STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
1.	Prepare for operation. (con't)	1e. (O)(S)(QC) The QASAS/Surveillance will verify that the MAV has a current inspection using DD Form 626 (or equivalent) prior to loading the ammunition.
	NOTE: On-post movement of surety materiel within the chemical limited area will be accomplished by at least two PRP-certified personnel.	1f. (O)(S) Turn off motor vehicle ignition of MAV. Set parking brake and chock wheels.
	NOTE: Drivers of munition laden vehicles must have CDL w/ HAZMAT endorsement and valid DOT medical certificate.	
2.	Material handling/storage practices.	2a. (O)(S)(QC) Operators handling wooden pallets or boxes will wear leather or leather-palmed gloves over their butyl gloves. When operators come in contact with agent filled munitions, boxes, or pallets containing agent filled munitions or DOT bottles, operator will wear Level D (boots & gloves worn) with apron. The forklift operator will wear minimum of Level D Protective Clothing.
	WARNING: OPERATORS WILL FOLLOW PROCEDURES OUTLINED IN APPENDIX D OF THIS SOP WHEN WORKING WITH OR IN THE VICINITY OF PCP TREATED PALLETS OR BOXES.	
	NOTE: Spotter/ground guides will be utilized during all TCM forklift movements	
		2b. (O)(S)(QC) Inspect pallets/box prior to handling to ensure they are not damaged due to wood rot, missing planks. Ensure rope lifting handles are serviceable prior to use. Make sure any and all slip/trip/fall hazards are cleared from work path.
		2c (O)(S)(QC) With negative monitoring results, Level D (see Appendix B) may be worn by motor vehicle operators (MVO).
	WARNING: PALLETS REMOVED FROM STACKS OR TRUCK WILL BE LOWERED IMMEDIATELY. PALLETIZED AMMUNITION WILL BE LOWERED TO APPROXIMATELY 6 INCHES FROM THE FLOOR PRIOR TO MOVEMENT.	2d. (O)(S) Store item(s) IAW current ammunition storage drawings. Individual lots will be consolidated into the fewest number of magazines possible. There will be only one less than full (light) box and/or pallet (unit) per lot, except for 155mm ammunition. Light boxes/units will be located with the rest of the lot, in the most visible portion in the magazine possible (i.e., on the aisle and as near the door as possible). Light boxes/units will be marked with orange paint and stenciled. Light boxes will only be in the top layer and visible from the aisle.
		2e. (O)(QC) Verify and identify items by NSN and Lot Number as required on DA Form 4508 (Ammunition and Transfer Record). Inventory Personnel will physically count TCM and verify lot numbers whenever loaded onto or unloaded. **Maintain lot integrity at all times.**

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
2.	Material handling/storage practices. (con't)	2f. (O) Inventory personnel will escort all Toxic Chemical Material (TCM) movements to ensure that all DA Form 4508 and Magazine Data cards are accurate and complete. They will also perform a physical count at the origin and destination. Verification criteria will include, but is not limited to: Stock Number, Lot Number, Condition Code, Quantity, and signatures of operation personnel. Inventory personnel will grid igloos (transferring and receiving) and place magazine data card on stack or appropriate item.
3.	Modified Ammo Van (MAV)—Load/Unload. NOTE: Spotter/ground guides will be utilized during all TCM motor vehicle movements.	3a. (O)(S) Appropriate fire symbol and chemical hazard symbol(s) will be placed on each side of MAV immediately prior to loading the first item.
		3b. (O)(S) Remove fire symbol and chemical hazard symbols from MAV when last pallet is unloaded.
	WARNING: WHEN CROSS MEMBERS OR THE FORKLIFT ARE NOT IN A POSITION TO SECURE THE LOAD, A POSITIVE STOP WILL BE INSTALLED ON THE CONVEYOR ROLLERS.	3c. (O) Pallets/skids (on drip pans) will be transferred to/removed from MAV by forklift.
	WARNING: PALLETS WILL NOT BE DOUBLE STACKED.	3d. (O)(S)(QC) Ammunition will be secured/braced sufficiently to preclude movement.
	WARNING: WHEN TRANSPORTING INDIVIDUALLY BOXED MUNITIONS, SUCH AS TREATY TAGGED SAMPLES, THE BOXES WILL BE LOADED ON PALLETS AND SECURED WITH A MINIMUM OF TWO TIE-DOWN STRAPS OR BANDS; A BLOCKED/BRACED WOODEN BOX MAY BE USED IN PLACE OF PALLET.	3e. (O)(S)(QC) The loading supervisor, MVO, and QASAS/Surveillance will verify that the load is adequately blocked, braced and secure prior to closing and securing the door.
	WARNING: PERSONNEL WILL NOT RIDE IN CARGO AREA OF THE MAV WITH THE AMMUNITION.	
		3f. (O)(S) Close and secure doors when loading or unloading is completed.
		3g. (O)(S) The two-man rule applies during movement. The speed of loaded MAV will be limited to 15 mph within the CLA. Vehicles will not be operated on off-road surface. Corners (90 degrees) are taken at no more than 5 miles per hour.
4.	MAV NRT Monitoring/Leaker Isolation.	4a. (O)(S) Prior to opening the rear door and unloading, the MAV will be monitored IAW SOP PU-0000-R-491. If monitoring results are negative; open door and unload cargo and proceed to Step 5. If positive results are obtained during any phase of this operation, proceed to Step 4b.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
4.	MAV NRT Monitoring/Leaker Isolation. (con't)	4b. (O)(S)(QC) If positive results are confirmed during the MAV monitoring disconnect the monitoring line. The leaker segregation will be performed at either the shipping or receiving igloo, whichever has the most room.
		4c. (O) Position MAV on the apron of the igloo, leaving adequate room for use of MHE, if necessary.
	NOTE: Ensure the make-up air inlets are open prior to conducting filter operations.	4d. (O)(S)(QC) Personnel in Level D (gloves and mask worn) at a minimum will connect 1000 CFM Portable Filter Units to both the MAV and the igloo to begin filtering operations.
		4e. (O)(S)(QC) After a minimum of 30 minutes of filtering, the MAV will be NRT monitored to assure that filtering has lowered the readings as much as possible prior to opening the vehicle. The filter units will remain running until leaker containment has been performed or the pallets have been moved to another location under engineering controls. Steps will be positioned at the rear of the MAV to allow personnel to access the cargo area. Once personnel are in the cargo area, remove the steps to allow the forklift access to the munitions.
		4f. (O)(S)(QC) Personnel in Level B (Level A if liquid is present) will start leaker segregation in the MAV by placing plastic over each pallet (or skid/2 pallets for 155 mm pallets). If there is evidence of a liquid leaker (liquid on the item or in the drip pan), place a plastic bag over the pallet/bundle and place a flat piece of plastic on the ground at the rear of vehicle to prevent the spread of contamination. Set the pallet/bundle on the plastic. Move forklift and secure the bottom piece of plastic to the sides of the plastic bag, previously placed over the pallet/bundle, utilizing duct tape. Re-position the forklift to pick up the pallet taking care not to tear the plastic, if possible.
		4g. (O)(S)(QC) Once the plastic is in place, the pallets or bundles will be placed in the filtered igloo. Segregation of the leaking round(s) will be performed IAW Operations 9 and 10. Re-position the steps at the rear of the MAV, after the munitions have been removed from the vehicle, to allow easy exit of personnel.
	NOTE: Ensure personnel process thru the Mini Hot-Line when operation is complete.	4h. (O)(S)(QC) Once the leaking round(s) is/are containerized, it/they will be moved/stored in the permitted storage structure IAW Operation 4.
5.	Close and secure igloo.	5. (O) Close and secure igloo in accordance with Operation 3, step 6.

K. SPECIAL REQUIREMENTS: If attaching a 1000CFM filter to a magazine where monitoring indicates a negative presence of agent (such as for training purposes) personnel may perform this operation in level D mask slung and avoid processing thru the step pans.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).

L. EQUIPMENT, TOOLS, GAGES AND SUPPLIES. (See Operation 1, Paragraph L)

OPERATIONS FORMAT

A. STANDING OPERATING PROCEDURE FOR

Chemical Operations

B. OPERATION NO. 5

C. BAY NO. Igloo Storage Site

D. SOP NO. PU-0000-M-486 DATE: 12 Apr 65

E. REV NO. 34 DATE: JUL 2 2012

F. CHANGE NO. DATE:

G. OPERATION: Intrusion Detection System (IDS) Test

H. EXPLOSIVE LIMITS: UNITS Igloo Limits EXPLOSIVE LBS. Igloo Limits

I. PERSONNEL LIMITS: OPERATORS 7 TRANSIENTS: 3

J.

STEP NO.	DESCRIPTION		SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
1.	Intrusion Detection System, Semi-Annual Inspection.	1a.	(O)(S) The Interior IDS Semi-Annual Inspection requires entry into the igloo. Ensure that Operations 1-3 have been accomplished prior to entry.
	NOTE: IDS personnel may wear Level D with 7 mil butyl gloves.	1b.	(O)(S)(QC)) Personnel entering igloo will wear a minimum of Level D (boots & gloves worn) protective clothing, provided NRT monitoring with negative results is performed IAW SOP-PU-0000-R-491.
		1c.	(O) IDS Inspections will be performed by Public Works personnel using their own internal guidance.
		1d.	(O)(S)(QC) Material in storage will not be moved, handled or touched by personnel in this operation.
2.	IDS, 1-1/4", for Quarterly and After Maintenance Inspections.	2.	(O)(S)(QC) The quarterly and after maintenance inspections require simply opening the igloo door approximately one and one quarter inches and waiting for the alarm to go off to validate the IDS. Igloo monitoring is not required for the 1-1/4" IDS operation because no entry into the igloo is made. 1¼" inspections may be performed by trained TMH personnel.
	NOTE: Level D with M3 butyl gloves and M40 series mask worn are required for this inspection.		
3.	Close and secure igloo.	3.	(O) Close and secure igloo in accordance with Operation 3, step 6.

