NWP
Nuclear Waste Partnership LLC
An AECOM-led partnership with B&W and AREVA

CO:15:02914
UFC:4250.00

February 11, 2015

Ms. Vicki Diane Snow, Contracting Officer
Business Operations Division
Carlsbad Field Office
U.S. Department of Energy
P.O. Box 3090
Carlsbad, NM 88221-3090

Subject: SUBMITTAL OF THE UNDERGROUND SALT HAUL TRUCK FIRE CORRECTIVE ACTION PLAN AND THE RADIOLOGICAL RELEASE EVENT CORRECTIVE ACTION PLAN UNDER NUCLEAR WASTE PARTNERSHIP LLC CONTRACT DE-EM0001971

References: DOE Memorandum CBFO:BOD:VDS:HL:14-0941: UFC 4250.00 from Vicki Diane Snow to Mr. Robert McQuinn, dated October 2, 2014, subject: Contract DE-EM0001971, Nuclear Waste Partnership LLC — Contracting Officer Direction for Combining the Underground Salt Haul Truck Fire and the Radiological Release Event Corrective Action Plans

DOE Memorandum CBFO:BOD:VDS:LEC:15-1548: UFC 4250.00 from Vicki Diane Snow to Mr. Robert L. McQuinn, dated February 11, 2015, subject: Contract No. DE-EM0001971, Nuclear Waste Partnership LLC - Changes to Contracting Officer Direction Provided in Letter CBFO 14-0941 dated October 2, 2014, titled Contracting Officer Direction for Combining the Underground Salt Haul Truck Fire and the Radiological Release Event Corrective Action Plans

Dear Ms. Snow:

This letter supersedes NWP Letter CO:15:02913 in its entirety. Pursuant to the letter of direction received from the CBFO Contracting Officer on October 2, 2014, as amended February 11, 2015, Nuclear Waste Partnership LLC hereby submits the Underground Salt Haul Truck Fire Corrective Action Plan and the Radiological Event Corrective Action Plan.

If you have any questions, please contact Mr. M.S. Hendrickson at Extension 8341.

Sincerely,

[redacted]

M. P. Gonzales, Manager
Contracts

MPG:skf

Attachments (2)

UNIQUE #	DOE UFC	DATE REC'VD	ADDRESSEES
1500275	4250.00	FEB 11 2015	D. Snow, C. Gadbury, G. Basabilvazo, G. Hellstrom, M. Brown, B. Mackie, D. Bryson, K. Watson, S. Dunagan, J. Franco

cc: G. Basabilvazo, CBFO
M. Brown, CBFO
D. Bryson, CBFO
S. Dunagan, CBFO
J. Franco, CBFO
C. Gadbury, CBFO
G. Hellstrom, CBFO
W. Mackie, CBFO
K. Watson, CBFO

Nuclear Waste Partnership LLC

Corrective Action Plan

Underground Salt Haul Truck Fire Event

[redacted] 2/11/15

NWP President & Project Manager Date

Nuclear Waste Partnership LLC

A URS-led partnership with B&W and AREVA

This page intentionally left blank.

Table of Contents

ACRONYMS

AIB	Accident Investigation Board
BNA	Baseline Needs Assessment
CAP	Corrective Action Plan
CAS	Contractor Assurance System
CBFO	U.S. Department of Energy Carlsbad Field Office
CC	Contributing Cause
CFR	Code of Federal Regulations
CONOPS	Conduct of Operations
CMR	Central Monitoring Room
DC	Direct Cause
DNFSB	Defense Nuclear Facility Safety Board
DOE	U.S. Department of Energy
DOE O	U.S. Department of Energy Order
DSA	Documented Safety Analysis
EAL	Emergency Action Level
EOC	Emergency Operations Center
EPHA	Emergency Planning Hazards Assessment
ERO	Emergency Response Organization
FHA	Fire Hazard Analysis
FLIRT	First Line Initial Response Team
FP	Fire Protection
ICS	Incident Command System
JON	Judgment of Need
LTA	Less than Adequate
M&O	Management and Operating
MRT	Mine Rescue Team
MSHA	Mine Safety and Health Administration
NWP	Nuclear Waste Partnership LLC
PM	Preventive Maintenance
PPE	Personal Protective Equipment
RC	Root Cause
RCRA	Resource Conservation and Recovery Act
SCSR	Self-Contained Self Rescuer
SME	Subject Matter Expert
SSC	Structure, System, and Component
TBD	To Be Determined
TRU	Transuranic
TSR	Technical Safety Requirements
U/G	Underground
USQ	Unreviewed Safety Question
WIPP	Waste Isolation Pilot Plant

1.0 INTRODUCTION

On Wednesday February 5, 2014 at approximately 10:45 Mountain Standard Time an underground mine fire involving an EIMCO Haul Truck 74-U-006B (salt haul truck) occurred at the Department of Energy (DOE) Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico.

2.0 ACCIDENT INVESTIGATION

On February 7, 2014 the Deputy Assistant Secretary for Safety, Security, and Quality Programs, U.S. Department of Energy, Office of Environmental Management formally appointed an Accident Investigation Board (AIB) to investigate the accident based on the accident meeting Accident Investigation Criteria 2.d.1 of DOE O 225.1B, *Accident Investigations*, Appendix A.

The AIB began the investigation on February 10, 2014, completed the investigation on March 8, 2014, and submitted its findings to the Deputy Assistant Secretary for Safety, Security, and Quality Programs, Office of Environmental Management on March 11, 2014. On March 14, 2014 the AIB's Accident Investigation Report (Report) was formally transmitted to Nuclear Waste Partnership LLC (NWP).

The AIB concluded the following causes of the accident.

Direct Cause (DC) – the immediate events or conditions that caused the accident.

The AIB identified the direct cause of this accident to be contact between flammable fluids (either hydraulic fluid or diesel fuel) and hot surfaces (most likely the catalytic converter) on the salt haul truck, which resulted in a fire that consumed the engine compartment and two front tires.

Root Cause (RC) – causal factors that, if corrected, would prevent recurrence of the same or similar accidents.

The AIB identified the root cause of this accident to be the failure of NWP LLC and the previous management and operations (M&O) contractor to adequately recognize and mitigate the hazard regarding a fire in the underground. This includes recognition and removal of the buildup of combustibles through inspections and periodic preventive maintenance (e.g., cleaning), and the decision to deactivate the automatic onboard fire suppression system.

Contributing Causes (CC) – events or conditions that collectively with other causes increased the likelihood or severity of an accident but that individually did not cause the accident. For the purposes of this investigation, contributing causes include those related to the cause of the fire, as well as those related to the subsequent response.

The AIB identified ten contributing causes to this accident or the resultant response:

1. The preventive and corrective maintenance program did not prevent or correct the buildup of combustible fluids on the salt haul truck. There is a distinct difference between the way waste-handling and non-waste-handling vehicles are maintained.
2. The fire protection program was less than adequate (LTA) in regard to flowing down upper-tier requirements relative to vehicle fire suppression system actuation from the Baseline Needs Assessment into implementing procedures. There was also an accumulation of combustible materials in the underground in quantities that exceeded the limits specified in the Fire Hazard Analysis (FHA) and implementing procedures. Additionally, the FHA does

not provide a comprehensive analysis that addresses all credible underground fire scenarios including a fire located near the Air Intake Shaft.

3. The training and qualification of the operator was inadequate to ensure proper response to a vehicle fire. He did not initially notify the Central Monitoring Room (CMR) that there was a fire or describe the fire's location.
4. The CMR Operations response to the fire, including evaluation and protective actions, was LTA.
5. Elements of the emergency/preparedness and response program were ineffective.
6. A nuclear versus mine culture exists, where there are significant differences in the maintenance of waste-handling versus non-waste-handling equipment.
7. The NWP Contractor Assurance System (CAS) was ineffective at identifying the conditions and maintenance program inadequacies associated with the root cause of this event.
8. The DOE Carlsbad Field Office (CBFO) was ineffective in implementing line management oversight programs and processes that would have identified NWP CAS weaknesses and the conditions associated with the root cause of this event.
9. Repeat deficiencies were identified in previous DOE and external agencies' assessments, e.g., Defense Nuclear Facility Safety Board (DNFSB), emergency management, fire protection, maintenance, CBFO oversight, and work planning and control, but were allowed to remain unresolved for extended periods of time without ensuring effective site response.
10. There are elements of the Conduct of Operations (CONOPS) program that demonstrate a lack of rigor and discipline commensurate with the operation of a Hazard Category 2 Nuclear Facility.

