	Action	Deliverable	Action Owner	Due Date
14-1	Develop, approve, and issue new activity and change control process within ADEP.	Copy of new activity and change control process issued through the ADEP Document Control Process.	ADEP	11/06/2015
14-2	Define membership and charter a Waste Processing Change Control Board in ADEP, including senior managers from ADEP, ADNHHO, and ADESH.	Documentation that establishes, charters, and defines membership of the Waste Processing Change Control Board.	ADEP	11/06/2015
14-3	Stand up “Waste Process Engineering Group” in ADEP, responsible for establishing process baselines and configuration control.	Memorandum documenting reorganization and attached ADEP organization chart with “Waste Process Engineering Group.”	ADEP	Complete

Addressing Systemic Issues

JON 14				
Number	Action	Deliverable	Action Owner	Due Date
14-4	Develop a Waste Process Engineer description, and on-board (hire and qualify) MIN02 Process Engineer.	Waste Process Engineer description, assignment (or hire of one), and completed training	ADEP	11/06/2015
14-5	Establish waste process engineering requirements for application to specific waste streams.	Copy of administrative procedure on process flow sheet development issued through the ADEP document control process that documents waste-process-engineering requirements.	ADEP	Complete
14-6	Create, approve, and issue procedure for waste treatment process flow sheet development that identifies critical steps, specifications and controls, and operational records requirements.	Copy of administrative procedure on process flow sheet development issued through the ADEP document control process that will: <ol style="list-style-type: none"> 1. Define process, material specifications, and controls 2. Define specific critical procedural steps/elements 3. Define documentation requirements 	ADEP	Complete
14-7	Define the requirements and charter for Integrated Process Control Teams (IPCTs) for specific waste streams, with a lead engineer and full set of SMEs (e.g., RCRA, Safety Basis, chemistry, Radiation Protection, Industrial Hygiene, CCP).	Administrative procedure on process flow sheet development in Action 14-6 will include the charter and requirements for IPCTs for specific waste streams, with a lead engineer and full set of SMEs. Requirements for documentation of IPCT products (including baselined flowsheet) will also be defined in the procedure.	ADEP	Complete

Judgment of Need (JON 32)

Conclusion 20: Los Alamos National Laboratory (LANL) existing processes governing the preparation, review, and approval of Environmental Programs procedures did not contain sufficient guidance related to hazard analysis and subject matter expert review necessary to ensure safe, consistent, and compliant execution of waste processing.

JON 32: LANL needs to review and revise EP-DIR-AP-10007 [Environmental Programs Procedure Preparation, Revision, Review, Approval, and Use], and other documents governing the procedure development process to ensure that all procedures and procedure revisions contain:

- The necessary level of detail to ensure the safe, consistent, and compliant performance of work, including process steps, materials, and material substitutions;*
- Explicit requirements and criteria regarding inclusion of appropriate subject matter experts and their review and concurrence with new and revised procedures; and*
- Requirements that a Job Hazard Analysis (JHA) is appropriately amended when new activities such as nitrate salt remediation that could introduce new hazards are incorporated into existing processes.*

Approach

LANL will revise and issue a new procedure to replace EP-DIR- AP-10007, *Environmental Programs Procedure Preparation, Revision, Review, Approval and Use*. This procedure is the sole procedure that addresses procedure development in ADEP. The new procedure will address all elements of AIB JON 32 as well as the DOE IG-1 through IG-5 recommendations in the DOE Office of Inspector General Management Alert (DOE/IG-0922, September 2014), which were:

- “IG-1: Ensure all needed SME and organization reviews of procedure changes are performed, including those with a chemistry background;
- IG-2: Ensure that SME documents (e.g., white paper, solutions package) are provided to the procedure writer;
- IG-3: Ensure that added procedures include sufficient detail to perform the task (e.g., what neutralizer to use and to what level to neutralize the waste);
- IG-4: Consider notifying Environmental Management organizations, such as the Central Characterization Project and Difficult Waste Team, of all changes to LANL waste management procedures so that a WIPP acceptability impact review can be performed prior to issuing changes;
- IG-5: Improve communication to procedure writers and reviewers concerning why a change is being made (e.g., to avoid combining organic materials with oxidizers in the waste stream).”

This new procedure will be used for development and revision of all technical procedures used in existing ADEP waste management facilities (Area G, WCRRF, and RANT) and also for development of procedures that will be used at the Transuranic Waste Facility under construction at LANL Technical Area 63. Personnel who are experienced with procedure development in nuclear waste facilities at other DOE sites will be involved in development of this procedure to ensure that best practices at other sites are incorporated into the new procedure.

Addressing Systemic Issues

JON 32				
Number	Action	Deliverable	Action Owner	Due Date
32-1	<p>Develop, approve, and issue new procedure to replace EP-DIR- AP-10007, <i>The Preparation, Review and Approval of ADEP Documents</i>, to ensure that all ADEP technical procedures include:</p> <ul style="list-style-type: none"> • Necessary level of detail to ensure safe, consistent, and compliant performance of work, including process steps, materials, and material substitutions; • Explicit requirements and criteria regarding inclusion of appropriate SMEs and their review and concurrence with new and revised procedures; and • Requirements that a Hazard Analysis consistent with P300, <i>Integrated Work Management</i>, is developed or revised when new activities that could introduce new hazards are incorporated into existing processes. 	Copy of procedure EP-AP-10007, <i>ADEP Technical Procedure Development</i> , issued through the ADEP document control process.	ADEP	Complete

Judgment of Need (JON 39)

Conclusion 23: Los Alamos National Laboratory (LANL), ES, and NA-LA allowed the safety culture at the Los Alamos National Laboratory (LANL) to deteriorate within pockets of the organization as evidenced by the workers' feedback that they did not feel comfortable identifying issues that may adversely affect management direction, delay mission-related objectives, or otherwise affect cost or schedule. In addition, management failed to effectively respond to workers' issues regarding unexpected conditions, i.e., generation of smoke and foaming, encountered during waste processing activities.

