

COPY

RADIOLOGICAL WORK PERMIT			
1. RWP NUMBER/TYPE: 14-017 / JS	2. RWP PREPARED BY AND DATE: Thompson/Chafin 3/31/14	3. VALID FROM (DATE/TIME): 4/2/2014	4. VALID TO (DATE/TIME): 5/2/2014
5. JOB SUPERVISOR: Operations/Radcon Manager		6. JOB LOCATION(S): WIPP Underground	
7. DESCRIPTION OF WORK (With Applicable Technical Work Documents and Titles) Establish a Safe Operating Base in the U/G for Re-Entry Phase 2B. Activities to include air quality checks and ground control assessments. Other activities include performing radiological surveys to characterize the radiological conditions, creating a safe operating base, and establishing radiological boundaries for the surveyed areas, install temporary ventilation stopping at 303/310 airlock, adjust 308 regulator, turning off auxiliary fans, configuring regulator louvers, hoist operations, minor maintenance, housekeeping, PMs, labeling, inspections, and walkdowns as allowed by RCT. *This RWP will require workers to sign in and acknowledge requirements daily* Work Order #1402137 Estimated Person-Hours: <u>40</u>			
8. RADIOLOGICAL SURVEY REPORT No. <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A SVR No. <u>14-0879*</u> (see continuation sheet)			
9. CONTAMINATION <input type="checkbox"/> N/A <input type="checkbox"/> UNKNOWN		HIGHEST LEVEL AND LOCATION	
ALPHA	<20 dpm/100cm ²	Location Ground Level, Conveyance & Station Level	
BETA-GAMMA	<200 dpm/100cm ²	Location Ground Level, Conveyance & Station Level	
10. AIRBORNE DAC VALUE: <input type="checkbox"/> N/A <input checked="" type="checkbox"/> UNKNOWN			
11. RADIATION <input type="checkbox"/> N/A <input type="checkbox"/> UNKNOWN		HIGHEST LEVEL AND LOCATION	
BETA	<5 mrem/hr	Location Ground Level, Conveyance & Station Level	
GAMMA (γ)	<5 mrem/hr	Location Ground Level, Conveyance & Station Level	
NEUTRON	<5 mrem/hr	Location Ground Level, Conveyance & Station Level	
12. HOT SPOTS <input checked="" type="checkbox"/> N/A <input type="checkbox"/> UNKNOWN		LOCATIONS	
		N/A	
13. MINIMUM TRAINING REQUIREMENTS <input type="checkbox"/> RAD WORKER I <input checked="" type="checkbox"/> RAD WORKER II <input checked="" type="checkbox"/> QUALIFIED RCT <input checked="" type="checkbox"/> RESPIRATORY PROTECTION <input checked="" type="checkbox"/> Other: <u>Re-entry mockup training</u>			

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14. MINIMUM PROTECTIVE CLOTHING REQUIREMENTS: N/A

<input type="checkbox"/> FULL SET OF PCS: - Coveralls - Cotton Glove Liners - Rubber Gloves - Shoe Covers - Booties - Hood - Tape as Directed by RCT	<input checked="" type="checkbox"/> DOUBLE SET OF PCS: - Two Pair Coveralls - Cotton Glove Liners - Two Pair Rubber Gloves - Two Pair Booties - Shoe Covers - Hood - Tape as Directed by RCT	SEPARATE PC ITEMS: <input type="checkbox"/> Coveralls <input type="checkbox"/> Cotton Glove Liners <input type="checkbox"/> Rubber Gloves <input type="checkbox"/> Booties <input type="checkbox"/> Shoe Covers <input type="checkbox"/> Hood <input type="checkbox"/> Lab Coat <input type="checkbox"/> Surgeons Gloves
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Other: See Special Instruction #1