3.0 CORRECTIVE ACTION PLAN DEVELOPMENT

NWP reviewed the Conclusions and Judgments of Need (JONs) from the AIB Report and developed actions to address each of the 25 JONs and supporting conclusions identified in the report pertaining to NWP. The JON tables in Section 6 of this plan describe the approach, actions and planned due dates to respond to each JON.

4.0 CORRECTIVE ACTION PLAN MANAGEMENT

During implementation of the Corrective Action Plan, 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 the CBFO Corrective Actions Manager. Changes to the Corrective Action Plan require CBFO approval. Corrective action progress meetings will be conducted at the request of the CBFO Corrective Actions Manager.

5.0 CORRECTIVE ACTIONS VERIFICATION AND EFFECTIVENESS REVIEW

NWP Functional Managers will ensure that actions are completed in a timely manner and that objective evidence of completion is provided to NWP Contractor Assurance. Contractor Assurance will then verify completion of the actions and that the objective evidence is adequate to demonstrate completion. Six to twelve months after completion of the actions, NWP will evaluate whether the actions have been effectively implemented and have addressed the Judgments of Need.

6.0 JON ACTION PLANS

The following subsections include the 25 JONs pertaining to NWP. Each subsection includes the AIB Report JON description and NWP's approach for addressing the JON. Actions, deliverables, action owners, and planned due dates are listed in table format.

Judgment of Need (JON 1)

NWP needs to evaluate and correct deficiencies regarding the controls for communicating emergencies to the underground, including the configuration and adequacy of equipment (alarms, strobes, and public address).

Approach

To address the weaknesses indicated by this JON, NWP's approach will include performing an evaluation of the CMR control panel switch, which is used to signal the underground personnel of an emergency event, for replacement with a time delay, open relay switch to minimize the CMR Operator's actions during an emergency. NWP will then conduct a human factors evaluation of the CMR control panels related to communicating emergencies to the underground; and will evaluate the visibility and audibility of the underground communications systems. Prior to startup, NWP will implement recommendations from the evaluation which correct deficiencies with regulatory requirements. NWP will then submit for CBFO approval, a plan for implementation of enhancements to the emergency communication system resulting from the NWP evaluation..

JON 1				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Evaluate the CMR control panel switch, for replacement with a time delay open relay switch to minimize the CMR operator's actions during an emergency.	Approved report of evaluation.	Engineering Manager	Complete
2	Evaluate human factors of the CMR control room panels related to communicating emergencies to the underground.	Approved report of evaluation.	Engineering Manager	Complete
3	Evaluate the visibility and audibility of underground communication systems.	Approved report of evaluation.	Emergency Management Manager	Complete

JON 1				
4	Implement required actions based on JON 1 Actions 1, 2, and 3.	Based on the outcome of the evaluations, NWP will implement recommendations from the evaluation which correct deficiencies with regulatory requirements. NWP will then submit to CBFO, a plan for implementation of enhancements to the emergency communication system resulting from the NWP evaluations.	Engineering Manager	6/30/15
5	Training on identified changes	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Training Manager	7/30/15

Judgment of Need (JON 2)

NWP needs to evaluate the procedures and capabilities of the FSM and CMRO in managing a broad range of emergency response events through a comprehensive drill and requalification program.

Approach

NWP has developed a comprehensive approach related to JON 2. This approach leads to a completely revamped Emergency Management Program which is compliant with DOE O 151.1C to include requirements for Incident Command System. NWP will ensure that the Emergency Management Program contains provisions for timely entry into the Resource Conservation and Recovery Act contingency plan. The program will also include reorganization of the roles and responsibilities for emergency response and emergency management in order to more effectively manage a broad range of events. The new Emergency Management Program will also include a comprehensive drill and qualification program and emergency response procedures. Achieving this approach includes: performing an independent assessment of the Emergency Management Program; ensuring both an accurate program description is in place and that procedures supporting compliant program execution are established; and that a level of training has been developed to support compliant program execution.

JON 2				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Perform an independent assessment of the Emergency Management Program to ensure compliance with DOE Order 151.1 C.	Report of independent assessment.	Contractor Assurance Manager	Complete
2	Revise the Resource Conservation and Recovery Act Contingency Plan implementing procedure and training course to ensure timely implementation during incidents.	Approved RCRA Contingency Plan implementing procedure, training materials, and documentation of completion	Emergency Management Manager	Complete

JON 2				
3	Revise Emergency Management Plan, incorporating issues from the independent assessment and evaluation, to include reorganization of the roles and responsibilities.	Approved Emergency Management Plan.	Emergency Management Manager	4/30/15
4	Develop and implement a comprehensive drill and exercise program.	Approved comprehensive drill program description and multi-year drill and exercise schedule.	Emergency Management Manager	Complete
5	Revise emergency response procedures to align with Emergency Management Plan.	Approved emergency response procedures.	Emergency Management Manager	4/30/15
6	Develop and implement an Emergency Response Organization Training and Qualification Program.	Approved ERO Training Plan and EOC position-specific authorization/qualification cards.	Emergency Management Manager	Complete
7	Implement the revised procedures	Training material and documentation of completion (e.g., rosters, completed qualification/authorization cards, etc.) Untrained personnel will not be authorized to perform the associated functions.	Emergency Management Manager	Complete

Judgment of Need (JON 3)

NWP needs to evaluate and apply a process/systems based approach for decision making relative to credible emergencies in the underground, including formalizing response actions, e.g., decision to change to filtration mode during an ongoing evacuation.

Approach

NWP is developing a process/systems based approach for decision making relative to credible emergencies through the development of an EPHA, incorporating the resulting EALs and response actions into the appropriate emergency response procedures.

JON 3				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Revise EPHA.	Final EPHA submitted to DOE field element for approval.	Emergency Management Manager	4/30/15
2	Incorporate the EALs and response actions into the appropriate emergency response procedures.	Approved emergency response procedures.	Emergency Management Manager	4/30/15
3	Implement revised emergency response procedures.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Emergency Management Manager	4/30/15

Judgment of Need (JON 4)

NWP and CBFO need to evaluate their corrective action plans for findings and opportunities for improvement identified in previous external reviews, and take action to bring their emergency management program into compliance with requirements.

Approach

NWP will create a list of external assessments performed between July 2008 and June 2013 and perform an independent review of the findings and observations to ensure that they have been previously addressed, or are being addressed in the new Emergency Management Program.

JON 4				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Develop a list of external assessments received between July 2008 and June 2013.	List of external assessments.	Contractor Assurance Manager	Complete
2	Perform a review of the findings and observations and ensure they have been addressed or are being addressed by the new Emergency Management Program.	Approved assessment report.	Emergency Management Manager	6/30/15
3	Incorporate required changes, based upon the results of the above review, into the Emergency Management Program.	Approved program description document and procedures.	Emergency Management Manager	7/30/15
4	Implement required changes, based upon the results of the above review, into the Emergency Management Program.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Emergency Management Manager	8/30/15

Judgment of Need (JON 5)

NWP and CBFO need to correct their activation, notification, classification, and categorization protocols to be in full compliance with DOE O 151.1C and then provide training for all applicable personnel

Approach

In response to JON 2, NWP is developing a revamped Emergency Management Program to ensure that the applicable protocols for activation, notification, and classification are fully compliant with DOE O 151.1C. Achieving this approach includes performing an independent assessment of the Emergency Management Program using the requirements in DOE O 151.1C, and ensuring that the requirements for activation, notification, classification, and categorization protocols have been addressed and that the appropriate personnel have been trained to the protocols. These actions will address JON 5.

JON 5				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See JON 2 Actions 1-5			

Judgment of Need (JON 6)

NWP and CBFO need to improve the content of site-specific EALs to expand on the information provided in the standard EALs contained in DOE O 151.1C.

Approach

NWP is developing a process/systems based approach for decision making relative to credible emergencies through the development of an EPHA, incorporating the resulting EALs and response actions into the appropriate emergency response procedures. These actions are specified in this CAP in the response to JON 3 and will satisfy JON 6.