K. SPECIAL REQUIREMENTS: N/A

L. EQUIPMENT, TOOLS, GAGES AND SUPPLIES. (See Operation 1, Paragraph L)

OPERATIONS FORMAT

A. STANDING OPERATING PROCEDURE FOR

Chemical Operations

B. OPERATION NO. 6

C. BAY NO. Bldg. 491, Receiving and VCC

D. SOP NO. PU-0000-M-486 DATE: 12 Apr 65

E. REV NO. 34 DATE: JUL 2 2012

F. CHANGE NO. DATE:

G. OPERATION: Verification Inspection of Vapor Containment Chamber (VCC)

H. EXPLOSIVE LIMITS: UNITS ROUNDS: 8 BOXES: 4 EXPLOSIVE LBS. 64 LBS.

I. PERSONNEL LIMITS: OPERATORS 14 TRANSIENTS: 6

J.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
1.	Preparation of Bldg. 491/VCC.	1a. (O)(S)(QC) Verify that Bldg. 491 has a current Lightning Protection System (LPS) inspection and bonding checks have been performed IAW SOP PU-0000-R-376.
		1b. (O)(S) Post personnel and explosive limits in the bay(s) and on the VCC.
	CAUTION: If power is lost while munitions are present in Bldg. 491, personnel will evacuate the building until power is restored (by main power source or generator) and proper monitoring is re-established.	1c. (O)(S)(QC) Verify that the backup generator is operable.
		1d. (O)(S)(QC) Operators will ensure the VCC is turned on and operational daily prior to the start up of the operations. A ribbon will be placed in the front of the VCC vent to provide visual verification of the ventilation system's operational status.
		1e. (O)(S)(Q) The Industrial Hygienist will verify the primary and backup ventilation systems are operating to within airflow standards. Safety will review.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
1.	Preparation of Bldg. 491/VCC. (con't)	1f. (O)(S)(QC) Verify that all necessary MHE, tools, supplies & equipment are on hand, serviceable and set up. (Specifically including but not limited to, internal and/or external decontamination stations, drip pans, inspected single round containers (SRC) for possible leakers, containers to dispose of any possible solid/liquid contaminated waste/dunnage, conductive flooring, fire extinguishers, grounding equipment.)
	NOTE: Boot tester requires a 10 minute warm-up period prior to first use. NOTE: If boots do not test satisfactorily, clean bottom of boots thoroughly and retest.	1g. (O)(S)(QC) If required, operators will perform conductive shoe test of TAP boots prior to start of operations. Test results for each operator will be documented at the beginning of each shift and upon returning from breaks/lunch periods.
		1h. (O)(S)(QC) Verify that necessary emergency shower and eye wash capability is present at operation site.
		1i. (O)(S)(QC) If required, ensure Rapid Deluge System daily operational checks are completed and the unit is operational (follow "Power Up" procedures).
		1j. (O)(S)(QC) Verify presence of Medical Support Personnel prior to start of operations. Medical support personnel will wear identification vests while in PPE/PCE to facilitate ease of identification.
		1k. (O)(S) A 1000 CFM will be pre-positioned and installed as an emergency back-up filter system.
		1l. (O)(S)(QC) Verify portable wind socks positioned outside of Bldg. 491 are readily visible from building exits.
		1m. (O)(S)(QC) Using the Operational Checklist, operators at each work station will verify all required items are present and work station is ready for operations. Operations Lead/Supervisor will conduct a final walk thru of worksite and, using the checklist, verify all pre-operational checks have been completed.

STEP NO.	DESCRIPTION		SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
1.	Preparation of Bldg. 491/VCC. (con't)	1n.	(O)(S) Prior to start of operations, Operations Lead/Supervisor will conduct a Safety briefing. All personnel (to include Medical, Inventory and Security) involved must be present for the briefing. At a minimum, the briefing will include: 1. an overview of the operation. 2. transportation routes for the movement of the rounds from storage and to Bldg 491 and back to storage, 3. location of decontamination station(s), 4. rally points, 5. chemical and fire evacuation routes, 6. level of PCE required, 7. medical monitoring requirements and use of physiological heart rate monitors.
2.	Transport selected Munitions/Samples.	2a.	(O)(QC) Verify that Operations 1 through 3 have been completed. Inventory personnel will prepare the DA Form 4508 to transfer samples to and from Bldg. 491. Samples will be transported IAW Operation 4
		2b.	(O)(S) Tag samples to be inspected; include the storage location on the tag or box to ensure rounds are returned to the proper storage location after inspection. Transport only enough samples for 4 hours work. Samples, in support of CWC, will be selected by the CWC inspection team.
3.	Receive Munitions/Samples at Bldg. 491.	3a.	(O)(S) Post appropriate fire and chemical symbol on Bldg. 491 prior to positioning the vehicle in the receiving bay.
		3b.	(O)(S) A temporary exclusion area will be established and maintained around Bldg 491 using Security Guards and road barricades. Exclusions area will be in place whenever chemical rounds are at Bldg 491.
	CAUTION: Ensure two person rule is maintained when aronnd surety material.	3c.	(O) When the MAV is positioned in the receiving bay and the engine is turned off, all doors to the outside will be closed.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
3.	Receive Munitions/Samples at Bldg. 491. (con't)	3d. (O)(S)(QC) Position the MAV vehicle in the receiving bay in such a way that the monitoring lines can be attached to monitoring port of the MAV. Turn off engine, chock wheels, and monitor vehicle prior to opening the cargo door. All monitoring will be performed IAW SOP PU-0000-R-491.
	WARNING: MAV DOOR WILL BE CLOSED AFTER EACH AMMUNITION SAMPLE IS REMOVED.	
	CAUTION: All doors to bldg 491 will be closed during operations (exception: one door maybe propped open just enough to be used to allow monitoring line access to the bldg). Door to monitoring room will be closed during operations.	
		3e. (O)(S) If **positive** NRT monitoring readings are obtained, immediately sound the chemical alarm system and evacuate personnel out of the immediate area, process thru the mini hot line (See Appendix A) as needed, and notify pertinent supervisory personnel and Operations Center.
	NOTE: If a positive MINICAMS reading is obtained, the 1000 CFM filter unit will remain in operation for a minimum of 30 minutes prior to opening the MAV.	3f. (O)(S) After confirmation, personnel in Level C2 PCE will attach the 1000 CFM filter to the MAV, verify that the make-up air inlets are open, and operate to reduce the concentration level.
		3g. (O)(S) Toxic Material Handlers, in Level B (Level A if liquid is present) will move the munitions from the MAV to VCC for leaker isolation and/or containerization IAW Operation 9, of this SOP.
		3h. (O) (S) If **negative** NRT monitoring reading are obtained, open the cargo door of the MAV.
		3i. (O)(QC) Inventory and QASAS personnel will ensure that NSN, LOT Number, and Quantities received match the DA Form 4508. The same information must be verified prior to returning the ammunition to storage.
	CAUTION: Operators handling munitions/boxes will wear Level D, plus apron and leather or leather-palmed gloves over butyl rubber gloves when handling wooden boxes and/or banding. Non-participating personnel will wear Level D protective clothing as long as NRT monitoring is conducted continuously in accordance with SOP PU-0000-R-491.	3j. (O) Remove munitions from the vehicle (one box/container at a time) and place on pallet. Close MAV cargo door. With a forklift or pallet jack, move the pallet to the east end of VCC. Single boxes of munitions (i.e. 4.2" or 105mm) will be carried to the unpack area utilizing the two person lift/carry process. Lift boxes with both hands on caring ropes.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
4.	Unpack Munitions/Samples. NOTE: Banding, boxes and fibers will be considered as "Never Been Contaminated", if there is no alarm from MINICAMS during operations. Non contaminated lead seals will be collected and turned over to EMO for disposition.	4a. (O)(S) When cutting banding, one operator, wearing leather or leather-palmed gloves, and face shield, will secure the band being cut to keep the banding from cutting protective clothing. Remove banding and/or seals, as applicable, and place bands/seals in the metal scrap container.
	WARNING: WHILE OPENING BOXES AND REMOVING ROUNDS BE ALERT FOR SIGNS OF AGENT LEAKAGE (E.G. EXUDATE, WET SPOTS ON FIBER CONTAINER, DETERIORATED FIBER ETC.).	4b. (O)(S) (O)(S) BOXED: Position one box of munitions sideways on worktable (NOT facing operators) and gently tip over until fiber containers slip out of box on to the lid. If boxes are end opening type, position box on table so rounds do not exit box towards operators. A speed wrench may be used to release the end wing nut. With a pair of tongs, pull fiber container from box and place fiber on table. Set box aside until needed for repack. Place fiber containers in tray/pan and push via the roller conveyor into the VCC. PALLETIZED: Place munitions in tray/pan and push via the roller conveyer into the VCC.
5.	VCC Operation. **CAUTION: There must be at least 2 operators inside VCC with the doors closed and the filter unit running prior to samples entering the VCC.** NOTE: Operators in the VCC will wear Level C2 PCE at a minimum	5a. (O)(S) BOXED: Carefully remove tape and place tape in trash container. Pull fiber container lid a sufficient distance to access the vent hole for air sampling. If a vent hole is not present in the fiber container, remove the lid just enough to gain access for a vapor test. BOXED/PALLETIZED: Be alert for signs of agent leakage (e.g., exudates, wet spots on fiber container/munition, etc.)
		5b. (O)(S) Place fiber container/munition in tray/pan and place cover/lid for monitoring. Monitor tray for one MINICAMS cycle. Monitoring personnel will notify VCC personnel visually of sample start/stop time and monitoring results.
		5c. (O)(S)(QC) If a MINICAMS alarm occurs, evacuate the building to the Mini Hot-Line and notify supervisory personnel to evaluate the situation. If there is no reading, proceed with Step 6.
6.	Visual Inspection.	6a. (O) BOXED: Remove lid on projectile end of fiber container.
		6b. (O)(S) BOXED: Over the worktable, raise fiber to allow projectile to slide out carefully. For 4.2-inch mortars, retain any loose propellant and remove the round just far enough to verify the markings, keeping the base inside the container. For 105MM, one operator will hold the projectile base while the other removes the fiber container with cartridge case.
	WARNING: LEVEL A MUST BE WORN IF LIQUID IS PRESENT.	6c. (O)(S)(QC) BOXED/PALLETIZED: Visually inspect the projectile for signs of leakage, such as corrosion, paint deterioration, etc. Test suspect areas with M8 paper. If

