W.O.# 1403213 C

PHASE 3B (Activities 2-4)

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1.0 INTRODUCTION

1.1 PURPOSE

This Work Control Document (WCD) provides instructions to specific tasks that are stand alone or use a combination of operation procedures and other WCDs to traverse from SH Shaft Station to E-140 S-2100, survey the E-140 S-2180 Overcast, traverse to and survey the S-2520 W-170 intersection. Depending on conditions found at S-2520 W-170 Room 1 Panel 6 or Room 7 Panel 7 waste face will be investigated. This work is essential in order to provide a means for locating and identifying the source term to investigate the cause(s) of the February 14, 2014 radiological event in the underground.

1.2 SCOPE

This WCD will instruct Personnel to:

- Perform air-quality checks
- Perform visual ground control assessments in all areas occupied or travelled
- Perform a radiological surveys South and West of E-140 S-2100 to characterize the radiological conditions and establish radiological boundaries for the surveyed area.
- Areas traversed and surveyed may include:
    - E-140 S-2100 to the E-140 S-2180 overcast
    - E140 S-2180 to E-140 S-2750
    - Panel 6 intake (S-2750)
    - Panel 7 intake (S-2520)
    - Room 7 Panel 7 and Waste Face

2.0 REFERENCES

BASELINE (DEVELOPMENTAL)

WP 04-AD3030	Pre-Job and Post-Job Reviews
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
PROD-439	General Hazard Analysis
ESS-2014-01	WIPP Habitability Evaluation of the Safety of the Situation
ESS-2014-02	Underground (U/G) Re-Entry Evaluation of the Safety of the Situation – Phase 2B
ESS-2014-03	Underground Re-Entry Evaluation of the Safety of the Situation – Phase 3
RWP 14-023	

REFERENCED (REQUIRED ON-HAND)

Attachment 1, CMRO Monitoring
Attachment 2, Reentry Escape Route Map
Attachment 3, Phase 3 Underground Map
Attachment 4, Geotechnical Engineering Ground Control Guidance Information

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
W65 SELF RESCUER RESPIRATOR
POWERED AIR PURIFYING RESPIRATOR (PAPR)
ORGANIC HEPA COMBINATION PAPR CARTRIDGES
DRAEGER BG4 CLOSED CIRCUIT BREATHING APPARATUS
NEGATIVE PRESSURE RESPIRATORS (Emergency Use Only)
RADIOLOGICAL PROTECTIVE CLOTHING / EQUIPMENT LISTED IN RWP AS APPROVED BY INDUSTRIAL SAFETY & HYGIENE

EQUIPMENT

Description
Camera(s): Go-Pro / hand-held
Multi-gas Detectors
UG Map (Map man)
Extension cords (w/ GFCI's)
Spare head lamps
Spare PAPR batteries
High Lumen Flashlight
Hand-Held ABC Fire extinguishers
Wagon(s)
Spare wagon wheel(s)
MiniRae 3000 Photo Ionization Detector (PID)
WIBGET Heat Stress Monitor
Smoke tubes/powder gun
Medical bag
Anemometer
Ladder

RADIOLOGICAL EQUIPMENT & SUPPLIES

Description
Bladewerx SaberAlert CAMs
Workplace Air Samplers
F&J Air Sampler
High Volume Air Sampler
Lapel Samplers (4)
Hand-e-counts (2)
Portable Survey Instruments
Decontamination Supplies (2) Sets
Stanchions (8)
Radiological rope
Placards
Radiological bags
Shoe covers & Gloves
Grease pencils
Scissors
Sprayer
Brattice 4'X25'

5.0 PRECAUTIONS

5.1 AIRBORNE & CONTAMINATION HAZARD

- The underground atmosphere within the AIS and the Salt Handling Shaft has been determined to be less than non-detectable of airborne or transferable radiological contamination based on air sampling and radiological surveys performed in reentry Phases 1 & 2A. In Phases 2B and 3A the underground atmosphere has been determined to be less than non-detectable of airborne or transferrable radiological contamination based on air sampling and radiological surveys performed from the SH Shaft Station to W-30 S1950, in S-1950 to E-140 and in E-140 to S-2100. Personal protective equipment (PPE) as documented in the Radiological Work Permit (RWP) will be used to ensure personnel protection should air quality issues (e.g., radioactivity, vapors) or transferable contamination be encountered during the execution of this phase.
- Radiological conditions of the shaft stations and the underground from the SH Shaft station to E-140 S-2100 have been characterized. Radiological Control (RadCon) will survey and assess facilities in a step-wise sequence to avoid the spread of contamination to personnel and facilities.
- For Phase 3B activities RCTs will retain media (e.g., smears, swipes air monitoring filters, etc.) for future analysis.

5.2 GROUND CONTROL HAZARD

- Ground conditions must be evaluated upon entry into the underground as personnel traverse and perform radiological surveys using Attachment 4, 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 be aware of pressure differentials across bulkheads and between air locks, use caution opening and closing mandoors.
- Request additional personnel when opening, closing or holding mandoors open when traveling through them.
- 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.

5.5 ERGONOMIC HAZARD

- 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 under garments (e.g., modesty clothing) and protective clothing (e.g., OREX coveralls) that are unrestrictive and lightweight providing breathability.
- Use the buddy system and Team Lead make eye to eye contact with members when asking if they are “ok”.
- Obtain physiological monitoring prior to and after use of respiratory protection.

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) or Draeger BG4 breathing apparatus 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 with the exception of individuals wearing the BG-4 apparatus.
- Each team (Base Team/Team 1 & Survey Team/Team 2) ensure at least one hand-held ABC fire extinguisher is available in the immediate work area. Each team ensure self-contained self-rescuers are available in the immediate work area; be familiar with 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 UG, and ensure Fire Protection Engineer (FPE) has evaluated supplies being used.

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

6.0 LIMITATIONS

6.1 Facility Shift Manager (FSM) shall concur with and monitor execution of this plan.

6.2 The operational restrictions and interim controls of ESS-2014-01, *WIPP Habitability Evaluation of the Safety of the Situation* and ESS-2014-02, Rev. 1, Re-Entry Evaluation of the Safety of the Situation (ESS) remain in effect and are applicable for this phase of reentry. In addition ESS-2014-03 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:

[ ] 6.2.1 Do not enter WASTE HANDLING MODE in the UNDERGROUND.

[ ] 6.2.2 Do not operate any U/G liquid fueled vehicles.

[ ] 6.2.3 Continue to operate the Mine Ventilation System in Filtration Mode. Do not operate the system in any other mode.

[ ] 6.2.4 Do not enter the U/G ventilation exhaust drift. For these activities, this is defined as:

- Drifts south of S-3080
- E-300 to the exhaust shaft
- Panel 6, S-3080 to E-300
- Panel 7, Room 7, S-2180 to E-300

[ ] 6.2.5 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. **[ESS-2014-02-01]**

- o PDAH-056-002/006 MOD EFF. FILTER HEPA UNIT 41-B-856/857 CLOGGED
- o PDAH-056-003/007 HIGH EFF. FILTER HEPA UNIT 41-B-856/857 CLOGGED
- o PDAH-056-004/008 1st HEPA FILTER HEPA UNIT 41-B-856/857 CLOGGED
- o PDAH-056-005/009 2nd HEPA FILTER HEPA UNIT 41-B-856/857 CLOGGED
- o 413 UVFS MOD FLTR 856/857 CLOG (CMS Point # CH5602/5610)
- o 413 UVFS HI FLTR 856/857 CLOG (CMS Point # CH5604/5612)
- o 413 UVFS 1ST HEPA 856/857 CLOG (CMS Point # CH5606/5614)
- o 413 UVFS 2ND HEPA 856/857 CLOG (CMS Point # CH5608/5616)

[ ] 6.2.6 The differential pressure for the Waste Hoist Tower will be monitored in the CMR. If this alarms, the CMR will notify the Re-entry Team to exit the U/G. **[ESS-2014-02-02]**

[ ] 6.2.7 If any of the two differential pressures identified below are other than negative, the CMR will notify the Re-entry Team to exit the U/G. **[ESS-2014-02-03]**

- o DP Station – dp6: 313 Bulkhead – negative d/p
- o DP Station – dp12: 707 Bulkhead – negative d/p

[ ] 6.2.8 If the U/G Ventilation System shuts down for any reason, the CMR will notify the Re-entry Team to exit the U/G. **[ESS-2014-02-04]**

[ ] 6.2.9 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/100cm^2 alpha or > 10000 dpm/100cm^2 beta, the CMR will notify the Re-entry Team to exit the U/G. **[ESS-2014-02-05]**

[ ] 6.2.10 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. **[ESS-2014-02-06]**

6.3 Physical ground control actions (e.g., scaling, barring down bad ground, etc.) will not 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 or member(s) feel unable to continue this phase **STOP WORK**, and return to a safe 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**, 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 RTL will be the single point of communication and will maintain this document and sign-off steps as reported complete before continuing except where noted steps may be completed concurrently.