JON 6				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See JON 3 actions.			

Judgment of Need (JON 7)

NWP and CBFO need to develop and implement an Incident Command System (ICS) for the EOC/CMR that is compliant with DOE O 151.1C and is capable of assuming command and control for all anticipated emergencies.

Approach

In response to JON 2, NWP is developing a comprehensive Emergency Management Program that aligns with the Incident Command System and is compliant with DOE O 151.1C, including the requirements for the Incident Command System. Additionally, NWP will institutionalize the ICS within the Emergency Management Plan and perform an exercise that allows evaluation of the ICS, to include the EOC/CMR and first-responders. These actions will address JON 7.

JON 7				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See JON 2 Actions 1-3.			
1	Develop and institutionalize Incident Command System within the Emergency Management Plan and ICS procedure.	Copy of Emergency Management Plan – ICS Support Annex and ICS Procedure.	Emergency Management Manager	Complete
2	Plan and conduct an exercise that allows the evaluation of the ICS to include the EOC/CMR and first-responders.	Exercise After Action Report.	Emergency Management Manager	Complete

Judgment of Need (JON 8)

NWP needs to review procedures and ensure consistent actions are taken in response to a fire in the underground.

Approach

NWP's approach to address JON 8 is to develop and implement an Underground Fire Response Plan and implementing procedure to establish a consistent approach to respond to fires in the underground. Implementation will include conducting a drill to demonstrate the use of the new procedure.

JON 8				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Develop an Underground Fire Response Plan and procedure to create a consistent approach to respond to fire in the underground to include the order of actions such as communications, fire suppression systems and PPE.	Approved Underground Fire Response Plan and procedure.	Emergency Management Manager	4/30/15
2	Implement procedure through training.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Emergency Management Manager	5/30/15
3	Plan and conduct an underground fire response drill demonstrating a consistent approach to underground fire response.	Drill After Action Report.	Emergency Management Manager	6/30/15

Judgment of Need (JON 9)

NWP, CBFO and DOE HQ need to clearly define expectations for responding to fires in the underground, including incipient and beyond incipient stage fires.

Approach

NWP's approach to address JON 9 is to determine the underground firefighting capacity and capability needed to protect worker egress. NWP will develop a policy for underground firefighting that addresses the incipient and beyond incipient stages, which recognizes the limits in capacity and capability to fight fire in the underground. The implementation of underground firefighting is captured in JON 8.

JON 9				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Determine the underground firefighting capacity and capability needed to protect worker egress.	Submit the determination to CBFO for approval.	Emergency Management Manager	3/15/15
2	Develop NWP policy for underground firefighting in the incipient and beyond incipient stages, based on the capacity and capability to protect worker egress.	Approved NWP Policy for underground firefighting.	Emergency Management Manager	3/15/15
	See JON 8 actions for implementation.			

Judgment of Need (JON 10)

NWP and CBFO need to develop and implement a training program that includes hands-on training in the use of personal safety equipment, e.g., self-rescuers, SCSRs, portable fire extinguishers, etc.

Approach

NWP's approach to address JON 10 is to identify fire-related personal protective equipment needed by underground workers and implement a comprehensive hands-on training program to ensure proficiency in its use.

JON 10				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Identify fire-related personal safety equipment required for the underground.	List of fire-related personal safety equipment required for the underground.	Safety Manager	Complete
2	Evaluate and revise training associated with the underground fire-related equipment to include hands-on training and recurring proficiency requirements.	Approved training materials.	Training Manager	3/19/15
3	Implement training.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Training Manager	4/3/15

Judgment of Need (JON 11)

NWP and CBFO need to improve and implement an integrated drill and exercise program that includes all elements of the ICS, including the MRT, First Line Initial Response Team (FLIRT) and mutual aid; unannounced drills and exercises; donning of self- rescuers/SCSRs; and full evacuation of the underground.

Approach

NWP committed to developing a new Emergency Management Program in JON 2, Actions 3, 4, and 5. This includes the development and implementation of a comprehensive drill and exercise program that encompasses unannounced and no-notice drills; and development of a multi-year drill and exercise schedule that ensures all ERO response elements participate over a multi-year period. Specifically, to address JON 11, NWP will conduct unannounced drill(s) incorporating ICS, MRT, FLIRT, and mutual aid; and will require donning of self-rescuers and a full evacuation of the underground.

JON 11				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See Actions 3, 4, and 5 of JON 2 for development of the drill and exercise program.			
1	Conduct unannounced drill(s) incorporating ICS, MRT, FLIRT, and mutual aid and requiring the donning of self-rescuers and a full evacuation of the underground.	Drill After Action Report.	Emergency Management Manager	Complete

Judgment of Need (JON 12)

NWP needs to evaluate and improve their criteria for granting unescorted access to the underground such that personnel with unescorted access to the underground are proficient in responding to abnormal events.

Approach

In response to JON 12, NWP will define the requirements for granting unescorted access to the underground including the establishment of proficiency requirements for responding to abnormal events. These requirements will be implemented through a revision of the underground access control procedure.

JON 12				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Define requirements and revise the underground access procedure for escorted and unescorted access to the underground, including proficiency requirements for responding to abnormal events.	Approved procedure.	Operations Manager	8/30/15
2	Implement revised procedure.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Operations Manager	9/30/15

Judgment of Need (JON 13)

NWP management needs to reevaluate and modify the approach to conducting preventive and corrective maintenance on all underground vehicles such that combustible fluids are effectively managed to prevent the recurrence of fires.

Approach

NWP will revise Engineering and Maintenance/Work Control procedures to incorporate expectations for reviewing manufacturer's recommendations as part of the PM determination process. NWP will perform an engineering evaluation of manufacturers operating and maintenance manuals to determine the appropriate maintenance strategy for underground liquid fueled vehicles. In addition, equipment checklists and preventive maintenance procedures for underground vehicles will be revised to include applicable, vendor requirements. Waste handling and non-waste handling equipment maintenance will be evaluated using the same revised processes ensuring the appropriate level of rigor. This approach also includes an evaluation of the use of alternative fire resistant fluids in the hydraulic systems of underground equipment.

JON 13				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Revise engineering procedures to provide a formal process to identify applicable maintenance requirements (vendor and other).	Approved, revised engineering procedures: WP 09-12, Evaluation of Technical Operability Adequacy of Facility Systems, Structures, and Components WP 09-CN3007, Engineering Change Order Preparation and Design Change Control	Engineering Manager	Complete

JON 13				
2	Revise maintenance procedures to incorporate engineering-identified maintenance requirements.	Approved, revised maintenance procedure: WP 10-WC3014, Periodic Maintenance Activity Screening Process	Work Control Manager	Complete
3	Review, and revise, as necessary, PM procedures for underground equipment.	Approved, revised PM procedures.	Work Control Manager	2/28/15
4	Revise operator pre-use checklists to address leaks and accumulation of combustible fluids.	Approved operator pre-use checklists.	Work Control Manager	3/13/15
5	Evaluate the use of alternative fire resistant fluids in the hydraulic systems of underground equipment.	Report of evaluation. Evaluation of high flashpoint fluids on UG vehicles, documented in ETO-U-022, and WIPP AHJ Determination of Fire Protection Guidance for Hydraulic Fluids, dated 10/23/14.	Engineering Manager	Complete
6	Implement recommendations from the evaluation of alternative fire resistant fluids.	Based on the outcome of the evaluations, NWP will implement appropriate changes. (No action is required as a result of the evaluations performed.)	Engineering Manager	Complete

JON 13				
7	Implement revised procedures.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions. (No action is required as a result of the evaluations performed.)	Work Control Manager	Complete

Judgment of Need (JON 14)

NWP and CBFO need to develop and implement a rigorous process that effectively evaluates: changes to facilities, equipment, and operations for their impact on safety, e.g., plant operations review process; impairment and corresponding compensatory measures on safety-related equipment; and the impact of different approaches in maintaining waste-handling and non-waste-handling equipment.