Conclusion 24: Questioning attitudes were not welcomed by management and many issues and hazards did not appear to be readily recognized by site personnel.

JON 39: LANL needs to develop and implement a more rigorous, effective integrated safety management system that embraces and implements the attributes of DOE G 450.4-1C, Integrated Safety Management Guide, including but not limited to:

- *Demonstrated leadership in risk-informed, conservative decision making;*
- *Improved learning through error reporting and effective resolution of problems;*
- *Line management encouraging a questioning attitude without fear of reprisal and following through to resolve issues identified by the workforce.*
- *Consideration should also be given to some additional contract incentive associated with leading a culture change that fosters the desired work environment. The LANL, EnergySolutions, LLC (ES) and NNSA Los Alamos Field Office (NA-LA) stop work related processes need to ensure that response to issues raised by workers are based on sound, technical justification.*

Approach

JON 39 cites LANL safety culture against the DOE G 450.4-1C as the primary issue. The conclusion states the culture has been allowed to deteriorate within pockets of the organization. The focus of this CAP will be within the specific areas of ADEP waste receipt, processing/treatment, loading, and storage. The approach will be to use this specific guidance for evaluation within the context of DOE G 450.4-1C and the existing ISM program at LANL. The specific approach LANL will use to develop actions under JON 39 is to assess and improve the implementation of the ISM framework for ADEP waste receipt, processing/treatment, loading, and storage. This approach will supplement the LANL Safety Objectives that are developed annually based on the response to Safety Culture, Voluntary Protection Program, and Integrated Safety Management evaluations that are included in LANL's Safety Culture Sustainment Plan completed in August 2014. This will include future implementation of ISM principles at the Transuranic Waste Facility under construction at LANL Technical Area 63.

Interfaces, Predecessors, Successors, and Parallel Actions

- Interface with JON 25

Addressing Systemic Issues

JON 39				
Number	Action	Deliverable	Action Owner	Due Date
39-1	Reorganize ADEP, ADESH, and ADNHHO-EWMO to separate regulatory, program, line, and FOD functions and provide appropriate checks and balance between the functions; clarify R2A2; and assign new managers; establish Quality Assurance Manager position; deploy quality assurance and issues management personnel to ADEP from QPA.	Separate program and line functions in ADEP to conform to the LANL operating model. This entailed moving environmental regulatory functions to ADESH, fully establishing the facility operations organization (EWMO) that reports to ADNHHO and is independent of ADEP. Additionally, senior management within ADEP and EWMO was established that met requisite technical requirements to run waste processing operations. Memorandum documenting reorganization and attached ADEP organization chart with quality assurance and issues management personnel deployed to ADEP from QPA.	ADEP ADESH ADNHHO	Complete
39-2	Identify gaps in safety culture using DOE G 450.4-1C, <i>Integrated Safety Management Guide</i> , including the Safety Culture Focus Areas and Associated Attributes in Attachment 10, and LANL ISM framework within ADEP/EWMO and applicable organizations involved in the ADEP receipt, processing/ treatment, loading, and storage of waste.	Single gap analysis that conforms to P328-3, <i>Management Assessment</i> , with criteria compared to standards documented in DOE G 450.4-1C, <i>Integrated Safety Management Guide</i> .	DEP DIR	Complete
39-3	Develop a project plan to address gaps in safety culture (DOE G 450.4-1C, <i>Integrated Safety Management Guide</i>) identified in Action 39-2.	Project plan and schedule. Note: This plan will include a communications plan, training, and increased management presence.	DEP DIR	12/01/2015
39-4	Implement approved project plan.	Milestones and deliverables in the approved project plan will be entered into the PFITS system and tracked to completion. Note: Many actions are already in progress, and this date is the completion of the project plan in total.	ADESH	2/15/2016

Judgments of Need (JONs 9 and 10)

Conclusion 7: Los Alamos National Laboratory (LANL) did not adequately evaluate the impact on the WIPP Waste Acceptance Criteria (WAC) or effectively control the addition of secondary job waste into transuranic (TRU) waste containers.

JON 9: LANL needs to improve the level of rigor in evaluating and controlling the addition of secondary waste into TRU waste containers.

Conclusion 8: Los Alamos National Laboratory (LANL) did not adequately incorporate upper tier requirements into the development of repackaging activities in the Waste Characterization, Reduction and Repackaging Facility (WCRRF). Specifically:

- *The Carlsbad Field Office (CBFO) directed controls contained in the LANL-CO white paper based on the Energetic Materials Research and Testing Center (EMRTC) Report RF 10-13; and*
- *The requirements associated with the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit (HWFP);*
- *Nitrate-salt-bearing wastes did not fully meet the LANL HWFP “special requirements” for managing ignitable wastes, including segregation and separation, and use of non-sparking tools;*
- *Did not comply with the LANL HWFP requirement that the nitrate-salt-bearing waste drums be labeled with all applicable Environmental Protection Agency (EPA) Hazardous Waste Numbers;*
- *Placed incompatible wastes and materials in the same container and did not impose special precautions;*
- *Did not label the nitrate-salt-bearing waste prior to transport and remediation at the WCRRF; and*
- *Did not label the unremediated nitrate-salt-bearing waste drums [that] contained liquids as Resource Conservation and Recovery Act (RCRA) corrosive.*

JON 10: LANL needs to strengthen the processes that ensure flow-down of upper tier requirements into their implementing procedures such that execution of work is compliant.

