



Allen, Pam, NMENV

From: Maestas, Ricardo, NMENV
Sent: Wednesday, April 08, 2015 4:00 PM
To: Allen, Pam, NMENV
Subject: FW: Action Item 95 Document
Attachments: 1407994 Bulkhead WCD _3_.pdf

From: Patterson, Russ - DOE [<mailto:Russ.Patterson@wipp.ws>]

Sent: Friday, August 08, 2014 11:56 AM

To: Bignell, Dale - CTAC; Kliphuis, Trais, NMENV; peake.tom@epa.gov; Edwards, Jonathan; Walsh, Jonathan; Perrin, Alan; Stone.Nick@epa.gov; Smith, Coleman, NMENV; brozowski.george@epa.gov; Fraass, Ron; Hardy, Russell; Veal.Lee@epamail.epa.gov; Economy.Kathleen@epa.gov; Poppell.Sam@epa.gov; Maestas, Ricardo, NMENV; Faller, Scott H.; Dunagan, Sean - SNL

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Subject: RE: Action Item 95 Document

All:

Please see the attached document which I believe satisfies Action Item 95 on the list. Thank you Stewart Jones.

Thanks everyone.

Russ

From: Patterson, Russ - DOE

Sent: Friday, August 08, 2014 10:24 AM

To: Bignell, Dale - CTAC; Kliphuis, Trais; peake.tom@epa.gov; 'Edwards, Jonathan'; 'Walsh, Jonathan'; 'Perrin, Alan'; 'Stone.Nick@epa.gov'; coleman.smith@state.nm.us; brozowski.george@epa.gov; 'Fraass, Ron'; Hardy, Russell; Veal.Lee@epamail.epa.gov; 'Economy, Kathleen (Economy.Kathleen@epa.gov)'; 'Poppell, Sam W. (Poppell.Sam@epa.gov)'; 'Maestas, Ricardo, NMENV <Ricardo.Maestas@state.nm.us> (Ricardo.Maestas@state.nm.us)'; 'Faller, Scott H.'; Dunagan, Sean - SNL

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Subject: RE: WIPP Information for Today

Below is a summary of activities. *I believe this information will be sufficient to keep you apprised of WIPP happenings for today. If anyone feels a call is required today, please let me know.* (Please note, activities and dates are subject to change. Please verify the most current dates of any information provided).

- The entry to investigate air flow issues and inspect bulkheads was accomplished the afternoon of 8/7/14. A bulkhead door (401) near the AIS had a ruptured pneumatic actuator airline which allowed the door to close. A



second bulkhead door (708) was in an open position and should have been closed. Realignment of these doors has stabilized the DP and airflow issues in the underground.

- An entry schedule is being developed to begin zone rollback entries starting next week. *No entries are planned for this weekend.*
- ESS-08 has been revised to allow corrective maintenance to the waste hoist. CBFO is reviewing this document. An electrical outage, on the surface, to perform this work is currently scheduled for Sunday 8/10/14.
- Schematics of a 90 foot carbon fiber adjustment boom with a base that will ride on a rail system that will span the waste face from rib to rib are attached. This device is for obtaining a video image in Panel 7, Room 7. The system deployment is anticipated in September.
- A photo of the sample collection device selected by the AIB and TAT is provided. Tentative dates for further Panel 7, Room 7 sample collections are 8/15 and 8/22.

Have a great weekend!

Russ Patterson
CBFO/ Compliance Certification Manager
575-234-7457

W.O.# 1407994 C

PERFORM VISUAL EXAMINATION OF BULKHEADS

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1.0 INTRODUCTION

1.1 PURPOSE

This Work Control Document (WCD) provides instructions to traverse the areas mapped in Attachment 4 to evaluate airlines, bulkhead conditions, perform necessary troubleshooting, repairing U/G ventilation leaks, reconfiguring dampers to maintain d/p and monitoring capability. At the point where configuration is restored, steps not performed are not required and work scope is satisfied.

1.2 SCOPE

This WCD will instruct Personnel to:

- Perform Waste Handling Tower (WHT)/RH Loading Room Alignment
- Mine Habitability
- Traverse underground areas:
 - Perform air-quality checks
 - Perform visual ground control assessments in all areas occupied or travelled
 - Perform radiological surveys to characterize the radiological conditions
- Perform necessary troubleshooting, mitigating U/G ventilation leaks including the following:
 - Check rubber flashing around bulkheads
 - Ensure man and vehicle doors are in normal configuration
 - Re-establish correct underground ventilation configuration
 - Reconfiguring dampers to maintain d/p and monitoring capability
 - Check ground conditions around bulkheads
 - Clearing loose obstructions to reestablish correct ventilation configuration
 - Inspection and/or isolation of airline(s)
 - Leveling of U/G surfaces (to floor, ribs etc.) to restore the configuration of seals around ventilation control equipment (such as dampers, bulkheads)
 - Check bulkhead structure for failures
 - Measure differential pressure at bulkheads
 - Verify flow direction / check for leaks using smoke tube
- Completion Activities

2.0 REFERENCES

BASELINE (DEVELOPMENTAL)

WP 04-AD3030	Pre-Job and Post-Job Reviews
WP 04-AD3011	Equipment Lockout/Tagout
WP 04-AU1007	Underground Openings Inspection
WP 12-HP3600	Radiological Work Permits
WP 12-HP1100	Radiological Surveys
WP 12-HP1500	Radiological Posting and Access Control
WP 12-HP3400	Contamination Control
WP 12-HP3500	Airborne Activity
WP 12-HP1321	Bladewerx SabreAlert Alpha Continuous Air Monitor
WP 12-IH1828	MSHA Air Quality Monitoring
WP 04-VU4605	UVFS Alarm Response
WP 04-VU1004	Remote Operations of Underground Bulkhead Regulators and Doors
WP 04-HV1061	WHB RH Area Zone 4 HVAC
WP 12-IH02-15	Heat Stress
WP 02-RC3110	Low-Level and Mixed Low-Level Waste Characterize for Off-Site Release for Disposal
PROD-439	General Hazard Analysis
ESS-2014-01	WIPP Habitability Evaluation of the Safety of the Situation
ESS-2014-03	Underground Re-Entry Evaluation of the Safety of the Situation – Phase 3
RWP 14-039	

REFERENCED (REQUIRED ON-HAND)

Industrial Hygiene Thermal Stress Evaluations
 53-P-001-W3 Underground and Shafts Compressed Air System Piping and Instrument Diagram

3.0 MATERIAL LIST

ITEM	MATERIAL DESCRIPTION	QTY	UNIT	PR/WH #
1	*Mine Phone Batteries	Min. 6	EA.	X-08-01779

*Required Material, all other as needed.