15. DOSIMETRY REQUIREMENTS: <input type="checkbox"/> N/A <input checked="" type="checkbox"/> TLD (badge) <input type="checkbox"/> EPD Dose Rate On: _____ mrem/hr Dose Rate Off: _____ mrem/hr <input type="checkbox"/> EXTREMITY TLD (LOCATION) <input type="checkbox"/> Other: <u>N/A</u>	16. RELEASE SURVEY REQUIREMENTS: <input type="checkbox"/> N/A <input checked="" type="checkbox"/> EQUIPMENT/ITEM <input checked="" type="checkbox"/> PERSONNEL - WHOLE BODY FRISK <input checked="" type="checkbox"/> PERSONNEL - HAND AND FOOT FRISK <input checked="" type="checkbox"/> Other: <u>See Special Instruction #2</u>
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17. MINIMUM MONITORING REQUIREMENTS: <input type="checkbox"/> N/A <input type="checkbox"/> At Start of Job <input type="checkbox"/> Intermittent <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Completion of Job <input checked="" type="checkbox"/> Alpha <input checked="" type="checkbox"/> Beta/gamma <input type="checkbox"/> Neutron <input checked="" type="checkbox"/> Contamination <input checked="" type="checkbox"/> Radiation <input checked="" type="checkbox"/> Airborne Monitoring <input checked="" type="checkbox"/> Other: <u>See Special Instruction #3</u>	18. RESPIRATORY PROTECTION: <input type="checkbox"/> N/A <input type="checkbox"/> Negative Pressure Air Purifying Respirator (PF 50) <input checked="" type="checkbox"/> Powered Air Purifying Respirator (PF 1000) <input type="checkbox"/> Self-Contained Breathing Apparatus (PF 10,000) <input checked="" type="checkbox"/> Other: <u>See Special Instruction #4</u>
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19. RADIOLOGICAL AREAS AUTHORIZED:

<input type="checkbox"/> RADIATION AREA	<input checked="" type="checkbox"/> CONTAMINATION AREA	
<input type="checkbox"/> HIGH RADIATION AREA	<input checked="" type="checkbox"/> HIGH CONTAMINATION AREA	<input checked="" type="checkbox"/> AIRBORNE RADIOACTIVITY AREA
<input type="checkbox"/> VERY HIGH RADIATION AREA		

Other: Radiological Buffer Area upon exit

20. LIMITING CONDITIONS OF RADIATION AND CONTAMINATION:

REMOVABLE CONTAMINATION LIMITS: ALPHA: 10,000 dpm/100 cm² BETA: 100,000 dpm/100 cm²

RADIATION LIMITS: DOSE RATES: 5 mrem/hr at 30 cm from source of radiation

AIRBORNE LIMITS DAC: 180 DAC-hr** See continuation sheet & Special Instruction #5

21. SPECIAL INSTRUCTIONS:

- 1) Two pair of rubber gloves shall be worn. Inner pair of gloves shall be taped to coveralls. Hood shall be taped to respirator.
- 2) All equipment/material/tools exiting the ARA, CA, or RBA shall be surveyed by RCT prior to release. All personnel exiting the ARA/CA shall have a whole body frisk prior to doffing PPE. All personnel exiting the CA shall have a whole body frisk. All personnel exiting the RBA shall have a hand and foot frisk.

(CONTINUED ON FOLLOWING PAGE)

Continuation Sheet for Special Instructions (section 21)

- 6) Good Conduct of Radiological Work practices shall be used in the U/G by all team members to minimize dust generation, airborne contamination, and the spread of contamination. Examples include but are not limited to:
 - No shuffling of feet
 - Reduction of baggy coveralls
 - Walking in main travelways
 - Only touch or handle items that have been surveyed by RCT
- 7) 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 $>2,000$ dpm/100cm² alpha or $>10,000$ dpm/cm² beta-gamma, the CMR will notify the re-entry team to exit the U/G.
- 8) Generated radiological waste will be sealed, surveyed, and tagged by RCT prior to removal from the CA and RBA. Ensure contaminated smears and filter papers are disposed of as waste and not transported to the counting room.
- 9) Lapel Air Samplers shall be worn to monitor for potential internal exposure to team members. One Lapel Air Sampler may be used for up to six team members (seven including the wearer), with at least one Lapel Air Sampler per team.
- 10) All workers shall have submitted a baseline urine sample. Follow-up bioassay samples shall be submitted per RC Timely Order #14-006.
- 11) Should PPE become compromised (i.e., ripped or torn coveralls), suspend work and report to RCT for survey, evaluation, and possible repair.
- 12) Shoe covers shall be surveyed after approximately 100 feet have been traversed. Use extreme caution when approaching bulkhead 308. Increase surveying of shoe covers and utilize extended tools for survey instruments.
- 13) Transition areas will be established as radiological conditions are defined. Transition areas shall be comprised of:
 - Postings & Radiological Barricades
 - Step-Off Pads
 - Doffing Instructions
 - Waste Receptacles
- 14) RCT to survey the inside and outside of the PAPR facepiece for release.
- 15) RCTs shall observe the face of portable instruments for dust loading and clean/replace as necessary. RCTs shall use caution with the face of portable survey instruments on rough surfaces.