Approach

LANL’s approach to address JONs 9 and 10 is to prepare a CAP that addresses the supporting documentation for both JONs. The approach will strengthen the processes that ensure flow-down of upper tier requirements into its implementing procedures such that the execution of work is compliant and through the implementation of the Waste Processing Change Control Board (see JON 14) and implementation is confirmed through field verification and regulatory oversight. This approach will be demonstrated through JON 9 by improving the rigor in evaluating and controlling the addition of secondary waste into waste containers by revising procedures, training workers, and verifying control implementation. In addition, the flow-down of upper tier requirements (JON 10) into their implementing procedures to ensure compliance will also be demonstrated by revising procedures, training workers, and verifying control implementation. In both JONs 9 and 10, hazard identification will be improved, controls will be incorporated into work documents, and control implementation will be verified.

Improving Requirements Definition

Predecessor Actions

- JON 13, LANL needs to strengthen documentation to include a detailed technical basis to justify decision made regarding change control for procedures and processes for the LA-MIN-02-V.001 waste stream.
- JON 14, LANL needs to implement an effective engineering change control process that includes defensible technical bases to justify process modifications.
- JON 25, LANL needs to develop and implement a fully integrated contractor assurance system that provides DOE and LANL confidence that work is performed compliantly, risks are identified, and control systems are effective and efficient.
- JON 32, LANL needs to review and revise EP-DIR-AP-10007, Environmental Programs Procedure Preparation, Revision, Review, Approval, and Use, to ensure that all procedures and procedure revisions contain the necessary elements prescribed in the AIB Phase II report.

JONs 9/10				
Number	Action	Deliverable	Action Owner	Due Date
9/10-1	Revise, approve, and issue three key LANL waste management and environmental protection documents [P409, <i>Waste Management</i> ; WM-SVS-AP-201, <i>Reviewing and Approving Waste Stream Profiles (WSP) in WCATS</i> ; and ENV-CP-TP-108, <i>Compliance Technical Assistance Program</i>] to strengthen and verify that requirements flow down through active line management and SME involvement for a) secondary waste requirements criteria and when SME reviews are required; b) criteria for when waste characterization, compatibility and processing reviews are required; c) definition of neutralization and absorption; d) HWFP modification process; e) changes in waste processing; and f) RCRA, WAC and HWFP requirements.	<p>Approved P409, <i>Waste Management</i>, issued by the LANL Policy Office with modifications identified.</p> <p>Copy of WM-SVS-AP-201, <i>Reviewing and Approving Waste Stream Profiles (WSP) in WCATS</i>, issued through the ADESH Document Control Process with modifications identified.</p> <p>Copy of ENV-CP-TP-108, <i>Compliance Technical Assistance Program</i>, issued through the ADESH Document Control Process with modifications identified.</p>	ADESH	11/13/2015

Improving Requirements Definition

JONs 9/10				
Number	Action	Deliverable	Action Owner	Due Date
9/10-2	Evaluate and modify qualification standards, as appropriate, for Waste Management Coordinators (WMCs) and Deployed Environmental Professionals (DEPs)	Training analysis of qualification standards for WMCs and DEPs. Modified qualification standards, as appropriate.	ADESH	Complete
9/10-3	Revise training for WMCs, DEPs, and designated ADEP personnel (e.g., waste operators and process engineers) on RCRA requirements, including a) secondary waste segregation requirements or the need to conduct compatibility evaluations; b) understanding of what constitutes waste processing and treatment; and c) what steps are required to ensure compliance with the HWFP.	Copies of revised training with modifications identified. Rosters demonstrating completion of required training as determined by the Responsible Line Manager.	ADESH	10/22/2015
9/10-4	Augment Treatment, Storage, and Disposal Facility (TSDF) inspector training with development of qualifications for RCRA TSDF inspections to include field application of inspection criteria.	RCRA TSDF Inspection Record Form OJT Course. Rosters demonstrating completion of required training as determined by the Responsible Line Manager.	ADESH	2/26/2016
9/10-5	Develop, approve, and issue ENV-CP-AP-200, <i>Regulatory Review of Waste Management Procedures</i> , that defines ENV-CP procedure review requirements, including a) RCRA secondary waste requirements; b) evaluation of waste management procedure compliance with RCRA and HWFP requirements; and c) signature line for SMEs.	Copy of ENV-CP-AP-200, <i>Regulatory Review of Waste Management Procedures</i> , issued through the ADESH Document Control Process.	ADESH	Complete

Judgment of Need (JON 13)

Conclusion 10: Los Alamos National Laboratory (LANL) failed to provide sound technical basis for decisions regarding repackaging procedures and processes for the LA-MIN-02-V.001 waste stream.

JON 13: LANL needs to strengthen documentation to include a detailed technical basis to justify decisions made regarding change control for procedures and processes for the LA-MIN02-V.001 waste stream.