4.0 EQUIPMENT LIST

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Description
HARD HAT
SAFETY GLASSES W/ SIDE SHIELDS (Support personnel at collar)
HARD TOE SHOES
EAR PLUGS / EAR MUFFS
W65 SELF RESCUER RESPIRATOR
FULL FACED POWERED AIR PURIFYING RESPIRATOR (PAPR)
ORGANIC HEPA COMBINATION PAPR CARTRIDGES
NEGATIVE PRESSURE RESPIRATORS (Emergency Use Only)
RADIOLOGICAL PROTECTIVE CLOTHING / EQUIPMENT LISTED IN RWP

Note that some equipment and supplies listed below may be currently staged underground. Use the checklists as a self-check to ensure items are available and loaded onto wagons or carts.

EQUIPMENT CHECKLIST

Description	
Manometer	
Multi-gas Detectors	
Spare head lamps	
Spare PAPR batteries	
High Lumen Flashlights	
Hand-Held ABC Fire extinguishers	
MiniRae 3000 Photo Ionization Detector (PID)	
WIBGETi Heat Stress Monitor	
Smoke Tube w/ aspirator bulb	
Camera	
Ladder	
Hand tools (pipe wrench, hammer, etc.)	
Air Valve Locks	
Hilti Spad gun / nails / shot	
Brattice	

**RADIOLOGICAL EQUIPMENT & SUPPLY
CHECKLIST**

Description	
Bladewerx SaberAlert CAMs	
*Workplace Air Samplers	
High Volume Air Samplers	
*Lapel Samplers	
Portable Smear Counters	
Portable Survey Instruments	
Decontamination Supplies (2) Sets	
Radiological rope	
Radiological sample bags	
Placards	
Radiological bags	
Shoe covers & Gloves	
Grease pencils	
Scissors	
Tweezers	
Brattice	

*As directed by Radiological Control Manager

5.0 PRECAUTIONS

5.1 RADIOLOGICAL AIRBORNE & CONTAMINATION HAZARD

- Radiological conditions of the underground have been characterized and posted per survey data collected during previous entries. Radiological Control (Radcon) will survey and assess facilities in a step-wise sequence to avoid the spread of contamination to personnel and facilities.

5.2 GROUND CONTROL HAZARD

- Ground conditions must be evaluated upon entry into the underground as personnel traverse and perform radiological surveys using Attachment 5, Geotechnical Engineering Ground Control Guidance Information.
- Should potentially unsafe ground be encountered, necessary actions shall be taken to avoid exposure to the hazard, including use of alternate routes.

5.3 PINCH POINT HAZARD

- Personnel remain aware of pressure differentials across bulkheads and between air locks, use caution opening and closing man-doors.
- Request additional personnel when opening, closing or holding man-doors open when traveling through them.
- Personnel be aware of pinch points when closing air isolation valves.
- Keep body, feet, hands and fingers out of pinch point areas.

5.4 COMMUNICATION HAZARD

- Use clear concise 3-way communication when communicating with team members and when reporting information to the CMR.
- To enhance communications, radios may be used in line of sight application. Additionally, a reentry team member will be designated the responsibility to ensure frequent communication with the CMR, providing periodic status of the work activities.

5.5 ERGONOMIC HAZARD

- PPE (e.g., Protective clothing, respirators) and surveying equipment may cause ergonomic strains to body, stretch and return body to normal posture.
- Rotate tasks with other team members.

5.6 THERMAL STRESS (HEAT)

- Ensure you pre-hydrate with cool clear liquids.
- Wear modesty clothing that is unrestrictive and lightweight.
- PPE has been selected that is unrestrictive, breathable and lightweight as possible.
- Use the buddy system and perform frequent checks to ensure team members are "OK".
- Obtain physiological monitoring prior to and after use of respiratory protection.
- Wet Bulb Global Temperature Monitoring and Evaluation of such shall be performed.

5.7 ORGANIC VAPOR HAZARD

- Certain areas of the mine are known to contain airborne organic vapors, to include Carbon Tetrachloride, Trichloroethylene, and 1,1,1-Trichloroethane.
- Although concentrations are expected to be low, use of combination cartridges (OV/P100) are required to protect personnel from potential organic vapor exposure.
- Organic vapor concentrations will be measured with a MiniRae 3000 PID.

5.8 FIRE HAZARD

- Carry and be familiar with current Reentry Escape Route Map.
- Each individual carry W65 self-rescuer and don at the first sign of fire.
- Each team ensure at least one hand-held ABC fire extinguisher is available in the immediate work area. Each team be familiar with self-contained self-rescuer cache locations in the mine; and don if SCSRs are retrieved.
- Personnel will perform visual inspection of condition of receptacle, plugs and grounds of power cords, and ensure Ground Fault Circuit Interrupters (GFCI) and power cords with built-in GFCI's have been tested and are satisfactory for use.
- Minimize combustibles being taken into the U/G, and ensure Fire Protection Engineer (FPE) has evaluated supplies being used.

5.9 OTHER HAZARDS

- All other hazards and required precautions will be addressed / mitigated in the listed procedures.