6.6 Personnel responsible for monitoring radiological and ground conditions will be present during all phases of this reentry.

6.7 Personnel traveling through bulkheads will use mandoors instead of vehicle doors to minimize possible disruption of the underground ventilation flow. Ensuring only one mandoor is open at time.

6.8 Evidence related to the underground haul truck fire incident and the fire scene shall not be disturbed.

6.9 Rented Draeger BG-4 units may only be worn by Qualified Mine Rescue Team Members.

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 Radiological - This WCD is to be performed in accordance with the requirements and limitations of the applicable Radiological Work Permit.

Should airborne radioactivity and/or transferable contamination be encountered above prescribed RWP suspension limits during the execution of this work, personnel will perform the following:

[ ] 6.11.1 Suspend work activities

[ ] 6.11.2 Mark the location and annotate activity levels

[ ] 6.11.3 RCT monitor/control the spread of contamination, including establishment of transition area(s) and radiological boundaries

[ ] 6.11.4 Configure the facilities/area in a safe condition

[ ] 6.11.5 Notify both reentry teams/FSM via the Mine Pager Phone

[ ] 6.11.6 Return to the SH Station

At any point during this Phase the SabreAlert CAM alarms **RETREAT** 100 feet and evaluate the CAM Alarm. **IF** the alarm is confirmed to be above the suspension criteria, notify both reentry teams via the Mine Pager Phone and return to the SH Shaft Station immediately.

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

Parameter Measured	**Action Level***	**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	Sustained readings of 100 ppm or greater ***	MiniRae 3000 (PID)

*If sustained VOC levels are greater than 20 PPM, Contact IS&H for an evaluation of the reading and the location found.

**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, and retreat to the SH Shaft Station.

***Does not apply to personnel wearing Draeger BG-4 units.

6.13 Thermal Stress – This WCD includes monitoring for heat stress with the WIBGET. If at any point WBGT temperatures are measured at the indicated Action Levels, notify the RTL immediately.

WBGT Temp (°C)	**Work / Rest Regimen**
<22.0	Continuous work
22.0 – 23.0	Work 45 min / rest 15 min
23.0 – 24.0	Work 30 min / rest 30 min
>24.0	Contact IS&H

6.14 REQUIRED QUALIFICATIONS AND TRAINING

- Facility Shift Manager (FSM)
- Facility Operations Shift Engineer (FOSE)
- Central Monitoring Room Operator (CMRO)
- AIS Hoist Operator (HO)
- SH Hoist Operator (HO)
- 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)
    - Mine Rescue Team Member (MRT)
    - Wastehandling Engineer (Wasteface Inspector)
    - Exploratory Team Escort
    - Reentry Team Lead (RTL)
- BG-4 Qualified Personnel:
    - Radiological Control Technicians (RCTs)
    - Mine Rescue Team Member (MRT)

6.15 OVERSIGHT STAFFING

The following organizations may participate in this evolution to perform oversight functions. Participation requires verification of training & qualification commensurate with their physical location in which the oversight is being performed (e.g., RWT-II, PAPR, etc.); and involvement with planning activities, dry-runs, physiological monitoring and pre-job briefs.

- Carlsbad Field Office (CBFO)
- Department of Energy (DOE) Accident Investigation Board (AIB)
- Defense Nuclear Facilities Safety Board (DNFSB)
- Mine Safety & Health Administration (MSHA)

6.16 CONTINGENCY RESPONSE STAFFING

- Emergency Response Team (ERT)
- Mine Rescue Team (MRT)
- Emergency Service Technicians (EST)
- 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.

_____/_____
RTL DATE

7.2 **RTL VERIFY** with FSM the Mine Ventilation System is configured in the Filtration Mode.

_____/_____
RTL DATE

7.3 **RTL VERIFY** with FSM the underground is <u>not</u> configured in the Waste Handling Mode.

_____/_____
RTL DATE

7.4 **RTL ENSURE** an RCT has been assigned to perform a direct frisk of the filter at <u>Station A</u> every hour while personnel are in the U/G and report results to the CMR.

_____/_____
RTL DATE

7.5 **RTL ENSURE** a CMR Operator has been assigned to monitor items listed in Attachment 1.

_____/_____
RTL DATE

7.6 **RTL ENSURE** all personnel have read, understand and have signed the applicable RWP.

_____/_____
RTL DATE

7.7 **RTL ENSURE** FSM has contacted Xcel Energy regarding status of the WIPP grid during the performance of this WCD.

_____/_____
RTL DATE

7.8 **RTL ENSURE** items shown in Section 3.0, Material List and Section 4.0, Equipment List are staged and ready for use.

_____/_____
RTL DATE

7.9 **RTL ENSURE** FSM has confirmed the availability of both standby diesel generators during the performance of this WCD.

_____/_____
RTL DATE

7.10 **RTL ENSURE** with FSM the approval of personnel entering the underground and such entries will be recorded in the Central Monitoring Room (CMR) log.

_____/_____
RTL DATE

7.11 **RTL ENSURE** FSM has removed the seals at both the AIS and SH Hoists.

_____/_____
RTL DATE

7.12 **RTL ENSURE** the required Preventative Maintenance (PMs) for the Hoists and Shafts are complete unless noted otherwise in the Hoist Log.

_____/_____
RTL DATE

7.13 **RTL ENSURE** HO has completed pre-operational checks on the SH Shaft and AIS hoists and has positioned the AIS conveyance approximately 20 feet above the AIS Station for emergency egress.

_____/_____
RTL DATE

7.14 **RTL ENSURE** all Ground Fault Circuit Interrupters (GFCI) and power cords with built-in GFCI's have been tested and are satisfactory for use.

_____/_____
RTL DATE

7.15 **RTL ENSURE** personnel performing this activity understand the following:

[ ] 7.15.1 Due to the current configuration and controls associated with areas in the underground, it is not feasible to complete a walk-down and Hazard Identification Summary at the actual work location.

[ ] 7.15.2 Personnel must maintain awareness for unforeseen hazards and/or unanticipated conditions. Should these be encountered during performance of work, personnel must understand their responsibility to **STOP WORK,** and ensure an adequate resolution prior to proceeding.

_____/_____
RTL DATE

7.16 **RTL ENSURE** the following items are addressed related to contingency planning / response:

[ ] 7.16.1 ERT / MRT are notified of the work being performed and on-site should a rescue/fire/medical response be required.

_____/_____
RTL DATE

[ ] 7.16.2 ESTs are notified of the work being performed and on-site should a fire/medical response be required.

_____/_____
RTL DATE

[ ] 7.16.3 Site Medical Nurse is notified of the work being performed and on-site should a medical response be required.

_____/_____
RTL DATE

[ ] 7.16.4 An identified NWP management representative is notified of the work being performed and on-standby should a medical transport be required.

_____/_____
RTL DATE

[ ] 7.16.5 Carlsbad Fire Department is notified of the work being performed and on-standby should a potentially contaminated medical transport be required.

_____/_____
RTL DATE

[ ] 7.16.6 Carlsbad Medical Center is notified of the work being performed and on-standby should a potentially contaminated medical transport be required.