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
6.	Visual Inspection. (con't)	positive results are obtained confirm with MINICAMS (with different column) for containerization. If contamination is not confirmed, proceed to the next step.
		6d. (O)(QC) If inspection is in support of CWC, position projectiles in such a way that the inspectors can see the round and its' markings from outside the VCC window. Proceed to next step once inspectors are satisfied.
7.	Repack Munitions/Samples.	7a. (O)(S) BOXED: Transfer empty box from unpack area to VCC. Repack round in its fiber container, tape fiber leaving at least a 1" pull tab, and place back in the original box and close lid.
		7b. (O) Repeat the steps as necessary for the remainder of boxes in the VCC.
		7c. (O)(S) Transfer boxes via roller conveyor, one at a time, to operating personnel outside the VCC.
	WARNING: OPERATORS HANDLING WOODEN BOXES AND/OR BANDING WILL WEAR LEATHER OR LEATHER-PALMED GLOVES OVER BUTYL RUBBER GLOVES.	7d. (O)(QC) Operators outside the VCC will apply a seal and banding to each box received from the VCC and place on pallet or cart. Open MAV cargo door. With a forklift, pallet jack, or ammunition cart, return the boxes to the MAV.
	CAUTION: Operations conducting banding operation will wear safety glasses and a face shield.	
		7e. (O)(QC) Operators will place the boxes that have been inspected in a drip pan at the rear of the MAV.
		7f. (O)(QC) Repeat the steps as necessary for the remainder of the boxes in the MAV, being careful each time to select boxes that have not been inspected previously.
8.	Return Munitions/Samples to storage.	8a. (O)(S)(QC) Return the rounds to appropriate storage location IAW Operation 4 of this SOP.
		8b. (O)(QC) Inventory personnel will verify the rounds are returned to proper storage locations. Check the sample tag on the box to ensure box is returned to proper storage location.

K. SPECIAL REQUIREMENTS:

1. Verify that the back-up generator for Building 491 is switched to the auto position when preparing to conduct operations in the VCC.

2. Personnel in the same room/bay where boxes or munitions are present, with no duties requiring handling the boxes or munitions, may wear Level D (boots and gloves worn) protective clothing as long as NRT monitoring is performed IAW SOP PU-0000-R-491. Transient Personnel within the building, but not in the room/bay where boxes or munitions are being handled,

may wear Level D.

L. EQUIPMENT, TOOLS, GAGES AND SUPPLIES. (See Operation 1, Paragraph L)

ITEM	QUANTITY	SPEC/DWG	NSN
Band Cutter	As Required	Locally Procured	
Band Stretcher	As Required	Locally Procured	
Band Crimper	As Required	Locally Procured	
Banding	As Required	Locally Procured	
Seals	As Required	Locally Procured	
Seal Crimper	2 Each	Locally Procured	
Diagonal Cut Pliers	1 Each	Locally Procured	
Tape, Pressure Sensitive, Plastic, Black	As Required	8135-00-823-8073	MIL-T-43036
OR			
Tape, Cotton, 2 In., Olive Drab	As Required	7510-00-266-5016	
Strap Wrench	As Required		
Monitoring Tray	As Required	Locally Procured	
Speed Wrench	As Required	Locally Procured	
Pallet Jack	1 Each		
Pallet	As Required		
Leather-Palmed Gloves	As Required		
Metal Scrap Container	1 Each		
Trash Container	1 Each		
Level D	As Required		
Level C2	As Required		
Face Shield	As Required		
Identification Vests	As Required		

OPERATIONS FORMAT

A. STANDING OPERATING PROCEDURE FOR

Chemical Operations

B. OPERATION NO. 7

C. BAY NO. N/A

D. SOP NO. PU-0000-M-486 DATE: 12 Apr 65

E. REV NO. 34 DATE: JUL 2 2012

F. CHANGE NO. DATE:

G. OPERATION: Detection Actions Taken – Vapor Leaker

H. EXPLOSIVE LIMITS: UNITS Igloo Limits EXPLOSIVE LBS. Igloo Limits

I. PERSONNEL LIMITS: OPERATORS Various TRANSIENTS: Various

J.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
1.	Real Time Analytical Platform (RTAP) obtains a positive reading while monitoring a structure.	1a. (O)(S) The Monitoring Systems Operator will sound the alarm and notify the Operations Center (OC) by radio IAW SOP PU-0000-R-491; operations personnel will mask immediately.
		1b. (O)(S) Verify all personnel at work site are masked.
	WARNING: IF AN RTAP OPERATOR CONFIRMS THE PRESENCE OF AGENT AT OR ABOVE THE ALARM LEVEL THE RTAP OPERATOR WILL MONITOR THE PASSIVE FILTER UNITS ATTACHED TO THE LOCATION AT THE MID BANK FOR POTENTIAL BREAKTHRU IAW WITH SOP PU-0000-R-491.	1c. (O)(S) If operators are inside the igloo, evacuate the structure and close doors. Evacuate upwind and contact the OC.
2.	Perform personnel decontamination using the Mini Hot Line.	2a. (O)(S) For routine operations, Mini Hot Line (Appendix A) may have been set up prior to the start of operations IAW Operation 2. If not, Mini Hot Line should be set up by the field crew for conducting this operation.
		2b. (O)(S) Upon exiting the igloo, process through two step pans positioned at site. Decontaminate gloves and boots (concentrating on soles), using a scrub brush provided in the first pan containing bleach. Rinse off decontaminant in the next pan containing water.

STEP NO.	DESCRIPTION		SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
2.	Perform personnel decontamination using the Mini Hot Line. (con't)	2c.	(O)(S) Proceed to the Mini Hot Line and decontaminate PCE (boots, gloves, apron, hood) using a common garden weed spray tank with bleach.
	WARNING: CARE MUST BE TAKEN TO PREVENT LIQUID FROM ENTERING THE PROTECTIVE MASK CANISTER. PERSONNEL WILL COVER INLET VALUE OF CANISTER WHILE BEING DECONTAMINATED.		
		2d.	(O)(S) Flush PCE using soapy water.
		2e.	(O)(S) Boots & gloves will be water rinsed in third step pan. Apron & hood will be water rinsed utilizing the portable shower, starting from head and methodically working down.
	WARNING: DO NOT PERMIT CONTAMINATED PCE TO COME IN CONTACT WITH INDIVIDUAL'S SKIN.	2f.	(O)(S) Upon rinse completion, remove all Butyl (TAP) PCE and cross hotline.
		2g.	(O)(S) Contact supervisor to determine the next course of action.
3.	Filter emplacement.	3a.	(O)(S) Monitoring personnel will provide confirmation of agent detection in accordance with SOP PU-0000-R-491.
		3b.	(O)(S) If detection is confirmed, 1000 CFM filter unit will be attached to vent stack IAW Operation 10, this SOP.
4.	Leaker isolation and containerization.	4.	(O)(S) Leaker isolation and containerization will be conducted IAW Operation 9, this SOP.

K. SPECIAL REQUIREMENTS: Monitoring Systems Operator will immediately notify the Operations Center (OC) by radio, IAW SOP PU-0000-R-491, with readings above the action level.

L. EQUIPMENT, TOOLS, GAGES AND SUPPLIES. (See Operation 1, Paragraph L)

ITEM	QTY REQD	SPEC NO./DWG NO.	MCSN/NSN
Radios, portable	As Required	Various	
Lights, portable	As Required	Locally procured	
Audible alarm/siren	As Required	Locally procured	
Personnel Vehicle	As Required		
PCE	As Required	MIL-C-2181	See TM 10-8415-210
Step Pans	As Required	Locally procured	
Forklift, 6000 lbs. or over	1 Each		
Shower unit or water truck w/shower	1 Each	Locally procured	
Warning signs	As Required	Various	Locally furnished
Brushes/Sponges	As Required		
Eyewash station	As Required		
5% Hypochlorite solution (bleach)	As Required		
Liquid Soap			
M8 detector paper	As Required		

OPERATIONS FORMAT

A. STANDING OPERATING PROCEDURE FOR

Chemical Operations

B. OPERATION NO. 8

C. BAY NO. N/A

D. SOP NO. PU-0000-M-486 DATE: 12 Apr 65

E. REV NO. 34 DATE: JUL 2 2012

F. CHANGE NO. DATE:

G. OPERATION: Detection and Actions Taken – Suspect Liquid

H. EXPLOSIVE LIMITS: UNITS Igloo Limits EXPLOSIVE LBS. Igloo Limits

I. PERSONNEL LIMITS: OPERATORS 6 TRANSIENTS: 2

J.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
1.	Suspect Liquid found during FEM.	1a. (O)(S) The Chemical Operations radio net, with the Security net as backup, will be used to notify the Operations Center (OC).
		1b. (O)(S)(QC) Personnel inside the structure will immediately exit, verify negative vapor monitoring results with RTAP operator, and then prepare for liquid identification.
		1c. (S)(O)(QC) If vapor monitoring results are negative, two operators dressed in Level C2 will re-enter the igloo. Using M8 paper, ascertain presence of agent by dabbing M8 paper into the suspect liquid using a pair of tongs. Wait approximately 30 seconds; a color change to deep red indicates the presence of mustard.
2.	Confirm presence of agent.	2a. (O)(S) Confirm positive M8 paper testing of suspect liquid. Operators will wear a minimum of Level C2 Protective Clothing. Confirmation of agent contamination can be conducted using the MINICAMS (different column) by placing the sampling/monitoring line near the suspected source of contamination or visually by operator.
	NOTE: Used M8 paper and metal tongs will be placed in the first pan, containing bleach for decontamination.	2b. (O)(S) If agent is confirmed, exit the structure and process through Mini Hot Line IAW Operation 7, steps 2a through 2g.
3.	Exit the structure.	3. (O) Close and secure igloo in accordance with Operation 3, step 6.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
4.	Filter emplacement.	4. (O)(S) 1000 CFM filter unit will be attached to vent stack IAW Operation 10, this SOP.
5.	Prepare for isolation and containerization.	5. (O)(S) Leaker isolation and containerization will be conducted IAW Operation 9, this SOP.