6.0 LIMITATIONS

6.1 The operational restrictions and interim controls of ESS-2014-01, *WIPP Habitability Evaluation of the Safety of the Situation* ESS-2014-03, Rev. 4a is applicable to this phase of reentry. The controls of this U/G Re-entry ESS are applicable upon the first member of the Re-entry Team receiving U/G access (brassing-in) and are no longer applicable upon the last team member exiting the access process (brassing-out) for each U/G re-entry. The following Operational Restrictions apply:

- [] 6.1.1 Do not enter WASTE HANDLING MODE in the UNDERGROUND.
- [] 6.1.2 Do not operate any U/G liquid fueled vehicles.
- [] 6.1.3 Do not operate the Underground Mine Ventilation System in any mode other than Filtration Mode.
- [] 6.1.4 Do not enter the U/G ventilation exhaust drift. For these activities, this is defined as:
 - Panel 7, Room 7, S-2180 to E-300
 - For Panel 6, South in W-170, from S-2750/W-170 to S-3650 and East in S-3650 from S-3650/W-170 to E-300
 - South of S-3080
 - E-300 to the Exhaust Shaft
- [] 6.1.5 If any of the differential pressure readings identified below reach the alarm value, the CMR will notify the Re-entry Team to exit the U/G.
 - PDAH-056-002/006 MOD EFF. FILTER HEPA UNIT 41-B-856/857 CLOGGED
 - PDAH-056-003/007 HIGH EFF. FILTER HEPA UNIT 41-B-856/857 CLOGGED
 - PDAH-056-004/008 1st HEPA FILTER HEPA UNIT 41-B-856/857 CLOGGED
 - PDAH-056-005/009 2nd HEPA FILTER HEPA UNIT 41-B-856/857 CLOGGED
 - 413 UVFS MOD FLTR 856/857 CLOG (CMS Point # CH5602/5610)
 - 413 UVFS HI FLTR 856/857 CLOG (CMS Point # CH5604/5612)
 - 413 UVFS 1ST HEPA 856/857 CLOG (CMS Point # CH5606/5614)
 - 413 UVFS 2ND HEPA 856/857 CLOG (CMS Point # CH5608/5616)

- [] 6.1.6 If any of the two differential pressures identified below are other than negative, the CMR will log the condition into CMR Log Book. No further action required. [ESS-2014-03-4a]
- DP Station – dp6: 313 Bulkhead
 - DP Station – dp12: 707 Bulkhead
- [] 6.1.7 If the U/G Ventilation System shuts down for any reason, the CMR will notify the Re-entry Team to exit the U/G.
- [] 6.1.8 A direct frisk of the filter will be performed at Station A every hour while personnel are in the U/G. If the results indicate activity > 2000 dpm/100cm² alpha or > 10000 dpm/100cm² beta, the CMR will notify the Re-entry Team to exit the U/G.
- 6.2 Visual Ground Control inspections will be performed by the Re-entry Team as they progress through the U/G. If the results of these visual inspections reveal an unsafe condition in the U/G as prescribed in the WCD, the U/G Re-entry Team Lead will take actions to re-route the Re-entry Team or instruct them to exit the U/G.
- 6.3 No physical ground control actions (e.g., scaling, barring down bad ground, etc.) are to be performed under this WCD.
- 6.4 The Reentry Team Leader(s) (RTL) will ensure the Reentry team members are physically fit and properly trained to perform this phase, checking the teams' condition approximately every 15 minutes or as conditions warrant.
- [] 6.4.1 Should any member's breathing apparatus malfunction, **STOP WORK** and return to an area with a known safe atmosphere before replacing or repairing the unit.
- [] 6.4.2 If a Reentry Team member or members feel unable to continue this phase, **STOP WORK** and return to the SH Shaft station and request Hoist Operator to hoist the member(s) to the surface.
- [] 6.4.3 Reentry Team members may be replaced and **WORK RESUMED** using designated alternate personnel meeting the technical and physical qualifications to perform necessary work on the team.
- 6.5 Each RTL in the U/G will maintain direct control of their respective steps/sections during performance ensuring the required disciplines are performing their identified tasks and periodically report status of such to the CMR.
- 6.6 Radiological and ground conditions personnel will be present during all phases of this reentry.
- 6.7 Personnel traveling through airlocks will ensure only one door is open at a time.

- 6.8 Evidence related to the underground haul truck fire incident and the fire scene shall not be disturbed.
- 6.9 Evidence related to the U/G rad event shall not be disturbed.
- 6.9.1 Entrance into Panel 7 Room 7 requires authorization from the Carlsbad Field Office (CBFO) Casey Gadbury or designee.
- 6.10 U/G access will be as normally directed in WP 04-AD3013. Personnel shall obtain an approved Underground Access Pass (UAP) issued by the Underground Controller for this activity.
- 6.11 Personnel allowed U/G is limited to 24.
- 6.12 Radiological - This WCD is to be performed in accordance with the requirements and limitations of the applicable Radiological Work Permit.
IF at any point during this Phase the SabreAlert CAM alarms
THEN evaluate the CAM Alarm for Turn-back Guidance.
- 6.13 Turn-back Guidance – The basic guidance below applies to ensure conservative decisions are implemented during performance of this WCD.
IF conditions are encountered (e.g., changing conditions, unforeseen air quality readings, radiological conditions above suspension limits, etc.) that warrant a turn-back or retreat
THEN perform the following:
- 6.13.1 Suspend work activities
- 6.13.2 Configure the facilities/area in a safe condition
- 6.13.3 Notify reentry teams/CMR via the Mine Pager Phone
- 6.13.4 Return to the SH Shaft Station
- 6.13.5 Exit the underground
- 6.13.6 Ensure Reentry Teams brass out
- 6.13.7 Notify CMR that personnel are brassed out
- 6.13.8 Suspend and/or exit this WCD

- 6.14 Air Quality – This WCD includes monitoring capabilities for air quality, If at any point air quality parameters are measured at indicated Action Limits, notify reentry teams via the Mine Pager Phone and return to the SH Shaft Station.

Parameter Measured	Action Limit*	Instrument
Carbon Monoxide	25 ppm or greater	Multi-gas detector** (e.g., ITX or MX-6)
LEL or % methane	5% LEL or 0.25% Methane or greater	
Oxygen	Less than 19.5%	
Volatile Organic Compounds*	100 ppm or greater	MiniRae 3000* (PID)
<p>*IF sustained VOC levels are greater than 20 PPM, THEN Contact IS&H for an evaluation of the reading and the location found.</p> <p>**Resetting the multi-gas detector unit may be required due to pressure differentials at different depths within the shafts. If at any point during this evolution the multi-gas detector or PID alarms, confirm the reading (e.g. pressure differential vs. actual alarm). Based on a confirmed alarm reading, notify the RTL, <u>and</u> retreat to the SH Shaft Station.</p>		

- 6.15 Thermal Stress – This WCD includes monitoring for heat stress with the WIBGET.