Approach

NWP's Engineering, Maintenance, and Work Control organizations will work together to establish processes that effectively evaluate changes to facilities, equipment or operations, that will include considerations for impairments of safety-related equipment, even if this equipment is not credited in the safety basis. NWP will establish procedure guidance on the selection of preventive maintenance and calibration activities and to ensure the flow down of requirements from applicable engineering procedures. This procedure modification will also improve maintenance prioritization to support critical system operational readiness and will include provisions for trending of deficiencies. NWP will also revise the engineering processes to provide a standard uniform approach for changes to site systems and equipment and ensure evaluation via the USQ process, as appropriate. JON 13, Actions 1, 2, and 3, are actions to ensure waste handling and non-waste handling equipment maintenance will be evaluated using the same processes ensuring the appropriate level of rigor.

JON 14				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Evaluate and revise NWP engineering procedure to require the cognizant system engineer to evaluate changes to facilities, equipment, and operations for impact to safety.	Approved procedures: WP 09-CN3007, Engineering Change Order Preparation and Design Change Control WP 09-CN3021, Component Indices WP 09-CN3022, Engineering File Room Operations	Engineering Manager	Complete

JON 14				
2	Evaluate and revise NWP USQ procedure to ensure changes to facilities, equipment, and operations are reviewed for their impact to safety.	Approved procedure.	Nuclear Safety Manager	5/31/15
3	Evaluate and revise the NWP work control procedure to ensure the appropriate SMEs are involved in evaluating changes to facilities, equipment, and operations.	Approved procedure.	Work Control Manger	Complete
4	Develop a list of critical plant systems and safety-related equipment.	Approved list of systems and equipment.	Operations Manager	3/31/15
5	Revise or develop an NWP procedure that provides instructions on evaluating the impact on critical systems and safety-related equipment impairments and guidance on establishing compensatory measures. Additionally, this procedure will direct the prioritization of maintenance activities.	Approved procedure.	Work Control Manger	3/31/15

JON 14				
6	Implement revised procedures.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Nuclear Safety Manager	4/31/15
	See JON 13 Actions 1 and 2 for the actions that revise the approach for maintaining waste-handling and non-waste-handling equipment to use the same processes ensuring the appropriate rigor.			

Judgment of Need (JON 15)

NWP needs to determine the extent of this condition and develop a comprehensive corrective action plan to address identified deficiencies.

Approach

In response to JON 15, NWP will perform a review to determine the extent of condition. The actions of JON 14 will also address the extent of condition.

JON 15				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	NWP will conduct an extent of condition review with respect to JON 14 for non-safety systems and equipment.	Extent of Condition Report.	Work Control Manager	3/20/15
2	Implement recommendations.	Based on the outcome of the evaluations, NWP will implement appropriate changes.	Work Control Manager	6/30/15

Judgment of Need (JON 16)

NWP needs to develop and implement a process that ensures comprehensive and timely impact evaluation and correction of impaired or out-of-service equipment.

Approach

The programmatic approach to addressing JON 14 will also ensure that impaired or out-of-service equipment is evaluated and corrected in a timely manner.

JON 16				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See JON 14, Action 5 for measures to be taken in addressing the development of requirements for comprehensive and timely evaluations of impaired or out-of-service equipment.			

Judgment of Need (JON 18)

NWP needs to develop and reinforce clear expectations regarding the performance of rigorous equipment inspections in accordance with manufacturer recommendations, established technical requirements; corrective action; and trending of deficiencies.

Approach

JON 13 actions 1, 2, and 4 address the development of clear expectations for equipment inspections and vendor/manufacturer recommendations. Additionally, the approach to this JON includes establishing processes for the trending of deficiencies and the evaluation of the aggregate effects of out-of-service equipment.

JON 18				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Revise the applicable work control and engineering procedures to include a process for the trending of deficiencies and to evaluate the aggregate effects of out-of- service equipment.	Approved procedures: WP 10-WC3010, Periodic Maintenance Administration and Controlled Document Processing WP 10-WC3011, Work Control Process WP 09-12, Evaluation of Technical Operability Adequacy of Facility Systems, Structures, and Components WP 09-CN3007, Engineering Change Order Preparation and Design Change Control	Work Control Manager	Complete

JON 18				
2	Implement procedure revisions.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Work Control Manager	Complete
	See JON 13 actions 1, 2, 3 and 4 addressing developing clear expectations for equipment inspections and vendor/manufacturer recommendations.			

Judgment of Need (JON 19)

NWP needs to ensure that all requirements of DOE O 420.1C and MSHA are addressed in the BNA, with the results completely incorporated into implementing procedures and the source requirements referenced, and that training consistent with those procedures is performed.

Approach

In response to JON 19, NWP will revise the BNA to ensure the requirements of DOE O 420.1 C and MSHA are addressed in the appropriate procedures, sources are referenced, and personnel are trained.

JON 19				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Revise BNA to ensure the requirements of DOE O 420.1 C and MSHA are addressed.	Submit BNA to CBFO.	Emergency Management Manager	3/30/15
2	Revise appropriate procedures including source requirements to implement the approved BNA.	Approved procedures.	Emergency Management Manager	5/30/15
3	Implement approved procedures.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Emergency Management Manager	6/30/15

Judgment of Need (JON 20)

NWP and CBFO need to perform an integrated analysis of credible underground fire scenarios and develop corresponding response actions that comply with DOE and MSHA requirements. The analysis needs to include formal disposition regarding the installation of an automatic fire suppression system in the mine.

Approach

In response to JON 20, NWP will revise the FHA to include a list of credible underground fire scenarios. NWP will then ensure that the resulting actions are incorporated into applicable response procedures and that personnel are trained. The disposition of the automatic fire suppression system is addressed in JON 19 action 1.

JON 20				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Revise the FHA to include a list of credible underground fire scenarios.	Approved FHA.	Nuclear Safety Manager	3/31/15
2	Revise procedures to include corresponding actions to respond to credible underground fire scenarios.	Approved procedures.	Emergency Management Manager	6/30/15
3	Implement approved procedures.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Emergency Management Manager	8/31/15

JON 20				
	Analysis of the installation of an automatic fire suppression system in the underground is addressed in JON 19, Action 1.			

Judgment of Need (JON 21)

NWP and CBFO need to review the combustible control program and complete corrective actions that demonstrate compliance with program requirements.

Approach

NWP will ensure that the WIPP Fire Protection Program provides comprehensive requirements for the use, accumulation and inspection of combustible materials in the underground and that personnel are appropriately trained to implement the requirements. Periodic inspections of the combustible loading in the underground will be conducted to ensure compliance.

JON 21				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Review and revise the WIPP Fire Protection Program to provide comprehensive requirements that are consistent with FHA criteria for the use, accumulation, and periodic inspection of combustible materials in the underground.	Approved procedures.	Nuclear Safety Manager	3/31/15
2	Implement approved procedures.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Nuclear Safety Manager	6/31/15

JON 21				
3	**Perform a periodic inspection of combustible loading in the underground.**	Inspection report.	Nuclear Safety Manager	9/31/15

Judgment of Need (JON 22)

NWP and CBFO need to evaluate and address deficiencies in housekeeping to ensure unobstructed egress and clear visibility of emergency egress strobes, reflectors, SCSR lights, etc.

Approach

NWP will ensure that the requirements are implemented for evaluating and addressing deficiencies in housekeeping issues to ensure unobstructed egress and clear visibility of emergency communications systems.

JON 22				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	NWP shall identify and implement requirements for evaluating deficiencies in housekeeping to ensure unobstructed egress and clear visibility of egress strobes, reflectors, SCSR lights, etc.	Approved procedures and applicable round sheets/data sheets.	Operations Manger	3/31/15
2	Implement approved procedures.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Operations Manager	4/6/15

Judgment of Need (JON 23)

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

Approach

NWP will develop and implement an integrated contractor system that is fully compliant with the requirements of DOE O 226.1B. This approach includes development of a program description and implementing procedures, as well as the performance of an independent evaluation of the new program. NWP will then perform an effectiveness review once the program has been fully implemented.