_____/_____
RTL DATE

[ ] 7.16.7 FSM/FOSE is notified of the work being performed and on-standby should a facility operations/infrastructure response be required including the execution of WP 04-ED1341, Surface Backup Power Distribution as necessary.

_____/_____
RTL DATE

[ ] 7.16.8 Crisis Management Team is notified of the work being performed and on-site should an Emergency Operations Center response be required.

_____/_____
RTL DATE

[ ] 7.16.9 Work Control Planner is notified of the work being performed and on-standby should a WCD response be required.

_____/_____
RTL DATE

[ ] 7.16.10 RadCon personnel are notified of the work being performed and on-standby should a decontamination response be required. This includes ensuring operability of the decontamination trailer and capability to transport worker(s) to the decontamination trailer.

_____/_____
RTL DATE

[ ] 7.16.11 Should a Shelter-in-Place protective action be required following a rad event during performance of this evolution, personnel conducting support functions at the shaft collar (e.g., Shaft Tender /Toplander, RadCon, etc.) will remain on post and don respiratory protection as directed by the designated RadCon Job Supervisor in order to assist workers as they exit the conveyance.

_____/_____
RTL DATE

7.17 **RTL ENSURE** Site Medical Nurse or Emergency Services Technicians perform vitals and assessment of Re-entry team members and document results.

_____/_____
RTL DATE

7.18 **RTL ENSURE** Team-1 and Team-2 understand 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 both the W65 Self-Rescuer and the SCSR should a fire occur in the U/G.

_____/_____
RTL DATE

7.19 **RTL ENSURE** an IS&H representative is on-standby and evaluating air quality and heat stress readings via mine pager phone provided by the Reentry teams.

_____/_____
RTL DATE

7.20 **RTL ENSURE** underground utilities (electric, compressed air) are available for performing tasks identified in this WCD.

_____/_____
RTL DATE

7.21 **RTL DESIGNATE** a Senior Management Oversight person to be present during the performance of the WCD.

_____/_____
DESIGNATED OVERSIGHT DATE
_____/_____
RTL DATE

8.0 PERFORMANCE

8.1 PHASE 3B (Activity 2) TRANSPORT REENTRY TEAM-1 TO THE UNDERGROUND

NOTE

Personnel should complete the BRASS IN process prior to donning protective clothing.

[ ] 8.1.1 **RTL ENSURE REENTRY TEAM-1** members **BRASS IN** through the underground controller.

_____/_____
RTL DATE

[ ] 8.1.2 **RTL NOTIFY** CMRO that personnel are brassed in and initiation of Phase 3B (Activity 2).

_____/_____
RTL DATE

[ ] 8.1.3 **RTL NOTIFY** RCT at Station A that personnel are brassed in and baseline probe is needed in support of initiation of Phase 3B (Activity 2).

_____/_____
RTL DATE

[ ] 8.1.4 **RTL ENSURE REENTRY TEAM-2** members **BRASS IN** through the underground controller.

_____/_____
RTL DATE

[ ] 8.1.5 **RTL ENSURE** that baseline probe of Station A is complete.

_____/_____
RTL DATE

[ ] 8.1.6 **RTL ENSURE** HO loaded any support equipment on top deck of SH Shaft conveyance.

_____/_____
RTL DATE

[ ] 8.1.7 **RTL ENSURE** Team-1 personnel have donned the appropriate layers of required PPE described in the RWP.

_____/_____
RTL DATE

[ ] 8.1.8 **RTL ENSURE** Team-1 personnel have donned and powered on their PAPRs.

_____/_____
RTL DATE

[ ] 8.1.9 **RTL ENSURE** the following equipment is "on" and operating:

- Bladewerx SabreAlert CAM(s)
- Multi-gas detectors
- PID
- WBGT

_____/_____
RTL DATE

[ ] 8.1.10 **HO INITIATE** transport of T-1 and support materials to the Station level.

_____/_____
T-1 RTL DATE

[ ] 8.1.11 **T-1 RCT PERFORM** the following:

[ ] 8.1.11.1 Background check with µ Rem 2350. Background should be noted on survey so that any increase should be evaluated as contamination.

[ ] 8.1.11.2 Survey of the SH Shaft Station area.

_____/_____
T-1 RTL DATE

[ ] 8.1.12 **IF** T-1 RCT determines contamination is below suspension limits.

THEN N/A Step [ ] 8.1.13 and Proceed to Step [ ] 8.1.14.

_____/_____
T-1 RTL DATE

[ ] 8.1.13 **IF** Contamination is above the suspension limits

THEN RCT notify Surface RCT support of contamination levels detected via mine pager phone.

[ ] 8.1.13.1 **HO TRANSPORT** T-1 and support materials to the Collar level.

[ ] 8.1.13.2 **RTL ENSURE T-1 BRASS OUT** through the underground controller.

[ ] 8.1.13.3 **RTL NOTIFY** CMRO that personnel are brassed out and terminated performance of this portion of Phase 3B (Activity 2).

[ ] 8.1.13.4 **RTL NOTIFY** RCT at Station A that personnel are brassed out and **ENSURE** final probe is performed in support of termination of Phase 3B (Activity 2).

[ ] 8.1.13.5 **RTL ENSURE** HO has positioned hoist conveyances to approximately 400 feet below the collar.

[ ] 8.1.13.6 **RTL ENSURE** FSM has installed the seals at both the AIS and SH Hoists.

[ ] 8.1.13.7 **EXIT** this WCD.

_____/_____
T-1 RTL DATE

NOTE

Steps [ ] 8.1.14 through [ ] 8.1.18 may be performed out of sequence.
Once Team-1 establishes communication to the CMR, Team-2 should prepare to go U/G.

[ ] 8.1.14 **T-1 RTL ESTABLISH** communication with the CMR by:

- Mine pager phone
- Landline

_____/_____
T-1 RTL DATE

[ ] 8.1.15 **T-1 RTL DOCUMENT** air quality readings:

% O_2 _____ 19.5 % – 23 %	%LEL _____ No > 5% % Methane _____ No > 0.25%
CO (PPM)_____ No > 25 PPM	VOCs (PPM)_____ No > 100 PPM

_____/_____
T-1 RTL DATE

[ ] 8.1.16 **T-1 RTL DOCUMENT** thermal stress reading:

WBGT (ºc)_____

_____/_____
T-1 RTL DATE

[ ] 8.1.17 **T-1 RTL PERFORM** a check on each member and get a confirmation that they are “OK”.

_____/_____
T-1 RTL DATE

[ ] 8.1.18 **HO RETURN** the conveyance to the collar.

_____/_____
T-1 RTL DATE

8.2 PHASE 3B (Activity 2) TRANSPORT REENTRY TEAM-2 TO THE UNDERGROUND

[ ] 8.2.1 **IF** additional equipment needs to be loaded

THEN Toplander assist in loading equipment onto top deck of conveyance.

_____/_____
T-2 RTL DATE

[ ] 8.2.2 **T-2 RTL ENSURE** Team-2 personnel have donned the appropriate layers of required PPE described in the RWP.

_____/_____
T-2 RTL DATE

[ ] 8.2.3 **T-2 RTL ENSURE** Team-2 personnel have donned and powered on their PAPRs.

_____/_____
T-2 RTL DATE

[ ] 8.2.4 **HO INITIATE** transport of Team-2 and any materials and equipment to the Station level.

_____/_____
T-2 RTL DATE

[ ] 8.2.5 **T-2 RTL PERFORM** a check on each member and get a confirmation that they are “OK”.

_____/_____
T-2 RTL DATE

NOTE

Teams 1 and 2 will perform identified tasks concurrently and each will remain together (e.g., line of sight) at all times, with the exception of the HO T-1 Bottomlander and RCT who will remain at the SH Shaft Station and T-2 Exploratory Team who will have air restriction time requirements. The travel routes will be used as shown in Attachment 3, Phase 3 Underground Map.

8.3 PHASE 3B (Activity 2) TEAMS 1 AND 2 TRAVERSE TO EAST 140 SOUTH 1950

[ ] 8.3.1 **T-1 and T-2 ENSURE** the necessary equipment and supplies are loaded onto wagon(s) to traverse to E-140/S-1950 area.