IF at any point WBGTi temperatures are measured at the indicated Action Limits above 27.0°,

THEN notify the RTL.

WBGTi Temp (°C)	Work / Rest Regimen
≤27.0	Continuous work
>27.0 – ≤ 28.6	Work 45 min / rest 15 min
>28.6 – ≤ 30.0	Work 30 min / rest 30 min
>30.0 – ≤ 31.0	Work 15 min / rest 45 min
>31.0	Contact IS&H

6.16 Electric Cart Use – Use of carts in the U/G for Reentry evolutions are permitted. The following pre-operational checks listed below must be satisfactory:

- Tires inflated and lug nuts in-place
- Headlights / tail lights, operational and face plates not cracked or missing
- Accelerator pedal, for smooth and non-binding movement
- Speed and directional controls
 - Brakes, both the service and parking brake
 - Steering mechanism, check the play in the steering wheel
- Fire extinguisher (charged and status indicator in the green)
- Horn
- Battery status indicator
- Data plate
- Visible structural damage to cart

[] 6.16.1 Carts with unsatisfactory pre-operational checks may not be used.

[] 6.16.2 The speed of travel will be kept to a minimum (i.e., pace of person walking) to ensure significant quantities of dust are not generated.

6.17 REQUIRED QUALIFICATIONS AND TRAINING

- Facility Shift Manager (FSM)
- Facility Operations Shift Engineer (FOSE)
- Central Monitoring Room Operator (CMRO)
- AIS / SH Hoist Operator (HO)
- Waste Handling Operations (WHO) Technicians
- Cognizant Engineer
- Industrial Safety & Hygiene (IS&H)
- PAPR/Respirator Qualified Personnel:
 - AIS Shaft Tender (Toplander)
 - SH Shaft Tender (Toplander)
 - SH Shaft Tender (Bottomlander)
 - Radiological Control Technicians (RCTs)
 - Underground Facilities Engineer (UFE) / Rover
 - Underground Mining & Ground Control Technician
 - Reentry Team Lead (RTL)

6.18 TRAINING / MEDICAL REQUIREMENTS

[] 6.18.1 Personnel entering the U/G require verification of training & qualification.

- RWT-II
- Respiratory Protection
- Physical
- Baseline Bioassay

6.19 CONTINGENCY RESPONSE STAFFING

- Emergency Service Technicians (EST)
- Emergency Response Team (ERT)
- Mine Rescue Team (MRT)
- Site Medical Nurse
- Facility Operations
- Crisis Management Team
- Work Control Planner

NOTE

Steps in this section may be performed in any order.

7.0 PREREQUISITES

- 7.1 **RTL CONDUCT** a formal, documented pre-job brief per WP 04-AD3030.
- 7.2 **RTL ENSURE** all personnel have read, understand and have signed the applicable RWP.
- 7.3 **RTL ENSURE** items shown in Section 3.0, Material List and Section 4.0, Equipment List are staged and ready for use.
- 7.4 **RTL ENSURE** the required Preventative Maintenance (PMs) for the Hoists have been performed.
- 7.5 **RTL ENSURE** operability of the decontamination trailer.
- 7.6 **RTL ENSURE** Shaft Tender/Toplander & Radcon understand the requirement to remain on post and don respiratory protection should a Shelter-in-Place protective action be required following a rad event during performance of this evolution.
- 7.7 **RTL ENSURE** Site Medical Nurse or Emergency Services Technicians perform vitals and assessment of Re-entry team members wearing respirators and documents results.
- 7.8 **RTL ENSURE** FSM has confirmed the availability of both standby diesel generators during the performance of this WCD.
- 7.9 **RTL ENSURE** Teams understands the preferred routes to travel for reentry, as well as Escape Map routes in the event of an emergency egress and are knowledgeable with the process of donning and using both the W65 Self-Rescuer and the SCSR should a fire occur in the U/G.

7.10 **RTL ENSURE** Facility Operations have performed the following: [ESS-2014-03-4a]

[] 7.10.1 Ensured RH Area Zone 4 HVAC is IN-SERVICE.

[] 7.10.2 Ensured Radcon has placed operating CAMs at the following locations:

- Waste Hoist Collar area
- Second Floor of the WHT
- CH Conveyance Loading Room
- RH Facility Cask Loading Room
- Auxiliary Air Intake

7.11 Minimized on-site personnel access. [ESS-2014-03-4a]

7.12 **RTL ENSURE** a Senior Supervisory Watch (SSW) has been designated to be present during the performance of the WCD.

SIGN-OFF RTL

7.13 **RTL ENSURE** all Prerequisites are complete.

SIGN-OFF RTL

8.0 PERFORMANCE

8.1 WASTE TOWER/RH LOADING ROOM ALIGNMENT [ESS-2014-03-4A]

- [] 8.1.1 **WHO / RE ENSURE** Transfer Shield Valve is OPEN.
- [] 8.1.2 **WHO / RE ENSURE** cover is off of Telescoping Port Shield.
- [] 8.1.3 **WHO / RE ENSURE** Door 153 is secured OPEN.
- [] 8.1.4 **RCT MONITOR** WHT CAMs for alarm conditions.
- [] 8.1.5 **IF** CAM(s) alarm,
THEN Contact the CMR.