JON 23				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Develop a Contractor Assurance Program Description that captures required elements of an effective contractor assurance system as defined by DOE Order 226.1B.	Submit Contractor Assurance Program Description to CBFO for approval.	Contractor Assurance Manager	Complete
2	Develop or expand upon procedures required to implement a contractor assurance system compliant with DOE 226.1B.	Approved procedures.	Contractor Assurance Manager	5/29/15
3	Implement procedures.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Contractor Assurance Manager	9/29/15

JON 23				
4	Perform an independent assessment of the NWP Contractor Assurance System to verify compliance with DOE Order 226.1B.	Assessment report.	Contractor Assurance Manager	3/12/15
5	Implement corrective actions for issues identified during the performance of the independent assessment.	Based on the outcome of the evaluations, NWP will implement appropriate changes.	Contractor Assurance Manager	5/29/15
6	NWP will perform an effectiveness review on the implementation of the Contractor Assurance System.	Effectiveness report.	Contractor Assurance Manager	3/15/16

Judgment of Need (JON 33)

NWP and CBFO need to evaluate and correct weaknesses in the Conduct of Operations (CONOPS) program and its implementation, particularly with regard to flow-down of requirements from upper-tier documents, procedure content and compliance, and expert-based decision making.

Approach

NWP will correct weaknesses in the CONOPS program and its implementation by conducting an independent evaluation of the program and correcting the identified deficiencies. This approach includes revising the CONOPS Matrix and affected implementing procedures, and training personnel. The approach also includes establishing a CONOPS mentoring program. NWP Contractor Assurance will also include CONOPS as an assessment focus area to verify the flow down of upper tier requirements, procedure content and compliance, and that expert-based decision-making is minimized.

JON 33				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Conduct independent evaluation of CONOPS program.	Evaluation report.	Operations Manager	Complete
2	Review and revise the CONOPS Matrix.	Revised CONOPS Matrix submitted to CBFO for approval.	Operations Manager	3/31/15
3	Revise implementing procedures.	Approved procedures.	Operations Manager s	4/6/15
4	Implement procedures.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Operations Manager	5/6/15

JON 33				
5	Implement a CONOPS mentoring program.	CONOPS mentoring program description.	Operations Manager	Complete
6	Establish a focus area for CONOPS compliance in the approved CAS assessment schedule.	Approved CAS assessment schedule.	Operations Manager	6/30/15

Judgment of Need (JON 34)

NWP and CBFO need to identify and control the risk imposed by non-waste-handling equipment, e.g., combustible buildup, manual vs. automatic fire suppression system, fire-resistant hydraulic oil, and treat waste-handling equipment and non-waste-handling equipment the same.

Approach

NWP has determined that a single system will be used to evaluate and impose requirements for nuclear and non-nuclear equipment. JON 13 and 14 corrective actions identify these requirements.

JON 34				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See JON 13 and 14 actions.			

Judgment of Need (JON 35)

NWP and CBFO management need to examine and correct the culture that exists regarding the maintenance and operation of non-waste-handling equipment

Approach

NWP will evaluate and integrate mine operations and nuclear operations in the underground through the use of common processes. For the specific issue of non-waste-handling equipment, NWP will develop common maintenance and operations review processes as defined in JONs 13 and 14. NWP will nurture an appropriate safety culture through the actions defined below.

JON 35				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See actions in JONs 13 and 14 for processes and requirements regarding non-waste handling equipment.			
1	Conduct root cause analysis of the degradation of the safety culture.	Root cause analysis report.	Safety Manager	Complete
2	Develop Expectations, Values and Behaviors in Sr. Management workshops.	Roster of attendance and training materials.	Safety Manager	Complete
3	Communicate updated safety culture plan to the workforce.	Roster of attendance and training materials.	Safety Manager	Complete

Nuclear Waste Partnership LLC

Corrective Action Plan

Phase 1 Radiological Release Event

[redacted]

NWP President & Project Manager

2/11/15

Date

Nuclear Waste Partnership LLC

A URS-led partnership with B&W and AREVA

This page intentionally left blank.

Table of Contents

ACRONYMS

AIB	Accident Investigation Board
CAM	Continuous Air Monitor
CAP	Corrective Action Plan
CAS	Contractor Assurance System
CBFO	U.S. Department of Energy Carlsbad Field Office
CC	Contributing Cause
CFR	Code of Federal Regulations
CON	Conclusion
CONOPS	Conduct of Operations
CMR	Central Monitoring Room
DC	Direct Cause
DNFSB	Defense Nuclear Facility Safety Board
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
EAL	Emergency Action Levels
EOC	Emergency Operations Center
ERO	Emergency Response Organization
ESS	Evaluation of the Safety Situation
FHA	Fire Hazard Analysis
FP	Fire Protection
INPO	Institute of Nuclear Power Operations
JON	Judgment of Need
LTA	Less than Adequate
M&O	Management and Operating
NWP	Nuclear Waste Partnership LLC
PISA	Potential Inadequate Safety Analysis
RadCon	Radiological Control
RC	Root Cause
RCRA	Resource Conservation and Recovery Act
SSC	Structure, System, and Component
TRU	Transuranic
TSR	Technical Safety Requirements
U/G	Underground
USQ	Unreviewed Safety Question
WIPP	Waste Isolation Pilot Plant

1.0 INTRODUCTION

On Friday, February 14, 2014 there was an incident in the underground (U/G) repository at WIPP, which resulted in the release of americium and plutonium from one or more transuranic (TRU) waste containers into the U/G mine and the environment.

2.0 ACCIDENT INVESTIGATION

On February 27, 2014, the Deputy Assistant Secretary for Safety, Security, and Quality Programs, U.S. Department of Energy, Office of Environmental Management, formally appointed a second Accident Investigation Board (the Board) to investigate the radiological release in accordance with DOE O 225.1B, *Accident Investigations*.

The Board began the investigation on March 3, 2014, completed Phase 1 of the investigation on March 28, 2014, and submitted the report to the Acting Deputy Assistant Secretary for Safety, Security, and Quality Programs, U.S. Department of Energy, Office of Environmental Management on April 1, 2014. The Phase 1 report covers the Board's conclusions for the release of TRU from the U/G to the environment. Based upon the conclusions of this accident investigation, the Board concluded that the above ground release identified in Phase 1 of the investigation was preventable. On April 24, 2014 the Board's Accident Investigation Report (Report) was published and made available to Nuclear Waste Partnership LLC (NWP).

The Board concluded the following causes of the accident.

Direct Cause (DC) – the immediate events or conditions that caused the accident.

The Board identified the direct cause of this accident to be the breach of at least one TRU waste container in the U/G which resulted in airborne radioactivity escaping to the environment downstream of the HEPA filters. Due to restrictions on access to the U/G following the event, the exact mechanism of container failure, e.g., back or rib fall, puncture by a failed roof bolt, off-gassing, etc., is unknown at this time and must be determined once access to the U/G is restored.

Root Cause (RC) – causal factors that, if corrected, would prevent recurrence of the same or similar accidents.

The Board identified the root cause of Phase 1 of the investigation of the release of radioactive material from U/G to the environment to be NWP's and CBFO's management failure to fully understand, characterize, and control the radiological hazard. The cumulative effect of inadequacies in ventilation system design and operability compounded by degradation of key safety management programs and safety culture resulted in the release of radioactive material from the U/G to the environment, and the delayed/ineffective recognition and response to the release.

Contributing Causes (CC) – events or conditions that collectively with other causes increased the likelihood or severity of an accident but that individually did not cause the accident. For the purposes of this investigation, contributing causes include those related to the cause of the release, as well as those related to the subsequent response.