K. SPECIAL REQUIREMENTS: (See Operation 1, Paragraph K)

L. EQUIPMENT, TOOLS, GAGES AND SUPPLIES. (See Operation 1 and 10, Paragraph L)

OPERATIONS FORMAT

A. STANDING OPERATING PROCEDURE FOR

Chemical Operations

B. OPERATION NO. 9

C. BAY NO. N/A

D. SOP NO. PU-0000-M-486 DATE: 12 Apr 65

E. REV NO. 34 DATE: JUL 2 2012

F. CHANGE NO. DATE:

G. OPERATION: Leaker Isolation and Containerization

H. EXPLOSIVE LIMITS: UNITS Igloo Limits EXPLOSIVE LBS. Igloo Limits

I. PERSONNEL LIMITS: OPERATORS 14 TRANSIENTS: 4

J.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
1.	Prepare for isolation and containerization.	1a. (O)(S)(QC) QASAS/Surveillance Office will issue the single round container (SRC) to be used in the operation. Verify that the single round container has been visually inspected, maintained, and leak tested within 90 days.
		1b (O)(QC) QASAS/Surveillance Office will be responsible for the visual inspection and testing of the SRC at the scheduled intervals and prior to use, when required.
		1c. (O)(QC) Obtain SRC, tools and supplies required to over-pack the leaking item. Remove additional closure bolts and lock washers from within the container and retain with gasket. Replace container cover. Install only two closure bolts and lock washers (diametrically opposed) and hand tighten for transporting to the operations site. Mark the SRC with leaker label information IAW Appendix D and attach a DA Form 1577-2 to the lid. Label information and DD Form 1577-2 will be provided by Surveillance Branch personnel.
		1d. (O)(S) Telephone, radio, or other means of two-way communication must be available at the work site. Audible warning devices such as a horn or a siren must be readily available.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
1.	Prepare for isolation and containerization. (con't)	1e. (O)(S) Shrouds will be prepared prior to isolation operation. The size and quantity of shrouds required will depend on the igloo layout and ammunition configuration.
	CAUTION: Each operator is responsible for inspecting his/her protective clothing. Inspect visually for discolorations, holes, tears and loose/corroded buttons and buckles. Operators will physically check their SCBA respiratory systems to ensure that the system is operating properly.	1f. (O)(S) Operators involved in isolation, removal, decontamination, or containerization of leakers must wear proper PCE (Appendix B). Prior to the start of any operation, the level of protection required will be determined based on monitoring levels and use scenario.
	WARNING: THE BUDDY SYSTEM WILL BE USED TO MONITOR AIR SUPPLY. IF THE RESPIRATORY SYSTEM ALARM ENGAGES THE INDIVIDUAL WILL IMMEDIATELY EXIT AND PROCESS THROUGH THE DECONCAMINATION STATION. BACKUP, FULLY CHARGED CYLINDERS WILL BE ON-SITE FOR IMMEDIATE USE IF REQUIRED.	
		1g. (O) Assure a suitable vehicle is available for operation (step van, passenger van, etc.)
2.	Site Preparation for Leaker Isolation and Containerization.	2a. (O)(S) Verify that all applicable steps of Operations 1 and 2 have been completed prior to visual leaker inspection.
		2b. (O)(S) A mobile secondary hotline (Appendix A) will be set up a minimum of 450 meters up wind from the accident/incident. Leader/Supervisor on site will determine set-up location based upon the hazard analysis and current weather conditions. A minimum of 2 operators with radio communication will remain on standby within the CLA and provide immediate response to the secondary hotline in case of an accident/incident.
		2c. (O)(S) Establish a temporary exclusion area with controlled access in and out. The area will be large enough to accommodate the operator's activities and a vehicle used in loading, unloading, and transportation of the over-packed munitions and all operations incident to the movement.
		2d. (O)(S) Continuous monitoring will be performed while operators are performing duties in the structure, IAW DA PAM 385-61 and SOP PU-0000-R-491.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S); OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).	
3.	Leaker Isolation.	3a.	(O)(S)(QC) An inspection of the material in storage will be conducted to the maximum extent possible without re-warehousing in an attempt to visually locate the source of contamination. Packaged items will be closely scrutinized for peeling, discolored, or blistered paint.
	CAUTION: Operators may enter storage magazines to render emergency assistance (if required) to entry personnel provided the operator(s) are wearing level C2 PCE, entry is of a short duration and personnel will conduct decontamination processes upon exit.		
	CAUTION: While conducting shrouding, extra caution will be used while accessing stacks and pallets. If climbing ladders to drape plastic, the buddy system will be used. Only trained personnel will perform shrouding/draping procedures.	3b.	(O) If during visual inspection the leaking item cannot be located, individual stacks, pallets, or items will be shrouded for additional localized monitoring.
		3c.	(O) Individually shrouded stacks, pallets, or items will be monitored using low-level monitoring to locate area(s) with elevated readings.
		3d.	(O) Once the "hot stack" is located, the affected items will first be visually re-inspected, segregated (if necessary) and monitored individually to further isolate the source of the leak.
	NOTE: Vapor leaks will not be decontaminated.	3e.	(O)(S)(QC) Once the leak is located, decontaminate only if it will reduce the spread of liquid contamination or reduce the potential for personnel exposure during containerization. A heavy-grade plastic bag, 4-mil or thicker, may be used as an interim drip container for leaking liquid chemical agent.
4.	Prepare the igloo interior for containerization.	4a.	(O)(S) Place a sheet of plastic on the floor large enough to accommodate any potential spills resulting from containerization. Set SRC nearby.
	NOTE: A third step pan for drying off may be necessary if decontamination of rounds adjacent to the leaker is deemed appropriate.	4b.	(O)(S) Place two step pans containing bleach and water and an empty step pan to be used for drying, next to each other and surround with spill pillows/pads to minimize runoff. Place two step pans containing bleach and water just inside interior of igloo for operators to wash boots and gloves prior to exiting igloo.
		4c.	(O)(S) Contact Environmental Management Office to obtain two 55-gallon drums and position the drums nearby – one for solid waste and another for liquid waste.
5.	Containerization.	5a.	(O)(S) If palletized, carefully remove pallet containing leaker from the stack using electric forklift. Move pallet to the containerization area at a height of approximately 6 inches from floor.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
5.	Containerization. (con't)	5b. (O)(S) Remove banding from pallet/box and place in 55 gallon drum – decontaminate if necessary.
	NOTE: Operators handling banding or dunnage will wear leather-palmed gloves over TAP gloves. If possible, based upon level of PCE, face shield will be worn when handling banding during unmasked operations.	
6.	155MM Projectile.	6a. (O)(QC) Obtain and prepare SRC (9" X 41") for use.
		6b. (O) Remove pallet top and place into a plastic bag for later monitoring.
		6c. (O)(QC) Visually check rounds for any signs of leakage or abnormal conditions. If no liquid can be detected, bag each round, wait for vapor buildup time (determined by laboratory), and then monitor individually IAW SOP PU-0000-R-491. Confirm HD liquid IAW Operation 8.
	NOTE: For 155MM, the grommet shall be removed prior to over-packing unless the possibility of spreading the contamination presents a greater hazard. Grommets will be managed as hazardous waste.	6d. (O)(S)(QC) Once the leaking munition is isolated, place the leaking round into a SRC overpack. See SPECIAL REQUIREMENTS.
	NOTE: The SRC and container cover represent an as-assembled unit. Operators should take precautions to ensure that the as-assembled, as-tested configuration is maintained. Both the container flange and flange cover are serial numbered to aid in maintaining the unit.	6e. (O)(QC) Remove the container closure bolts, lock washers, and container cover and set them aside on clean plastic. Place container cover with machined mating surface facing up. Verify that the gasket is properly installed on the container; ensure that the gasket does not get pinched or is twisted during lid installation.
	NOTE: Be careful to record all pertinent information regarding the round, and particularly which serial number SRC it is placed in. This information is needed for the Leaker Report. Verify serial numbers of lid and container body are aligned.	6f. (O)(QC) Place leaking projectile upright (DO NOT DROP) in container. Retrieve container cover, lock washers, and closure bolts. Use cover handle to align bolt-holes in the cover with holes in the container body flange. Install all closure bolts, lock washers, and tighten with ratchet wrench/speed handle.
	NOTE: Multiple torque wrenches pre-set at 20-foot pounds, 40-foot pounds, and 60-foot pounds may be used.	6g. (O)(QC) Using a calibrated torque wrench set at 20-foot pounds, tighten the bolts in the torque sequence shown on the lid. Set the torque wrench to 40-foot pounds and tighten the bolts in the same torque sequence. Finally, set the torque wrench to 60-foot pounds and tighten the bolts in the same torque sequence.
		6h. (O)(QC) Place a plastic bag over the lid of the container leaving sufficient air inside for MINICAMS sampling.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).	
6.	155MM Projectile. (con't)	6i.	(O)(S) SRC headspace will be monitored after a minimum of 12 hours with to verify absence of agent vapors. If agent is detected re-torque SRC bolts. If this fails, removed the cover and check to see that the O-ring is properly seated. If this fails, replace the O-ring. If this fails, prepare to overpack the container using a 12" X 56" SRC.
		6j.	(O)(S) For pallets with a liquid leaker decontaminate adjacent rounds by placing them in the step pan with bleach and scrubbing exterior surface; leave in the pan for five minutes to allow the chemical breakdown to occur.
		6k.	(O)(S) Flush decontaminated rounds with water in the second pan.
		6l.	(O)(S) Place "clean" rounds in the third pan to dry.
		6m.	(O)(S) Shroud "clean" rounds in a plastic bag and place sample line for MINICAMS monitoring (allow >12 hours prior to monitoring).
7.	Reconfigured 105MM rounds (stored without propellant and cartridge case).	7a.	(O)(QC) Obtain and prepare SRC (7" X 27") for use.
		7b.	(O) Repeat steps 6b through 6m including notes (except for grommets).
8.	Boxed 105 MM projectile and 4.2-inch rounds projectiles.	8a.	(O)(QC) Obtain and prepare SRC (7" X 27") for use.
		8b.	(O) Visually check wooden boxes for any signs of leakage or abnormal conditions. If no liquid can be detected, bag each round, wait for vapor buildup time (determined by laboratory), and then monitor individually. Confirm HD/HT liquid IAW Operation 8.
		8c.	(O)(S) Once the leaking munition can be isolated, segregate the box from the others and prepare to open.
	NOTE: Once the wooden box with the leaker is identified, and depending on the circumstances of the leak (agent concentration, liquid vs. vapor, condition of inner packaging, etc.), treating both rounds as leakers and overpacking them might be the best option and should be discussed as an alternative, pending HQ approval.	8d.	(O)(S) Open the wooden box and visually inspect for any signs of leakage. If none are found, commence to shroud each fiber container for low-level monitoring.
	WARNING: IF REMOVAL OF THE 105MM EXPLOSIVE COMPONENTS PRESENTS UNNECESSARY DANGER, LEAVE IN PLACE AND CONTAINERIZE. ENSURE DOCUMENTATION REFLECTS THAT EXPLOSIVE COMPONENTS WERE LEFT IN PLACE.	8e.	(O)(S)(QC) Boxed 105MM—The propellant and cartridge case should be separated from the 105MM projectile whenever possible and the projectile and cartridge case should be containerized separately.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
8.	Boxed 105 MM projectile and 4.2-inch rounds projectiles. (con't)	8f. (O)(S)(QC) Monitor energetic components IAW SOP PU-0000-R-491 and then package separately from the round in an approved container noting lot number and any other relevant identification.
		8g. (O)(S) Boxed 4.2"—Isolate leaking munition down to the individuals fiber container(s) without opening the fiber. Leaking munitions will be placed nose end up in the overpack container without removing the fiber, propellant or ignition cartridge. Annotate records to fully identify the packaging configuration of the containerized cartridge.
		8h. (O)(S) Once the leaking munition is isolated, place the leaking round into a 7" X 27" SRC.
		8i. (O) Repeat steps 6b through 6m including notes (except for grommets).
9.	Overpacks/DOT Bottles.	9a. (O) Visually check over-packs/DOT bottles for any signs of leakage or abnormal conditions. If no liquid can be detected, bag each item wait for vapor buildup time (determined by laboratory), and then monitor individually. Confirm HD/HT liquid IAW Operation 8.
		9b. (O)(S) Overpacks determined to be leaking agent vapor will be placed in a 12" X 56" SRC. DOT bottles will be placed in a 7" X 27" SRC or a 9" X 41" SRC (depending on size of DOT bottle).
		9c. (O) For overpacks/DOT bottles repeat steps 6d through 6i including notes (except for grommets).
		9d. (O)(S)(QC) Select appropriate lifting device and safety cap. Attach the lifting device to the forklift.
	CAUTION: Ensure there is sufficient space available for containerizing leaking overpacks.	9e. (O)(S) Re-warehouse as necessary to accommodate operations. Place one or more empty SRCs in the center aisle.
		9f. (O) Place a box pallet (egg crate) for over-packed leaking items in the vicinity of the SRCs.
		9g. (O)(S)(QC) Place the appropriate lifting device over the desired propelling charge container. Hand-tighten by turning the lifting device turn bar in a clockwise direction. Verify that the clamp arms are in snug contact with the exterior of the propelling charge container body assembly. DO NOT OVER TIGHTEN.
		9h. (O)(S)(QC) If using lifting boom, position the boom so that the boom hook is located vertically over the lifting device. Slowly lower the boom and attach the boom hook to the lifting device hook. Verify that the hook is firmly attached.