_____/_____

T-2 RTL DATE

[ ] 8.3.2 **RCT PERFORM** a background check for instrumentation

_____/_____

T-2 RTL DATE

[ ] 8.3.3 **T-1 and T-2 TRAVERSE** to E-140 S-1950 area while **PERFORMING** the following:

- A Ground control assessment by visually inspecting the ground and by using Attachment 4, Geotechnical Engineering Ground Control Guidance
- Radiological surveys and observing the postings and barriers marking the limits of the surveys
    - Verifying suspension criteria is not exceeded
- Air quality checks
    - Verifying action limits are not exceeded
- Heat stress (WBGT) readings
    - Verifying action limits are not exceeded
- Periodically record ground control, radiological, heat stress and air quality data on the appropriate area map
- Communicating status to CMR via mine pager phones along the travel route
- Change batteries on mine pager phones as needed

- Turn on CAMs and Workplace Air Samplers

_____/_____

T-2 RTL DATE

[ ] 8.3.4 **T-1 RCT CONFIGURE** and **TEST** Wi-Fi capabilities of CAMS with Surface RCTs.

[ ] 8.3.5 **T-2 RTL IF** traverse to E-140 S-1950 is successful

THEN perform the following:

[ ] 8.3.5.1 Communicate via mine pager phone the traverse to E-140 S-1950 is complete.

[ ] 8.3.5.2 N/A Step [ ] 8.3.6 and **PROCEED** to Section 8.4.

_____/_____

T-2 RTL DATE

[ ] 8.3.6 **T-2 RTL IF** suspension limits are exceeded

THEN

[ ] 8.3.6.1 **RCT MARK** the location and/or annotate the levels of activity detected.

[ ] 8.3.6.2 **RCT PERFORM** hand and feet survey.

[ ] 8.3.6.3 **RCT DIRECT** team members upwind previous surveyed area, establish a radiological boundary and perform whole body frisk.

[ ] 8.3.6.4 **RCT SEGREGRATE** contaminated workers from non-contaminated workers.

[ ] 8.3.6.5 **RCT ASSIST** contaminated workers with doffing PPE / donning of clean PPE as determined by RCT for egress to the SH Shaft Station.

[ ] 8.3.6.6 **COMMUNICATE** via mine pager phone the exact location.

[ ] 8.3.6.7 **T-1 AND T-2 RETURN** to SH Shaft Station.

[ ] 8.3.6.8 **T-2 RTL COMMUNICATE** via mine pager phone or by landline to CMR upon arrival at the SH Shaft Station.

[ ] 8.3.6.9 **HO TRANSPORT** Team 2 **THEN** Team 1 to the surface via the SH Shaft.

[ ] 8.3.6.10 **RTL ENSURE T 2 BRASS OUT** through the underground controller.

[ ] 8.3.6.11 **RTL ENSURE T 1 BRASS OUT** through the underground controller.

[ ] 8.3.6.12 **RTL NOTIFY** CMRO that personnel are brassed out and terminated performance of this portion of Phase 3B (Activity 2).

[ ] 8.3.6.13 **RTL NOTIFY** RCT at Station A that personnel are brassed out and **ENSURE** final probe is performed in support of termination of Phase 3B (Activity 2).

[ ] 8.3.6.14 **RTL ENSURE** HO has positioned hoist conveyances to approximately 400 feet below the collar.

[ ] 8.3.6.15 **RTL ENSURE** FSM has installed the seals at both the AIS and SH Hoists.

[ ] 8.3.6.16 **EXIT** this WCD.

_____/_____
T-2 RTL DATE

8.4 PHASE 3B (Activity 2) T-2 EXPLORATORY TEAM MEMBERS TRAVERSE TO EAST 140 SOUTH 1950

[ ] 8.4.1 **T-2 ET ESCORT ENSURE** ET personnel have donned the appropriate layers of required PPE described in the RWP.

_____/_____
ET Escort DATE

[ ] 8.4.2 **T-2 ET ESCORT ENSURE** ET personnel have donned their BG4s but the T-bone not inserted to connect the BG4 to the face piece.

_____/_____
ET Escort DATE

[ ] 8.4.3 **T-2 ET ESCORT ENSURE** ET personnel have inserted the T-bone and opened the oxygen valve prior to entering the SH conveyance.

_____/_____
ET Escort DATE

[ ] 8.4.4 **HO TRANSPORT** ET to the Station level.

_____/_____
ET Escort DATE

[ ] 8.4.5 **T-2 ET STEP OFF** of conveyance.

[ ] 8.4.6 **T-2 ET ESCORT PERFORM** a check on each member and get a confirmation that they are “OK”.

_____/_____
ET Escort DATE

[ ] 8.4.7 **T-2 ET TRAVERSE** to E-140/S-1950.

_____/_____

ET Escort DATE

8.5 PHASE 3B (Activity 2) EXPLORATORY TEAM SURVEY EAST 140 SOUTH 2180 OVERCAST

[ ] 8.5.1 **T-2 TRAVERSE** to E-140/S-2100 area while **PERFORMING** the following:

- A ground control assessment by visually inspecting the ground and by using Attachment 4, Geotechnical Engineering Ground Control Guidance
- Radiological surveys and establishing radiological boundaries for the surveyed area with postings and barriers to mark the limits of the survey
  - Verifying suspension criteria is not exceeded
- Air quality checks
  - Verifying action limits are not exceeded
- Heat stress (WBGT) readings
  - Verifying action limits are not exceeded
- Communicating status to CMR via mine pager phones along the travel route

_____/_____

T-2 RTL DATE

[ ] 8.5.2 **T-2 RTL IF** traverse to E-140/S-2100 is successful

THEN perform the following:

[ ] 8.5.2.1 Communicate via mine pager phone the traverse to E-140/S-2100 is complete.

[ ] 8.5.2.2 N/A Step [ ] 8.5.3 and **PROCEED** to Step [ ] 8.5.4.

_____/_____

T-2 RTL DATE

[ ] 8.5.3 **T-2 RTL IF** suspension limits are exceeded

THEN

[ ] 8.5.3.1 **RCT MARK** the location and/or annotate the levels of activity detected.

[ ] 8.5.3.2 **RCT PERFORM** hand and feet survey.

[ ] 8.5.3.3 **RCT DIRECT** team members upwind previous surveyed area, establish a radiological boundary and perform whole body frisk.

[ ] 8.5.3.4 **RCT SEGREGRATE** contaminated workers from non-contaminated workers.

[ ] 8.5.3.5 **RCT ASSIST** contaminated workers with doffing PPE / donning of clean PPE as determined by RCT for egress to the SH Shaft Station.

[ ] 8.5.3.6 **COMMUNICATE** via mine pager phone the exact location.

[ ] 8.5.3.7 **T-1 AND T-2 RETURN** to SH Shaft Station.

[ ] 8.5.3.8 **T-2 RTL COMMUNICATE** via mine pager phone or by landline to CMR upon arrival at the SH Shaft Station.

[ ] 8.5.3.9 **HO TRANSPORT** Team 2 **THEN** Team 1 to the surface via the SH Shaft.

[ ] 8.5.3.10 **RTL ENSURE T 2 BRASS OUT** through the underground controller.

[ ] 8.5.3.11 **RTL ENSURE T 1 BRASS OUT** through the underground controller.

[ ] 8.5.3.12 **RTL NOTIFY** CMRO that personnel are brassed out and terminated performance of this portion of Phase 3B (Activity 2).

[ ] 8.5.3.13 **RTL NOTIFY** RCT at Station A that personnel are brassed out and **ENSURE** final probe is performed in support of termination of Phase 3B (Activity 2).

[ ] 8.5.3.14 **RTL ENSURE** HO has positioned hoist conveyances to approximately 400 feet below the collar.

[ ] 8.5.3.15 **RTL ENSURE** FSM has installed the seals at both the AIS and SH Hoists.

[ ] 8.5.3.16 **EXIT** this WCD.