The Board identified nine contributing causes to the radiological release to the environment investigated in Phase 1, or resultant response:

1. Implementation of the NWP Conduct of Operations Program is not fully compliant with DOE O 422.1, *Conduct of Operations*, and impacted the identification of abnormal conditions and timely response.
2. NWP does not have an effective Radiation Protection Program in accordance with 10 Code of Federal Regulations (CFR) 835, *Occupational Radiation Protection*, including, but not limited to radiological control technician training, qualification, and requalification, equipment and instrumentation, and audits.
3. NWP does not have an effective maintenance program. The condition of critical equipment and components, including continuous air monitors, ventilation dampers, fans, sensors, and the primary system status display were degraded to the point where the cumulative impact on overall operational readiness and safety was not recognized or understood.
4. NWP does not have an effective Nuclear Safety Program in accordance with 10 CFR 830 Subpart B, *Safety Basis Requirements*. There has been a reduction in the conservatism in the Documented Safety Analysis (DSA) hazard/accident analysis and corresponding Technical Safety Requirement (TSR) controls over time. In addition, the DSA and TSRs contain errors, there is a lack of DSA linkage to supporting hazard analysis information, and there is confusion over the back fall accident description in a closed versus open panel.
5. NWP implementation of DOE O 151.1C, *Comprehensive Emergency Management System*, was ineffective. Personnel did not adequately recognize, categorize, or classify the emergency and did not implement adequate protective actions in a timely manner.
6. The current site safety culture does not fully embrace and implement the principles of DOE Guide (G) 450.4-1C, *Integrated Safety Management Guide*. There is a lack of a questioning attitude, reluctance to bring up and document issues, and an acceptance and normalization of degraded equipment and conditions.
7. Execution of the NWP Contractor Assurance System (CAS) in accordance with DOE O 226.1B, *Implementation of Department of Energy Oversight Policy*, was ineffective. Execution of the CAS did not identify precursors to this event or the unacceptable conditions and behaviors documented in this Phase 1 report.

3.0 CORRECTIVE ACTION PLAN DEVELOPMENT

NWP reviewed the Conclusions and Judgments of Need (JONs) from the AIB Report and developed actions to address each of the 25 JONs and supporting conclusions identified in the report pertaining to NWP. The JON tables in Section 6 this plan describe the approach, actions, and planned due dates to respond to each JON.

4.0 CORRECTIVE ACTION PLAN MANAGEMENT

During implementation of the Corrective Action Plan, 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 the CBFO Corrective Actions Manager. Changes to the Corrective Action Plan require CBFO approval. Corrective action progress meetings will be conducted at the request of the CBFO Corrective Actions Manager.

5.0 CORRECTIVE ACTIONS VERIFICATION AND EFFECTIVENESS REVIEW

NWP Functional Managers will ensure that actions are completed in a timely manner and that objective evidence of completions is provided to NWP Contractor Assurance. Contractor Assurance will then verify completion of the actions and that the objective evidence is adequate to demonstrate completion. Six to twelve months after completion of the actions, NWP will evaluate whether the actions have been effectively implemented and have addressed the Judgments of Need.

6.0 JON ACTION PLANS

The following subsections include the 25 JONs pertaining to NWP. Each subsection includes the AIB Report JON description and NWP's approach for addressing the JON. Actions, deliverables, action owners, and planned due dates are listed in table format.

Judgment of Need (JON 1)

Nuclear Waste Partnership LLC (NWP) and the Carlsbad Field Office (CBFO) need to implement a detailed recovery plan to systematically reenter the underground, collect data and information, and make an absolute determination as to the mechanism of the TRU waste release.

Approach

DOE has determined that Phase II of the AIB investigation of the radiological release will make an absolute determination as to the mechanism of the release. To address JON 1, NWP will develop a recovery plan to systematically reenter the underground and support the AIB in the collection of data and information related to their investigation.

RJON 1				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Develop a recovery plan for reentry into the underground for collection of data and information.	Approved recovery plan.	Recovery Manager	Complete

Judgment of Need (JON 3)

NWP needs to revise the hazard and accident analyses to comply with DOE- STD - 3009, *Preparation Guidance for US. Department of Energy Nonreactor Nuclear Facility Safety Analysis* and DOE-STD-5506, *Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities,* regarding not crediting administrative controls in the unmitigated analysis. In particular, some initial assumptions/initial conditions, e.g., compliance with 30 CFR 57, *Safety and Health Standards Underground Metal and Nonmetal Mines* ground control program requirements, should be preventive or mitigative controls derived by the mitigated analysis and should be evaluated for the need for protection with Technical Safety Requirement controls.

Approach

NWP's approach to address JON 3 is to conduct an independent assessment of the Nuclear Safety Program and develop, or revise, the program description and applicable implementing procedures, to include the TSR requirement for independent reviews. NWP will also revise the Hazard and Accident Analysis to comply with DOE Standards 3009 and 5506, with particular consideration for the crediting of administrative controls. NWP will then develop and implement the DSA and TSRs, and will perform an independent verification review.

RJON 3				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	NWP will conduct an independent assessment of the Nuclear Safety Program and track identified deficiencies in the NWP issues management program.	Completed independent assessment of the Nuclear Safety Program.	Safety Basis Manager	Complete
2	Develop or revise program description document and implementing procedures. (Include the TSR requirement for independent reviews in this revision effort.)	Approved Nuclear Safety Program description document and implementing procedures.	Safety Basis Manager	5/31/15

RJON 3				
3	Implement revised Nuclear Safety Program procedures.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Safety Basis Manager	8/31/15
4	NWP will revise the Hazard and Accident Analysis to comply with DOE Standards 3009 and 5506, with particular consideration for the crediting of administrative controls.	Revised DSA and TSR submitted to CBFO for approval.	Safety Basis Manager	5/31/15
5	NWP will implement the DSA and TSRs.	Independent verification review report.	Safety Basis Manager	10/31/15

Judgment of Need (JON 4)

NWP needs to commission an independent assessment of the Documented Safety Analysis/Technical Safety Requirement, Revision 4 through corporate assistance or other recognized external resources, and corrective actions implemented that establish appropriate hazard controls and functional classifications.

Approach

To address JON 4, NWP will conduct an independent assessment of the DSA, Revision 4, and TSRs in place and will establish a mechanism for the periodic review of the DSA and TSRs. Corrective actions for the deficiencies identified as a result of the independent assessment may be implemented via various corrective action mechanisms.

RJON 4				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	NWP to conduct an independent assessment, gap analysis, of DSA/TSRs (Rev. 4).	Independent assessment report of DSA/TSRs (Rev. 4).	Safety Basis Manager	Complete
2	Correct deficiencies from the independent assessment of DSA/TSRs (Rev. 4).	Objective evidence of resolution of identified deficiencies.	Safety Basis Manager	7/27/15
3	Establish a focus area for TSR development process and implementation in the approved CAS assessment schedule.	Approved CAS assessment schedule.	Contractor Assurance Manager	6/30/15

Judgment of Need (JON 5)

NWP needs to re-evaluate the importance of the suite of available preventive and mitigative controls, e.g., continuous air monitors and underground ventilation system, in the supporting hazards analysis report, and the Documented Safety Analysis, Section 3.3 hazard evaluation, and whether they should be considered as major contributors to defense in depth. This may require upgrading of some Structures, Systems, and Components functional classifications.

Approach

Due to the radiological release, NWP performed a thorough evaluation which resulted in several PISAs and ESSs. The ESSs identified several systems that were important to safety that were not credited as safety SSCs. The above ground Continuous Air Monitor at Station B and the Underground ventilation system are now being treated as Important to Safety through the ESS process. NWP will perform a gap analysis of the DSA in Action 1 for JON 4, and will revise the Hazard Analysis in JON 3 Actions 4 and 5. NWP will revise the DSA based upon the results of the gap analysis and revised Hazard Analysis.

RJON 5				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See JON 4, Actions 1 and 2, and JON 3, Actions 4 and 5.			

Judgment of Need (JON 6)

NWP needs to re-evaluate the classification of continuous air monitors and the underground ventilation system consistent with the outcome of the revised hazard analysis and develop technical safety requirement controls consistent with that classification.

Approach

The above ground Continuous Air Monitor Station B and the underground ventilation system are now being treated as Important to Safety through the ESS process. These systems will be reclassified as part of the DSA revision process. Refer to JON 5 for the actions to revise the DSA.

RJON 6				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See JON 5.			

Judgment of Need (JON 7)

NWP needs to revise the Technical Safety Requirements to align with changes to the Documented Safety Analysis, e.g., continuous air monitor and underground ventilation system, correct current errors in the Technical Safety Requirements, and ensure that implementing procedures clearly support consistent interpretations.

Approach

NWP has addressed revising the TSRs to align with the new DSA in JON 3 Actions 4 and 5. NWP has addressed the above ground Continuous Air Monitors Station B and the Underground ventilation system classification as Important to Safety through JON 6. NWP has addressed ensuring the implementing procedures for the TSRs in JON 4, Actions 4 and 5; and will assess their implementation in JON 5, action 3

RJON 7				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See JONs 3, 4 and 5 and 6.			