Approach

LANL’s approach to address JON 13 is to complete the technical basis actions for the LA-MIN02-V.001 waste stream and to implement and document the change-control process specific to the LA-MIN02-V.001 waste stream under the corrective actions for JON 14. LANL will compile internal technical studies and analysis with technical input from the DOE Technical Assessment Team (TAT) and other information to develop a sound technical basis for the remediated nitrate salts (RNS) waste stream and the unremediated nitrate salts (UNS) waste stream. Other information will include additional testing and analysis to support the remediation path forward. This technical understanding will be applied to safe storage of the waste containers that hold RNS and UNS waste, and a set of treatment options for the RNS and UNS wastes will be developed. Temperature has a powerful effect on both chemical and biological reactions, and supplemental cooling will be implemented for RNS container storage as a defense-in-depth measure. Temperature control will also be evaluated for removal of RNS drums from standard waste boxes (denesting) and during treatment of the RNS waste. An assessment of treatment options will be prepared and subject to independent peer reviews by LANL’s parent organizations, members of the TAT, and the New Mexico Environment Department. Treatment studies using surrogates that are prepared based on sampling of a statistically derived number of UNS drums will be conducted to evaluate treatment efficacy, and a process engineering evaluation will be performed to identify the best location (facility choice) at LANL for treatment of the RNS and UNS wastes and support required safety basis and hazardous waste permitting actions. Reviews that provide an independent verification of readiness to start up RNS and UNS waste processing will include an implementation verification review (IVR) for safety basis, a management self-assessment (MSA), a contractor readiness assessment (CRA), and a federal readiness assessment (FRA).

Predecessor Actions

None

JON 13 Number	Action	Deliverable	Action Owner	Due Date
13-1	Using LANL technical studies and analysis, along with technical input as derived from the Technical Assessment Team (TAT) Report, develop a summary document that describes our best understanding of the Remediated Nitrate Salt (RNS) Waste Stream.	Update of the report “Waste Isolation Pilot Plant (WIPP): Chemical Reactivity and Recommended Remediation Strategy for Los Alamos Remediated Nitrate Salt (RNS) Wastes” to include new information derived from scientific studies and inclusion of the information from the TAT report relevant to the topic.	ADEP	Complete

Improving Requirements Definition

JON 13				
Number	Action	Deliverable	Action Owner	Due Date
13-2	From the understanding derived in Action 1, develop a set of treatment options and evaluate their applicability to the RNS and Unremediated Nitrate Salts (UNS) waste streams using internal resources.	Report discussing the available options along with a recommendation.	ADEP	Complete
13-3	Conduct a peer review of the treatment options report, to include assembly of an independent external team and direct interaction of the team with technical experts, and provide opinions and recommendations of the path forward for RNS/UNS salts.	Report detailing the review, issues raised, and recommendations of the path forward for treating RNS/UNS salts.	ADEP	Complete
13-4	Develop a technical basis for storage and monitoring, to include analysis of the anticipated kinetics, as well as methods for temperature and headspace gas monitoring that will provide early warning.	<ol style="list-style-type: none"> 1. Summary report that discusses thermal chemistry of RNS waste stream and identification of bounding conditions that lead to potential runaway. Identify diagnostic information that can be used to anticipate the possibility of thermal runaway and provide early warning. 2. JON Action 18-5 (Revised, approved and issued Abnormal Operating Procedure [AOP] for 54-0375). 	ADEP	11/6/2015
13-5	Develop an experimental test plan to determine the efficacy of treatment options for eliminating RCRA characteristics as they apply to RNS and UNS waste streams. Execute the test plan and propose path forward for treatment.	<ol style="list-style-type: none"> 1. Documented test plan. 2. Report from Laboratories summarizing results given to IPCT that will be used in conjunction with processes developed under JON 14 to establish the path forward for removing RCRA characteristics, enabling a final disposal pathway. 3. Independent review and National TRU Program (NTP) concurrence on proposed path forward and facility choice for UNS/RNS remediation. 4. DOE approval of proposed path forward and facility choice for UNS/RNS remediation. 	ADEP	10/9/2015 3/16/2016 4/15/2016 4/15/2016

Judgment of Need (JON 18)

Conclusion 13: Available data indicated that oxidation was occurring in the Standard Waste Box (SWB) where sibling drum 68685 was stored, along with other similarly remediated waste drums.

JON 18: Los Alamos National Laboratory (LANL) needs to investigate and determine the cause for oxidation in sibling drum 68685 and take action to mitigate the condition as well as prevent future nitrate-salt-bearing waste drums (remediated and unremediated) from oxidizing.

Approach

LANL’s interpretation of JON 18 is that LANL needs to investigate and determine the cause for oxidation in drums containing remediated nitrate salts (RNS), including sibling drum 68685, and take action to mitigate and inhibit oxidation in the drums to the extent practicable.

LANL’s approach to addressing JON 18 is to use scientific studies and analyses to understand the current status of chemical reactivity in RNS drums. From this information, LANL will define measures and develop diagnostic methods to provide early warning regarding thermal runaway, and determine actions to take in the event of such warnings (Prerequisite – science studies under JON 13).

Predecessors Actions:

JON 13, LANL needs to strengthen documentation to include a detailed technical basis to justify decisions made regarding change control for procedures and processes for LA-MIN-02-V.001.