8.2 MINE HABITABILITY ACTIVITIES

- [] 8.2.1 **IF** at any time during the performance of this WCD Bulkhead 308 d/p is no longer negative,
THEN CMRO **ADJUST** 308 Regulator louvers from the CMR per procedure WP 04-VU1004.
OR Direct Reentry team to adjust 308 Regulator louvers. [ESS-2014-03-4a]
- [] 8.2.2 **IF** at any time during the performance of this section the Waste Hoist Shaft up-casts,
THEN FSM **ENSURE** Door 142 is OPEN. [ESS-2014-03-4a]
- [] 8.2.3 Cognizant Engineer **ADJUST** RH Zone4 HVAC flow as needed to maintain d/p at Bulkhead 308.
- [] 8.2.4 **FSM DETERMINE** If the AIS and/or SH shaft needs to be uncovered **AND THEN** direct accordingly.
- [] 8.2.5 **RTL NOTIFY** CMRO upon first team member brass in
AND THEN make the following notifications: [ESS-2014-03 Rev. 4a]
 - CMRO initiate monitoring Attachment 2
 - Radcon complete initial baseline probe of Station A

SIGN-OFF RTL

SIGN-OFF CMRO

NOTE

Steps [] 8.2.6 through [] 8.2.9 will be performed in-sequence by each team;
These steps may be performed concurrently by each team.

- [] 8.2.6 **RTL ENSURE** remaining team members **BRASS IN**.
- [] 8.2.7 **RTL ENSURE** team members perform the following:
 - Donning of appropriate layers of PPE
 - Powered on equipment
 - PAPRs, if required
 - CAMs
 - Multi-gas detectors
 - PID
 - WBGTi
- [] 8.2.8 **HO TRANSPORT** team members and support materials to the Station level.
- [] 8.2.9 **PERFORM** the following at the Operating Base (SH Station):
 - Air quality, thermal stress readings
 - Communication to CMR
 - Ground control assessment by visually inspecting the ground and by using Attachment 5, Geotechnical Engineering Ground Control Guidance
 - Verifying guidance criteria is not exceeded
 - Radiological survey and configuration of postings
 - Team Check
 - Pre-operational checks on carts
 - Periodically communicate status to CMR. A status of "SAT" may be used to indicate the criteria above (e.g., ground control, rad, air quality, and heat stress) has been satisfied.

NOTE

Section 8.3 will be performed throughout the evolution as each team traverses through the mine.

8.3 REENTRY TEAMS ACTIVITIES

- [] 8.3.1 **TRAVERSE** throughout mapped areas on Attachment 4 while **PERFORMING** the following:
- A Ground control assessment by visually inspecting the ground and by using Attachment 5, Geotechnical Engineering Ground Control Guidance
 - Verifying guidance criteria is not exceeded
 - Radiological surveys and observing the requirements of the postings.
 - Verifying suspension criteria is not exceeded
 - Air quality checks
 - Verifying action limits are not exceeded
 - Heat stress (WBGTi) readings
 - Verifying action limits are not exceeded
 - Change batteries on mine pager phones as needed
 - Pre-operational checks on cart(s), if used.
 - Periodically communicate status to CMR along the travel route. A status of "SAT" may be used to indicate the criteria above (e.g., ground control, rad, and air quality) has been satisfied.

NOTE

Section 8.4 and 8.5 may be performed concurrently.

8.4 TEAM-1 AIRLINE INSPECTION/ISOLATION ACTIVITIES**WARNING**

Noise Hazard

- [] 8.4.1 **ENSURE** ear plugs are worn while inspecting and/or isolating the airline(s).
- [] 8.4.2 **INSPECT** airline(s) in the N-300 area for leaks.
- [] 8.4.3 **IF** air leak is found,
THEN report location of leak to CMR.
- [] 8.4.4 **COORDINATE** with CMR in determining location of air valve(s) to isolate the air using 53-P-001-W3 Underground and Shafts Compressed Air System Piping and Instrument Diagram drawing.

CAUTION

Air isolation upstream of the air supplying Control Bulkhead 401 may cause doors to become un-operable and abruptly close.

- [] 8.4.5 **IF** isolation of air is Up-stream of BH401
THEN Chain doors OPEN.

WARNINGElevated Work AND Air Pressure Hazard

- [] 8.4.6 **ENSURE** ladder is secured to prevent tipping, or request a team member to hold ladder.
 - [] 8.4.6.1 The member climbing the ladder shall use both hands while climbing the ladder and request tools to be handed to them.
- [] 8.4.7 **ENSURE** safety glasses with side shields are worn to protect eyes.
- [] 8.4.8 **ADJUST** (to close) the identified isolation valve(s).
- [] 8.4.9 **LOCKOUT** and/or **TAGOUT** the isolation valve(s) per WP 04-AD3011.
- [] 8.4.10 **RETURN** to Operating Base.

8.5 TEAM-2 BULKHEAD INSPECTION/CONFIGURATION ACTIVITIES

- [] 8.5.1 **INSPECT** the identified bulkheads in Step [] 8.5.2 to the criteria below:
 - Check rubber flashing around the bulkhead
 - Preparing surfaces to restore configuration required
 - Check dampers
 - Closing and/or obtaining configuration required
 - Check BH structure for failures
 - Clearing loose obstructions
 - Check man doors and vehicles doors positions
 - Closing and/or obtaining configuration required
 - Check ground conditions
 - Integrity
 - Cracks/slabs
 - Use a smoke tube to check for leaks/verify flow
- [] 8.5.1.1 **DOCUMENT** as-found / as-left conditions in Work Status Log.
- [] 8.5.1.2 **IF** abnormal configuration of ventilation controls are found, **THEN** contact COG Engineer for direction.

[] 8.5.2 Bulkheads to be inspected / configured:

- BH 443 and BH 502 at Switch Station 1 (S90/E25)
- BH 309 (W30/S400)
 - **CHECK** operation of Muffin fans
- BH 320 and BH 319 (S700)
- BH 313 (S1000/E55)
 - **CHECK** differential pressure
 - **REPORT** manometer readings to the CMR.
- BH 324 (S1300/E130)
 - **CHECK** differential pressure.
 - **REPORT** manometer readings to the CMR.
- BH 327 (S1600/E140)
- BH 525 and BH 524 (S1950)
- BH 708 (W30/S2050)
- BH 415 and 416 (E140/S600)
 - **CHECK** differential pressure
 - **REPORT** digital DP gage against the magnehelic reading
- BH 308 (S400/E280)
 - **LOOK** through open louvers (308B) to see if back draft dampers are open.
- BH 309 (Waste Station)
- BH 310 and 303 (E140/S130)
 - **CHECK** differential pressure
 - **REPORT** digital DP gage against the magnehelic reading

[] 8.5.3 **RETURN** to Operating Base.