_____/_____
T-2 RTL DATE

[ ] 8.5.4 **T-2 RTL DIRECT** T-2 ET to perform radiological direct probe surveys of the floor area under the overcast in accordance with WP 12-HP1100, Radiological Surveys.

- Verifying suspension criteria are not exceeded
- Recording and reporting radiological findings
- Establishing radiological boundaries for the surveyed area with postings and barriers to mark the limits of the survey as needed

_____/_____
T-2 RTL DATE

[ ] 8.5.5 **IF** contamination control is required to control airborne or transferable contamination in the S-2180 overcast area

THEN T-2 ET RCTs SPRAY down the area and **LAY DOWN** brattice as a travel path through the overcast area

OR N/A and Proceed to Step [ ] 8.5.6.

_____/_____
T-2 RTL DATE

[ ] 8.5.6 **T-2 ADVANCE** through the E-140 S2180 overcast area.

_____/_____
T-2 RTL DATE

8.6 PHASE 3B (Activity 2) TEAM 2 SURVEY TO SOUTH 2520 WEST 170 INTERSECTION

[ ] 8.6.1 **T-2 TRAVERSE** to S-2520/W-100 by progressing on intervals of not more than 100 ft. while **PERFORMING** the following:

- A ground control assessment by visually inspecting the ground and by using Attachment 4, Geotechnical Engineering Ground Control Guidance
- Radiological surveys and establishing radiological boundaries for the surveyed area with postings and barriers to mark the limits of the survey
  - Verifying suspension criteria is not exceeded
- Air quality checks
  - Verifying action limits are not exceeded
- Heat stress (WBGT) readings
  - Verifying action limits are not exceeded
- Periodically record ground control, radiological, heat stress and air quality data on the appropriate area map
- Replacing mine pager phone batteries as needed, along the travel route
- Communicating status to CMR via mine pager phones along the travel route

_____/_____
T-2 RTL DATE

[ ] 8.6.2 **T-2 RTL IF** traverse to S-2520/W-100 is successful

THEN perform the following:

[ ] 8.6.2.1 Communicate via mine pager phone the traverse to S-2520/W-100 is complete.

[ ] 8.6.2.2 N/A Step [ ] 8.6.3 and **PROCEED** to Step [ ] 8.6.4.

_____/_____
T-2 RTL DATE

[ ] 8.6.3 **T-2 RTL IF** suspension limits are exceeded

THEN

[ ] 8.6.3.1 **RCT MARK** the location and/or annotate the levels of activity detected.

[ ] 8.6.3.2 **RCT PERFORM** hand and feet survey.

[ ] 8.6.3.3 **RCT DIRECT** team members upwind previous surveyed area, establish a radiological boundary and perform whole body frisk.

[ ] 8.6.3.4 **RCT SEGREGRATE** contaminated workers from non-contaminated workers.

[ ] 8.6.3.5 **RCT ASSIST** contaminated workers with doffing PPE / donning of clean PPE as determined by RCT for egress to the SH Shaft Station.

[ ] 8.6.3.6 **COMMUNICATE** via mine pager phone the exact location.

[ ] 8.6.3.7 **T-1 AND T-2 RETURN** to SH Shaft Station.

[ ] 8.6.3.8 **T-2 RTL COMMUNICATE** via mine pager phone or by landline to CMR upon arrival at the SH Shaft Station.

[ ] 8.6.3.9 **HO TRANSPORT** Team 2 **THEN** Team 1 to the surface via the SH Shaft.

[ ] 8.6.3.10 **RTL ENSURE T 2 BRASS OUT** through the underground controller.

[ ] 8.6.3.11 **RTL ENSURE T 1 BRASS OUT** through the underground controller.

[ ] 8.6.3.12 **RTL NOTIFY** CMRO that personnel are brassed out and terminated performance of this portion of Phase 3B (Activity 3).

[ ] 8.6.3.13 **RTL NOTIFY** RCT at Station A that personnel are brassed out and **ENSURE** final probe is performed in support of termination of Phase 3B (Activity 2).

[ ] 8.6.3.14 **RTL ENSURE** HO has positioned hoist conveyances to approximately 400 feet below the collar.

[ ] 8.6.3.15 **RTL ENSURE** FSM has installed the seals at both the AIS and SH Hoists.

[ ] 8.6.3.16 **EXIT** this WCD.

_____/_____
T-2 RTL DATE

[ ] 8.6.4 **T-2 RTL DIRECT** T-2 ET approach the S-2520/W-170 intersection performing radiological direct probe surveys in accordance with WP 12-HP1100, Radiological Surveys.

- Verifying suspension criteria are not exceeded
- Recording and reporting radiological findings

_____/_____
T-2 RTL DATE

[ ] 8.6.5 **T-2 RTL DIRECT** T-2 ET to reunite with ET Escort and return to the SH Shaft station and the surface.

_____/_____
T-2 RTL DATE

[ ] 8.6.6 **IF** contamination was not detected in the S-2520/W-170 intersection

THEN perform the following:

[ ] 8.6.6.1 Communicate via mine pager phone that S-2520/W-170 intersection is non-detectable.

[ ] 8.6.6.2 N/A Section 8.7 and **PROCEED** at Section 8.8.

_____/_____
T-2 RTL DATE

8.7 PHASE 3B (Activity 3 & 4) T-2 EVALUATE PANEL 6

[ ] 8.7.1 **T-2 TRAVERSE** towards Room 1 Panel 6 intake to conduct the Panel 6 assessment via S-2520, E-140 and S-2750 by performing the following:

- A ground control assessment by visually inspecting the ground and by using Attachment 4, Geotechnical Engineering Ground Control Guidance.
- Radiological surveys and establishing radiological boundaries for the surveyed area with postings and barriers to mark the limits of the survey
  - o Verifying suspension criteria is not exceeded
- Air quality checks
  - o Verifying action limits are not exceeded
- Heat stress (WBGT) readings
  - o Verifying action limits are not exceeded
- Periodically record ground control, radiological, heat stress and air quality data on the appropriate area map
- Replacing mine pager phone batteries as needed, along the travel route
- Communicating status to CMR via mine pager phones along the travel route

_____/_____
T-2 RTL DATE

[ ] 8.7.2 **T-2 DOCUMENT** conditions of the Room 1 Panel 6 intake using video and camera.

[ ] 8.7.3 **T-2 RETURN** TO E-140/S-1950.

[ ] 8.7.4 **T-2 RTL ENSURE** the following has been performed:

- Debrief and document all team members findings/thoughts
- Direct T-1 and T-2 to assemble and prepare to traverse back to the SH Station
- Ensure RCTs collect applicable air sampling media

_____/_____
T-2 RTL DATE

[ ] 8.7.5 **T-2 RTL CONFIRM** whether installed CAMs are connected to the Wi-Fi and if workplace air samplers may remain in operation

IF CAMs or workplace air samplers need to be secured,

THEN RETURN to the SH Salt Shaft Station, **SECURING** CAMs and workplace air samplers along route.

_____/_____
T-2 RTL DATE

[ ] 8.7.6 **HO TRANSPORT** Team 2 then Team 1 to the surface via the SH Shaft.

_____/_____
T-2 RTL DATE

[ ] 8.7.7 **RTL ENSURE T 2** has **BRASSED OUT** through the underground controller.

_____/_____
T-2 RTL DATE

[ ] 8.7.8 **RTL ENSURE T 1** has **BRASSED OUT** through the underground controller.

_____/_____
T-1 RTL DATE

[ ] 8.7.9 **RTL NOTIFY** CMRO that personnel are brassed out and completion of this portion of Phase 3B (Activity 3 & 4).

_____/_____
RTL DATE

[ ] 8.7.10 **RTL NOTIFY** RCT at Station A that personnel are brassed out and **ENSURE** final probe is performed in support of completion of Phase 3B (Activity 3 & 4).

_____/_____
RTL DATE

[ ] 8.7.11 **RTL ENSURE HO** has positioned hoist conveyances to approximately 400 feet below the collar.