JON 18				
Number	Action	Deliverable	Action Owner	Due Date
18-1	Sample headspace gas from 68685 and other RNS containers and trend data.	Report summarizing headspace gas analysis.	ADEP	Complete
18-2	Analyze data, develop models, and interpret results.	Report detailing analysis of headspace gas sampling and analysis.	ADEP	Complete
18-3	Establish control methods for mitigating and inhibiting oxidation.	Documented Engineering Analysis that establishes control methods for mitigating and inhibiting oxidation.	ADEP	Complete
18-4	Implement supplemental cooling inside the Dome 375 Permacon to mitigate and inhibit oxidation in RNS containers.	Documentation such as waste container temperature monitoring data that demonstrates that supplemental cooling is operational inside the Dome 375 Permacon.	ADEP	Complete
18-5	Develop methods for temperature and headspace gas monitoring that will provide early warning.	Update to TA-54-0375 Abnormal Operating Procedure to implement methods for temperature and headspace monitoring for early warning issued through ADEP Document Control Process.	ADEP	11/6/2015

Judgment of Need (JON 19)

Conclusion 14: The WCRRF Basis for Interim Operation (BIO) did not thoroughly describe or evaluate nitrate salt processing or waste storage activities.

JON 19: The Waste Characterization, Reduction, and Repackaging Facility (WCRRF) Basis for Interim Operation (BIO) needs to be revised to include more specificity in description of nitrate-salt-processing activities and then update the hazard analysis to include identification of all hazards and their evaluations.

Approach

A BIO/Technical Safety Requirements (TSR) Page Change will be prepared for the current WCRRF BIO/TSR Rev.2.1 to clarify nitrate salt processing and waste-storage activities. A technical basis is being developed for the treatment of the Remediated and Unremediated Nitrate Salts (JON 13). The technical basis will be processed through the ADEP new activity and change control process (JON 14). The resultant technical baseline will inform a page change (including a revised hazard analysis) to the WCRRF BIO/TSR that will allow final treatment of remediated and unremediated nitrate salt drums. After approval of the page change to the WCRRF BIO/TSR by the Los Alamos Field Office, implementation will follow and will be verified during any operational readiness review. Future processing of other waste streams in WCRRF will follow the same process for page changes.

Predecessor Actions

Corrective actions in JON 13 and JON 14 are predecessor actions for Action 19-2.

JON 19				
Number	Action	Deliverable	Action Owner	Due Date
19-1	Submit WCRRF BIO Rev 3.1 Page Change to NNSA revising Ch. 2 and 3 to correct statements regarding nitrate salts and other oxidizers and include a statement in Ch. 3 regarding the potential presence of liquids in TRU waste streams.	Documented evidence of submittal of WCRRF BIO/TSR Page Change (current WCRRF BIO/TSR Rev 2.1).	ADNHHO	Complete
19-2	Submit WCRRF BIO/TSR Page Change to Safety Basis Approval Authority addressing treatment of remediated and un-remediated nitrate salt drums.	Documented evidence of submittal of WCRRF BIO/TSR Page Change (to support treatment of remediated and unremediated nitrate salt waste containers).	ADNHHO	4/29/2016

Improving Requirements Definition

Judgment of Need (JON 20)

Conclusion 14: The WCRRF BIO did not thoroughly describe or evaluate nitrate salt processing or waste storage activities.

JON 20: LANL needs to review the Area G BIO in light of changes made to the WCRRF BIO and update accordingly.

Approach

The current Area G BIO/TSR will be evaluated based on the WCRRF BIO/TSR Rev. 3.1 Page Change for applicable changes to nitrate salt processing and waste storage activities. The safe storage and isolation of Remediated Nitrate Salts in the Area G Dome 375 Permacon has been evaluated and controlled by a series of Evaluation of the Safety of the Situation (ESS) submittals and corresponding Safety Evaluation Reports (SERs). The latest is SER-AREAG-ESS-14-002, Revision 3.0. The Page Change to the Area G BIO (including a revised hazard analysis) for cold-safing and denesting of remediated nitrate salt containers is contingent on the results from the remaining scientific tests (JON 13-4). After approval of the page change to the Area G BIO/TSR by the Los Alamos Field Office, implementation will follow and will be verified during any operational readiness review. Future processing of other waste streams in Area G will follow the process outlined for JON 19.

Predecessor Actions

Corrective actions in JON 13 and JON 19 are predecessor actions for Action 20-2 and 20-3.

JON 20				
Number	Action	Deliverable	Action Owner	Due Date
20-1	Upon submittal of WCRRF BIO/TSR, Rev. 3.1, evaluate Area G BIO/TSR for applicable Page Changes.	Report documenting evaluation of Area G BIO/TSR.	ADNHHO	Complete
20-2	Contingent on results of Action 20-1, develop Page Changes to Area G BIO/TSR.	Documented evidence of submittal of Page Change to current Area G BIO/TSR if applicable.	ADNHHO	Complete
20-3	Submit Area G BIO/TSR Page Change to Safety Basis Approval Authority addressing cold-safing and denesting of remediated nitrate salt containers.	Documented evidence of submittal of Area G BIO/TSR Page Change (to support cold-safing and denesting of remediated nitrate salt containers).	ADNHHO	1/29/2016
20-4	Implement Area G BIO/TSR page change after approval by NA-LA.	Area G procedures for denesting and cold-safing of RNS containers and training of workers to the procedures will be added to PFITS and the actions tracked to completion.	ADEP	10/20/2016

Improving Requirements Definition

Judgment of Need (JON 21)

Conclusion 14: The WCRRF BIO did not thoroughly describe or evaluate nitrate salt processing or waste storage activities.