Judgment of Need (JON 8)

NWP needs to commission an independent assessment of the Unreviewed Safety Question process through corporate assistance or other recognized external resources, and implement corrective actions that ensure effectiveness.

Approach

NWP will conduct an independent assessment of the USQ process and implement appropriate corrective actions including revising the USQ process to clarify the guidance for the performance and timeliness of PISAs. Mentors were assigned to coach USQ evaluators and reviewers.

RJON 8				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	NWP will conduct an independent review of the Unreviewed Safety Question process.	Report of the review.	Safety Basis Manager	Complete
2	Implement corrective actions for deficiencies identified from the independent review.	Objective evidence that issues from the independent review have been addressed.	Safety Basis Manager	7/31/15
3	NWP will mentor USQ evaluators and reviewers.	NWP nuclear safety manager to supply objective evidence that mentoring was performed.	Safety Basis Manager	10/15/15
4	NWP will revise the USQ procedure.	Submit to CBFO for approval.	Safety Basis Manager	Complete
5	NWP will implement revised USQ procedure.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Safety Basis Manager	5/31/15

Judgment of Need (JON 9)

NWP needs to strengthen the Unreviewed Safety Question Determination procedure to clarify Potential Inadequacy in the Safety Analysis guidance, including the appropriate timeliness for entrance into the process and decision making.

Approach

NWP has addressed the revision of the USQ process in JON 8, to include the clarification of PISA guidance and timeliness. NWP will assess implementation of the approved USQ process.

RJON9				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See JON 8.			
1	Establish a focus area for the USQ process and implementation in the approved CAS assessment schedule.	Approved CAS assessment schedule.	Contractor Assurance Manager	6/30/15

Judgment of Need (JON 14)

NWP needs to immediately develop and implement interim compensatory measures to ensure prompt identification, categorization, classification, and response to operational emergencies, e.g., corporate reach-back, training, Senior Management Watch in the Central Monitoring Room, etc.

Approach

To address JON 14, NWP developed interim compensatory measures regarding identification, categorization, classification, and response to operational emergencies, and submitted these measures to CBFO for approval.

RJON 14				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Develop interim compensatory measures sufficient for recovery and mine entry.	CBFO approval of interim compensatory measures.	Recovery Manager	Complete
2	Implement interim compensatory measures.	Objective evidence of implementation.	Recovery Manager	6/30/15

Judgment of Need (JON 16)

NWP needs to correct their activation, notification, classification, and categorization protocols to be in full compliance with DOE O 151.1C, *Comprehensive Emergency Management System*, Resource Conservation and Recovery Act (RCRA) Contingency Plan and then provide training and drills for all applicable personnel.

Approach

NWP has committed to independently reviewing and revising, as necessary, the Emergency Management Plan to ensure compliance with DOE Order 151.1C and to validate implementation of the RCRA contingency plan through the actions of the Salt Haul Fire CAP, JON 2.

RJON 16				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See the actions in the Salt Haul Fire CAP, JON 2.			

Judgment of Need (JON 17)

NWP needs to revise Emergency Response Organization training to include more supervised hands-on training and drills to enhance the effectiveness of the Emergency Response Organization's response.

Approach

NWP has already committed to developing a comprehensive drill and exercise program and a multi-year drill and exercise schedule in the Salt Haul Fire CAP, JONs 10 and 11. NWP will assess training to validate effectiveness in addressing this JON.

RJON 17				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Develop and implement an Emergency Response Organization training and qualification program.	Approved ERO Training Plan and EOC position-specific authorization/ qualification cards.	Emergency Management Manager	Complete
2	Develop and implement a comprehensive drill and exercise program.	Approved comprehensive drill program description and multi-year drill and exercise schedule.	Emergency Management Manager	Complete
3	Assess Emergency Operations Center (EOC) training and qualification program to determine effectiveness.	EOC Training Assessment Report	Emergency Management Manager	7/30/15
4	Conduct training of the ERO staff.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Emergency Management Manager	Complete
5	Assess performance of the ERO through an exercise.	Exercise After Action Report.	Emergency Management Manager	Complete
	See also actions in Salt Haul Fire CAP JONs, 10 and 11.			

Judgment of Need (JON 18)

NWP needs to fully integrate the Resource Conservation and Recovery Act Contingency Plan activation criteria within the site Emergency Action Levels and to train the applicable personnel to ensure implementation of the Resource Conservation and Recovery Act, Contingency Plan.

Approach

NWP has committed to independently reviewing and revising, as necessary, the Emergency Management Plan to ensure compliance with DOE Order 151.1C and to validate implementation of the RCRA contingency plan through the actions of the Salt Haul Fire CAP, JON 2. These actions will fully integrate the requirements of the two programs and address JON 18.

RJON 18				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See actions in the Salt Haul Fire CAP, JON 2.			

Judgment of Need (JON 19)

NWP needs to take prompt action to correct longstanding deficiencies from previous reviews.

Approach

NWP has taken action to identify issues from previous external reviews through the actions in the Salt Haul Fire CAP, JON 4 which dealt with the Emergency Management Organization. NWP will broaden the scope of that review to include external assessments regardless of focus.

RJON 19				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Develop a list of external assessments received between July 2008 and June 2013.	List of external assessments.	Contractor Assurance Manager	Complete
2	Perform a review of the findings and observations and ensure they are addressed.	Approved review report and disposition of un-addressed items.	Contractor Assurance Manager	6/30/15

Judgment of Need (JON 21)

NWP needs to improve the content of site-specific Emergency Action Levels to expand on the information provided in the standard Emergency Action Levels contained in DOE O 151.1C, *Comprehensive Emergency Management System*.

Approach

NWP has committed to taking action to revise the site specific EALs through actions contained in JONs 2 and 3 of the Salt Haul Fire CAP.

RJON 21				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See the actions in the Salt Haul Fire CAP, JONs 2 and 3.			

Judgment of Need (JON 22)

NWP needs to develop and implement an Incident Command System for the Emergency Operations Center/Central Monitoring Room that is compliant with DOE O 151.1C and is capable of assuming command and control for all anticipated emergencies.

Approach

NWP has committed to revising the Emergency Management Plan and to integrate the Incident Command System principles, concepts and terminology for the EOC/CMR and first responders through the actions of the Salt Haul Fire CAP, JONs 2 and 7.

RJON 22				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See the actions in the Salt Haul Fire CAP, JONs 2 and 7.			

Judgment of Need (JON 24)

NWP and CBFO need to develop and implement an effective integrated safety management system (ISMS) that embraces and implements the principles 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
- Reinforcing the mechanisms, e.g., WIPP Forms, "Notes to Joe," employee concern program, differing professional opinions, and protocols for communicating issues to NWP and CBFO leadership.

Approach

NWP till take action to improve the effectiveness of the Integrated Safety Management System by addressing the deterioration of safety culture referenced in Conclusion 13 (CON 13) for this JON including addressing questioning attitude, demonstrated leadership in risk-informed conservative decision making, reporting and effective resolution of problems, and improvement in nuclear safety culture attributes embracing the Safety Culture Focus Areas in DOE G 450.4-1C, *Integrated Safety Management Guide*.

RJON 24				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	NWP will conduct a Root Cause Analysis on the degradation of the Safety Culture referenced in CON 13 related to this JON.	Root Cause Analysis Report.	Safety Manager	Completed
2	An INPO assist visit team will evaluate the implementation of the Safety Culture Focus Area attributes from DOE G 450.4-1C, Integrated Safety Management Guide.	INPO approved summary of results.	Safety Manager	6/1/15
3	Implement actions to address the safety culture root cause and the issues identified by the INPO assist visit team through the Nuclear Safety Culture Improvement Plan.	Evidence of implementation of the Nuclear Safety Culture Improvement Plan.	Safety Manager	1/1/16

RJON 24				
4	Include the conduct of an effectiveness review of the implementation of the corrective actions associated with Nuclear Safety Culture in the approved CAS assessment schedule.	Approved CAS assessment schedule.	Contractor Assurance Manager	1/30/17

Judgment of Need (JON 27)

NWP needs to strengthen execution of the Conduct of Operations Program to be compliant with DOE O 422.1, *Conduct of Operations.* Specific areas of focus must include (but not limited to):

- Establishing and reinforcing expectations conveyed in WP 04-CO.OI, *Conduct of Operations* series procedures.
- Initiate a mentoring program, e.g., senior supervisor watch that provides real-time feedback to first and second line supervisors as to their responsibilities regarding compliant execution of operations activities.
- Strengthen the structure, content and flow of abnormal response procedures to ensure immediate actions do not require judgment calls prior to execution.
- Consider the addition of real-time surveillance capability, e.g., video of the active waste panels/rooms.
- Establish and execute an operational drill program that evaluates operator response to upset conditions.
- Establish a process that heightens awareness and requires deliberate action to reduce the quantity and length of time key pieces of equipment are out of service.