_____/_____
RTL DATE

[ ] 8.7.12 **RTL ENSURE** FSM has installed the seals at both the AIS and SH Hoists.

_____/_____
RTL DATE

[ ] 8.7.13 **PROCEED** to Section 8.9.

8.8 PHASE 3B (Activity 3 & 4) TRAVERSE TO ROOM 7 PANEL 7

[ ] 8.8.1 **T-2 TRAVERSE** to the Room 7 Panel 7 S-2520 intersection by progressing on intervals of not more than 100 ft. while **PERFORMING** the following:

- A ground control assessment by visually inspecting the ground and by using Attachment 4, Geotechnical Engineering Ground Control Guidance.
- Radiological surveys and establishing radiological boundaries for the surveyed area with postings and barriers to mark the limits of the survey
  - o Verifying suspension criteria is not exceeded
- Air quality checks
  - o Verifying action limits are not exceeded
- Heat stress (WBGT) readings
  - o Verifying action limits are not exceeded
- Periodically record ground control, radiological, heat stress and air quality data on the appropriate area map
- Replacing mine pager phone batteries as needed, along the travel route
- Communicating status to CMR via mine pager phones along the travel route
- Verify configuration of Panel 7 ventilation controls.

_____/_____
T-2 RTL DATE

[ ] 8.8.2 **T-2 RTL IF** traverse to Room 7 Panel 7 is successful

THEN N/A Step [ ] 8.8.3 AND **PERFORM** the following:

[ ] 8.8.2.1 Communicate via mine pager phone the traverse to Room 7 Panel 7 is complete.

_____/_____
T-2 RTL DATE

[ ] 8.8.3 **T-2 RTL IF** suspension limits are exceeded

THEN

[ ] 8.8.3.1 **RCT MARK** the location and/or annotate the levels of activity detected.

[ ] 8.8.3.2 **RCT PERFORM** hand and feet survey.

[ ] 8.8.3.3 **RCT DIRECT** team members upwind previous surveyed area, establish a radiological boundary and perform whole body frisk.

[ ] 8.8.3.4 **RCT SEGREGRATE** contaminated workers from non-contaminated workers.

[ ] 8.8.3.5 **RCT ASSIST** contaminated workers with doffing PPE / donning of clean PPE as determined by RCT for egress to the SH Shaft Station.

[ ] 8.8.3.6 **COMMUNICATE** via mine pager phone the exact location.

[ ] 8.8.3.7 **T-1 AND T-2 RETURN** to SH Shaft Station.

[ ] 8.8.3.8 **T-2 RTL COMMUNICATE** via mine pager phone or by landline to CMR upon arrival at the SH Shaft Station.

[ ] 8.8.3.9 **HO TRANSPORT** Team 2 **THEN** Team 1 to the surface via the SH Shaft.

[ ] 8.8.3.10 **RTL ENSURE T 2 BRASS OUT** through the underground controller.

[ ] 8.8.3.11 **RTL ENSURE T 1 BRASS OUT** through the underground controller.

[ ] 8.8.3.12 **RTL NOTIFY** CMRO that personnel are brassed out and terminated performance of this portion of Phase 3B (Activity 3 & 4).

[ ] 8.8.3.13 **RTL NOTIFY** RCT at Station A that personnel are brassed out and **ENSURE** final probe is performed in support of termination of Phase 3B (Activity 3 & 4).

[ ] 8.8.3.14 **RTL ENSURE** HO has positioned hoist conveyances to approximately 400 feet below the collar.

[ ] 8.8.3.15 **RTL ENSURE** FSM has installed the seals at both the AIS and SH Hoists.

[ ] 8.8.3.16 **EXIT** this WCD.

_____/_____
T-2 RTL DATE

CAUTION

Potential for sharps in area of Waste Face due to possible drum eruption.

[ ] 8.8.4 **T-2 OBSERVE** area up to waste face for potential sharp objects that may tear shoe covers and **AVOID** stepping on sharps.

[ ] 8.8.5 **T-2 INSTRUCT** members to not enter into debris field of sharps.

WARNING

Personnel may be exposed to falling from an elevated work area.

[ ] 8.8.6 **T-2 RTL ENSURE** that any member standing six feet or higher on a ladder that a second member hold the ladder to prevent tipping and the member climbing the ladder uses both hands.

[ ] 8.8.7 **T- 2 RTL DIRECT** T-2 to approach the Room 7 Panel 7 Waste Face performing radiological direct probe surveys in accordance with WP 12-HP1100, Radiological Surveys.

- Verifying suspension criteria are not exceeded.
- Recording and reporting radiological findings
- Establishing radiological boundaries for the surveyed area with postings and barriers to mark the limits of the survey.
- Documenting conditions at the Room 7 Panel 7 Waste Face using video and camera.

_____/_____
T-2 RTL DATE

[ ] 8.8.8 **T-2 RETURN** TO E-140/S-1950.

[ ] 8.8.9 **T-2 RTL ENSURE** the following has been performed:

- Debrief and document all team members findings/thoughts
- Direct T-1 and T-2 to assemble and prepare to traverse back to the SH Station
- Ensure RCTs collect applicable air sampling media

_____/_____
T-2 RTL DATE

[ ] 8.8.10 **T-2 RTL CONFIRM** whether installed CAMs are connected to the Wi-Fi and if workplace air samplers may remain in operation

IF CAMs or workplace air samplers need to be secured,

THEN RETURN to the SH Salt Shaft Station, **SECURING** CAMs and workplace air samplers along route.

_____/_____
T-2 RTL DATE

[ ] 8.8.11 **T-1 and T-2 RETURN** to the SH Shaft station.

_____/_____
T-2 RTL DATE

[ ] 8.8.12 **HO TRANSPORT** Team 2 then Team 1 to the surface via the SH Shaft.

_____/_____
RTL DATE

[ ] 8.8.13 **RTL ENSURE T 2** has **BRASSED OUT** through the underground controller.

_____/_____
T-2 RTL DATE

[ ] 8.8.14 **RTL ENSURE T 1** has **BRASSED OUT** through the underground controller.

_____/_____
T-1 RTL DATE

[ ] 8.8.15 **RTL NOTIFY** CMRO that personnel are brassed out and completion of this portion of Phase 3B (Activity 3 & 4).

_____/_____
RTL DATE

[ ] 8.8.16 **RTL NOTIFY** RCT at Station A that personnel are brassed out and **ENSURE** final probe is performed in support of completion of Phase 3B (Activity 3 & 4).

_____/_____
RTL DATE

[ ] 8.8.17 **RTL ENSURE HO** has positioned hoist conveyances to approximately 400 feet below the collar.

_____/_____
RTL DATE

[ ] 8.8.18 **RTL ENSURE** FSM has installed the seals at both the AIS and SH Hoists.

_____/_____
RTL DATE

[ ] 8.8.19 **RTL ENSURE** a Request for Disposal (RFD) is documented for this evolution and contact Site Environmental Compliance (SEC) for disposal of generated waste.

[ ] 8.8.19.1 **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 UG R/hr range and the weight of each bag is complete. Attach this Container Inventory/Activity Log to the RFD.

_____/_____
RTL DATE

8.9 OPERATIONAL ACCEPTANCE

[ ] 8.9.1 **RTL DECLARE** Phase 3B complete with the successful access to the location of the radiological event.

_____/_____
RTL DATE

8.10 POST-JOB REVIEW

[ ] 8.10.1 **RTL CONDUCT** post-job review per WP 04-AD3030.