JON 21: LANL needs to conduct an extent of condition review for issues that are similar to nitrate-salt-bearing waste processing in WCRRF and Area G.

Approach

In accordance with SBP-15-351, *Design Basis or Safety Basis Change Review*, LANL will conduct an independent safety basis review to provide assurance that applicable operations/activities described in the WCRRF, Area G, and RANT BIO/TSRs are safe and compliant with the current facility basis. Upon completion of the review, applicable page changes will be submitted if required.

JON 21				
Number	Action	Deliverable	Action Owner	Due Date
21-1	Conduct Safety and Compliance Review per Safety Basis Procedure SBP-15-351, <i>Design Basis or Safety Basis Change Review</i> , on WCRRF, Area G, and RANT processes described in Chapter 2 of BIOs.	Report documenting safety and compliance review on WCRRF, Area G, and RANT processes described in Chapter 2 of BIOs. Any deficiencies identified in the review will be entered into PFITS (LANL action tracking system).	ADNHHO	11/30/2015

Judgment of Needs (JONs 15, 16, and 17)

Conclusion 12: Los Alamos National Laboratory (LANL) failed to ensure that there was sufficient detail provided in the Waste Characterization, Reduction and Repackaging Facility (WCRRF) glovebox procedure to ensure safe, consistent, and compliant repackaging of waste and accurate documentation of the contents of the waste drums in the records.

JON 15: LANL needs to revise the WCRRF glovebox operations procedure to contain the necessary level of detail to ensure safe, consistent, and compliant remediation of nitrate-salt-bearing waste.

JON 16: The glovebox operations procedure needs to be revised to require operators to document critical process steps in a quality record, e.g., initial pH, absorbent added, neutralizer used, adjusted pH.

JON 17: Operators need to be adequately trained on the revised glovebox operations procedure.

Approach

LANL's approach to address JON 15, JON 16, and JON 17 is to prepare a CAP that addresses all three of the JONs. The approach will include completion of actions for the following JONs as prerequisites to completion of the CAP for JON 15, JON 16, and JON 17. Draft procedures developed under this corrective action will be reviewed by an entity independent of LANL, and comments will be addressed before the procedures are finalized. LANL will also request DOE and NTP approval of the procedure for UNS/RNS remediation.

Predecessor Actions

- JON 9, LANL needs to improve the level of rigor in evaluating and controlling the addition of secondary job waste into TRU waste containers;
- JON 10, LANL needs to strengthen the flow-down of upper tier requirements into their implementing procedures such that execution of work is compliant;
- JON 13, LANL needs to strengthen documentation to include a detailed technical basis to justify decisions made regarding change control for procedures and processes for LA-MIN-02-V.001;
- JON 14, LANL needs to implement an effective engineering change control process that includes defensible technical bases to justify process modifications;
- JON 19, the WCRRF BIO needs to be revised to include more specificity in description of nitrate-salt-waste processing and activities and then update the hazard analysis to include identification of all hazards and their evaluations;
- JON 22, LANL needs to ensure that USQ evaluators are organizationally independent of line management;
- JON 23, LANL needs to conduct retraining of USQ process evaluators/approvers focused on implementation of the Unreviewed Safety Question Determination (USQD) process ; and
- JON 32, LANL needs to review and revise EP-DIR-AP-10007, Environmental Programs Procedure Preparation, Revision, Review, Approval and Use, to ensure all procedures and procedure revisions contain the necessary level of detail, explicit requirements and criteria for inclusion of appropriate subject matter experts, and requirements that a Job Hazard Analysis is amended when new activities are incorporated into existing processes.

The corrective actions for JON 17 also tie to JON 38.

Implementing Improvements

JON 15 JON 16 JON 17				
Number	Action	Deliverable	Action Owner	Due Date
15/16-1	Revise, approve, and issue glovebox (GB) procedure for nitrate salt waste (separate procedure for each waste stream) to include necessary level of detail to ensure safe, consistent, and compliant remediation of nitrate salt waste, and document key process steps in a quality record.	<ol style="list-style-type: none"> 1. Copy of GB procedure issued through the ADEP Document Control Process for each nitrate salt waste stream that includes the necessary level of detail and documentation required for key process steps. 2. Independent review and NTP approval of procedure to implement UNS/RNS remediation. 3. DOE approval of procedure to implement UNS/RNS remediation. 	ADEP	7/23/2016 8/23/2016 8/23/2016
17-1	Develop training content on GB procedure for each nitrate salt waste stream in accordance with P781-1, <i>Conduct of Training</i> .	<p>Specific training on GB procedure for each nitrate salt waste stream, including chemistry fundamentals.</p> <p>Rosters demonstrating completion of required training as determined by the Responsible Line Manager.</p>	ADEP	7/23/2016

Judgment of Need (JON 38)

Conclusion 22: EnergySolutions, LLC (ES) operators and supervisors were not adequately trained and qualified to process waste with regard to identification and control of incompatible materials.

JON 38: LANL needs to evaluate and strengthen the operator and supervisor training programs of LANL and their subcontractors to ensure adequate understanding of basic chemistry interactions and associated controls.