STEP NO.	DESCRIPTION		SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
9.	Overpacks/DOT Bottles. (con't)		
	WARNING: AN OPERATOR WILL CONTINUOUSLY OBSERVE THE CONTAINER AS IT IS BEING WITHDRAWN FROM THE BOX PALLET UNIT. IF THE CONTAINER IS DAMAGED TO THE EXTENT THAT SAFE ACCOMPLISHMENT IS QUESTIONABLE, IT WILL BE LOWERED BACK INTO THE BOX PALLET UNIT. CONTINUATION OF OPERATIONS WILL BE ASSESSED BY A SUPERVISOR DESIGNATED BY THE COMMANDER TO MAKE THE DECISION TO CONTINUE WITH THE LIFT.	9i	(O)(S)(QC) Slowly lift the propelling charge container from the box pallet unit. When the propelling charge can has been lifted above the sides of the box pallet, install the appropriate safety cap on the bottom of the propelling charge container. Verify proper placement of the safety cap.
	NOTE: Extreme care should be taken to prevent damaging machined mating surfaces during overpack operations.	9j.	(O)(S)(QC) Slowly lift the propelling charge container until it comfortably clears the flange of the overpack container.
		9k.	(O)(S)(QC) Position the propelling charge container over the opened overpack container.
	WARNING: THE SAFETY CAP WILL NOT BE REMOVED IF THIS PROPELLING CHARGE CONTAINER IS SEVERELY DETERIORATED AND ITS REMOVAL MIGHT CAUSE THE PROPELLING CHARGE CONTAINER TO FALL BEFORE IT CAN BE PLACED IN THE OVERPACK. THE SAFETY CAP IS DESIGNED TO BE CONTAINERIZED WITH THE PROPELLING CHARGE CONTAINER, IF NECESSARY.	9l.	(O)(S)(QC) Remove the safety cap. If the safety cap is not removed, report the serial number of the container involved to QA.
		9m.	(O)(S)(QC) Lower the propelling charge container into the overpack container until there is no tension on either the boom hook or the lifting device hook.
		9n.	(O)(S)(QC) Disengage the lifting device from the propelling charge container by rotating the turn bar counter-clockwise.
		9o.	(O)(S)(QC) Remove the lifting device from the propelling charge container and set aside.
		9p.	(O)(S)(QC) Retrieve container cover, lock washers, and closure bolts. Align bolt holes in the cover with holes in the container body flange.
	CAUTION: Ensure that the gasket does not get pinched or is twisted during lid installation.	9q.	(O)(S)(QC) Install all closure bolts, lock washers, and tighten with ratchet wrench/speed handle
		9r.	(O)(S) Torque and monitor the SRC in accordance with steps 6g - 6i of this operation.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
10.	Secondary Waste Decontamination. **NOTE:** Liquid wastes generated as a result of operations (decontamination solutions, step pans, etc) will be collected and packaged into a 55 gallon drum appropriately lined and rated for liquid containment. Liquid wastes will be classified through an extraction sampling process IAW SOP-0000-R-491and transferred to liquid hazardous waste storage. **NOTE:** All solid secondary wastes will be containerized by placing waste inside of plastic bags and sealing plastic bags in appropriate manner (tape, ties, etc). Plastic bags will be placed into appropriate overpack/drums and sealed prior to transferring to storage. An alternative is to line the secondary waste drums with plastic bags prior to placing the waste into the drums. Solid secondary wastes will be heated to at least 70 degrees F for a minimum of 4 hours prior to final monitoring and characterization.	10a. (O)(S) Secondary waste (i.e. wood, plastic, grommets, banding, PCE, decon solution etc.) will be monitored prior to decontamination process. Solid Waste monitored to levels greater than 1 Vapor Screening Level (VSL)/ 1STEL ($0.003 mg/m^3$) will require decontamination; waste monitored to levels less than or equal to 1VSL will be containerized and placed in permitted hazardous waste structure. Contents of each container will be listed and reported to Environmental Management Office (EMO) along with the corresponding container number and monitoring results.
		10b. (O)(S)(QC) Secondary waste above 1VSL will be submerged in a decon solution for a minimum of 10 minutes; rinsed thoroughly in a water solution; and allowed to dry overnight prior to monitoring.
		10c. (O)(S)(QC) Dry secondary waste will be placed in plastic bags and monitored after adequate vapor build-up time (determined by laboratory) is achieved.
		10d. (O)(S) Secondary waste monitored to levels less than 1 VSL will be containerized and placed in permitted hazardous waste structure; waste monitored to levels above 1VSL will be re-deconned IAW Steps 10b – 10c.
		10e. (O)(S)(QC) Steps 10b – 10c will be repeated two additional times or until a monitoring level of less than 1VSL is achieved.
		10f. (O)(S) Secondary waste monitored to levels greater than 1VSL after 3 decon processes will be containerized and placed in permitted hazardous waste structure.
11.	Close and secure igloo.	11a. (O)(S) Site Lead will notify assigned key control personnel to replace locks, Inform P10 (Post 5) by phone or radio that operations are complete.
		11b. (O)(S) Using a 6,000 lb. or over forklift MHE personnel will place security block in position over the spike using

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
11.	Close and secure igloo. (con't)	care when replacing block as they are easily damaged. Once completed Site Lead will report completion to the Safety Operator at the van.
		11c. (O)(S) Safety Operator at the van will then notify the OC, by phone or radio, that igloo is clear, secure and King Tut has been returned and that operations are complete.