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- 16) RCTs shall review Rad Engineering survey rules of thumb regarding limitations of survey techniques and survey instruments prior to entry.
- 17) RCT to mark/designate location of first indication of contamination.
- 18) Ensure adequate transition materials (e.g., spare coveralls, gloves, shoe covers) are staged on cart and available to workers if needed.

Assumptions and Justifications

*Referenced survey 14-0879 was performed on Salt Shaft on 3/26/2014 and includes collar, shaft walls, conveyance, bonnet and station level.

**180 DAC-hr is a conservative limiting condition based on the Protection Factor of PAPR with loss of battery (50PF x 4 DAC-hr = 200).

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22. ESTIMATED COLLECTIVE DOSE: see below		
PERSON - HOURS (FROM BLOCK 7): 40	* Average dose rate: 0.05	mrem/HR
= ESTIMATED COLLECTIVE DOSE: 2 mrem		
23. ALARA SCREENING		
ALARA REVIEW COMPLETED <input checked="" type="checkbox"/> YES <input type="checkbox"/> N/A		
<i>Robert Hayes</i> ALARA COORDINATOR PRINTED NAME	<i>Robert Hayes</i> SIGNATURE	<i>4/2/14</i> DATE
24. APPROVAL FOR USE		
<i>Duane Mc Lane</i> RADIOLOGICAL CONTROL MANAGER PRINTED NAME	<i>DM</i> SIGNATURE	<i>4/2/14</i> DATE
25. JOB SUPERVISOR REVIEW		
JOB SUPERVISOR PRINTED NAME	SIGNATURE	DATE
26. PRE-JOB BRIEF COMPLETED <input type="checkbox"/> YES <input type="checkbox"/> N/A		
JOB SUPERVISOR PRINTED NAME	SIGNATURE	DATE
27. RWP CLOSEOUT:		
JS PRINTED NAME	SIGNATURE	DATE
RC MANAGER PRINTED NAME	SIGNATURE	DATE
28. POST-JOB REVIEW COMPLETED <input type="checkbox"/> YES <input type="checkbox"/> N/A		
ALARA COORDINATOR PRINTED NAME	SIGNATURE	DATE
29. POST-JOB SURVEY: <input type="checkbox"/> YES <input type="checkbox"/> N/A RAD SURVEY #: _____		
RCT PRINTED NAME	SIGNATURE	DATE

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21. SPECIAL INSTRUCTIONS (CONTINUED):

3) Continuous RCT coverage will be provided for the top lander, bottom lander, and all team members in the U/G. Air sampling (workplace and/or CAMs) shall be established at the following locations:

- Salt collar windbreak - Icam
- SabreCAM outside Bottom lander's conex (safe operating base)
- Breathing zone of team members - SabreCAM & F&J
- West-30: SabreCAMs every 300 feet, as electrical receptacles allow

CAM alarm setpoints shall not exceed 180 DAC-hr for PAPR use** (see continuation sheet) and shall not exceed 8 DAC-hr for CA use. Monitor CAM filter media frequently and change out filter media as needed due to buildup. This RWP will be terminated if any air activity is detected above established alarm setpoints on alarm-capable CAMs or probe values exceed 2700 dpm alpha or 3.6E6 dpm beta-gamma above background for PAS. In the event of a CAM alarm, work will be suspended and workers shall move to a safe, unaffected location 100 feet upwind and be surveyed by RCT. RCT shall evaluate and acknowledge the CAM alarm. If CAM alarm was due to high activity, RCT to perform a whole body frisk on workers. RCT to segregate contaminated workers from non-contaminated workers. RCT to assist with doffing of contaminated PPE and don new PPE for egress back to Salt Shaft.

4) Combination filters (HEPA & Organic) will be worn with PAPRs for initial entries and as specified per IH/RC direction for subsequent entries. Teams shall take extra batteries for PAPRs. (Note: PAPRs have a protection factor (PF) of 1000 with battery power and a PF of 50 without battery power. Consequently, the battery should only be changed if a loss of power occurs.)

5) This RWP will be terminated if transferable contamination is detected above limiting conditions on page 2, section 20. Rules of thumb: 10uR/hr is approximately equal to 10,000 dpm/100cm² alpha. When frisking, 2 times background is approximately equal to 5,000 dpm/100cm² alpha and 4 times background is approximately to 10,000 dpm/100cm² alpha. The limiting conditions apply to all areas, including PPE. Workers shall move at least 100 feet upwind to a safe location and have RCT perform a whole body frisk. RCT to segregate contaminated workers from non-contaminated workers. RCT to assist with doffing of contaminated PPE and don new PPE for egress back to Salt Shaft.

See attached continuation sheets