Approach

LANL’s approach to address JON 38 is to conduct an organizational profile for the Waste Disposition Division (WD) within Environmental Programs; perform an analysis of the tasks and associated knowledge and skills within those positions and update the associated Training Implementation Matrix (TIM) for those positions; and develop training and qualification programs that address specific requirements of the positions, including positions that require training and qualification related to chemistry. The training and qualification programs will be developed in accordance with LANL Procedure P781-1, *Conduct of Training*, and will meet the requirements in DOE Order 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*, including testing and certification where applicable. The specific level of training and qualification will be defined for specific positions in WD operations, including subcontractor activities. At this time, LANL plans to self-perform waste remediation activities and will use subcontractor employees only for staff augmentation, and these employees are included in the LANL training and qualification program. LANL will also clarify oversight of subcontractor training and qualification under actions included in response to JON 25 to address other activities that will be performed by subcontractors. Subcontractor employees will be required to meet the same qualification requirements as a LANL employee would if performing the same work. These training and qualification programs will also be implemented at the Transuranic Waste Facility that is under construction at LANL Technical Area 63.

JON 38				
Number	Action	Deliverable	Action Owner	Due Date
38-1	Review, modify, and update WDD position descriptions within Environmental Programs to include position description summary, job knowledge, education, and work direction components of the position.	Updated position descriptions for Waste Disposition Division positions.	ADEP	7/17/2016

Implementing Improvements

JON 38				
Number	Action	Deliverable	Action Owner	Due Date
38-2	Develop, based on analysis, training, and qualification programs for WD positions within Environmental Programs in accordance with P781-1, <i>Conduct of Training</i> , that meet the requirements in DOE Order 426.2, <i>Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities</i> , and that address specific training and qualification requirements of each position, including positions that require training and qualification related to chemistry.	Training and qualification requirements for each position within the WD in Environmental Programs.	ADEP	9/9/2016
38-3	Revise TIM for WDD positions based on analysis from Actions 38-1 and 38-2.	Revised TIM for WDD positions.	ADEP	9/30/2016
38-4	Clarify the oversight role of LANL with regard to Subcontractor training and qualification for waste processing.	JON 25 Actions 25-4, 25-5, 25-6, and 25-7.		

Judgment of Need (JON 22)

Conclusion 15: The LANL USQ process was ineffective in ensuring that important procedure changes related to processing of nitrate salts were adequately evaluated for impacts to the safety basis.

JON 22: LANL needs to ensure that Unreviewed Safety Question (USQ) evaluators are organizationally independent of line management.

Approach

Most USQ evaluators are in the Safety Basis Division Office (SB-DO) and Engineering Services Division Office organizations that are functionally independent from the Line organizations. To ensure review of all USQ documents is completely independent, SB-DO implemented the Senior Analyst Review for independent review of the technical quality/accuracy for 100% of generated USQ documents. This provides corrections, mentoring, and training to USQ evaluators on a case-by-case basis.

JON 22				
Number	Action	Deliverable	Action Owner	Due Date
22-1	Formalize Senior Analyst Review for all USQ documents and develop a procedure to replace the existing Standing Order.	<p>Revised and approved USQ procedure issued through the ADNHHO Document Control Process describing the role and function of the Senior Analyst Review.</p> <p>Copy of a USQ document that shows review by a Senior Analyst after revised USQ procedure is issued.</p>	ADNHHO	Complete

Judgment of Need (JON 23)

Conclusion 15: The LANL USQ process was ineffective in ensuring that important procedure changes related to processing of nitrate salts were adequately evaluated for impacts to the safety basis.

JON 23: LANL needs to conduct retraining of USQ process evaluators/approvers focused on implementation of the Unreviewed Safety Question Determination (USQD) process consistent with DOE Guide 424.1-1B, Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements.

Approach

The Safety Basis Division (SB) will develop and deliver facility specific training consistent with DOE Guide 424.1B, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*, on Hazards and Accident Analysis and TSRs to USQ Qualified Safety Evaluators (QEVs) to enhance knowledge. The current training will be reviewed against DOE Guide 424.1 B, and training will be revised to address any gaps identified in the review. The SB is currently providing training and mentoring to QEVs through an independent review process conducted by the Senior Analyst Review Panel. The SB conducted two workshops in April 2015 with QEVs to train on the LANL USQ process, lessons learned, and recent occurrences involving the USQ process. SB is revising both initial- and continuing training to incorporate better examples of good and poor quality USQ documents, lessons learned, occurrence reports, etc.

JON 23				
Number	Action	Deliverable	Action Owner	Due Date
23-1	Revise and implement USQ initial and refresher/continuing training.	1. Revised USQ Initial and Refresher Training Courses.	ADNHHO	10/30/2015
		2. Rosters demonstrating completion of required training as determined by the Responsible Line Manager.		5/29/2016
23-2	Develop and implement facility-specific training on Hazards and Accident Analysis and TSRs.	1. Facility-specific Training Courses on Hazards and Accident Analysis and TSRs.	ADNHHO	10/30/2015
		2. Rosters demonstrating completion of required training as determined by the Responsible Line Manager.		5/29/2016

Judgment of Need (JON 25)

Conclusion 16: The Los Alamos National Laboratory (LANL) contractor assurance system was not effective in identifying weaknesses in the process for developing/changing procedures, analyzing and controlling hazards, performing work to repackaging nitrate-salt-bearing wastes, and feedback mechanisms which resulted in the production and shipping of noncompliant waste drums to the Waste Isolation Pilot Plant and Waste Control Specialists, LLC (WCS).