K. SPECIAL REQUIREMENTS:

1. Stack shrouding and air monitoring is a crucial part of a systematic approach to leaker isolation. Vapor build-up time used during leaker isolation will be determined by the laboratory on a case-by-case basis. The vapor build-up time to make an evaluation of elevated readings among shrouded items is normally 12 hours. Depending on the initial agent reading, weather conditions, and ammunition configuration (i.e. stack, pallet, boxes, or rounds) build-up time may be greater than or less than the 12 hours to provide an accurate determination for further isolation. An elevated reading is not the only criteria used for further isolation; it is also contingent on a sustained reading that in comparison to other monitored like-items is elevated. With sufficient vapor build-up time, accurate concentration variations will effectively isolate down to one leaking munition

2. Material, such as water, decontaminating solution, sand, or verimiculite, will NOT be placed in overpack containers with leaking munitions. Interim plastic drip bags will be used with liquid leaks. Per CMA Stockpile Management, plastic bags used to isolate a vapor leak may be placed with munition in SRC containers. When drip bags are present, care must be taken to avoid tearing or catching bags between gasket and flanges during packaging.

3. Container preparation should be performed in a dry environment, protected from adverse weather conditions. It should NOT be performed by individuals dressed in butyl rubber protective clothing. Prepare container(s) prior to transport to overpack operations site.

4. If the container or container cover is dropped or tipped over, during over pack operations, replace with another container with cover. The dropped container and container cover will require a visual inspection and leak test by the Surveillance Branch prior to use. The two items are an as-assembled, as-tested unit.

5. Adequate space must be provided to allow egress of workers in the igloo.

6. Restrain the container(s) from movement, minimizing the potential for worker injury and limiting the possibility of damaging machined mating surfaces. The container should be in an upright position to facilitate removal and replacement of the cover.

7. The single round container incorporates two cleaned and preserved mating surfaces, one on the lid and one on the container flange. Damage to the sealing surfaces could jeopardize agent containment capability. During loading operations, the container lid is removed and placed away from the immediate work area, flange side up, to afford protection from abrasion to the flange surface.

8. Extreme care should be taken to prevent damaging machined mating surfaces during overpack operations.

9. The Letter of Instruction for the 7" X 27" single round container (SRC) is the only LOI that mentions lock washers with closure bolts. If the 9" X 41" and /or the 12" X 56" SRCs have lock washers, install with the closure bolts.

10. DO NOT use impact wrenches or power tools to tighten or loosen bolts. If cover handle is not sufficient to hold container during tightening, use of a strap wrench may be necessary or else the container may be strapped to a rigid fixture to prevent movement during tightening.

11. Verify that all MHE and lifting devices have received required periodic inspection and/or load tests, as applicable. Because a forklift becomes "modified" with the addition of a propelling charge lifting device, approval from the forklift manufacturer is required. This manufacturer may require additional modifications and/or a new data plate. This approval must be documented and filed with the forklift maintenance records. For load and functional test purposes the lifting device is part of the forklift and the two items will be tested as a unit. The addition of the lifting device may affect the stability and/or center of gravity of the forklift (See CFR 1910.178, Appendix A).

12. QASAS/Surveillance Office personnel will record the container serial number that is located on the flange and the flange cover, on the DSR card and inspection documentation.

13. Operators will use proper lifting techniques when removing munitions from pallets; when placing leakers in the containers; and when handling the single round containers. After sliding the leaker into the single round container, slowly raise the open end of the container to allow the round to gently contact the container bottom.

14. Supervisor will ensure that all personnel assigned to toxic chemical operations, are trained IAW AMC–R 350-4 and local containerization procedures and have read, or had read to them this and all other applicable SOP's and understand the contents thoroughly.

L. EQUIPMENT, TOOLS, GAGES AND SUPPLIES. (See Operation 10, Paragraph L)

ITEM	QTY REQD	SPEC NO./DWG NO.	MCSN/NSN
Lights, portable	As Required	Locally procured	
Radios, portable	As Required	Various	
Communications Equipment	As Required	Locally procured	
Audible alarm/siren	As Required	Locally procured	
Physiological heart rate monitor	As Required	Locally procured	
Personnel Vehicle	As Required		
Pallets/Dunnage	As Required	Various	
Boxes (Ammo)	As Required	Various	
Overpack			
7" by 27" SRC (for 105mm and 4.2" munitions)	As Required	Dwg S727001 thru S727009	
9" by 41" SRC (for 155mm and 8" munitions)	As Required	Dwg ACV00655	
12" by 56" SRC (for Secondary Over-pack)	As Required	Dwg ACV 00649	
Interspiro 9030 SCBA	As Required	See operating instructions	
PCE	As Required	MIL-C-2181	See TM 10-8415-210
Tape, Pressure Sensitive (Duct Tape)	As Required		7510-00-074-4955
Clear plastic bags (lrg & xlrg)	As Required	Locally procured	
Clear plastic for shrouding	As Required	Locally procured	
Secondary Containment Pool	1 Each		
Step Pans	As Required	Locally procured	
Shower unit or water truck w/shower	1 Each	Locally procured	
Forklift, 6000 lbs. or over	1 Each		
Steel strapping, 1½"	As Required	QQ-S-781	8135-00-283-0671
Steel strapping, 3/4 "	As Required	QQ-S-781	
Band cutters	As Required		5110-00-223-6281
Steel strapping stretchers	As Required		3540-00-278-1250
Steel strapping crimpers	As Required		
Hand tools	As Required	Various	Locally furnished
Warning signs	As Required	Various	Locally furnished
Leather palmed gloves	As Required	MIL-G-2366	8415-00-268-7869
Torque wrench	As Required		
Brushes/Sponges	As Required		
Eyewash station	As Required		
5% Hypochlorite solution (bleach)	As Required		
HTH	As Required		
Stretcher	As Required		
M8 detector paper	As Required		
Flashlights, explosive proof	As Required	MIL-F-3747	
Fire Extinguisher, Type 10BC or ABC	2 Each		
DD Form 1577	As Required		
SDS Form 959-R	As Required		
Ladder	As Required		
Forklift, Electric, Type (E, EE,ES, or EX)	As Required		
1000 CFM Filter Unit	1 Each		

OPER NO: 9 SOP NO: PU-0000-M-486 REV 34 CHG _____ DATE JUL 2 2012

ITEM	QTY REQD	SPEC NO./DWG NO.	MCSN/NSN
Lifting Device	1 Each		
Metal Tongs	As Required		
Spill pillows/pads	As Required		
55 gal drums	2 Each		
95 gal drums	As Required		

OPERATIONS FORMAT

A. STANDING OPERATING PROCEDURE FOR **Chemical Operations**

B. OPERATION NO. 10

C. BAY NO. N/A

D. SOP NO. PU-0000-M-486 DATE: 12 Apr 65

JUL 2 2012

E. REV NO. 34 DATE:

F. CHANGE NO. DATE:

G. OPERATION: 1000 CFM Filter Installation and Operation

H. EXPLOSIVE LIMITS: UNITS Igloo Limits EXPLOSIVE LBS. Igloo Limits

I. PERSONNEL LIMITS: OPERATORS 6 TRANSIENTS: 2

J.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
1.	Perform Pre-operational checks on 1000 CFM prior to deployment.	1. (O) Perform all the pre-operational checks listed in the 1000 CFM checklist located inside the electrical panel control box prior to deployment.
2.	1000 CFM Filter Emplacement.	2a. (O) Place filter unit on the east side of igloo as close to the rear vent as possible. Chock the wheels to prevent the unit from rolling. Level the filter unit using the jacks located at each corner of the filter unit trailer.
		2b. (O)(QC) Specific instructions for setting up and running the 1000 CFM filter unit are located in the 1000 CFM checklist located inside electrical panel control box. These steps will be strictly adhered to in the operation of the filter unit.
	NOTE: If use of the 1000 CFM is required on a long term basis (longer than three months), the Ammunition Surveillance Office will periodically test the grounding rod to assure continuity and required grounding resistance is maintained,	2c. (O)(QC) Assure that the grounding rod is firmly placed into the ground. Notify the Ammunition Surveillance Office and request a test of the grounding rod and line for continuity.
		2d. (O) Remove the hose assembly from the filter unit.
		2e. (O)(S)(QC) Ensure the filter hose assembly has the Adapter Collar and Igloo Adapter connected to the hose. If not previously assembled, do so at this time.
		2f. (O) Remove the inlet cap from the filter housing. Place the hose assembly with adapter collar to the filter inlet and secure with four swivel latches.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
2.	1000 CFM Filter Emplacement. (con't)	2g. (O) If additional hose length is required to reach from the filter unit to the rear ventilator stack, attach additional hose sections using a pair of adjustable ring clamps to reach the access door on the stack.
		2h. (O) Personnel in Level D (gloves and mask worn) at a minimum will carry the adapter and hose up to the rear ventilator and open the ventilator access door.
		2i. (O)(S) Using a utility knife and leather gloves over butyl rubber gloves, personnel will carefully cut the seal around the rear stack access door.
	NOTE: Two 1000 CFM filters may be used in parallel to efficiently reduce high level igloo readings. The "Y" adapter will be attached to the rear vent of the igloo and both hose assemblies will be attached to the adapter.	2j. (O) Position the clamp tabs to the inside of the Igloo Adapter. Insert the Igloo Adapter into access opening on vent stack. Using the clamp position indicator move clamp tabs to the out board of the Igloo Adapter. Tighter knob on both sides of Igloo Adapter so the adapter is tight. Use Startup Checklist for 1000 CFM Unit and start the filter engine (check engine oil and fuel).
	CAUTION: If the use of a ladder is necessary, operators will use extreme caution during transport and placement of the ladder to the rear stack due to potential uneven terrain on the side of the igloo. Operators will assure ladder has solid footing and will maintain three point contact with the ladder while climbing. A second operator will hold the ladder steady while the first operator is climbing and placing/removing the cap over the snorkel.	2k. (O) Using a rear stack access platform, operators will place a rubber cap over the snorkel end of the rear passive ICS filter unit exhaust vent. Only in the event a rear stack platform is not available, a ladder may be used as an alternative to place the cap over the rear vent exhaust.
		2l. (O)(S)(O) Open the bypass door of the front ICS passive filter unit by turning the handle to the left. NRT monitoring will be conducted after 30 minutes of operation and daily thereafter IAW SOP PU-0000-R-491 to verify absence of "break-through".
3.	1000 CFM Filter Start Up and Operation.	3a. (O) Use Startup Checklist for 1000 CFM Unit and start the filter engine. Annotate the date, structure, agent, and monitoring results on the filter usage sheet/log maintained with the filter unit for each day filter is used.
		3b. (O)(S)(QC) NRT monitoring will be conducted after 30 minutes of operation and daily thereafter during operation IAW SOP PU-0000-R-491 to verify absence of "break-through". Front and back vents of the filtered structure must be open when the filter unit is operating.
	NOTE: Monitoring results will be maintained by PCD Laboratory and Monitoring personnel in a database for historical purposes.	3c. (O) Annotate the date, time, structure number, and agent, on the filter usage sheet/log maintained with the filter unit for each day filter is used.