8.6 COMPLETION ACTIVITIES

- 8.6.1 **COMMUNICATE** status to CMR upon completion of the traverse to the operating Base
 - 8.6.1.1 **HO TRANSPORT** Reentry teams to the surface after they arrive at Operating Base (SH Station).
- 8.6.2 **RTL ENSURE** upon the last person **BRASSING OUT** the following notifications are made: [ESS-2014-03 Rev. 4a]
 - CMRO terminate monitoring Attachment 2
 - Radcon perform final probe of Station A

SIGN-OFF RTL

SIGN-OFF CMRO

- 8.6.3 **RTL ENSURE** a Request for Disposal (RFD) is documented for this evolution.
 - 8.6.3.1 **RTL ENSURE** that the Container Inventory / Activity Log (Attachment 1 of WP 02-RC3110) is filled out with activities of each bag of waste in the U/G μ R/hr range and the weight of each bag is complete. Attach this Container Inventory/Activity Log to the RFD.
 - 8.6.4 **FSM DETERMINE** if the AIS and/or SH Shaft need to be covered, AND THEN direct accordingly.
 - 8.6.5 **RTL ENSURE** DOOR 142 is CLOSED.
 - 8.6.6 **RTL DOCUMENT** in the Work Status Log the summary of tasks completed.
- ## 8.7 POST-JOB REVIEW
- 8.7.1 **RTL CONDUCT** post-job review per WP 04-AD3030.

Attachment 1 – SIGN-OFF SHEET

PREREQUISITES

Section	Action	Initials
7.12	Senior Supervisory Watch _____	RTL_____
7.13	Ensure All Prerequisites are complete.	RTL_____
		DATE_____
		TIME_____

PERFORMANCE

Section	Action	Initials
[] 8.2.5	First Person Brass-In Attachment 2	RTL_____
		CMRO_____
[] 8.6.2	Last Person Brass-Out Attachment 2	RTL_____
		CMRO_____

PERSONNEL DATA

PRINTED NAME	SIGNATURE	INITIALS	DATE

Attachment 2

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**CMR Monitoring
[ESS-2014-03]**

To ensure compliance with ESS-2014-03, Rev. 4a, Re-Entry Evaluation of the Safety of the Situation, the following items will be monitored by a CMRO:

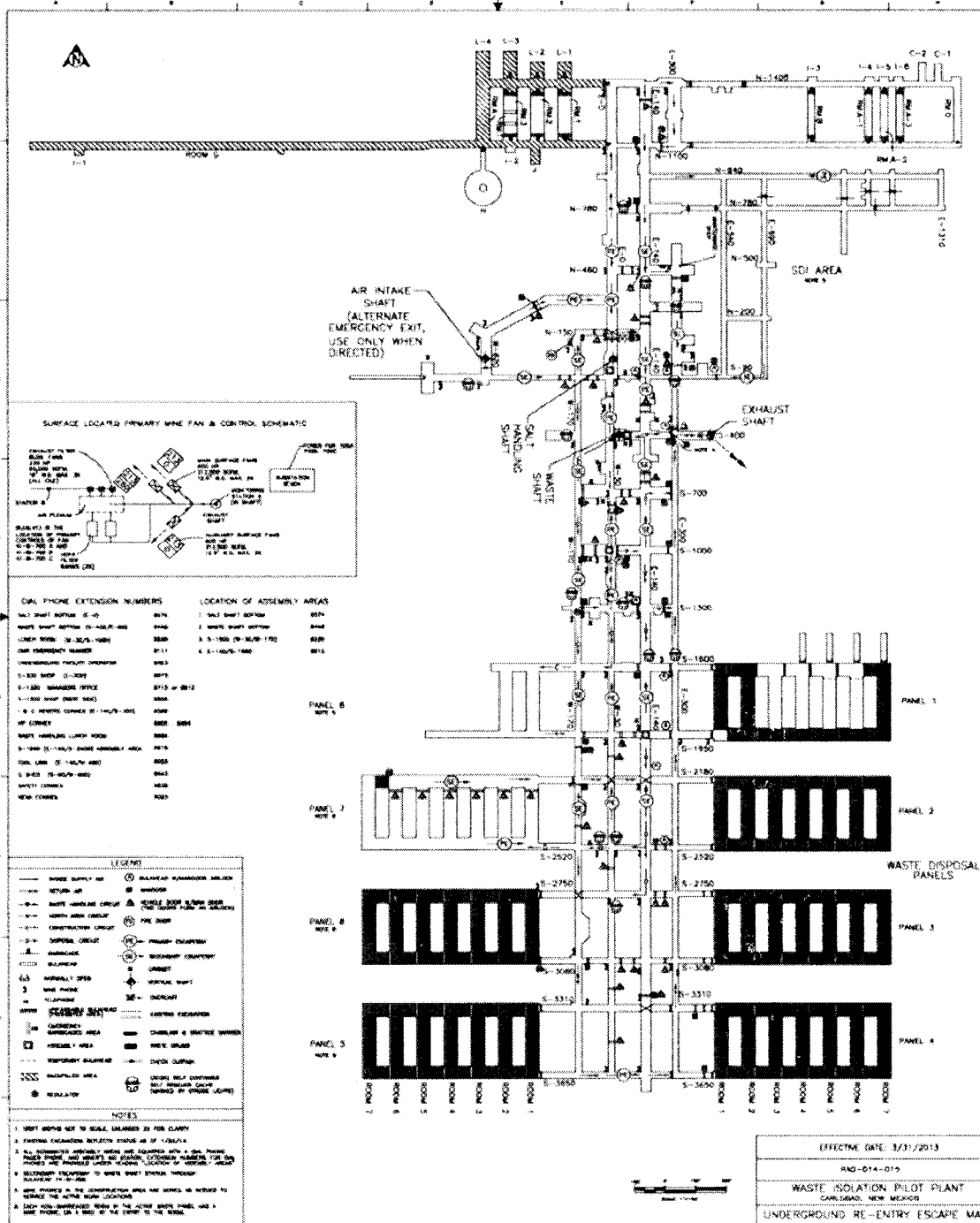
1. **IF** any of the differential pressure readings identified below reach the alarm value,
THEN NOTIFY the Re-entry Team to exit the U/G.
 - PDAH-056-002/006 MOD EFF. FILTER HEPA UNIT 41-B-856/857 CLOGGED
 - PDAH-056-003/007 HIGH EFF. FILTER HEPA UNIT 41-B-856/857 CLOGGED
 - PDAH-056-004/008 1st HEPA FILTER HEPA UNIT 41-B-856/857 CLOGGED
 - PDAH-056-005/009 2nd HEPA FILTER HEPA UNIT 41-B-856/857 CLOGGED
 - 413 UVFS MOD FLTR 856/857 CLOG (CMS Point # CH5602/5610)
 - 413 UVFS HI FLTR 856/857 CLOG (CMS Point # CH5604/5612)
 - 413 UVFS 1ST HEPA 856/857 CLOG (CMS Point # CH5606/5614)
 - 413 UVFS 2ND HEPA 856/857 CLOG (CMS Point # CH5608/5616)
2. **IF** the differential pressure for the Waste Hoist Tower alarms,
THEN CMRO LOG the condition into the CMR Log Book. No further action required. [ESS-2014-03 Rev.4a]
 - DP Station – dp6: 313 Bulkhead
 - DP Station – dp12: 707 Bulkhead
3. **IF** the U/G Ventilation System shuts down for any reason,
THEN NOTIFY the Re-entry Team to exit the U/G.
4. A direct frisk of the filter will be performed at Station A every hour while personnel are in the U/G.
IF the reported results indicate activity > 2000 dpm/100cm² alpha or > 10000 dpm/100cm² beta,
THEN NOTIFY the Re-entry Team to exit the U/G.