Approach

NWP has committed to actions to address improvement of the conduct of operations in the Salt Haul Fire CAP, JON 33. Improvements in the process that evaluates the length of time key pieces of equipment are out of service are included in the Salt Haul Fire CAP, JON 14 Action 5. NWP will initiate an additional series of actions directed at improving CONOPS as noted below.

RJON 27				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See Salt Haul Fire CAP, JON 33 and JON 14 Action 5.			
1	Revise abnormal response procedures to reduce expert-based decision making.	Approved procedures.	Operations Manager	Complete
2	Implement revised abnormal response procedures.	Training determination, training material and documentation of completion (e.g., rosters, required reading, etc.) Untrained personnel will not be authorized to perform the associated functions.	Operations Manager	Complete

RJON 27				
3	Perform an engineering evaluation to consider the addition of real-time surveillance capabilities.	Engineering evaluation report.	Engineering Manager	5/20/15
4	Implement recommendations of the engineering evaluation.	Based on the outcome of the evaluation, NWP will implement recommendations from the evaluation which correct deficiencies with regulatory requirements. NWP will then submit to CBFO, a plan for implementation of enhancements to the real-time surveillance capabilities resulting from the NWP evaluation.	Operations Manager	7/30/15
5	Develop an Operations abnormal conditions drill program that can accommodate a range of upset conditions.	Approved operations abnormal drill program.	Emergency Management	Complete
6	Conduct an operational drill with upset conditions.	After Action Report.	Emergency Management	Complete

Judgment of Need (JON 29)

NWP needs to take action to ensure that the maintenance process effectively considers and prioritizes repairs to achieve and maintain a high state of operational readiness.

Approach

NWP has committed to actions to identify critical systems, evaluate impairments and to prioritize maintenance to improve operational readiness in the Salt Haul Fire CAP, JONs 13 and 14. These actions will address JON 29

RJON 29				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See the Salt Haul Fire CAP, JONs 13 and 14.			

Judgment of Need (JON 30)

NWP needs to improve the execution of engineering processes that ensure system configuration management is maintained and that the rigor in processing proposed changes to systems is at a level that ensures system design functionality is maintained. Specific examples include:

- Conversion of the 860 vortex damper actuator from automatic to manual operation.
- Functionality of the ventilation system in filtration including evaluation and testing of leakage via the bypass dampers.
- The impact of salt buildup on bypass damper effectiveness.

Approach

NWP has committed to actions to improve the status of critical equipment and to improve prioritization of maintenance of that equipment through the Salt Haul Fire CAP JON, 13 Actions 1, 2 and 7, and JON 14 Actions 4, 5 and 7. NWP will improve the configuration management of critical equipment so that system design functionality is ensured through improved engineering processes identified in the Salt Haul Fire CAP, JONs 14 Actions 1, 3, 5 and 7.

RJON 30				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See Salt Haul Fire CA, JONs 13 and 14.			

Judgment of Need (JON 33)

NWP needs to evaluate the current state of the radiological control program including the current radiological conditions and implement compensatory measures to support recovery and current activities.

Approach

NWP has developed a set of compensatory actions to address radiological controls to support recovery and current activities. These compensatory measures were approved by CBFO and include a suite of 22 actions addressing topics such as staffing, posting, sampling, monitoring, mentoring, etc. to respond to current radiological conditions.

RJON 33				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	Develop interim radiological control compensatory measures sufficient for recovery and current activities.	CBFO approval of interim compensatory measures.	RadCon Manager	Complete
2	Implement interim radiological control compensatory measures.	Objective evidence of implementation.	RadCon Manager	4/30/15

Judgment of Need (JON 34)

NWP needs to perform an extent of condition review of the training program incorporating the results of this event and implement actions to improve radiological control management, RCT, and radiation worker proficiency in dealing with contamination, and airborne radioactive material

Approach

NWP will conduct an extent of condition review of the Radiological Control Program including the associated training program for radiological control, and the requirements of 10 CFR 835 so that the issues of JONs 34 and 35 are addressed.

RJON 34				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	NWP will conduct an extent of condition review of the Radiological Control Program, including the training program for radiological control.	Extent of condition report.	RadCon Manager	Complete
2	Implement actions to address the issues identified in the extent of condition review.	Based on the outcome of the evaluation, NWP will implement appropriate changes from the extent of condition review.	RadCon Manager	4/30/15
3	NWP will assess the proficiency of radiological control management, radiological control technicians and rad workers.	Objective evidence of proficiency.	RadCon Manager	6/1/15

Judgment of Need (JON 35)

NWP needs to perform an extent of condition review for identified weaknesses in the radiological control program and implement corrective actions to fully implement 10 CFR 835.

Approach

NWP will conduct an extent of condition review of the Radiological Control Program including the associated training program and the requirements of 10 CFR 835 so that the issues of JONs 34 and 35 are addressed.

RJON 35				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See JON 34.			

Judgment of Need (JON 37)

NWP needs to develop a technical basis to implement continuous and reliable/redundant real-time air monitoring with appropriate automatic shift to filtration to protect the workers, the public and the environment. This needs to take into consideration the different ventilation modes, protection of workers in the U/G, and release of contaminants to the environment. The technical basis must also consider the hazardous constituents in the TRU mixed waste.

Approach

The underground ventilation system has been in the Filtration Mode since the event on February 14, 2014. Therefore, the reliability of a single CAM does not need to be addressed for shifting the ventilation mode. Evaluations of the Safety of the Situation (ESS) controls are in place requiring maintaining the ventilation system in filtration mode, the above ground Station B CAM in operation, and conducting radiological monitoring at Station A, whenever personnel are in the underground. Additionally, underground airborne monitoring is conducted by the radiological control program. Leakage past the bypass dampers has been addressed by applying high density foam to the dampers.

RJON 37				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
1	NWP shall develop an ESS requiring use of the Filtration Mode and operation of the Station B CAM.	Approved ESS by the CBFO.	Nuclear Safety Manager	Complete
2	Implement the ESS controls.	Implementation verification review.	RadCon Manager	Complete
3	NWP shall apply high density foam to the bypass dampers to reduce leakage.	Completed bypass damper work package.	RadCon Manager	Complete
4	NWP will develop a technical basis for monitoring airborne radiological activity in the underground.	Approved technical basis document.	RadCon Manager	Complete
5	NWP will implement radiological controls for airborne radioactivity in the underground.	Objective evidence that the controls were implemented.	RadCon Manager	4/30/15

Judgment of Need (JON 38)

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

Approach

NWP has committed to actions to implement a fully integrated contractor assurance system in the Salt Haul Fire CAP, JON 23.

RJON 38				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See the Salt Haul Fire CAP, JON 23.			

Judgment of Need (JON 39)

NWP needs to establish and implement line management oversight programs and processes that:

- Meet the requirements of DOE O 226.1B, *Implementation of Department of Energy Oversight Policy,* and hold personnel accountable for implementing those programs and processes.
- Implement effective contractor assurance processes to emphasize conduct of operations, maintenance, radiological protection, nuclear safety, emergency management, and safety culture.
- Implement a Contractor Assurance System to ensure that actions from prior assessments are implemented to prevent or minimize recurrence of identified deficiencies.
- Include self-assessments by knowledgeable, qualified subject matter experts within the various safety management programs.

Approach

NWP has committed to the implementation of a fully integrated contractor assurance system, including the implementation of a line management oversight program, in the Salt Haul Fire CAP, JON 23.

RJON 39				
Number	**Action**	**Deliverable**	**Action Owner**	**Due Date**
	See the Salt Haul Fire CAP, JON 23.			