STEP NO.	DESCRIPTION		SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
3.	1000 CFM Filter Start Up and Operation. (con't)	3d.	(O)(QC) The dampers of the front and back vents of the storage structure must be open when the filter unit is operating. Assure that dampers to the front and rear are in the open position.
4.	1000 CFM Filter Refueling.	4.	(O) 1000 CFM filter will be shut down daily for refueling and PCMS using the procedures in the checklist located inside the electrical panel control box. The Operations Center will be notified when the unit is shut down and when unit is started up. During refueling operations a portable fire extinguisher will be on site.
5.	1000 CFM Filter Removal.	5a.	(O)(S) Filter operations will be terminated after the leaker has been containerized; filter will be removed when the laboratory has certified the igloo clean IAW PCD-R 50-3.
		5b.	(O) Close the Bypass door of the passive filter unit on the structure door by turning the handle to the right.
	CAUTION: If the use of a ladder is necessary, operators will use extreme caution during transport and placement of the ladder to the rear stack due to potential uneven terrain on the side of the igloo. Operators will assure ladder has solid footing and will maintain three point contact with the ladder while climbing. A second operator will hold the ladder steady while the first operator is climbing and placing/removing the cap over the snorkel.	5c.	(O) Remove the cap covering the snorkel on the rear ICS passive filter unit vent using the rear stack access platform (or ladder, if necessary) to gain access to the cap.
	NOTE: Operators will wear Level D PCE with mask and gloves worn to remove the flexible hose from the stack and cover the end with plasctic.	5d.	(O)(S) Remove the flexible hose form the rear stack. Remove the adapter from the hose and cover the end of the hose with plastic sheeting and secure with tape.
		5e.	(O)(S) Monitor the 1000 CFM filters, hoses, and rear ventilator adapter assembly IAW SOP PU-0000-R-491 prior to removing from CLA.

K. SPECIAL REQUIREMENTS: (See Operation 1, Paragraph K)

1. Removal of contaminated filters will be done IAW with requirements described in Appendix E.

2. Removed filters will be managed IAW PCD Waste Management Plan.

3. If the 1000 CFM fails, replace with a serviceable unit.

4. Operators will be trained and wear proper hearing protection when working on or near filter unit. Operators will be trained on the installation and operation of the 1000 CFM Filter Unit.

5. If any portion of the Lightning Protection System (LPS) is affected by filter operations and integrity of the system is compromised, contact the QASAS/Surveillance Office for corrective actions.

6. The 1000 CFM may be stored with the flexible hose either attached to the filter inlet housing or separated from it. If the hose is stored separated from the filter inlet housing, each end of each hose section will be covered with plastic sheeting secured with tape until monitoring of the hose has been completed.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).

L. EQUIPMENT, TOOLS, GAGES AND SUPPLIES.

ITEM	QTY REQD	SPEC NO./DWG NO.	MCSN/NSN
1000 CFM Filtering Unit	1 Each		
Tape, Duct	As Required		
Bags, Plastic, Large	As Required		
Utility Knife	As Required		
Leather Gloves	As Required		
Hearing Protection	As Required		
Rear Stack Access Platform	As Required		
Ladder (if Required)	1 Each		
Ring Clamps	As Required		
Screwdriver/Nut Driver	1 Each		

OPERATIONS FORMAT

A. STANDING OPERATING PROCEDURE FOR **Chemical Operations**

B. OPERATION NO. 11

C. BAY NO. N/A

D. SOP NO. PU-0000-M-486 DATE: 12 Apr 65

JUL 2 2012

E. REV NO. 34 DATE:

F. CHANGE NO. DATE:

G. OPERATION: **Decontamination of PCE, Equipment, and Facilities**

H. EXPLOSIVE LIMITS: UNITS Igloo Limits EXPLOSIVE LBS. Igloo Limits

I. PERSONNEL LIMITS: OPERATORS 5 TRANSIENTS: 1

J.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
1.	Management and Decontamination of PCE.	1a. (O)(S)(QC) PCE not exposed to agent vapor or liquid contamination will be hung up and allowed to aerate for at least 12 hours prior to reuse.
		1b. (O)(S)(QC) PCE not exposed to agent vapors or liquid shall, as a minimum, be returned to the laundry facility for laundering once every three months.
		1c. (O)(S)(QC) PCE exposed to agent vapors/liquid will be placed in a plastic bag, as each individual processes through the decontamination station; Each bag will contain the PCE from one individual and will be sealed following PCE collection. During cleanup (conclusion of operations) personnel wearing butyl rubber gloves will collect and transport the sealed bags to the Building 475 monitoring shed, where the bags will be monitored IAW SOP PU-0000-R-491.
		1d. (O)(S)(QC) PCE exposed to agent vapor will, upon negative monitoring results, be returned to the laundry facility for laundering and aeration.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
1.	Management and Decontamination of PCE. (con't)	1e. (O)(S)(QC) PCE exposed to agent vapor which monitoring indicates levels greater than the WPL level will be decontaminated, and again bagged, heated, and monitored IAW SOP PU-0000-R-491. This process will be repeated three times or until monitoring indicates agent levels below the WPL before being returned to the laundry for laundering and aeration. If after three attempts of decontamination and the PCE exceeds the WPL, it will be treated as hazardous waste and disposed of IAW the RCRA permit at the Waste Management Plan
		1f. (O)(S) PCE subjected to liquid agent contamination will be decontaminated and placed in an approved container after testing for thoroughness of decontamination per PCD Site Specific Monitoring Plan. The PCE will be tagged, which will indicate content, degree of initial exposure, decontamination accomplished, and date packaged. The container will then be managed IAW the RCRA permit and the Waste Management Plan. Contents and monitoring results will be reported to EMO.
2.	Surface decontamination. **CAUTION: When handling, mixing or applying HTH during chemical operations a minimum of Level C2 Protective Clothing will be worn.** **WARNING: HTH MUST BE USED AS A SOLUTION. IN THE DRY STATE, HTH REACTS VIOLENTLY WITH LIQUID MUSTARD, ALONG WITH OTHER FLAMMABLE AND COMBUSTIBLE SUBSTANCES, AND MAY GENERATE SUFFICIENT HEAT TO CAUSE FLAME.** **WARNING: HTH WILL DESTROY CLOTHING, EMITS GAS, DUSTS AND VAPORS AND WILL INJURE SKIN, EYES, AND RESPIRATORY TRACT.** **WARNING: IF HTH COMES IN CONTACT WITH THE SKIN OR CLOTHING, THE AREA SHOULD BE FLUSHED WITH LARGE AMOUNTS OF WATER.**	2a. (O)(S) Large surface areas will be sprayed with a solution of HTH from the M12A1 Decontamination apparatus IAW SOP PU-0000-M-302 (the M12A1 Decontamination apparatus will be charged with HTH only when required).
		2b. (O)(S) To remove HTH residue from the floor, wash the floor first with soapy water and then flush with clear water.
		2c. (O)(S)(QC) Cover with plastic sheeting and monitor. If sample comes back positive, repeat steps 2a-2c.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
3.	Disposal of contaminated material.	3a. (O)(S)(QC) Protective equipment or other material that has been contaminated with liquid agent will be processed IAW Operation 9, Step 10. Waste will be tagged to identify type and date of contamination, and managed IAW with the RCRA permit.
		3b. (O)(S) Decontamination residue (3X) from chemical operations, such as bagged TAP clothing and salvaged dunnage, may be stored in a hazardous waste storage structure/area inside or outside the chemical limited area in accordance with the hazardous waste permit.
4.	Tools and equipment.	4a. (O) If the equipment has been subjected to liquid contamination, it will be marked "XXX" and returned to operations personnel after decontamination and monitoring results are below permissible exposure levels.
		4b. (O) If the equipment has been exposed to vapor contamination, it will be marked "XXX" and returned to operations personnel after decontamination and monitoring results are below permissible exposure levels.

K. SPECIAL REQUIREMENTS:

1. Determination of atmosphere and surface area contamination will be made through monitoring of area by appropriate detectors. Chemical Operations Supervisor will determine level of protective clothing after review of monitoring results.

2. When in doubt as to degree of agent exposure, treat PCE as though contaminated with liquid agent.

3. When to exiting the storage structure, personnel will rinse their boots and gloves in step pans containing bleach and water. Processing through the contamination reduction area, to include use of step pans, is intended to confine agent and spent decontaminants and is only required if known or suspected agent contamination is encountered.

4. Used decontaminating solutions will be collected, sampled and packaged IAW PCD Hazardous Waste Management Plan and then stored in a hazardous waste storage site.