SIGN-OFF CMRO

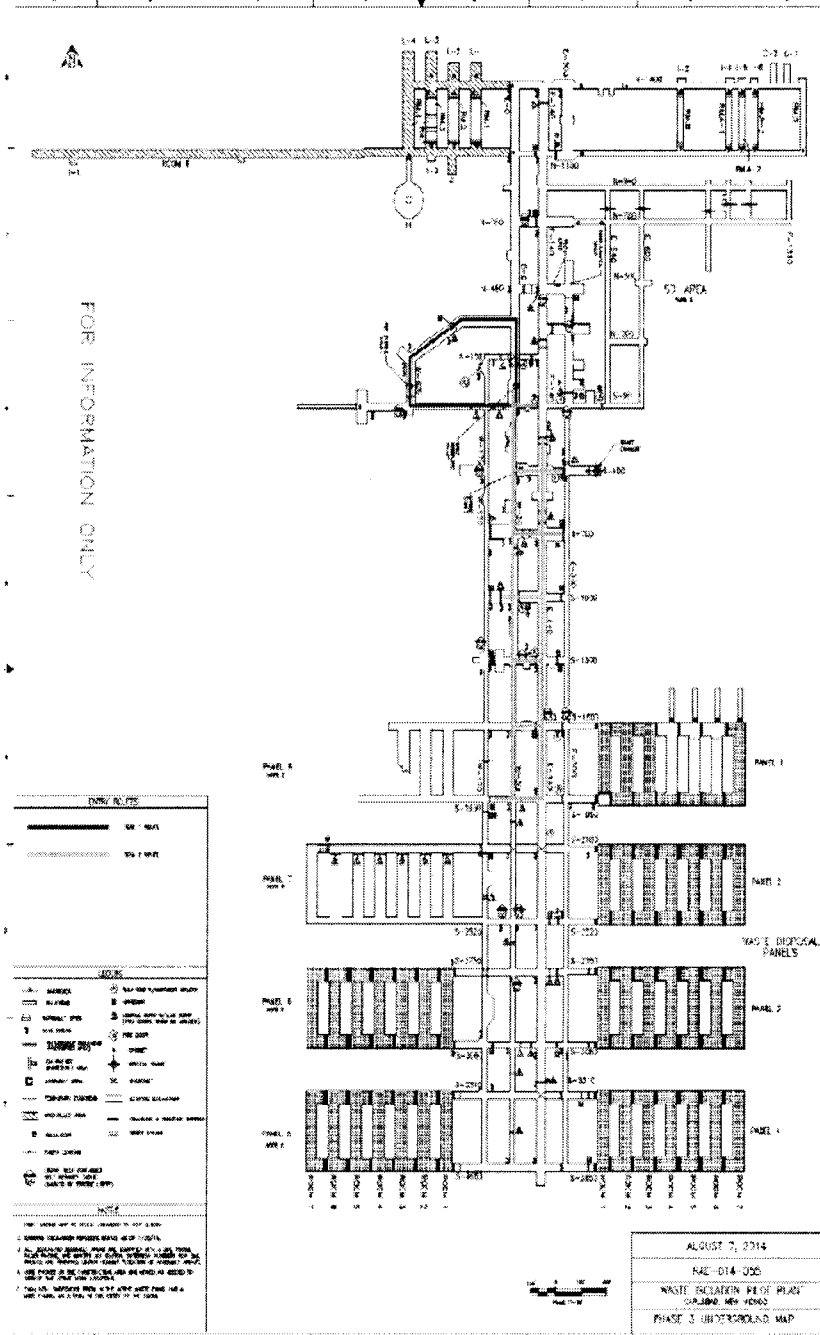
Attachment 3

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Reentry Escape Route Map



Phase 3 Underground Map



Attachment 5

Geotechnical Engineering Ground Control Guidance Information

Geotechnical Engineering Ground Control Guidance Information

	Drift Width (ft)	Roof Beam		Weight of Roof Beam (lb/linear-foot)	Resin-anchored rock bolts per 25 linear feet of drift to maintain safety factor of 1.5	
		Thickness (ft)	Pattern(s)		Min. Intact	Max. Failed
		(ft)				
E0 Drift						
N0 (Salt Shaft) to N150	24	N/A		N/A	N/A	
N150 to N300	25	8.3	6x5	28013	23	13
N300 to N450	25	7.3	6x5	24638	21	15
N450 to N780	25	6.5	6x5	21938	18	18
N780 to N1100	25	6.5	6x5	21938	18	18
N1100 to N1400	25	6.5	6x5	21938	18	18
E140 Drift						
N1400 to N1100	25	6.4	6x5	21600	18	18
N1100 to N780	25	8.1	6x5	27338	23	13
N780 to N450	25	8.0	6x5	27000	23	14
N450 to N150	25	8.0	6x5	27000	23	14
N150 to N450	25	8.0	6x5, 5x5	27000	23	39
N150 to S90	25	8.3	6x5, 5x5	28013	23	38
S90 to S400	25	8.3	6x5, 5x5	28013	23	38
S400 to S700	25	6.0	6x6, 6x6	20250	17	44
S700 to S1000	25	4.2	5x5*	14175	12	18
S1000 to S1300	25	5.8	5x5, 5x5	19575	16	34
S1300 to S1600	25	5.9	5x6, 5x5	19913	17	41
S1600 to S1950	25	5.9	5x6, 5x5	19913	17	44
S1950 to S2180	25	5.7	5x6, 5x5	19238	16	45
S2180 to S2520	25	6.0	6x5, 6x5	20250	17	49
S2520 to S2750	25	5.4	6x5, 6x5	18228	15	51
S2750 to S3080	25	5.7	6x5, 5x5	19238	16	50
W30 Drift						
S90 to S700	20	8.6	5x5	23220	19	11
S700 to S1000	20	8.6	5x5, 5x5	23220	19	42
S1000 to S1300	20	7.7	5x5, 6x5	20790	17	44
S1300 to S1600	20	8.3	5x5, 6x5	22410	19	42
S1600 to S1950	20	8.1	5x5, 6x5	21870	18	43
S1950 to S2180	20	7.9	5x5, 6x5	21330	18	43
S2180 to S2520	20	7.5	5x5, 6x5	20250	17	44
S2520 to S2750	20	6.9	5x5, 6x5	18495	15	46
S2750 to S3080	20	6.1	5x5, 6x5	16538	14	47

Attachment 5

Geotechnical Engineering Ground Control Guidance Information

Geotechnical Engineering Ground Control Guidance Information

Drift Width (ft)	Roof Beam Thickness (ft)	Pattern(s)	Weight of Roof Beam (lb/linear-foot)	Resin-anchored rock bolts per 25 linear feet of drift to maintain safety factor of 1.5	
				Min. Intact	Max. Failed
W170 Drift					
S90 to S90	14	8.0	Mechanical		10
S90 to S400	14	7.8	5x5	13230	11
S400 to S700	14	5.5	5x5	10395	9
S700 to S1000	14	6.6	5x5	12474	10
S1000 to S1300	14	8.9	5x5	16821	14
S1300 to S1600	14	6.5	5x5	16065	13