_____/_____
RTL DATE

8.11 COMMENTS

[ ] 8.11.1 **DOCUMENT** additional action or other data below:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____/_____
FSM / RTL DATE

[ ] 8.11.2 All personnel affixing initials to these work instructions **PROVIDE** the information listed in the PERSONNEL DATA table below:

PERSONNEL DATA

PRINTED NAME	SIGNATURE	INITIALS	DATE

Attachment 1 Page 1 of 2

CMR Monitoring
[ESS-2014-03]

To ensure compliance with ESS-2014-03, 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. **[ESS-2014-02-01]**

   - 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 NOTIFY the Re-entry Team to exit the U/G. **[ESS-2014-02-02]**

3. **IF** any of the two differential pressures identified below are other than negative,

   THEN NOTIFY the Re-entry Team to exit the U/G. **[ESS-2014-02-03]**

   - DP Station – dp6: 313 Bulkhead – negative d/p
   - DP Station – dp12 707 Bulkhead – negative d/p

4. **IF** the U/G Ventilation System shuts down for any reason,

   THEN NOTIFY the Re-entry Team to exit the U/G. **[ESS-2014-02-04]**

Attachment 1 Page 2 of 2

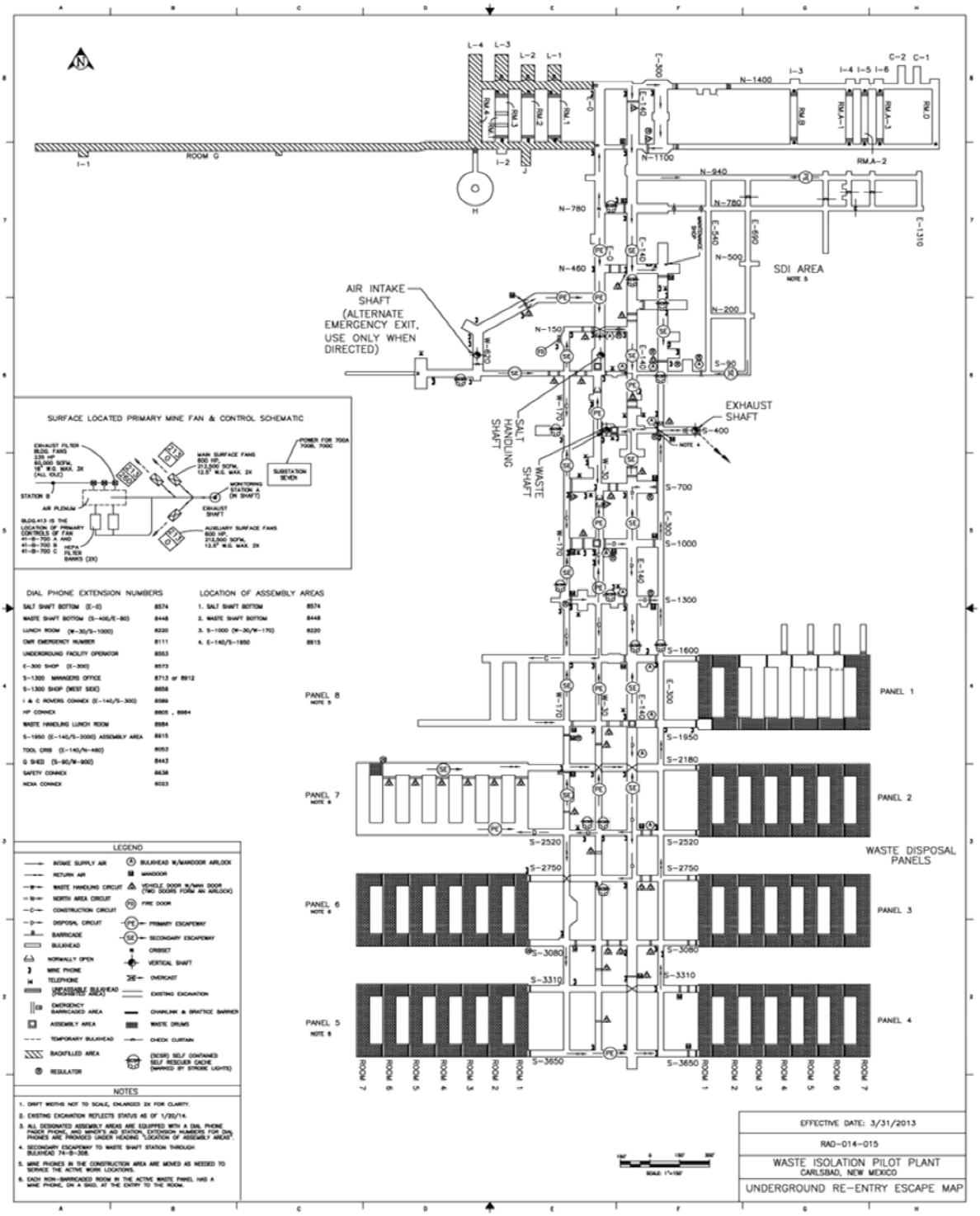
5. A direct frisk of the filter will be performed at Station A every hour while personnel are in the U/G.

   IF the reported results indicate activity > 2000 dpm/100cm^2 alpha or > 10000 dpm/100cm^2 beta,

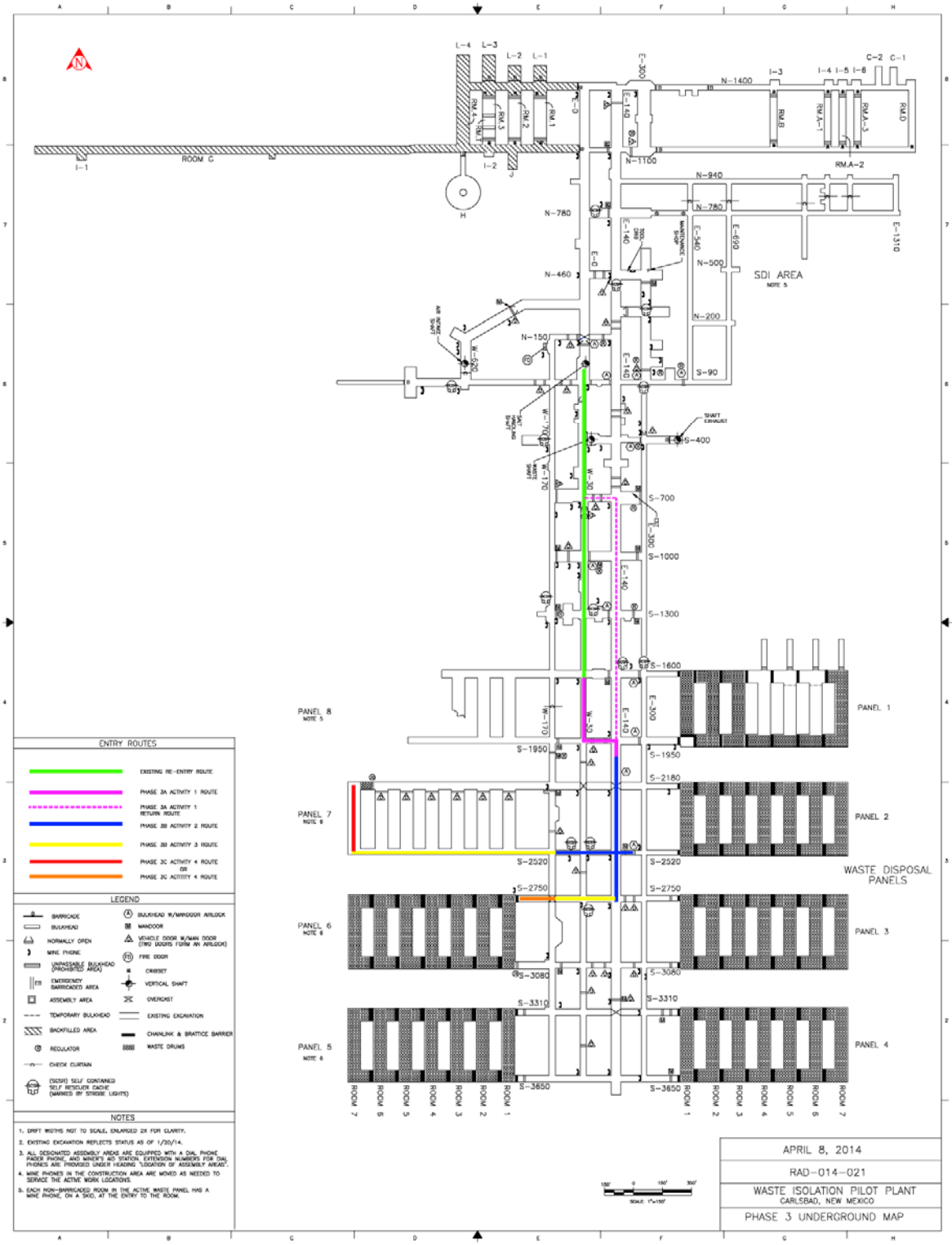
   THEN NOTIFY the Re-entry Team to exit the U/G. **[ESS-2014-02-05]**