L. EQUIPMENT, TOOLS, GAGES AND SUPPLIES. (See Operation 1, Paragraph L)

ITEM	QTY REQ'D	SPEC/DWG NUMBER	MCN/NSN
M12A1 Decon Apparatus	As Required		
HTH	As Required		
Tape, Duct	As Required		
Plastic Bags	As Required		

OPERATIONS FORMAT

A. STANDING OPERATING PROCEDURE FOR **Chemical Operations**

B. OPERATION NO. 12

C. BAY NO. N/A

D. SOP NO. PU-0000-M-486 DATE: 12 Apr 65

E. REV NO. 34 DATE: JUL 2 2002

F. CHANGE NO. _____ DATE: _____

G. OPERATION: Donning and Doffing of STEPO/Interspiro

H. EXPLOSIVE LIMITS: UNITS N/A EXPLOSIVE LBS. N/A

I. PERSONNEL LIMITS: OPERATORS N/A TRANSIENTS: N/A

J.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
1.	Pre-donning Procedures.	1a. (O) Remove suit from storage container.
	NOTE: Prior to donning level A, and B protective outfits, personnel will be medically monitored IAW PCD R 385-507.	1b. (O)(S)(QC) Ensure Sign Out Sheet is present inside suit container. This form indicates the suit has a current inspection date. Form must be signed by the wearer prior to donning suit. DO NOT use a damaged suit. Check for holes, rips and abrasions. Return it to clothing inspector if found unserviceable.
	NOTE: Personnel will receive training and will practice wearing PCE prior to performing chemical duties in their protective outfits.	1c. (O)(QC) Wearer will perform an audio-visual alarm test upon receipt of SCBA.
		1d. (O) Innerwear will consist of cotton underwear and/or shorts, and cotton T-shirt.
2.	Donning Procedures.	2a. (O) Remove shoes.
	CAUTION: Ensure Heart Rate monitor is utilized IAW PCD-R 385-507 prior to donning.	
		2b. (O) Don Personal Ice Cooling System (PICS) shirt.
	NOTE: Wearer will require at least one assistant to assist with donning/doffing of STEPO	2c. (O) Sit down and don boot liners.
		2d. (O) Stand and place right foot into protective suit right bootie. Step over slide fastener and put left foot into left bootie.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
2.	Donning Procedures. (con't)	2e. (O) Pull protective suit up to waist and let top of protective suit lay to right side or behind wearer.
	CAUTION: Equipment damage. Walking or standing in protective suit booties on rough surfaces will cause abrasions or tears to booties. If surface is rough, stand on a piece of cardboard, carpet, or similar material to protect suit booties	
		2f. (O) Sit down and roll up ankle cuffs and put on TAP boots.
		2g. (O) Roll ankle cuffs down to cover tops of TAP boots and secure snap fasteners. Stand up.
		2h. (O)(S)(QC) Ensure Sign Out Sheet is present inside SCBA container. This form indicates the SCBA has a current inspection date. Form must be signed by SCBA wearer prior to donning. The user will inspect and test the SCBA unit assigned to them in accordance with the manufacturer's operating instruction and all training provided.
	CAUTION: Backpack of SCBA must be worn low on back to properly distribute weight of SCBA.	2i. (O) Don SCBA. Open eccentric side buckles. (1) Hold SCBA with back pack of SCBA harness assembly toward you and cylinder valve facing downward. (2) Grasp right shoulder strap at pressure gauge manifold block, then lift and slide strap onto right shoulder. (3) Reach behind with left hand and locate left waist buckle; slide left hand upward on left shoulder strap and position strap onto left shoulder as if donning a coat.
		2j. (O) Using both hands, pull left and right waist belts straight out and clip together.
		2k. (O) Using both hands, pull loose ends of waist straps to side to tighten harness assembly.
		2l. (O) Lock down eccentric side buckles.
		2m. (O) Don the communication system. (OPTIONAL) Position throat mike to one side of "Adam's apple". (1) Plug microphone jack into top of speaker case. (2) Place around waist as required. (3) Turn on and listen for signals indicating proper operation. (4) Set volume.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
2.	Donning Procedures. (con't) NOTE: Ensure PICS (Personal Ice Cooling System) support strap is connected to PICS load-bearing pass through. Ensure PICS support strap adjustment buckle is located on chest.	2n. (O) Connect PICS support strap from load-bearing pass through onto D-ring on SCBA left shoulder strap and harness ring on harness frame where shoulder straps are attached, and tighten.
		2o. (O) Connect coolant pass through assembly internal couplings to cooling shirt couplings. Pull on couplings to ensure they are engaged.
		2p. (O) Fully extend face mask head harness straps and lay head harness over front of facemask.
		2q. (O) Remove rubber plug from valve and retain. Connect breathing hose (from pressure gauge manifold) to suit pass-through.
		2r. (O) Depress lever on breathing valve then reach back with left hand and open cylinder valve completely.
		2s. (O) Inhale, turning on positive pressure automatically. Exhale to reset diaphragm assembly in neutral position.
		2t. (O) Place facemask on face forcing chin cup tightly against chin.
		2u. (O) Pull facemask head harness over head.
		2v. (O) Pull straight back on facemask head harness straps to tighten, beginning with lower jaw straps, then middle straps and finally top strap.
		2w. (O)(QC) Stop breathing and listen for any leakage. If leakage is heard check that there is no interference with face seal. Re-adjust head harness as necessary. Check to ensure bypass valve is closed.
		2x. (O)(QC) Check positive pressure by holding breath and inserting two fingers between sealing edge of face mask and face. Air should escape. Remove fingers. No sound of escaping air should be heard.
		2y. (O)(QC) Check bypass operation by turning bypass knob clockwise and listen for air flow. Close bypass by turning bypass knob counter clockwise until knob is against the stop.
	NOTE: To save cylinder air wearer can go to ambient air until STEPO suit is zipped.	2z. (O)(QC) Check pressure gauge. Pressure gauge needle should be in green area.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
2.	Donning Procedures. (con't)	2aa. (O) Pull protective suit up over head and duck head and shoulders through slide fastener into top half of protective suit.
		2bb. (O) Pull back of protective suit around SCBA.
		2cc. (O) Route long suspender straps over shoulders. Cross suspender straps at back and at middle of chest and buckle to short suspender straps. Buckles are color coded yellow.
		2dd. (O) Move control unit to long suspender strap on left side for final placement.
		2ee. (O) Hang PICS onto load bearing pass-through hook and connect PICS external tether assembly to coolant pass-through assembly. Inside of suit, adjust support strap to raise PICS to a comfortable position.
		2ff. (O) Attach PICS thigh strap around leg and adjust for comfort.
		2gg. (O) Place PICS toggle switch to HIGH (cooling should occur within two minutes). After cooling is achieved, switch toggle to low.
	NOTE: Place a piece of terry cloth towel inside STEPO pocket to be used to clear the face shield when fogging occurs	2hh. (O) Route left and right visor support straps through D-rings of protective suit visor frame and connect to buckles on bottom of visor frame. Buckles are color coded red.
		2ii. (O) Insert arms and hands into protective suit sleeves and gloves. North Silver Shield 0120CE inner gloves will be worn.
	WARNING: ALL PERSONNEL SUBJECT TO HEAT STRESS ENVIRONMENTS WILL BE GIVEN SUFFICIENT WORK/REST CYCLE TIME BETWEEN OPERATIONS TO AVOID HEAT STRESS ILLNESS. SITE SUPERVISOR WILL ENSURE THAT REQUIRED RESPIRATOR AND PCE TRAINING HAS BEEN COMPLETED; MEDICAL SCREENING MUST BE COMPLETED PRIOR TO DONNING SCBA. ALL OPERATORS SHOULD DRINK COPIOUS AMOUNTS OF WATER DURING WARM WEATHER OPERATIONS, SITE SUPERVISORS WILL MONITOR THE WBGT AND ADJUST DAILY OPERATIONS ACCORDINGLY. SITE SUPERVISORS MUST ENSURE COOLING VEST/SYSTEM IS WORN IAW HEAT STRESS PLAN IAW PCD-R 385-507.	2jj. (O) Close slide fastener and snap storm flap into place.

STEP NO.	DESCRIPTION	SPECIFIC INSTRUCTION (SAFETY (S), OPERATIONAL (O), QUALITY CHARACTERISTICS (QC)).
3.	Operating Conditions.	3a. (O)(S) Monitor pressure gauge. Ensure pressure gauge needle is in the green area, indicating tank has been fully charged to greater than 90% rated capacity.
	WARNING: LIMITED BREATHING AIR IN SCBA. LEAVE AREA IMMEDIATELY WHEN ALARM WHISTLE SOUNDS. AN AUDIBLE ALARM INDICATES REMAINING BREATHING AIR PRESSURE IN SCBA CYLINDER HAS DROPPED BELOW 25 PERCENT CAPACITY. THE "BUDDY SYSTEM" WILL BE USED TO MONITOR AIR SUPPLY.	3b. (O)(S) While leaving area and performing decontamination, monitor SCBA pressure gauge. A low pressure audible alarm will sound when SCBA cylinder has approximately 25 percent (approximately 1125 psig) air remaining.
	NOTE: Additional SCBA air tanks are available as needed.	
4.	Hot Weather Precautions.	4a. (S) Protective Suit. When the protective suit is worn in hot environments and while working at high work rates, the user will be more prone to heat stress illness. Heat stress illness may result due to heat build-up inside the protective suit and subsequent rise in body core temperature. Every effort should be made to rotate personnel in the work cycle to allow the body to recuperate.
	WARNING: HEAT STRESS ILLNESS. STEPO USERS SHOULD BE GIVEN SUFFICIENT RECUPERATION TIME BETWEEN OPERATIONS IN HOT WEATHER ENVIRONMENTS TO AVOID HEAT STRESS ILLNESS. HEAT STRESS ILLNESS COULD RESULT FROM EXTENDED USE WITHOUT PROPER REST AND FLUID REPLENISHMENT.	
		4b. (S) Prevention of heat stress illness. As a general rule to prevent fatigue and heat stress illness, the wearer's rest work cycle time should be equivalent to three times the period of time that the protective suit is worn: however, the final decision on the appropriate rest work cycle time will be determined by the CMA.
		4c. (S) Heat Stress Illness. If the user becomes a casualty of heat stress illness, they must be removed from the protective suit immediately. If the casualty is in a contaminated area, evacuate the casualty to an established hotline or an uncontaminated area upwind of the work site for decontamination and removal of the protective suit.
5.	Doff Protective Suit.	5a. (O) Perform decontamination procedures in accordance with Operation 11.
		5b. (O) Assistant will unsnap and fold back cuffs. Wearer will remove boots.
		5c. (O) Assistant will unsnap protective suit storm flap and unzip suit.