S1600 to S1950	14	8.8	5x5	16632	14
S1950 to S2180	14	8.0	5x5	15120	13
S2180 to S2520	14	7.9	5x5	14931	12
S2520 to S2750	14	7.9	5x5	14931	12
S2750 to S3080	14	5.7	5x5	10679	9
North Cross Drifts					
N460 from E140 to E0	25	7.8	5x5*	26325	23
N780 from E140 to E0	14		Mechanical		10
N1100 from E140 to E0	14		Mechanical		10
N1400 from E140 to E0	14		Mechanical		10
N1100 from E300 to E140	14		Mechanical		10
N1400 from E300 to E140	14		Mechanical		10
E200 Drift					
N1400 to N1100	25	6.1	5x5	20588	17
N460 to N250	25	8.0	4x5	27000	23
N250 to S90	25	8.0	5x5	27000	23
N150 Drift					
E140 to E0	14	8.0	Mechanical	15120	13
S90 Drift					
S40 to S90	32	8.0	n/a	34560	29
E0 to E140	12	8.0	n/a	12960	11
W30-W170	14	8.0	n/a	15120	13
W170-W520	14	9.0	Mechanical	17010	14
S400 Drift					
E140 to E300	21	8.0	5x5*	22680	19
S700 Drift					
E140 to W30	20	8.0	5x5*	21600	18

Attachment 5

Geotechnical Engineering Ground Control Guidance Information

Drift Width (ft)	Roof Beam		Weight of Roof Beam (lb/linear-foot)	Resin-anchored rock bolts per 25 linear feet of drift to maintain safety factor of 1.5	
	Thickness (ft)	Pattern(s)		Min. Intact	Max. Failed
S1600 Drift					
W30 to W170	20	8.0	5x5"	21900	18
S1900 Drift					
W30 to E140	20	8.0	5x5"	21600	18
W30 to W170	20	8.0	5x5"	21600	18
S2520 Drift					
E140 to W30	20	8.0	5x5"	21600	18
W30 to W170	20	8.0	5x5"	21600	18
W170 to Room 7 Waste Stack	20	8.0		21600	N/A
S2730 Drift					
E140 to W30	20	8.0	5x5"	21600	18
W30 to W170	20	8.0	5x5"	21600	18
W170 to Room 1	20	8.0		21600	n/a
AIS Access Drift					
E3-W30 to N135	25	8.0	6x6	27000	23
N135-W620 to AIS	25	8.0	6x6	27000	23
S3000 Drift					
E140 to W30	20	5.4	5x5"	14580	12
<p>Note:</p> <ul style="list-style-type: none"> Avoid walking under clusters of broken roof bolts. Avoid walking under segmented blocks of ground that are not supported. Failed rock bolt plates are to be counted as failed rock bolts. Roof bolt failures near the ribline are less critical as those located in the center of the drift or supporting a sagging roof beam. "n/a" and "*" designate uncertainty about the number of installed rock bolts. This will be refined as information is gathered. A conservative roof beam thickness of 8.0 is used when the actual thickness of the roof beam is uncertain. Rule of Thumb: A minimum of 1 intact Dwywid (thread bar) roof bolt per 30 square feet in older workings. 					