JON 25: LANL needs to develop and implement a fully integrated contractor assurance system that provides DOE and LANL confidence that work is performed compliantly, risks are identified, and control systems are effective and efficient.

Specific areas to be addressed include:

- *Ensuring adequate scope and associated depth and breadth of self-assessments, independent assessments, and management assessments;*
- *Clarifying the oversight role of LANL Environmental and Waste Management Operations (EWMO) with regard to subcontractors and waste processing/packaging operations;*
- *Ensuring required environmental program oversight, i.e., the Resource Conservation and Recovery Act (RCRA) (hazardous waste determination, upper tier requirements flow-down into implementing procedures, waste determination, records);*
- *Including the necessary rigor in implementation of the change control process (review and approval by subject matter experts);*
- *Verifying that requirements are flowed down into implementing procedures, e.g., RCRA requirements, TRU Waste Authorized Methods for Payload Control, etc.; and*
- *Evaluating and responding to feedback from Waste Characterization, Reduction and Repackaging Facility (WCRRF) operations by LANL senior management, e.g., notification of reactions in the glovebox.*

Approach

LANL's approach to corrective actions under JON 25 is to:

1. Assess and improve the Contractor Assurance System for Environmental Programs Waste Processing;
2. Assess and improve the oversight roles of LANL with regard to subcontractors doing Waste Processing work; and
3. Assess and improve the Quality Assurance program for Waste Processing work, including review of rigor in implementation of the change control process (JON 14), requirements flow-down process, including P409, *Waste Management* (JON 9/10), and responding to operations feedback by LANL senior management (JON 39).

LANL will engage the NA-LA staff person involved in CAS oversight in development of the CRADs, participation in the interviews, and in daily discussion meetings on the assessment of the Contractor Assurance System for Environmental Programs Waste Processing.

Predecessor Actions

None

Interfaces and Parallel Actions

- Interface with JON 10 (Requirements Flow-down)
- Interface with JON 14 (Change Control)

Ensuring Compliance

- Interface with JON 38 (Subcontractor Training)
- Interface with JON 39 (Safety Culture)

JON 25				
Number	Action	Deliverable	Action Owner	Due Date
25-1	<p>CAS Implementation Using a Criteria Review and Approach Document (CRAD) based on NAP-21, perform an assessment of the formal aspects of the CAS within ADEP/EWMO and applicable organizations that are involved in the processing and packaging of waste. Consistent with NNSA Policy NAP-21, <i>Transformational Governance and Oversight</i>, and DOE Order 226.1B, <i>Implementation of Department of Energy Oversight Policy</i>, the CAS processes are:</p> <ul style="list-style-type: none"> • Assessments; • Performance Measures; • Operating Experience; • Issues Management and Corrective Actions; • Integrated Continuous Process Improvement. <p>Address CAS findings identified in the AIB.</p>	Assessment Report that conforms to P328-2, <i>Independent Assessment</i> , that includes a gap analysis with elements compared to NAP-21 and DOE Order 226.1B.	QPA	Complete
25-2	Develop project plan to address identified gaps in CAS elements (per assessment above).	Project Plan and schedule.	QPA	Complete
25-3	Implement approved project plan.	Milestones and deliverables in the approved project plan will be entered into the PFITS system and tracked to completion.	QPA	5/31/2016
25-4	<p>Clarify the oversight role of LANL with regard to Subcontractors & waste processing/packaging operations. Using a CRAD, assess Acquisition Services Management Division (ASM) Contractor and Subcontractor requirements in regard to oversight role to include R2A2s for ADEP and EWMO.</p>	Assessment Report that includes a gap analysis based on LANL subcontracting policy.	QPA	Complete

Ensuring Compliance

JON 25				
Number	Action	Deliverable	Action Owner	Due Date
25-5	Develop project plan to close gaps in detailing and improving contractor requirements identified in assessment.	Project Plan and schedule.	QPA	Complete
25-6	Implement approved project plan.	Milestones and deliverables in the approved project plan will be entered into the PFITS system and tracked to completion.	QPA	5/31/2016
25-7	Modify the existing STR refresher training to emphasize that technical changes to the subcontract and changes to the scope of work require a review and concurrence by applicable SMEs and other stakeholders and that such changes and reviews are documented and included in the STR subcontract administration file.	Revised STR Training documents. Rosters demonstrating completion of required training as determined by the Responsible Line Manager. (Link to JON-38)	QPA	10/30/2016
25-8	Quality Assurance Implementation Using a CRAD based on EM-QA-001, perform an assessment of the formal aspects of the EM Quality Assurance program to the scope of activities to which the ADEP QA program is applied to ensure that regulatory, statutory, and contractual QA requirements that are applicable to those activities are applied to those activities. This activity includes providing institutional QA personnel to ADEP.	Assessment Report that conforms to P328-3 Management Assessment that includes a gap analysis between requirements in EM-QA-001 with criteria compared to standards and implementing procedures in LANL and ADEP Quality Assurance Programs. (Link to JON-10, JON 14, and JON-39)	QPA	Complete
25-9	Develop project plan to address identified gaps in Quality Assurance.	Project Plan and schedule.	QPA	Complete
25-10	Implement approved project plan.	Milestones and deliverables in the approved project plan will be entered into the PFITS system and tracked to completion.	QPA	5/31/2016