_____/_____
CMRO DATE

Attachment 2 **Reentry Escape Route Map** Page 1 of 1



Attachment 3 **Phase 3 Underground Map** Page 1 of 1



Attachment 4 Page 1 of 3

Geotechnical Engineering Ground Control Guidance Information

Geotechnical Engineering Ground Control Guidance Information

		Geotechnical	Maintain a Safety Factor of 1.5	
	Bolt Loss History	Instrumentation	Max Acceptable Bolt Loss in Newest Roof Bolt Pattern	
Investigation Route	Roof Bolt Pattern	Feb-March 2010-2013 Maximum[1], Average[2]	Rates	(Broken Dywidag Roof Bolts per 25 linear feet of drift)	Comments
E0 Drift					
N0 (Salt Shaft) to N150	4,6, 10-ft Mechanical	1, 1	Slightly Increasing	N/A	Single roof bolt pattern installed
N150 to N300	14-ft Dywidag	1, 1	Steady	10	Single roof bolt pattern installed
E140 Drift					
N150 to S90	12-ft Dywidag	1, 1	No Data	10	Single roof bolt pattern installed
S90 to S400	12-ft Dywidag	1, 1	Slightly Increasing	10	Single roof bolt pattern installed
S400 to S700	12-ft Dywidag	1, 1	Slightly Increasing	10	Single roof bolt pattern installed
S700 to S1000	12 and 14-ft Dywidag	7, 5	Steady	10	Multiple roof bolt patterns installed.
S1000 to S1300	12 and 14-ft Dywidag	11, 6	Steady	10	Multiple roof bolt patterns installed.
S1300 to S1600	12 and 14-ft Dywidag	12, 7	Steady	10	Multiple roof bolt patterns installed.
S1600 to S1950	12 and 14-ft Dywidag	14, 11	Steady	10	Multiple roof bolt patterns installed.
S1950 to S2180	12 and 14-ft Dywidag	16, 11	Increasing	10	Multiple roof bolt patterns installed.
S2180 to S2520	12 and 18-ft Dywidag	21, 17	Decreasing	10	Multiple roof bolt patterns installed.
S2520 to S2750	12 and 14-ft Dywidag	18, 12	Steady	10	Multiple roof bolt patterns installed.
W30 Drift					
Salt Shaft to S700	4,6, 10-ft Mechanical	1, 1	Decreasing	N/A	Multiple roof bolt patterns installed.
S700 to S1000	12-ft Dywidag	1, 1	Steady	8	Single roof bolt pattern installed
S1000 to S1300	12-ft Dywidag	2, 1	Steady	8	Single roof bolt pattern installed
S1300 to S1600	12-ft Dywidag	0, 0	Decreasing	8	Single roof bolt pattern installed
S1600 to S1950	12-ft Dywidag	0, 0	Decreasing	8	Single roof bolt pattern installed
S1950 to S2180	12-ft Dywidag	1, 1	Slightly Increasing	8	Single roof bolt pattern installed
S2180 to S2520	12-ft Dywidag	2, 1	Steady	8	Single roof bolt pattern installed
S2520 to S2750	12 and 14-ft Dywidag	1,1	Steady	8	Multiple roof bolt patterns installed.
W170 Drift					
S90 to S400	4,6 and 10-ft Mechancial	0, 0	Steady	N/A	Single roof bolt pattern installed
S400 to S700	4,6 and 10-ft Mechancial	0, 0	Steady	N/A	Single roof bolt pattern installed
S700 to S1000	4,6 and 10-ft Mechancial	0, 0	Steady	N/A	Single roof bolt pattern installed
S1000 to S1300	4,6 and 10-ft Mechancial	2, 1	Slight Increase	N/A	Single roof bolt pattern installed
S1300 to S1600	4,6 and 10-ft Mechancial	0, 0	Increasing	N/A	Single roof bolt pattern installed
S1600 to S1950	14-ft Dywidag	0, 0	Increasing	6	Multiple roof bolt patterns installed.
S1950 to S2180	14-ft Dywidag	3, 1	Increasing	6	Multiple roof bolt patterns installed.
S2180 to S2520	14-ft Dywidag	1, 1	Steady	6	Multiple roof bolt patterns installed.
N150 Drift					
E140 to E0	4,6 and 10-ft Mechancial	0, 0	Decreasing	N/A	Single roof bolt pattern installed
S90 Drift					
Salt to S90	4,6 and 10-ft Mechancial	1, 1	No Data	N/A	Single roof bolt pattern installed
E0 to E140	4,6 and 10-ft Mechancial	0, 0	No Data	N/A	Single roof bolt pattern installed
W30-W170	4,6 and 10-ft Mechancial	0, 0	Steady	N/A	Single roof bolt pattern installed
W170-W620	4,6 and 10-ft Mechancial	0, 0	Steady	N/A	Single roof bolt pattern installed

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Geotechnical Engineering Ground Control Guidance Information

Geotechnical Engineering Ground Control Guidance Information

S400 Drift					
E140 to E300	4,6 and 10-ft Mechancial	1, 1	No Data	N/A	Single roof bolt pattern installed
S700 Drift					
E140 to W30	14-ft Dywidag	1, 1	Steady	8	Single roof bolt pattern installed
S1600 Drift					
W30 to W170	12 and 14-ft Dywidag	0, 0	No Data	8	Single roof bolt pattern installed
S1950 Drift					
W30 to E140	14-ft Dywidag	1, 1	Decreasing	6	Single roof bolt pattern installed
W30 to W170	12-ft Dywidag	0, 0	No Data	6	Single roof bolt pattern installed
S2520 Drift					
E140 to W30	14-ft Dywidag	0, 0	Steady	8	Single roof bolt pattern installed
W30 to W170	14-ft Dywidag	0, 0	Decreasing	8	Single roof bolt pattern installed
W170 to Room 7 Waste Stack	12-ft Dywidag	N/A	Steady	N/A	Spot Bolted Only
S2750 Drift					
E140 to W30	12 and 14-ft Dywidag	2, 1	Decreasing	8	Multiple roof bolt patterns installed.
W30 to W170	12 and 14-ft Dywidag	2, 1	Steady	8	Multiple roof bolt patterns installed.
W170 to Room 1	12 and 14-ft Dywidag	0, 0	Increasing	8	Multiple roof bolt patterns installed.
AIS Access Drift					
E0-N300 to N135	12 and 14-ft Dywidag	3, 2	Steady	10	Multiple roof bolt patterns installed.
N135-W620 to AIS	12 and 14-ft Dywidag	1, 1	Steady	10	Multiple roof bolt patterns installed.

Note:
Avoid walking under clusters of broken roof bolts.
Avoid walking under segmented blocks of ground that are not supported.
Failed roof bolt plates will be numerous.
Roof bolt failures near the ribline are not as critical as those located in the center of the drift or those supporting a sagging roof beam.
The S2750 drift and ramp areas (S2520 to S2750) are the most active. Preferred route is E140 drift ramp.
Rule of Thumb: A minimum of 1 Dywidag (threaded bar) roof bolt per 45 square feet in older workings.
Newly mined areas require little heavy ground support. Most concerns are with drummy ground and shallow separations along the back/rib.
The roof bolt losses are calculated on the newest Dywidag roof bolt pattern.
[1]Largest number of February through March broken bolts in any of the 4 years.
[2]The yearly February through March broken bolt values were averaged and the average values were rounded up.
The numbers of broken bolts are based on the Latest Generation of Bolts installed and a safety factor of 1.5.
There will likely be more roof bolts broken (exceeding our go/ no go decision point) but they will be of the previous generations for which we do not take any credit for.

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